# USE PERMIT AMENDMENT
# U-01-06 Amendment No. 1
## HD RANCH
## SOLANO COUNTY, CALIFORNIA

## Draft Initial Study and

## Mitigated Negative Declaration

**June 2018**

**Prepared By**
**Department of Resource Management**
**County of Solano**

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**FIGURES**

DEPARTMENT OF RESOURCE MANAGEMENT
**PART II OF INITIAL STUDY OF ENVIRONMENTAL IMPACTS**

## Introduction

The following analysis is provided by the Solano County Department of Resource Management as a review of and supplement to the applicant's completed "Part I of Initial Study." These two documents, Part I and II, comprise the Initial Study prepared in accordance with the State CEQA Guidelines, Section 15063.

| | |
|---|---|
| **Project Title:** | HD Dairy Ranch |
| **Application Number:** | U-01-06 Amendment No. 1 |
| **Project Location:** | 7815 Midway Road, Dixon |
| **Assessor Parcel No.(s):** | Assessor's Parcel Nos. (APNs) 0112-060-060, 0112-060-070, 0112-060-080, 0112-100-050, and 0112-100-060 |
| **Project Sponsor's Name and Address:** | HD Ranch<br>7815 Midway Road, Dixon, CA 95620 |

### General Information

This document discusses the proposed project, the environmental setting for the proposed project, and the impacts on the environment from the proposed project and any measures incorporated which will minimize, avoid and/or provide mitigation measures for the impacts of the proposed project on the environment.

- ❑ Please review this Initial Study. You may order additional copies of this document from the Planning Services Division, Resource Management Department, County of Solano at 675 Texas Street Suite 5500, Fairfield, CA, 94533.
- ❑ We welcome your comments. If you have any comments regarding the proposed project please send your written comments to this Department by the deadline listed below.
- ❑ Submit comments via postal mail to

Planning Services Division
Resource Management Department
Attn: Nedzlene Ferrario, Senior Planner
675 Texas Street, suite 5500
Fairfield, CA 94533

- ❑ Submit comments via fax to: (707) 784-4805
- ❑ Submit comments via email to: nnferrario@solanocounty.com
- ❑ **Submit comments by the deadline of: July 13, 2019**

## Next Steps

After comments are received from the public and any reviewing agencies, the Department may recommend that the environmental review is adequate and that a Mitigated Negative Declaration be adopted or that the environmental review is not adequate and that further environmental review is required.

## ENVIRONMENTAL DETERMINATION

On the basis of this initial study:

☐ I find the proposed project could not have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

■ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the project proponent has agreed to revise the project to avoid any significant effect. **A MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find the proposed project could have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.

☐ I find the proposed project could have a significant effect on the environment, but at least one effect has been (1) adequately analyzed in a previous document pursuant to applicable legal standards, and (2) addressed by mitigation measures based on the previous analysis as described in the attached initial study.
An EIR is required that analyzes only the effects that were not adequately addressed in a previous document.

☐ I find that although the proposed project could have a significant effect on the environment, no further environmental analysis is required because all potentially significant effects have been (1) adequately analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are included in the project, and further analysis is not required.

5/24/2018
Date

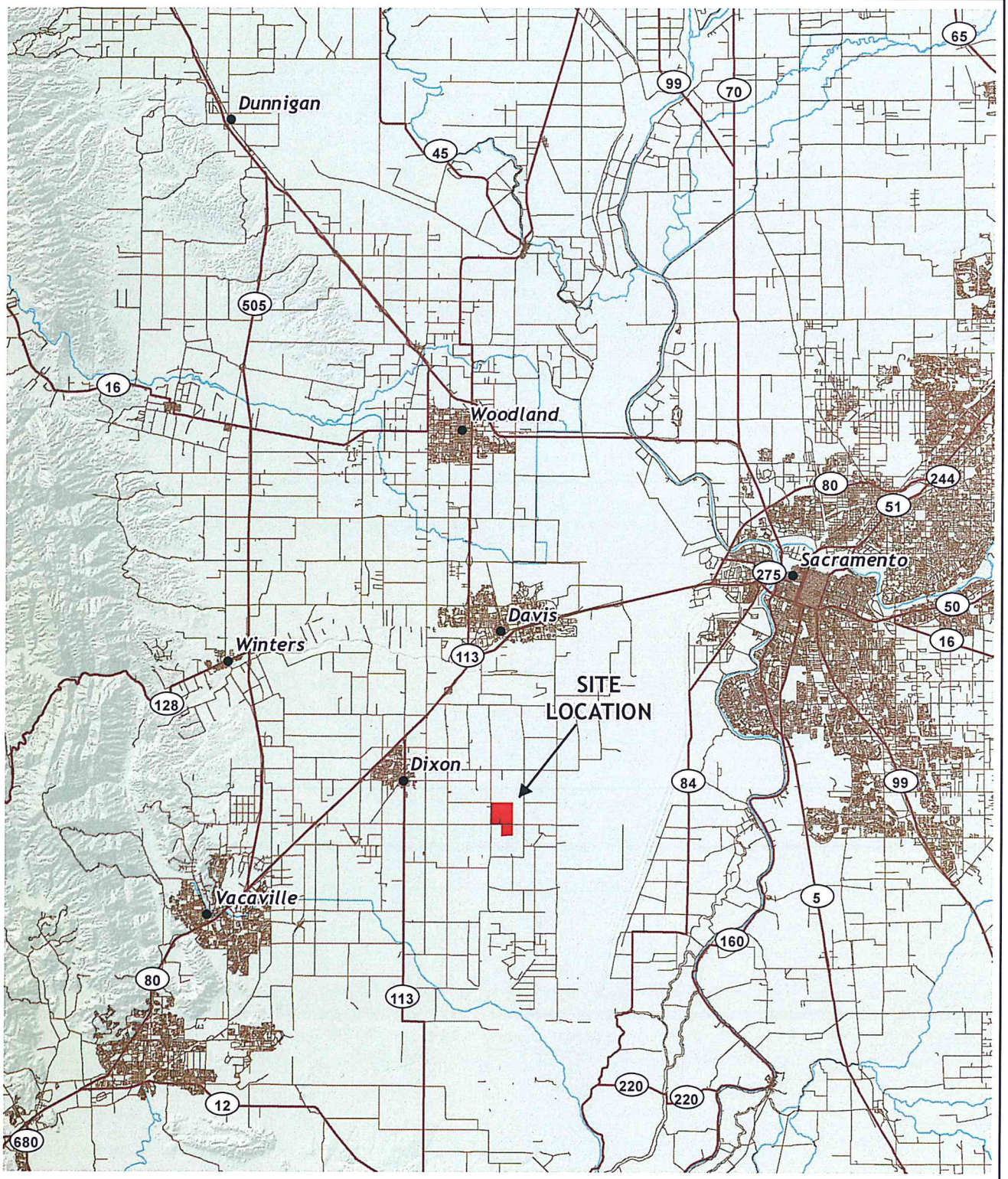
Nedzlene Ferrario
Senior Planner

## INCORPORATION OF MITIGATION MEASURES INTO THE PROPOSED PROJECT

By signature of this document, the project proponent amends the project description to include the mitigation measures as set forth in Section 2.

5-22-18
Date

Amos DeGroot
HD Ranch

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0 2.5 5 10 Miles

GENERAL SITE LOCATION
HD RANCH
SOLANO COUNTY, CALIFORNIA

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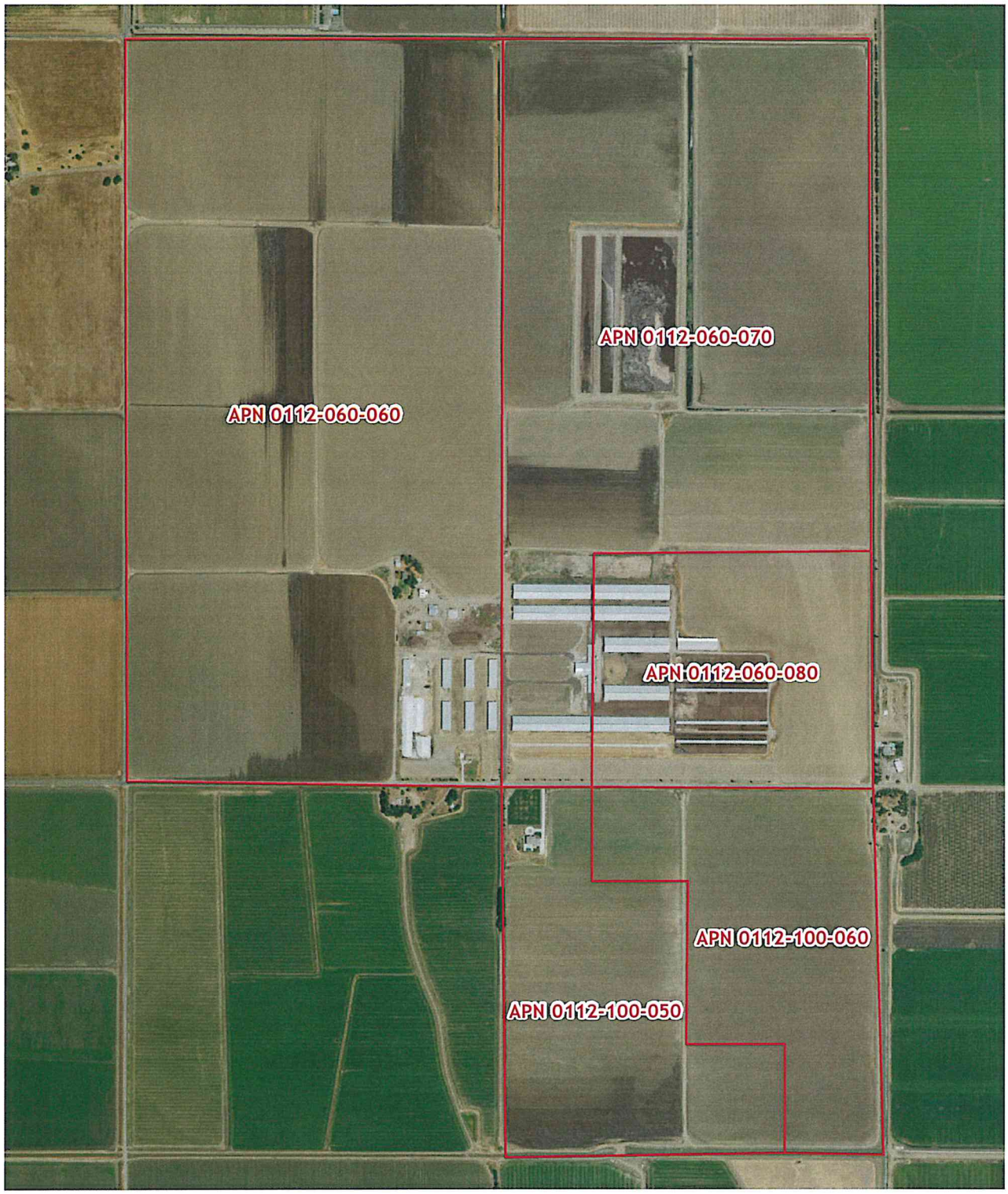


Approximate Parcel Boundary

N

VESTRA

SOURCE: ESRI WORLD IMAGERY, 2010

0 500 1,000 2,000 Feet

**PARCEL LOCATIONS**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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# 1.0 ENVIRONMENTAL SETTING and PROJECT DESCRIPTION

## 1.1 ENVIRONMENTAL SETTING:

The project site is an existing dairy farm located approximately 4 miles southeast of Dixon, California, located at 7815 Midway Road, east of Sikes Road, in the unincorporated portion of Solano County. The site is most directly accessed from Midway Road which connects to State Highway 113 and to Interstate 80 to the west of the site. The site is flat and ranges in elevation from 30 to 38 feet above mean sea level. Drainage on the site is generally to the south and east.

There is no significant amount of native vegetation or tree cover on the project site. Approximately 1/5 of the site is composed of the actual dairy facilities and the rest is used for grain production for the dairy and waste management. A small number (i.e., <10) of interior live oak trees are located near the house and shop area. The surrounding area is characterized exclusively by agricultural use (the zoning of the surrounding areas is Exclusive Agriculture). There are 13 residences within 1 mile of the project site (Figure 1), the nearest being 0.6 miles to the east of project facilities; all of the residences are associated with agricultural production.

## 1.2 PROJECT DESCRIPTION:

The applicant is proposing to increase the number of cattle on the property from 6,000 to 10,291 without increasing the number of animal units previously approved, 7215 AU (animal units). Animal units are calculated on the 1,000-pound base animal. The increase is due to the change of cattle breed from Holstein to Jerseys. Jerseys are smaller in frame size than Holsteins; therefore, more Jersey may be accounted for within the same number of animal units, previously approved in 2001. The applicant is proposing to construct additional employee housing without increasing the number of employees and, additional calf and heifer housing. Refer to Phase 1 and 2 described in the following page.

A total of 7,215.5 animal units were assumed in the original permit to generate the original nutrient management and waste management numbers. The conversion from Holstein to Jersey cattle will not change the total number of animal units, but there will be an increase in the number of animals because of the Jersey's smaller frame size. Refer to Table 2 for the calculations.

All animal areas are flushed. All exercise pends are scraped and manure is removed offsite. This includes the heifer and dry cow pens where feed lanes are flushed. Runoff from these pens is also directed into the water reuse system.

Proposed changes at the site will be phased. These are summarized below and included on Figure 2 – Site Plan.

| Table 2<br>CURRENT/PROPOSED CATTLE | | | | |
|---|---|---|---|---|
| **Cattle** | **Original Permit No. of Cattle** | **Original Permit Animal Units[1]** | **Proposed Animal Units[2]** | **Proposed No. of Cattle** |
| Milk Cows | 3,000 | 1,604 | 3,800 | 3,800 |
| Dry Cows | 500 | 620.5 | 650 | 650 |
| Bred Heifers 15-24 mos. | 1,250 | 1,400 | 1,567.75 | 2,148 |
| Heifers 7-14 mos. | 925 | 498 | 877.75 | 1,951 |
| Calves 4-6 mos. | 150 | 43 | 229 | 916 |
| Calves 0-3 mos. | 175 | 50 | 91 | 827 |
| Total | 6,000 | 7,215.5 | 7,215.5 | 10,291 |
| [1] = Holstein cattle<br>[2] = Jersey cattle | | | | |

**Phase 1**

- Extension of the calf barn flush lane to the end of the heifer corrals for 350 additional hutches. The additional hutches will not be under a barn, but will be open and have a flush lane beneath them as do the current hutches.
- The addition of heifer corrals on the north side of the calf barn (see No. 26 on Figure 2) and along the north side of the current freestall barns. These will be sloped (3 percent) and compacted to meet the County standards in Section 27. They will generally be scraped twice a month in the summer and as accessible in the winter. The heifer corrals will be sloped to drain to the waste management system.

**Phase 2**

- Add pasture feed pens to Freestall Barns 7 and 8 (proposed).
- Addition of three worker housing units (two of these were previously approved under administrative permit in 2017), for a total of 5 houses. The housing units range from 1,200 to 1,800 square feet.

All buildings, corrals, shades, flush lanes, and feed lanes will be built in a similar style and with the same directional flow to all existing buildings and corrals.

### 1.2.1 ADDITIONAL DATA:

| | |
|---|---|
| NRCS Soil Classification: | Yolo silty clay loam along 0 to 1 percent slopes |
| Agricultural Preserve Status/Contract No.: | Contract number 1297 |
| Non-renewal Filed (date): | Not Applicable |
| Airport Land Use Referral Area: | Not Applicable |
| Alquist Priolo Special Study Zone: | Not Applicable |
| Primary or Secondary Management Area of the Suisun Marsh: | Not Applicable |
| Primary or Secondary Zone identified in the Delta Protection Act of 1992: | Not Applicable |

### 1.2.2 Surrounding General Plan, Zoning and Land Uses

| | General Plan | Zoning | Land Use |
|---|---|---|---|
| **Property** | Agriculture | A-40 | Dairy |
| North | Agriculture | A-40 | Agriculture |
| South | Agriculture | A-40 | Agriculture |
| East | Agriculture | A-40 | Agriculture/Residence |
| West | Agriculture | A-40 | Agriculture |

## 1.3 CONSISTENCY WITH EXISTING GENERAL PLAN, ZONING, AND OTHER APPLICABLE LAND USE CONTROLS:

### 1.3.1 General Plan

The property is designated Agriculture on Solano County's Land Use Diagram and the proposed project is not in conflict with the General Plan.

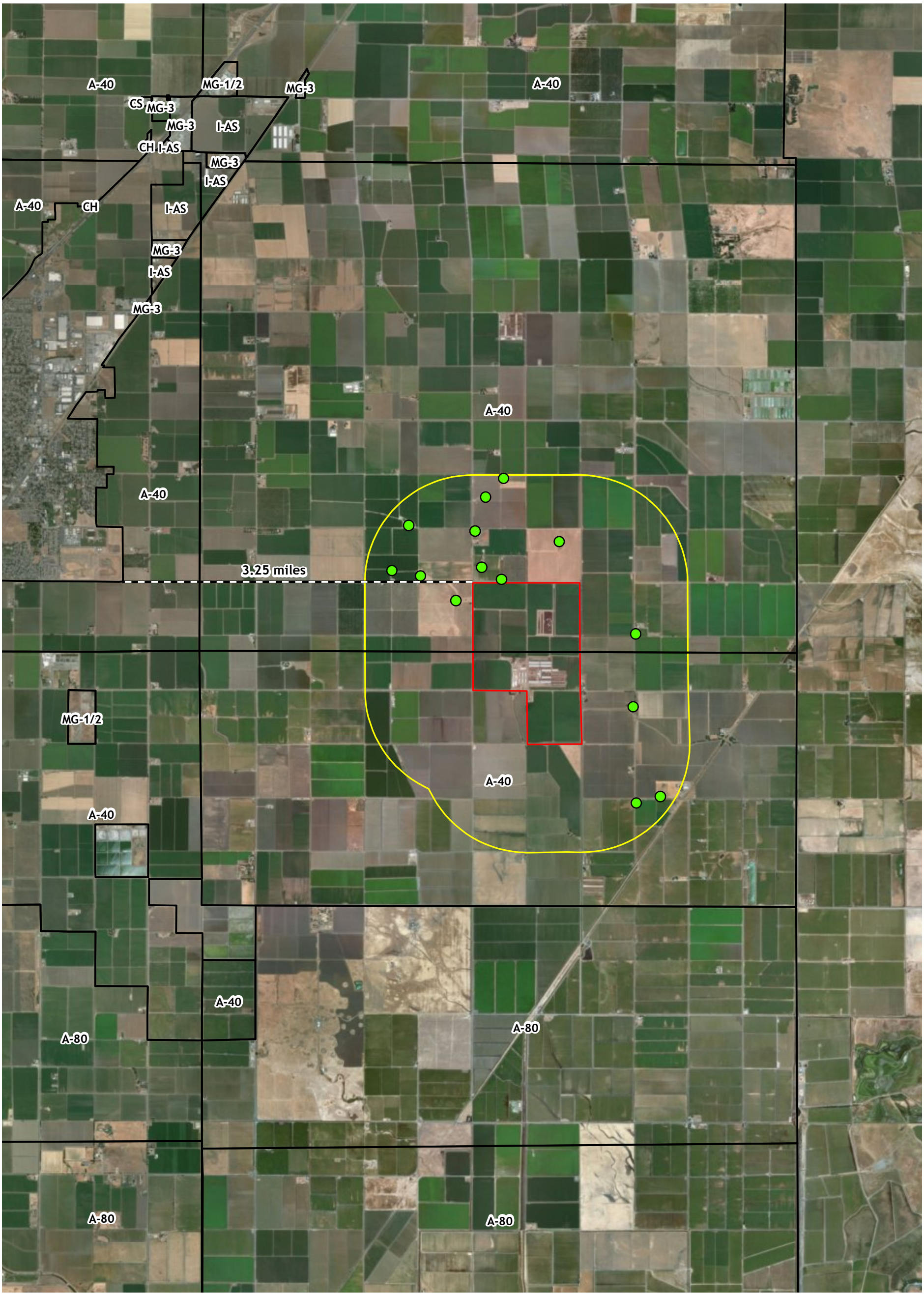
### 1.3.2 Zoning

The property is zoned A-40. Dairies are conditional uses in the zoning district and a Land Use Permit U-01-06 was granted in 2001.

## 1.4 Permits and Approvals Required from Other Agencies (Responsible, Trustee and Agencies with Jurisdiction):

### 1.41 Agencies that May Have Jurisdiction over the Project

- Regional Water Quality Control Board (RWQCB), Central Valley Region
- Yolo-Solano Air Quality Management District

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SOURCE: VIVID-USA AERIAL IMAGE 2016; SOLANO COUNTY 2016

FIGURE 1
**ZONING AND NEARBY RESIDENCES**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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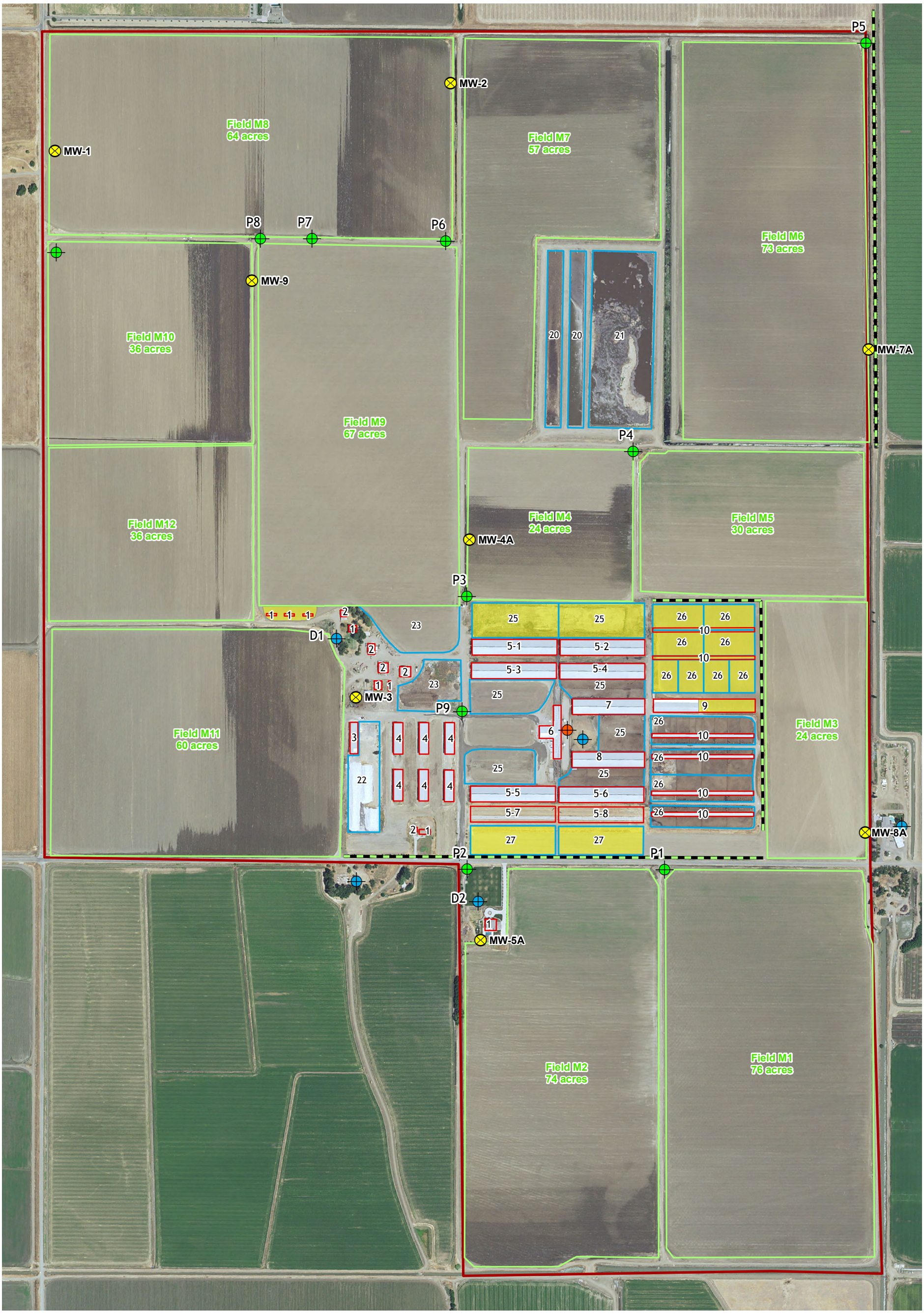


Monitoring Well Location
Barn Well
Irrigation Well
Domestic Well
Re-Establish Vegetation Buffer
Field
Property Boundary
Buildings
Property Features
Proposed New Feature

1 - House
2 - Shop
3 - Commodity Barn
4 - Hay Barn
5-# - Freestall Barn
6 - Milk Parlor
7 - Heifer Barn
8 - Fresh/Hospital Barn
9 - Calf Hutches
10 - Corral Shade
20 - Settling Pond
21 - Lagoon
22 - Silage Slab
23 - Bedding/Manure
24 - Beef Pen
25 - Exercise Pen
26 - Corral
27 - Grazing Pen

0 300 600 1,200 Feet

VESTRA

SOURCE: 2014 NAIP AERIAL PHOTOGRAPH

FIGURE 2
**SITE PLAN**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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## 2.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES AND AVOIDANCE, MINIMIZATION AND/OR PROTECTION MEASURES

This chapter discusses the potential for adverse impacts on the environment. Where the potential for adverse impacts exist, the report discusses the affected environment, the level of potential impact on the affected environment and methods to avoid, minimize or mitigate for potential impacts to the affected environment.

### Findings of SIGNIFICANT IMPACT

Based on the Initial Study, Part I as well as other information reviewed by the Department of Resource Management, the project does not have the potential for significant impacts to any environmental resources.

### Findings of LESS THAN SIGNIFICANT IMPACT Due to Mitigation Measures Incorporated Into the Project

Based on the Initial Study, Part I as well as other information reviewed by the Department of Resource Management, the following environmental resources were considered and the potential for significant impacts were reduced to less than significant due to mitigation measures incorporated into the project. A detailed discussion of the potential adverse effects on environmental resources is provided below:

- ❑ Air Quality
- ❑ Biological Resource
- ❑ Cultural Resources
- ❑

### Findings of LESS THAN SIGNIFICANT IMPACT

Based on the Initial Study, Part I as well as the review of the proposed project by the Department of Resource Management, the following environmental resources were considered and the potential for impact is considered to be less than significant. A detailed discussion of the potential adverse effects on environmental resources is provided below:

- ❑ Aesthetics
- ❑ Geology & Soils
- ❑ Greenhouse Gases
- ❑ Hazards & Hazardous Materials
- ❑ Hydrology & Water
- ❑ Transportation & Traffic
- ❑ Utilities and Service Systems

### Findings of NO IMPACT

Based on the Initial Study, Part I as well as the review of the proposed project by the Department of Resource Management, the following environmental resources were considered but no potential for adverse impacts to these resources were identified. A discussion of the no impact finding on environmental resources is provided below:

- ❑ Agricultural Resources
- ❑ Noise
- ❑ Land Use
- ❑ Public Services
- ❑ Mineral
- ❑ Recreation
- ❑ Population and Housing

## 2.1 Aesthetics

| Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Have a substantial adverse effect on a scenic vista? | ☐ | ☐ | ☐ | ■ |
| b. | Substantially damage scenic resources, including, but not limited to, trees, rock out-croppings, and historic buildings within a state scenic highway? | ☐ | ☐ | ☐ | ■ |
| c. | Substantially degrade the existing visual character or quality of the site and its surroundings? | ☐ | ☐ | ☐ | ■ |
| d. | Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area? | ☐ | ■ | ☐ | ☐ |
| e. | Increase the amount of shading on public open space (e.g. parks, plazas, and/or school yards)? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

**a-e)** The proposed project is regarding changing the number of cattle on-site consistent with the number of assumed animal units approved in the prior permit. The site is not located adjacent to Scenic Roadway, no trees, rock outcroppings or historical buildings are located on site. One barn flush lane at the site will be expanded to assist in the herd conversion and additional modular residences will be added for use by dairy employees. No significant aesthetic impacts are anticipated.

**d)** The area is lighted 24 hours a day, 7 days a week. New exterior lighting in the calf barn will be required to be hooded to reduce glare and retain light to limited areas. Additionally, the light will not be directed beyond the property lines. The only new sources of light are the three additional residences and a portion of the calf hutch area. The following mitigation measure will be required to reduce the impact to a less than significant.

***MMRP – A.1:*** *Exterior lighting shall be hooded and directed away from adjacent residential development.*

## 2.2 Agricultural Resources

Checklist Items: Would the project

| | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | ☐ | ☐ | ☐ | ■ |
| b. | Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ■ |
| c. | Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

The site is under Williamson Act Contract number 1297 and the proposed project is consistent with the Solano County Uniform Rules and Procedures Governing Agricultural Preserves and Land Conservation Contracts. Dairies are permitted according to the Uniform Rules and Procedures. Significant impacts are not anticipated.

## 2.3 Air Quality

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ■ | ☐ | ☐ |
| b. | Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | ☐ | ■ | ☐ | ☐ |
| c. | Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)? | ☐ | ☐ | ■ | ☐ |
| d. | Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ■ | ☐ |
| e. | Create objectionable odors affecting a substantial number of people? | ☐ | ☐ | ■ | ☐ |

**Discussion:**

The project is located in the Sacramento Valley Air Basin. The Yolo-Solano Air Quality Management District (YSAQMD) has jurisdiction over air quality issues throughout Yolo County and the northeastern part of Solano County. The predominant wind direction is shown on Figure 3.

The California Air Resources Board (CARB) has established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant. The federal and California state ambient air quality standards are summarized in Table 3. Federal and state ambient standards were developed independently, and, as a result, the standards differ in some cases. At a minimum state standards are required to be equivalent to Federal standards, but in general, the California state standards are more stringent.

**Table 3**
**FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS**

| Pollutant | Averaging Time | Federal Primary Standard | State Standard |
|---|---|---|---|
| Ozone | 1-Hour<br>8-Hour | --<br>0.070 ppm | 0.09 ppm<br>0.070 ppm |
| Carbon Monoxide | 8-Hour<br>1-Hour | 9.0 ppm<br>35.0 ppm | 9.0 ppm<br>20.0 ppm |
| Nitrogen Dioxide | Annual<br>1-Hour | 0.053 ppm<br>100 ppb | 0.030 ppm<br>0.18 ppm |
| Sulfur Dioxide | Annual<br>24-Hour<br>1-Hour | 0.03 ppm<br>0.14 ppm<br>75 ppb | --<br>0.04 ppm<br>0.25 ppm |
| $PM_{10}$ | Annual<br>24-Hour | --<br>150 ug/$m^3$ | 20 ug/$m^3$<br>50 ug/$m^3$ |
| $PM_{2.5}$ | Annual<br>24-Hour | 12 ug/$m^3$<br>35 ug/$m^3$ | 12 ug/$m^3$<br>-- |
| Lead | 30-Day Avg.<br>3-Month Avg. | --<br>1.5 ug/$m^3$ | 1.5 ug/$m^3$<br>-- |

**Source:** California Air Resources Board, 2016
**Notes:** ppm = parts per million ppb = parts per billion ug/$m^3$ = micrograms per cubic meter

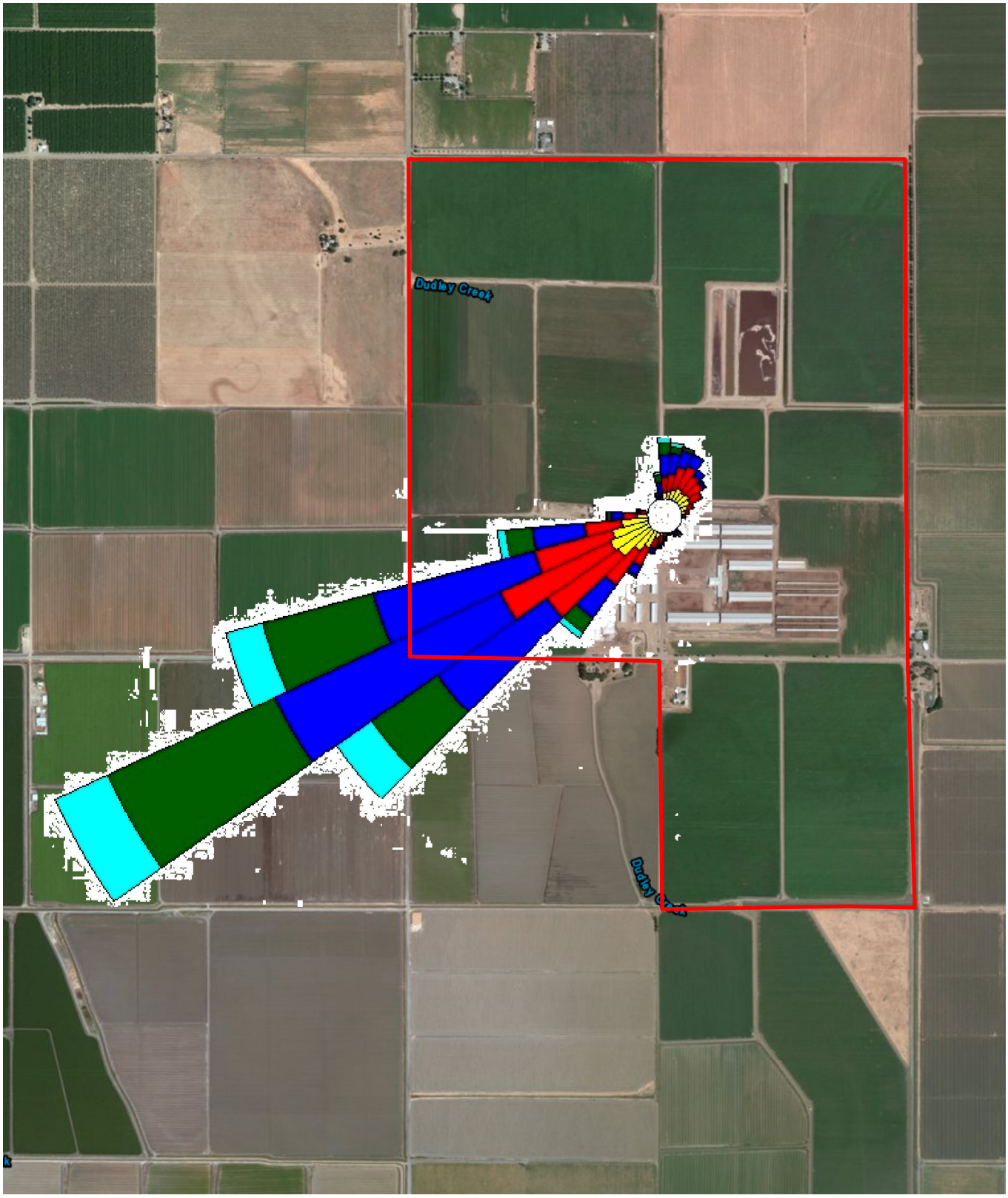
In accordance with the California Clean Air Act (CCAA), the CARB is required to designate areas of the state as “attainment,” “nonattainment,” or “unclassified” with respect to applicable standards. An “attainment” designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A “nonattainment” designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria.

The U.S. Environmental Protection Agency (EPA) has classified Solano County as an attainment area for the CO, lead, NO2, and SO2 standards. Solano County’s national designation for the ozone standards is nonattainment, and it is an unclassified area for $PM_{10}$ and $PM_{2.5}$ standards.

The CARB has classified Solano County as an attainment area for the CO, lead, NO2, and SO2 standards. Solano County is classified as a nonattainment area for ozone and $PM_{10}$ standards, and an unclassified area for the $PM_{2.5}$ standards. Solano County’s attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table 4.

The YSAQMD operates two monitoring stations in Vacaville. The Vacaville-Ulatis Drive and the Vacaville-Merchant Street monitoring stations are approximately 15 miles from the project location. Data from the monitoring stations are shown in Table 5. All data presented are from the Ulatis Drive station, except for $PM_{10}$, which was only available at the Merchant Street station.

The YSAQMD has adopted thresholds of significance for determining whether projects




HD Ranch Boundary

VESTRA

0 750 1,500 3,000 Feet

N

SOURCE: 2016 NAIP AERIAL PHOTOGRAPH;
STATION 23202 - TRAVIS AIR FORCE BASE 2009-2014

FIGURE 3
**PREVAILING WIND DIRECTION**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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will have significant adverse impacts on air quality. The thresholds of significance summarized in Table 6 are used to determine significance.

**Table 4**
**FEDERAL AND STATE ATTAINMENT STATUS FOR SOLANO COUNTY**

| Criteria Pollutants | State Designations | National Designations |
|---|---|---|
| Ozone | Nonattainment | Nonattainment |
| $PM_{10}$ | Nonattainment | Unclassified |
| $PM_{2.5}$ | Unclassified | Unclassified |
| Carbon Monoxide | Attainment | Attainment |
| Nitrogen Dioxide | Attainment | Attainment |
| Sulfur Dioxide | Attainment | Attainment |
| Sulfates | Attainment | |
| Lead | Attainment | Attainment |
| Hydrogen Sulfide | Unclassified | |
| Visibility-Reducing Particles | Unclassified | |

**Source:** California Air Resources Board, 2015

**Table 5**
**AMBIENT AIR QUALITY MONITORING DATA**
**VACAVILLE-ULATIS DRIVE**

| Pollutant | Calif. Primary Standard | Federal Primary Standard | Year | Maximum Concentration | Days (Samples) State/Fed Standard Exceeded |
|---|---|---|---|---|---|
| Ozone ($O_3$) (1-Hour) | 0.09 ppm for 1 hour | NA | 2014<br>2015<br>2016 | 0.089<br>0.085<br>0.092 | 0/*<br>0/*<br>0/* |
| Ozone ($O_3$) | 0.07ppm for 8 hours | 0.07 ppm for 8 hours | 2014<br>2015<br>2016 | 0.072<br>0.070<br>0.072 | 1/1<br>1/0<br>1/1 |
| Particulate Matter ($PM_{10}$) | 50 ug/$m^3$ for 24 hours | 150 ug/$m^3$ for 24 hours | 2014<br>2015<br>2016 | 28.5<br>41.7<br>24.9 | 0/0<br>0/0<br>0/0 |
| Fine Particulate Matter ($PM_{2.5}$) | No 24-hour State standard | 35 ug/$m^3$ for 24 hours | 2014<br>2015<br>2016 | PENDING | |

**Source:** California Air Resources Board (ADAM) Air Pollution Summaries, 2014-2016

**Table 6**
**YSAQMD EMISSIONS THRESHOLDS OF SIGNIFICANCE**

| Pollutant | Thresholds of Significance |
|---|---|
| ROG | 10 tons/year |
| $NO_x$ | 10/year |
| $PM_{10}$ | 80 lbs/day |
| CO | Violation of a state ambient air quality standard |

Construction activities at the site would result in short-term air emissions including Reactive Organic Gases (ROG), carbon monoxide (CO), sulfur dioxide (SO2), nitrogen oxide (NOx), and fugitive dust. Construction at the site will include the erection of two freestall barns which were previously approved under the current (original) CUP but not constructed, extension of the calf hutch flush lane, construction of corrals, and the addition of one employee-housing unit (two units were previously approved under administrative permit). Construction of these facilities is expected to be completed in phases over the next 5 years. The two freestall barns were previously approved under the current CUP and are considered part of the baseline condition.

Emissions from construction activities are expected to be low and intermittent. The employee-housing units proposed as part of this amendment will be manufactured homes, which will limit the amount of onsite construction required. Mobile emissions from the facility are not expected to increase. Due to the addition of the three employee-housing units, daily employee trips into the facility are expected to decrease.

Because Jersey cows are smaller than Holstein cows, they produce approximately 17 percent less milk, daily, than Holstein cows. Overall, slightly more truck trips will be required for transportation of milk from the Jersey milk cows. Current milk production requires 3.05 tanker truck trips per day (see Table 7). One Jersey cow produces approximately 60 pounds of milk per day, on average, and the proposed number of Jersey cows (3,800 head) would produce approximately 228,000 pounds of milk per day. Transportation of milk from the change to Jersey cattle would require approximately four (4) tanker loads per day.

Jersey cows require approximately 20 percent less feed and have a higher feed efficiency despite producing less milk, overall, than Holstein cows. Jersey cows are able to produce about 1.61 pounds of energy-corrected milk (ECM; milk that has been standardized for protein, fat and milk content) for every 1 pound of dry matter intake. Holstein cows produce about 1.38 pounds of ECM per 1 pound of dry matter intake. Over the past 24 months, an average of 391.59 tons of feed was delivered to HD Ranch per week, or 2.24 truck trips per day. The proposed herd of Jersey cows would require 735.42 tons of feed per week, or approximately four (4) truck trips per day. Projected feed requirements and delivery truck trips are shown in Table 8.

The project is not expected to increase overall mobile emissions at the site; therefore, the project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment. The proposed herd conversion is also not expected to contribute to any air quality violation or violate any air quality standard due to increased vehicle emissions.

The applicant has an existing Odor Management Plan for the dairy. This plan addresses odor management for the freestall barns, corrals, milk barn, settling basins, retention lagoon, storage of dry manure, storage of silage, dead animals, and the application of manure to the crops. Rinsing, flushing, and washdown practices are addressed, as are the drainage system, settling basins, storage lagoon, and nutrient application to the fields. All animal-keeping facilities will be set back 200 feet from the

front property line (Midway Road), 2,600 feet to the west property line (Sikes Road), 4,000 feet to the north property line, and 1,050 feet to the east property line. The retention lagoon is set back 400 feet to the eastern property line. The exception is the use of the proposed grazing pens along Midway Road. These pens will be planted with a winter ryegrass mixture for grazing. These setbacks will further reduce potential odor impacts. A vegetative buffer for $PM_{10}$ mitigation has been requested by the Yolo-Solano AQMD and will be installed. The vegetative buffer plan is included as Appendix A.

**Table 7**
**CURRENT VEHICLE TRIPS***

| Year | Month | Feed Delivered (Tons) | Monthly Feed Delivery Truck Trips | Daily Feed Delivery Truck Trips | Milk Shipped (Pounds) | Monthly Milk Shipment Truck Trips | Daily Milk Shipment Truck Trips | Employee Transportation (# One-Way Trips Per Day) |
|---|---|---|---|---|---|---|---|---|
| 2015 | October | 1587 | 63.5 | 2.05 | 5075545 | 89.04 | 2.87 | 38 |
| 2015 | November | 1539 | 61.6 | 2.05 | 4897069 | 85.91 | 2.86 | 38 |
| 2015 | December | 1511 | 60.4 | 1.95 | 4968025 | 87.16 | 2.81 | 38 |
| 2016 | January | 1345 | 53.8 | 1.74 | 5040428 | 88.43 | 2.85 | 38 |
| 2016 | February | 1185 | 47.4 | 1.63 | 4925753 | 86.42 | 2.98 | 38 |
| 2016 | March | 1546 | 61.8 | 1.99 | 5426718 | 95.21 | 3.07 | 38 |
| 2016 | April | 1546 | 61.8 | 2.06 | 5276178 | 92.56 | 3.09 | 38 |
| 2016 | May | 1695 | 67.8 | 2.19 | 5504268 | 96.57 | 3.12 | 38 |
| 2016 | June | 1635 | 65.4 | 2.18 | 5228229 | 91.72 | 3.06 | 38 |
| 2016 | July | 1709 | 68.4 | 2.21 | 5446918 | 95.56 | 3.08 | 38 |
| 2016 | August | 1738 | 69.5 | 2.24 | 5501012 | 96.51 | 3.11 | 38 |
| 2016 | September | 1752 | 70.1 | 2.34 | 5093926 | 89.37 | 2.98 | 38 |
| 2016 | October | 1942 | 77.7 | 2.51 | 5256804 | 92.22 | 2.97 | 38 |
| 2016 | November | 1975 | 79.0 | 2.63 | 5457741 | 95.75 | 3.19 | 38 |
| 2016 | December | 1831 | 73.2 | 2.36 | 5359691 | 94.03 | 3.03 | 38 |
| 2017 | January | 1841 | 73.6 | 2.45 | 5076383 | 89.06 | 2.87 | 38 |
| 2017 | February | 1550 | 62.0 | 2.21 | 4972363 | 87.23 | 3.12 | 38 |
| 2017 | March | 1838 | 73.5 | 2.45 | 5524535 | 96.92 | 3.13 | 38 |
| 2017 | April | 1800 | 72.0 | 2.40 | 5504677 | 96.57 | 3.22 | 38 |
| 2017 | May | 1896 | 75.8 | 2.45 | 5757654 | 101.01 | 3.26 | 38 |
| 2017 | June | 1877 | 75.1 | 2.50 | 5396793 | 94.68 | 3.16 | 38 |
| 2017 | July | 1895 | 75.8 | 2.45 | 5781637 | 101.43 | 3.27 | 38 |
| 2017 | August | 1821 | 72.8 | 2.35 | 5577003 | 97.84 | 3.16 | 38 |
| 2017 | September | 1734 | 69.4 | 2.31 | 5214757 | 91.49 | 3.05 | 38 |
| | **Average** | **1699.50** | **67.98** | **2.24** | **5302671** | **93.03** | **3.05** | **38** |

* Feed truck has a capacity of 25 tons
*Milk haul truck has a capacity of 57,000 lbs.
* Employee transport will not change under the proposed revision

**Table 8**
**PROJECTED VEHICLE TRIPS**

| Cattle Type | Pounds per Head/Day | Total Head | Total Feed per Day (tons) | Total Feed per Week (tons) | Weekly Feed Delivery Truck Trips* | Daily Feed Delivery Truck Trips * | Milk Pounds/Day per Cow | Milk P/D [1] | Daily Milk Truck Trips [2] |
|---|---|---|---|---|---|---|---|---|---|
| Milk cow | 36.64 | 3800 | 69.62 | 487.31 | 19.49 | 2.78 | 60 | 228,000 | 4 |
| Dry cow | 17.63 | 650 | 5.73 | 40.11 | 1.60 | 0.23 | -- | -- | -- |
| Heifer (4-6 months) | 7.45 | 916 | 3.41 | 23.88 | 0.96 | 0.14 | -- | -- | -- |
| Heifer (7-14 months) | 11.88 | 1951 | 11.59 | 81.12 | 3.24 | 0.46 | -- | -- | -- |
| Heifer (15-24 months) | 13.70 | 2148 | 14.71 | 103.00 | 4.12 | 0.59 | -- | -- | -- |
| Calves (0-3 months) | -- | 827 | -- | -- | -- | -- | -- | -- | -- |
| **Total** | **87.30** | **10,291** | **105.06** | **735.42** | **29.42** | **4.20** | **60** | **228,000** | **4.0** |

*Feed truck capacity is 25 tons
[1] Milk P/D/C x 3,800 cows = 228,000
[2] Milk truck capacity is 57,000 pounds (228,000 ÷ 57,000 = 4

**a) Would the project conflict with or obstruct implementation of the applicable air quality plan?**

**Less Than Significant Impact with mitigation.** The proposed project will not conflict or obstruct implementation of an applicable air quality plan. The Air Quality section of the Solano County General Plan establishes mitigation measures designed to reduce particulate matter (PM) and ozone precursors in the ambient air as a result of emissions from sources that attract or generate motor vehicle activity. HD Ranch is working with SCAQMD on Best Management Practices for $PM_{10}$ emissions.

The project would not result in a significant change in air quality impacts over baseline conditions associated with transportation of materials to the facility, as the facility is located close to the destination of the milk and required feedstocks. This is a baseline condition and, the proposed project would not significantly increase the overall number of truck trips needed to transport milk and deliver feed (1.96 more feed delivery truck trips per day and 0.95 more milk tanker trips per day).

The project will create some short-term dust emissions during construction. Fugitive dust from vehicle traffic will be controlled by using a water truck as needed. Sufficient water for dust control will be obtained from an onsite wells. The impact is less than significant.

In order to respond to District concerns regarding PM 10 emissions, a Vegetative Buffer (VEB) Plan was prepared and supported by the Yolo-Solano Air Quality District. The plan is included as Appendix A. Research has demonstrated that VEB barriers can impede, alter, absorb, and/or dissipate both odor and dust emissions from agricultural operations such as confined feeding operations. As air moves across vegetative surfaces, leaves and other aerial plant surfaces remove some of the dust, gas, and microbial constituents of airstreams. Trees and other woody vegetation are among the most efficient natural filtering structures in a landscape, in part due to the very large total surface area of leafy plants, often exceeding the surface area of the soil containing those plants upwards of several hundred-fold. Additionally, VEBs can improve the visual perception of a facility.

VEBs have been shown to incrementally mitigate odors and particulates, including ammonia, through a complex of dynamics. Among the most important of these dynamics are:

- Enhancement of vertical atmospheric mixing through forced mechanical turbulence – leading to enhanced dilution and dispersion;
- Filtration through particulate interception and retention – capturing particulates also captures odors;
- Odor/particulate fallout due to gravitational forces enhanced by reduced wind speed;
- Improved producer/community relations by using highly visible odor management technology.

As a dust mitigation technology, VEBs have a number of advantages over other approaches. This technology is useful for all sources of agriculture-related impacts and is adaptable to the landscape, allowing for different system designs. There is evidence that the presence of trees in agricultural landscapes has socio-aesthetic benefits that most other odor and dust mitigation technologies lack. A proper VEB can serve as a visual screen and a dust and odor filter. In addition, VEBs may be the only mitigation technology that can increase in effectiveness over time. As the trees of a VEB system grow larger and more morphologically complex, their ability to mitigate dust and odors through particulate filtration and increased landscape turbulence can become increasingly efficient.

The mitigation includes the reconstruction of the original visual vegetative buffer along Midway Road. This was to be a single row planting of evergreen trees, but will now consist of two rows due to additional mitigation requirements for Swainson's hawk.

Based on the prevailing wind direction and District request for $PM_{10}$ mitigation, the VEB along the heifer corrals will include the planting of a wind barrier located along the eastern fenceline of the new and existing heifer corrals and extending around the edge of the north side (see Appendix A). A mix of coniferous and deciduous trees will be planted. The mix is designed to have a variety of leaf sizes and shape, as well as texture, to maximize entrapment of particulate. The diversity of species will also mitigate loss or destruction of the windbreak if insects or diseases occur on certain species.

***MMRP – A.2:*** *In order to mitigate for $PM_{10}$, as recommended by the YSAQMD, emission permittee has agreed to construct a vegetative buffer of mixed deciduous and coniferous tree species along the west and north edges of the expansion corral area and to replace the tree buffer along Midway Road. The buffer shall be a 30-feet wide planting strip and trees shall be spaced at 20 feet on center. Prior to the issuance of a building or grading permit, whichever occurs first, the permittee shall submit a planting and irrigation plan for the vegetative buffer and provide evidence to the Department of Resource Management Yolo-Solano Air Quality Management District approval of the planting and irrigation plan. The tree species shall be as recommended by the Vegetative Buffer Plan.*

**b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

**Less Than Significant Impact with mitigation.** See a) above.

**c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?**

**Less Than Significant Impact with Mitigation.** See Section a) above. Each project with emissions falling under regulatory standards must individually comply

with the air pollution control district (APCD) regulations. Also, each project would be required to utilize the best available control technology to mitigate impacts to air quality. The project is specifically subject to the regulations outlined in 40 CFR Part 503 and Title 14 CCR, Division 7, Chapter 3.1.

The pollutants in Solano County for which standards have been established include ozone and particulates ($PM_{10}$). The County has been designated as a "non-attainment" area for ozone and $PM_{10}$. The facility employs a Dust Control Plan to manage dust and will plant a vegetative buffer for dust control. Given this information, it is concluded that the impact from the project is less than significant.

**d) Would the project expose sensitive receptors to substantial pollutant concentrations?**

**Less Than Significant Impact.** The existence of the dairy is a baseline condition. Air pollutants that will potentially be generated from operations were addressed previously. No new pollutants are anticipated to be added. No significant increases in vehicular activity are anticipated as a result of the project. A slight increase in particulate may occur with the addition of heifers in outdoor corrals. Land use surrounding the facility is agricultural. The nearest area zoned for residential use is located approximately 3.25 miles west of the project area in the community of Dixon. Although the surrounding land use is agricultural, there are residences near the project area, mostly associated with other agricultural operations. Zoning and nearby residences are shown on Figure 1. The facility operates under an existing Odor Impact Minimization Plan, which reduces impacts from odor and volatile organic compound (VOC) emissions on the closest residences.

**e) Would the project create objectionable odors affecting a substantial number of people?**

**Less Than Significant Impact.** The primary sources of odors at the project site are:

- Water reuse ponds
- Water reuse application
- Flushing

The existence of the dairy is a baseline condition and all activities are currently occurring or were approved under the previous use permit. Odors at the site are addressed by the Odor Impact Minimization Plan. No additional water reuse ponds or application areas have been added to the project. The only additional flushing will be due to the flushing of the additional calf hutch area and heifer corrals. The additional flush area of less than 1.0 acre will not result in sources of noticeable increases in odors and is considered a less-than-significant impact.

## 2.4 Biological Resources

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | ☐ | ■ | ☐ | ☐ |
| b. | Have a substantial adverse effect on any aquatic, wetland, or riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☐ | ■ |
| c. | Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act including, but not limited to, marsh, vernal pool, coastal, etc., through direct removal, filling, hydrological interruption, or other means? | ☐ | ☐ | ☐ | ■ |
| d. | Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | ☐ | ☐ | ☐ | ■ |
| e. | Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | ☐ | ☐ | ☐ | ■ |
| f. | Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | ☐ | ☐ | ☐ | ■ |

### Discussion:

Database searches for potentially occurring special-status plant and wildlife species were conducted using the California Natural Diversity Database (CNDDB), the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS), and U.S. Fish and Wildlife Service (USFWS) critical habitat species lists. The CNDDB was reviewed for records of special-status plant and wildlife species in 1- and 5-mile radii from the HD Ranch Property. Twenty-one state and/or federally recognized special-status plant and wildlife species were recorded. Although several special-status wildlife species are identified in database searches for the area, most have no potential to occur within the project area due to a lack of suitable habitat or because the area currently and historically has been an agricultural

production area. The CNDDB-documented occurrences and USFWS critical habitat within 5 miles of the site were shown on Figure 4.

Of the species identified in the CNDDB search, many are associated with uncropped portions of the nearby Yolo Bypass (Glide Tule Ecological Reserve, Yolo Bypass Wildlife Area) and historic railroad line. The species include: alkali milk-vetch (*Astragalus tener var. tener*), Baker's navarretia (*Navarretia leucocephala ssp. Bakeri*), bearded popcorn flower (*Plagiobothrys hystriculus*), California linderiella (*Linderiella occidentalis*), giant garter snake (*Thamnophis gigas*), Heckard's pepper-grass (*Lepidium latipes var. heckardii*), midvalley fairy shrimp (*Branchinecta mesovallensis*), saline clover (*Trifolium hydrophilum*), San Joaquin spearscale (*Extriplex joaquinana*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*). Critical habitat designated by the USFWS within 5 miles of the project area includes Colusa grass (*Neostapfia colusana*), Solano grass (*Tuctoria mucronata*), Delta smelt (*Hypomesus transpacificus*), and vernal pool tadpole shrimp.

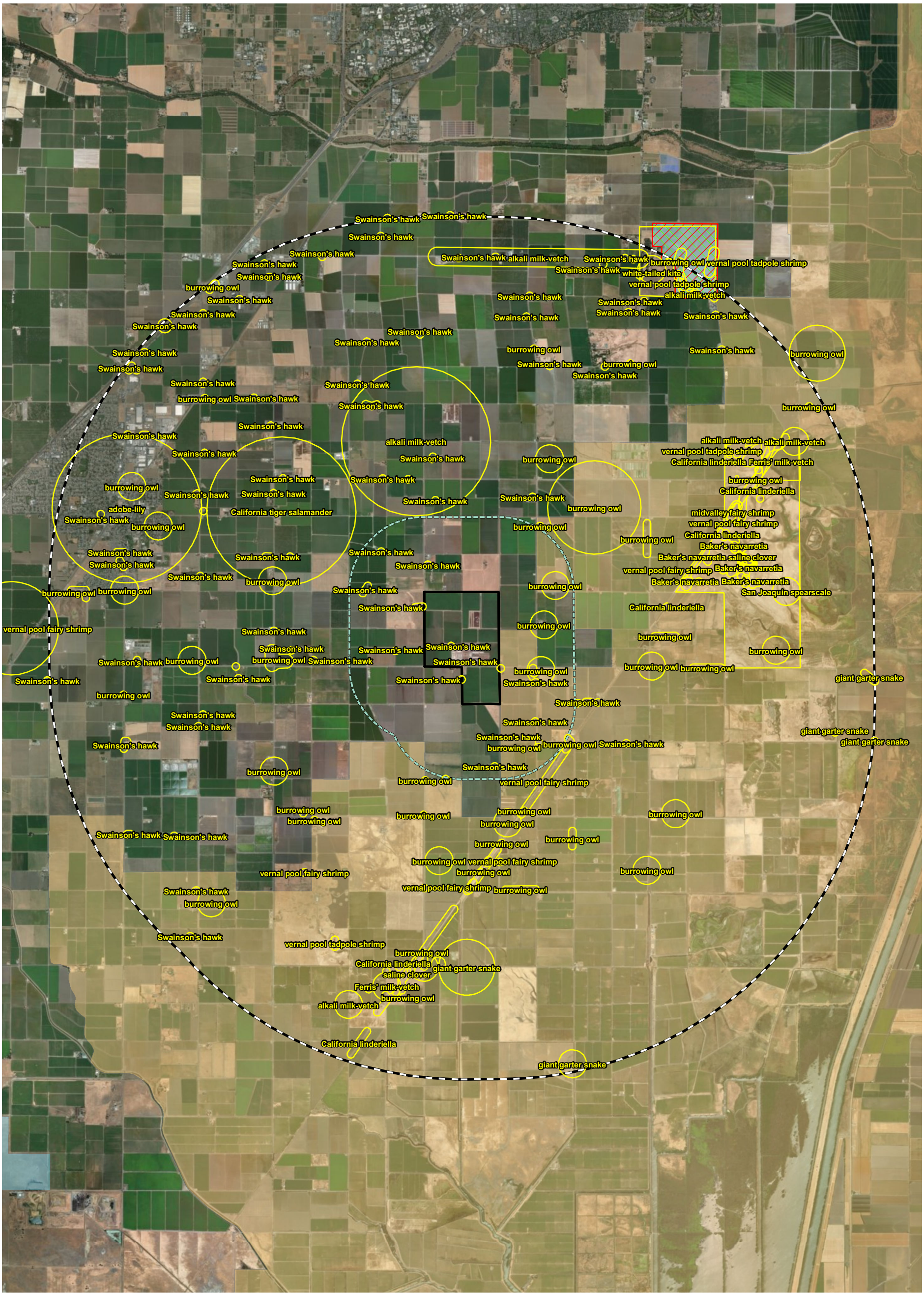
The CNDDB identified two raptor species as having previously been documented to occur within 1 mile of the project site: burrowing owl (*Athene cunicularia*) and Swainson's hawk (*Buteo swainsoni*). Both are documented to have a presence throughout the region, concurrent with existing land uses.

No federally protected wetlands or riparian habitat are located on the subject property. No streams or other watercourses occur onsite. Several irrigated canals and ditches are located in the project vicinity; however, these are not utilized by native resident or migratory fish species. Native and migratory birds are found at the site throughout the year, but proposed project activities will not significantly impact the existing habitat. No tree preservation policies, habitat conservation plans, natural community conservation plans, or state habitat conservation plans are developed for the property.

**a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

**Less Than Significant Impact with mitigation:** The project has the potential to create a loss of Swainson Hawk foraging habitat. The current proposal includes construction of new exercise and grazing pens (Area 25 and 27) and corrals, shade structures and calf hutches (Area 26, 10, and 9). The new exercise pens (Area 25) is not considered a loss because the area is currently used as a backup wastewater pond and the grazing pens (Area 27), will be planted with grass and remain available for foraging habitat

However, areas proposed for corrals, calf hutches and shade structures (area 9, 10 and 26) are currently cropland and conversion of such areas could result in loss of foraging habitat, totaling approximately 9.5 acres, therefore, in order to reduce the impact to a less than significant level, the following mitigation measure is recommended.




VESTRA

SOURCE: ESRI WORLD IMAGERY, 2010; CDFW CNDDB OCTOBER 2015

FIGURE 4
**CNDDB OCCURRENCES AND USFWS CRITICAL HABITAT**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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***MMRP – BR-1:*** *In order to mitigate for the loss of Swainson Hawk foraging habitat, the project proponent/permittee shall install an additional row of trees* suitable for Swainson Hawk nesting and habitat, such as Redwoods, Cottonwoods and/or Willows to the *vegetative buffer presented as mitigation A-2 within the 30 foot wide planter strip. The planting and irrigation plan will be submitted to the Department of Resource Management for Planning Department for review and approval prior to issuance of a grading or building permit, whichever occurs first.*

**b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

**No Impact.** The project site is an operating dairy, previous conversion of natural habitat to agricultural land has already occurred at the site and is part of the baseline condition. Riparian communities formerly occupied extensive stands within the County; however, these communities are principally located along major rivers and sloughs. The project site is not located within the vicinity of these watercourses, nor is it located within the vicinity of stream courses which feature riparian habitat.

**c) Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means?**

**No Impact.** The project is an operating dairy, previous conversion of natural habitat to agricultural land has already occurred at the site and is part of the baseline condition. According to the National Wetlands Inventory of the USFWS, the facility boundary does not contain wetlands.

The project will not directly remove, fill, interrupt the hydrology of, or otherwise impact federally protected wetlands. Therefore, it is concluded that there is no impact on federally protected wetlands as a result of this project.

**d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

**No Impact.** The project is an operating dairy; previous conversion of natural habitat to agricultural land has already occurred at the site and is part of the baseline condition. The project would have no impact on migratory waterfowl and other birds migrating through the region because the project does not change the nature of the current operation. The proposed project would not alter or destroy migratory wildlife corridors. There is no impact.

**e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

**No Impact.** The project is an operating dairy, previous conversion of natural habitat to agricultural land has already occurred at the site and is part of the baseline condition. The proposed project would not create a conflict with local policies or ordinances protecting biological resources because there are none within the area of the project. Therefore, it is concluded that there is no impact.

**f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

**No Impact.** The project is an operating dairy, previous conversion of natural habitat to agricultural land has already occurred at the site and is part of the baseline condition. The proposed project would not create a conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan because no plans have been adopted for this specific area. Therefore, it is concluded that there is no impact.

## 2.5 Cultural Resources

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Cause a substantial adverse change in the significance of an historical resource as defined in CEQA Guidelines §15064.5? | ☐ | ■ | ☐ | ☐ |
| b. | Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5? | ☐ | ■ | ☐ | ☐ |
| c. | Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature? | ☐ | ☐ | ☐ | ■ |
| d. | Disturb any human remains, including those interred outside of formal cemeteries? | ☐ | ■ | ☐ | ☐ |

### Discussion

County staff (Walsh) noted that remains, identified as Native American, were unearthed and reinterred during initial construction in 2001. With the exception of surficial grading in the vicinity of the calf hutch area, heifer corrals, and three new residences (two of which are already installed), no additional surface grading is anticipated outside of the baseline condition.

The project site has experienced past extensive agricultural uses which have repeatedly disturbed the project site surface and soils to varying depths. However, if buried archaeological resources exist on the site, grading, and other construction-related activities could cause significant impacts to these undiscovered resources.

**a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?**
**b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?**

**Less Than Significant with Mitigation Incorporation.** In compliance with CEQA Guideline §15064.5 (Determining the Significance of Impacts to Archaeological and Historical Resources), a request for a records search was submitted to the North-Central Information Center (NCIC), a member of the California Historic Resources Information System (CHRIS), to determine if cultural places are located within the project site. Results from the records search have not been received. In the event that any historical or archaeological resources are unearthed during project construction, the implementation of mitigation measure CR-1 would reduce impacts of the project to less than significant.

**Mitigation Measure CR-1:**

*In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 100 feet of the resources shall be halted and the applicant/operator shall consult with the County and a qualified archaeologist (as approved by the County) to assess the significance of the find per CEQA Guidelines Section 15064.5. The qualified archaeologist shall determine the nature of the find, evaluate its significance, and, if necessary, suggest preservation or mitigation measures. Appropriate mitigation measures, based on recommendations listed in the archaeological survey report, will be determined by the Director of the Solano County Department of Resource Management. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is carried out. All significant cultural materials recovered shall be, at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documented according to current professional standards.*

**c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

**No Impact.** The project site contains no known paleontological resources or unique geologic sites. Refer to the discussion above in regard to accidental discovery of paleontological resources.

**d) Would the project disturb any human remains, including those interred outside of formal cemeteries?**

**Less Than Significant Impact with Mitigation Incorporation.** The potential exists during construction to possibly uncover previously unidentified resources. In the event that human remains are unearthed during project construction, the implementation of Mitigation Measure CR-2 would reduce potential impacts of the project to less than significant.

**Mitigation Measure CR-2:**

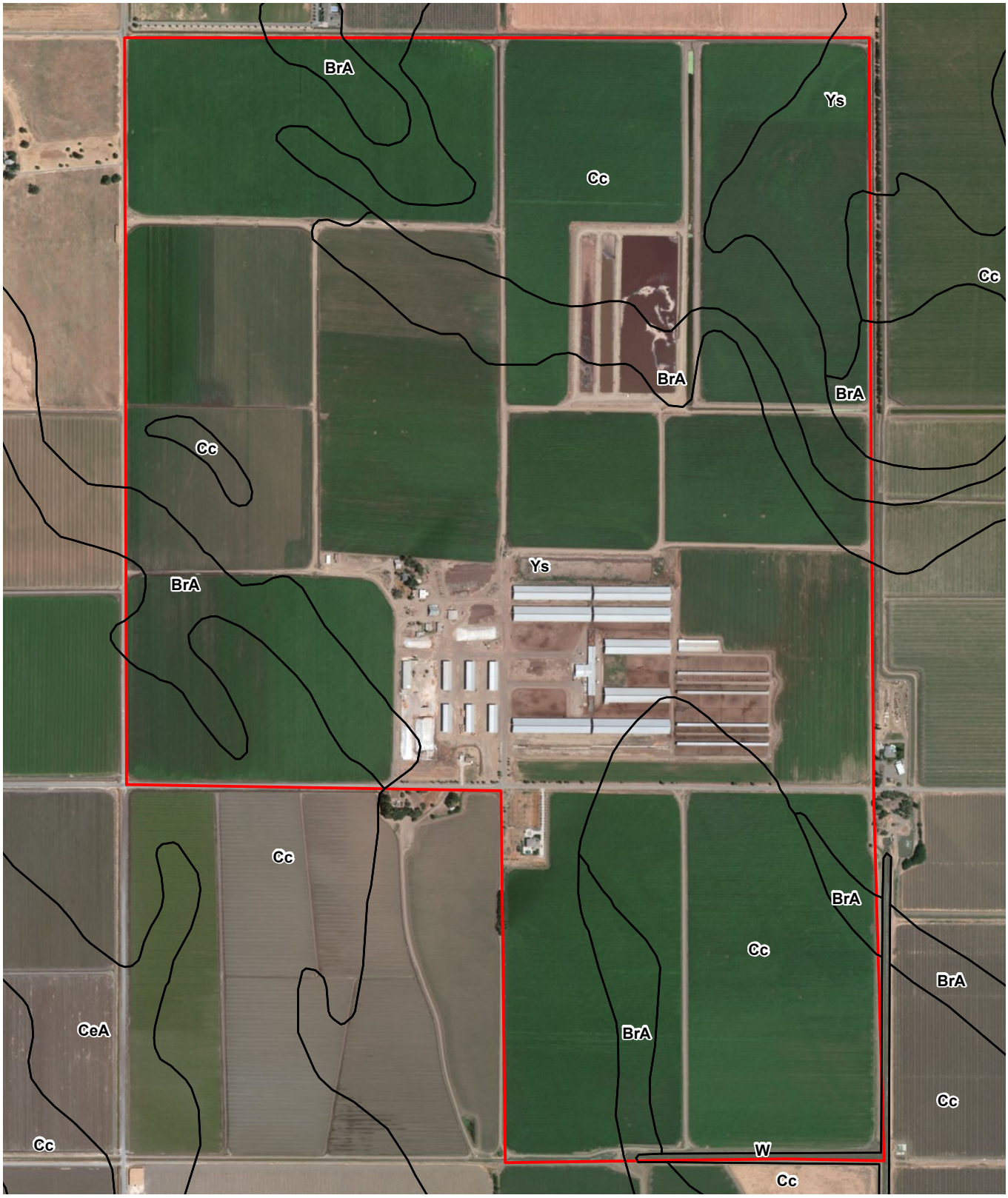
*Section 7050.5 of the California Health and Safety Code states that if human remains are found during construction activities, all operations are to cease until the County coroner has determined that the remains are not subject to the provisions of law concerning investigation of the circumstances in the manner provided in Section 5097.98 of the Public Resources Code*

## 2.6 Geology and Soils

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. 1) | Rupture of a known earthquake fault, as described on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.) | ☐ | ☐ | ☐ | ■ |
| 2) | Strong seismic ground shaking? | ☐ | ☐ | ☐ | ■ |
| 3) | Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☐ | ■ |
| 4) | Landslides? | ☐ | ☐ | ☐ | ■ |
| b. | Result in substantial soil erosion or the loss of topsoil? | ☐ | ☐ | ☐ | ■ |
| c. | Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, differential settlement, liquefaction or collapse? | ☐ | ☐ | ☐ | ■ |
| d. | Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | ☐ | ☐ | ■ | ☐ |
| e. | Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? | ☐ | ☐ | ■ | ☐ |

### Discussion:

The project site is not located in an area of known seismic or slope hazards. Soils are not expansive and a new septic system has been installed to serve the worker housing proposed onsite. Site soils are shown on Figure 5. Compliance with Uniform Building Code and Chapter 6.4 Sewage Disposal standards of the County Code will ensure that impacts are less than significant.




Soil Map Unit

Approximate Property Boundary

Soil Names:
BrA - Brentwood clay loam, 0 to 2 percent slopes
Cc - Capay clay
W - Water
Ys - Yolo silty clay loam

0 500 1,000 2,000 Feet

VESTRA

SOURCE: NRCS 2010

FIGURE 5
**SOILS**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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## 2.7 Greenhouse Gas Emissions

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | ☐ | ☐ | ■ | ☐ |
| b. | Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ■ | ☐ |

**Discussion:**

The Governor of California signed Executive Order S-3-05 (EO) in June 2005 which established statewide reduction targets for greenhouse gases. The EO states that emissions shall be reduced to 2000 levels by 2010, to 1990 levels by 2020, and by 2050 reduced to 80 percent of the 1990 levels. Assembly Bill 32, the California Global Warming Solutions Act, 2006 (AB 32), was signed into law in September 2006. AB 32 finds that global warming poses a serious threat to the economic wellbeing, public health, natural resources, and the California environment. It establishes a state goal of reducing greenhouse gas emissions to 1990 levels by the year 2020, which would be a 25 percent reduction from forecasted emission levels.

CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in draft CEQA documents. The greenhouse gas guidelines fit within the existing CEQA framework by amending existing Guidelines to reference climate change.

HD Ranch proposes to change cattle breed from Holstein to Jersey cattle. The environmental sustainability of animal agriculture has recently undergone scrutiny as the issue becomes more prominent in political, social, and economic agendas. Improving productivity demonstrably reduces the environmental impact of dairy production. Previous research on the interaction between productivity and environmental impact has focused on the effect of changing milk production per cow, having an effect at both the individual and the population level.

In 2007, the U.S. dairy herd was comprised of approximately 90.1 percent Holstein cattle and 5.3 percent Jersey cattle. These two breeds display very different performance characteristics, notably a higher milk yield in Holstein cattle versus a higher milk nutrient density and lesser body weight in Jersey cattle. With the higher milk nutrient density in Jerseys, a lower volume of milk is required versus Holsteins relative to cheese yield. HD Ranch produces milk for cheese.

Jersey cows consume 29 percent less feed and excrete 33 percent less manure and 28 percent less urine than Holstein cows, according to a study published by the Department of Dairy Science, at Virginia Polytechnic Institute and State University (Capper and Cady, 2011).

A study published in the Journal of Dairy Science showed that, for the production of 500,000 tons of cheddar cheese, Holstein cows had a total carbon footprint of 8,104,000 tons of $CO_2e$. For the same total cheese production, Jerseys had a total carbon footprint of 6,442,000 tons of $CO_2e$, a reduction of over 20 percent per pound of cheese produced with Jersey milk. Jersey cows, while smaller and producing less milk per cow, are more efficient versus their larger counterpart, Holsteins. The change from Holstein to Jersey cattle with the same total animal units will result in a net decrease in $CO_2e$.

**a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

**Less Than Significant Impact.** Greenhouse gases (GHGs), as defined by Health and Safe Code, include but are not limited to water vapor, carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), ozone ($O_3$), and chlorofluorocarbons (CFCs) (Health and Safety Code §38500 et seq.). These gases all act as effective global insulators, reflecting back to earth visible light and infrared radiation.

The project cannot generate enough GHG emissions to influence global climate change on its own. The project participates in potential climate change by its incremental contribution (positive or negative) of GHG emissions that, when combined with the cumulative increase of all other natural and anthropogenic sources of GHGs, impact global climate change. Therefore, global climate change is a type of cumulative impact and the project's participation in this cumulative impact is through its incremental contribution of GHG emissions.

The primary source of GHG emissions associated with the project results from the transportation of materials to the facility and the associated emissions from heavy-duty diesel trucks. There will be no change in truck numbers. This is a baseline condition and, therefore, there are no impacts.

Other sources of GHG emissions are the belching of dairy cattle and the methane emissions from water reuse ponds. The fugitive emissions from the decomposition of the manure from the ponds will continue to occur. The volume of recycled water into the ponds will not increase substantially from the calf hutches and heifer corral areas. The pond size will not be increased and the pond area is considered a baseline condition; therefore, there is no impact.

Jersey cows consume fewer natural resources and have a lower environmental impact compared to Holstein cows, it is not expected that the conversion will have a significant impact on GHG emissions from the existing dairy. A less than significant increase is anticipated.

**b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

**Less Than Significant Impact.** See discussion in Section a) above. The Climate Action Plan for Solano County (2011) notes that livestock make up less than 10 percent of emission sources in the County. The plan also includes the objectives of promoting sustainable and economically viable products. This project meets that objective. The plan also encourages confined animal livestock operations to develop biogas control systems and biogas power-generation systems. These systems are just now beginning to be used in the dairy industry.

HD Ranch has installed a solids removal system at the site, which will remove solids prior to reaching the ponds and, hence, reduce GHG emissions from the pond area. In addition, HD Ranch will replant and restore the tree buffer along Midway Road planted by the previous owner but allowed to die. These trees will assist in reducing GHG emissions from the project.

The majority of the potential GHG emissions are associated with baseline conditions of the operating dairy. The proposed amendment will not significantly increase the number of truck trips per day. Therefore, impacts associated with this issue would be less than significant.

## 2.8 Hazards and Hazardous Materials

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | ☐ | ☐ | ☐ | ■ |
| b. | Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | ☐ | ☐ | ☐ | ■ |
| c. | Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | ☐ | ☐ | ☐ | ■ |
| d. | Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☐ | ☐ | ■ |
| e. | For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ■ |
| f. | For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ■ |
| g. | Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☐ | ■ |
| h. | Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

The area is not designated as a high fire risk area in the General Plan Health and Safety Element. The project proponent will be responsible for implementing all requirements imposed by the Dixon Fire Protection District through the building permit process. No hazards are anticipated. The project is not located within 0.25 mile of any existing schools, airports, or airstrips, and the project will not interfere with an adopted emergency plan.

Pests including flies, cattle grubs, cattle lice, rodents, and mosquitos can also become hazards due to their potential to become a nuisance, as well as their potential to carry diseases. The applicant submitted a Pest and Vector Control and Management Plan that addresses various kinds of pests that can be found within a dairy facility that is not property managed under the previous use permit application. The plan sets forth biological, cultural, and chemical pest control methods that reduce any impact from pests. These pests are, however, a part of the baseline condition. No significant impacts are anticipated.

## 2.9 Hydrology and Water

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Violate any water quality standards or waste discharge requirements? | ☐ | ☐ | ■ | ☐ |
| b. | Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | ☐ | ☐ | ☐ | ■ |
| c. | Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site? | ☐ | ☐ | ☐ | ■ |
| d. | Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on-or off-site? | ☐ | ☐ | ☐ | ■ |
| e. | Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | ☐ | ☐ | ☐ | ■ |
| f. | Otherwise substantially degrade water quality? | ☐ | ☐ | ☐ | ■ |
| g. | Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | ☐ | ☐ | ■ | ☐ |
| h. | Place within a 100-year flood hazard area structures that would impede or redirect flood flows? | ☐ | ☐ | ■ | ☐ |
| i. | Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam? | ☐ | ☐ | ■ | ☐ |
| j. | Be subject to inundation by seiche, tsunami, or mudflow? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

The proposed project includes the change of cattle breed from Holstein to Jersey

cattle and addition of calf and heifer housing and as well as three modular employee-housing units, two of which were previously approved. Water at the property is currently supplied by two barn wells, nine irrigation wells, and two domestic wells. No new wells are proposed.

The dairy currently operates under General Waste Discharge Requirements for Milk Cow Dairies (Order R5-2013-0122) issued by the RWQCB. The required Waste Management Plan was prepared under this General Order. Stormwater and surface runoff are directed to the onsite retention ponds. The Waste Management Plan has been revised to include the new calf and heifer areas. The existing drainage pattern at the site will not be altered. The Waste Management Plan prepared by a Professional Engineer shows that the pond has sufficient capacity.

Portions of the proposed facilities are located in the 100-year floodplain. The site has been surveyed. The FEMA Flood Insurance Rate Map is shown on Figure 6A and a site-specific map is included as Figure 6B. The proposed new calf structure will meet all building code requirements at the time a building permit is acquired.

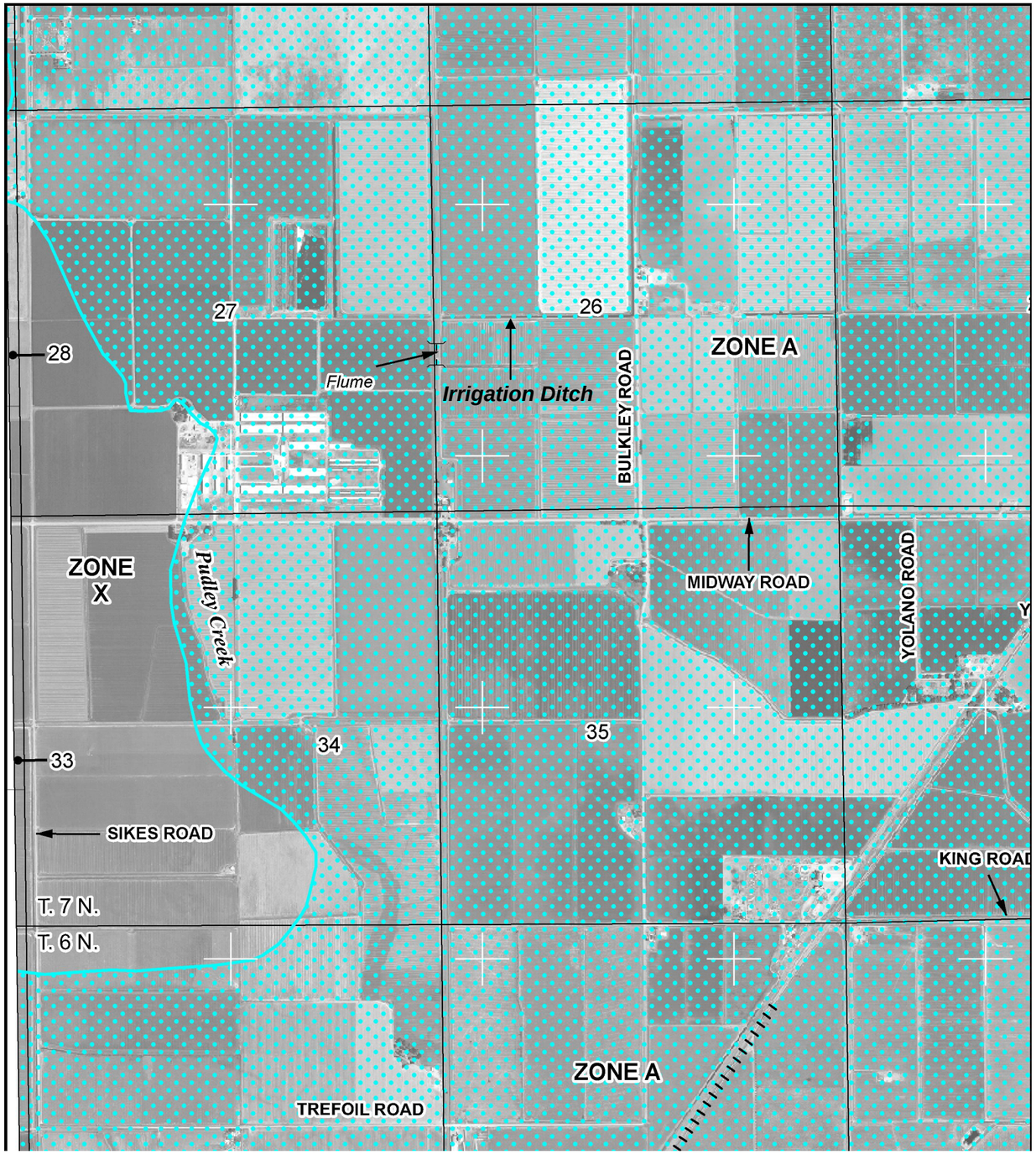
A revised Nutrient Management Plan has been prepared to address the conversion from Holstein to Jersey cattle. The plan shows that the water reuse generated at the facility can be applied to currently available croplands at agronomic rates that protect water quality. The plan was prepared by a Certified Crop Advisor with experience in dairy water reuse, crop management, and land use.

**a) Would the project violate any water quality standards or waste discharge requirements?**

**Less Than Significant Impact.** The facility is an operating dairy. The dairy operates under a use permit issued by the County and a General Order issued by the RWQCB. Both agencies have authority to protect water quality. The County required submittal of a Comprehensive Nutrient Management Plan under County code. The plan includes evaluation of waste management capacity and application rates for the use of water reuse on cropland. The RWQCB also requires the verification of adequate capacity and development of a Nutrient Management Plan for the application of water reuse to cropland.

The RWQCB initially approved the size and design of the existing water reuse pond in 2001. The 2016 revision to the Waste Management Plan shows that the ponds have sufficient capacity to hold the surface water runoff from the heifer corrals and calf hutch areas, as well as solids and liquids from the animal units onsite. HD Ranch installed a manure solids separation facility to remove manure solids prior to entrance to the water reuse pond system. The separation facility will be installed in 2017. The pond design has not changed.

In recent correspondence, the RWQCB requested HD Ranch to provide additional information on the operation and cleaning of the pond system. This was provided to the RWQCB in a letter dated April 2017. The Waste Management Plan was revised to address these concerns and was provided to the County and RWQCB. The RWQCB concurred that the ponds have sufficient water reuse capacity for the




# LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

| | |
|---|---|
| **ZONE A** | No Base Flood Elevations determined. |
| **ZONE AE** | Base Flood Elevations determined. |
| **ZONE AH** | Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined. |
| **ZONE AO** | Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined. |
| **ZONE AR** | Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood. |
| **ZONE A99** | Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined. |
| **ZONE V** | Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined. |
| **ZONE VE** | Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined. |

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

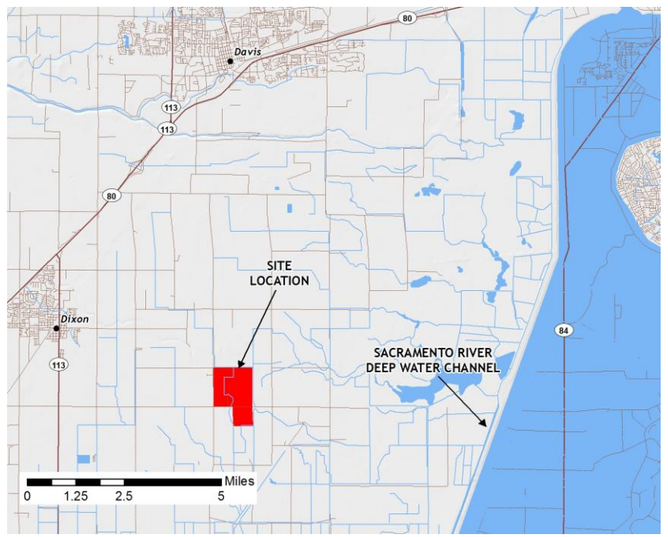
**ZONE X**

Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

**ZONE X**

Areas determined to be outside the 0.2% annual chance floodplain.




NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0225E

# FIRM

**FLOOD INSURANCE RATE MAP**

**SOLANO COUNTY, CALIFORNIA**
**AND INCORPORATED AREAS**

**PANEL 225 OF 730**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| SOLANO COUNTY | 060631 | 0225 | E |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**06095C0225E**

**EFFECTIVE DATE**
**MAY 4, 2009**

Federal Emergency Management Agency

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

600 0 600 1200 METERS

VESTRA

SOURCE: FEMA FIRM MAP, 2009

FIGURE 6A
**2009 FEMA FLOOD MAP**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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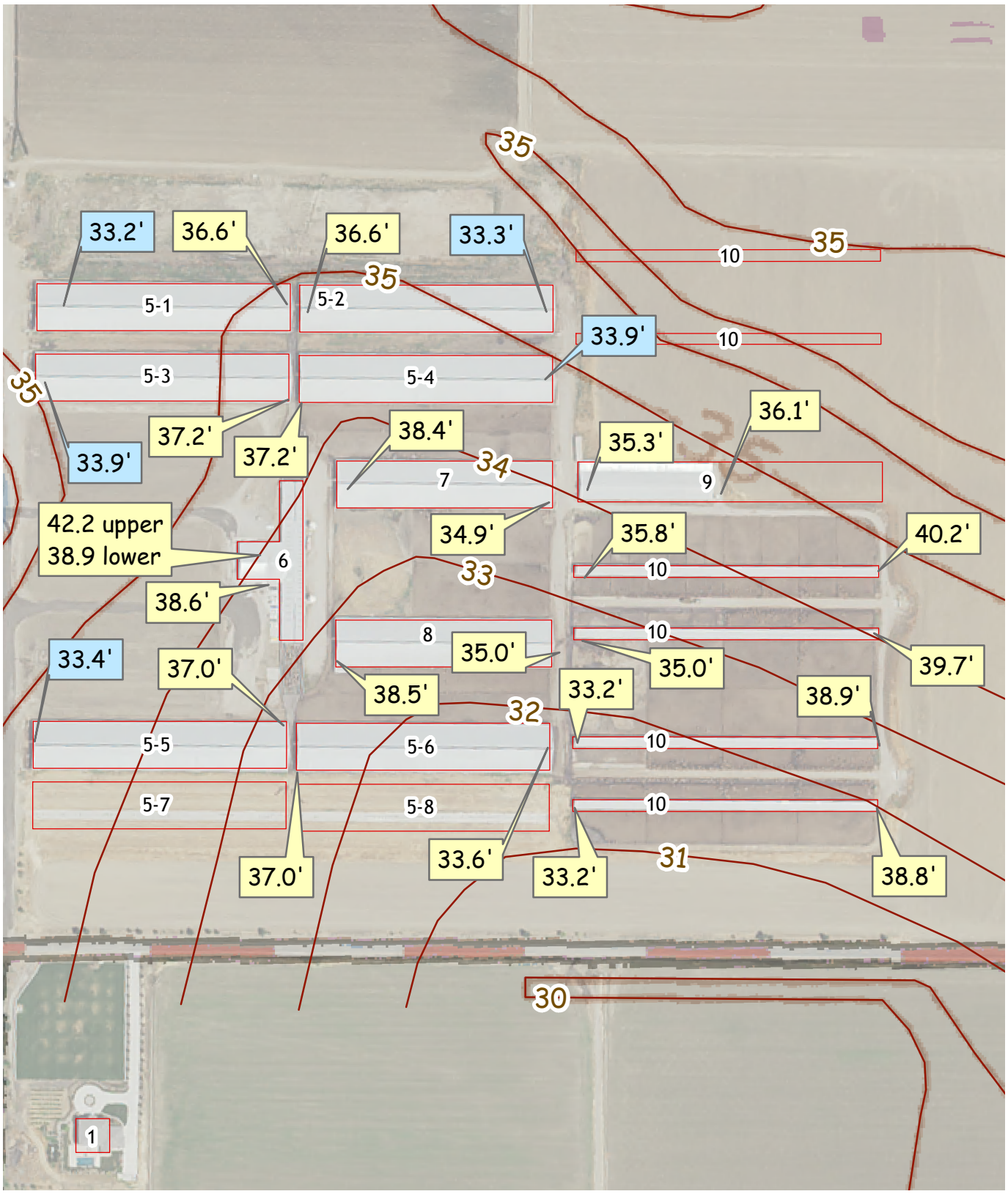



40.2' FINISH FLOOR ELEVATIONS

40.2' FINISH FLOOR ELEVATIONS BELOW FLOOD DEPTH: TO BE SANDBAGGED OR BERMED IF 100-YEAR EVENT THREATENS

1 - House
5 - Freestall Barn
7 - Heifer Barn
8 - Fresh/Hospital Barn
9 - Calf Hutches
10 - Corral Shade

VESTRA

0 150 300 600 Feet

SOURCE: USDA NAIP 2014 AERIAL PHOTOGRAPH

FIGURE 6B
**FACILITY ELEVATIONS**
HD RANCH
SOLANO COUNTY, CALIFORNIA

P:\GIS\71328\CountyInitialStudy\71328_FacilityElevations.mxd

proposed improvements and that the Nutrient Management Plan will result in protection of water quality. The RWQCB will issue waste discharge requirements for the site following County approval.

Solano County Environmental Health Division required the facility to install a groundwater monitoring network in 2001. Four of the eight onsite monitoring wells were replaced with deeper wells during October 2014 due to drought conditions and resultant lowered groundwater levels. The site is currently monitored by eight monitoring wells, two up gradient and six downgradient. Well information is included in Table 9 and shown on Figure 7.

**Table 9**
**MONITORING WELL CONSTRUCTION DETAILS [1]**

| Well No. | Installation Date | Construction Material | Total Depth (ft bgs) | Screened Interval (ft bgs) | Sand Interval (ft bgs) |
|---|---|---|---|---|---|
| MW-1 | 10/1/2002 | 2" Sch. 40 PVC | 40 | 25-40 | 22-40 |
| MW-2 | 10/1/2002 | 2" Sch. 40 PVC | 40 | 25-40 | 22-40 |
| MW-3 | 10/1/2002 | 2" Sch. 40 PVC | 35 | 20-35 | 17-35 |
| MW-4A [2] | 10/20/2014 | 2" Sch. 40 PVC | 55.5 | 35-55 | 33-56 |
| MW-5A | 10/22/2014 | 2" Sch. 40 PVC | 44.5 | 24-44 | 22-46 |
| MW-7A | 10/21/2014 | 2" Sch. 40 PVC | 46 | 25.5-45.5 | 24-47.5 |
| MW-8A | 10/2/2014 | 2" Sch. 40 PVC | 38.5 | 18-38 | 16-42.5 |
| MW-9 [4] | 5/24/2010 | 2" Sch. 40 PVC | 45 | 25-45 | 23-45 |

**Notes:**
Monitoring Wells MW-4, MW-5, MW-7, and MW-8 were replaced in October 2014.
[1] Source: *First Quarter 2009 Groundwater Monitoring Report*, Table 1 (Apex Engineering Inc., April 28, 2009) and Well Replacement Completion Report (VESTRA, 2015).
[2] Solano County requested replacement well.
[3] MW-6 was abandoned and replaced with MW-9 on May 24, 2010.
[4] Source: Well Completion Report (VESTRA, 2010).

Data from the wells indicated an impact to groundwater nitrate concentrations under the previous operator. Process changes by the current owner and improvements in practices have mitigated this impact.

The groundwater monitoring system required by the Solano County Code meets the requirements for groundwater monitoring under individual waste discharge requirements to be issued by the RWQCB. Quarterly groundwater monitoring reports prepared for the site are submitted to both Solano County and the RWQCB and satisfy the requirements of the current General Order and the proposed individual waste discharge requirements.

A Comprehensive Nutrient Management Plan was prepared for Solano County and a Nutrient Management Plan was prepared for the RWQCB to document that the use of water reuse for crop irrigation will be conducted at agronomic rates and not affect groundwater quality. The previous operator of the facility, Heritage Dairy, had occasional issues relating to water discharge. HD Ranch, the current operator, has improved pond management and water reuse application practices which has resulted in improvements to groundwater quality beneath the site.


## LEGEND

IR-1 IRRIGATION WELL LOCATION

D-1 DOMESTIC WELL LOCATION

MW-1 GROUNDWATER MONITORING WELL W/GROUNDWATER ELEVATION

M1 FIELD NUMBER

PROPERTY BOUNDARY

VESTRA

0 500 1,000

SCALE IN FEET

FIGURE 7

ONSITE MONITORING WELLS

HD RANCH

SOLANO COUNTY, CALIFORNIA

P:/GIS/71328/CountyInitialStudy/71328_Mon Well Locations.pdf

The 2016-2017 winter was the wettest year on record based on a 150-year history. No surface water was discharged from the facility and the pond capacity was adequate.

Compliance with RWQCB requirements, which has jurisdiction over waste discharge, will mitigate potentially significant impacts to a less-than-significant level.

An NPDES Stormwater permit for construction activities is also required. Construction-related impacts would be reduced to less than significant by the implementation of BMPs that are part of the required Stormwater Pollution Prevention Plan (SWPPP). All stormwater leaving the facility passes through a filter strip and is subject to regulations set forth in the Clean Water Act. The approval of calculations for containment and water reuse used by the RWQCB and Solano County result in the proposed amendment having a less than significant impact.

**b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

**No Impact**. The facility currently operates as a dairy and uses groundwater as a source of water supply. The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. No additional wells are proposed with this project.

Groundwater occurs in the alluvial deposits underlying the alluvial fans, low plains, and basin flats of the Sacramento Valley. The site is located in the Solano Subbasin of the larger Sacramento Valley Groundwater Basin. The Solano subbasin is comprised of deposits of late tertiary to Quaternary age, including the Holocene alluvium and Pleistocene terrace deposits of the Tehama Formation. Usable groundwater is hosted in the Tehama Formation and overlying alluvium. Groundwater below the base of the Tehama Formation is generally too saline to be usable for agriculture. In the vicinity of the site, the base of the Tehama formation is estimated to be approximately 3,000 feet bgs.

Site-specific geology is characterized by interlayered silts, silty clays, and fine medium sands in the upper 50 feet. Sand bodies are distinctly lenticular and show well developed cross-stratification. Vertically, a typical section consists of approximately 5 feet of silty clays with low to moderate organic content. This is underlain by inter-bedded silts and clays to a depth of 25 feet. Moisture content steadily increases downwards while organic content decreases. Normally graded fine to medium sands are present from 25 to 35 feet bgs and are saturated below 30 feet. The fine to medium sand unit grades downwards into a saturated sandy gravel below 35 feet. Cobbles are common in the basal 2 feet of the sandy gravel unit. Below a depth of 40 to 45 feet, the sandy gravel unit grades into a sandy clay that

extends to at least 55 feet bgs. Surficial lithology also varies laterally between sand-dominant sediments and silty clay. These variations are interpreted to be the result of horizontal changes in depositional environment from channel settings to interfluvial floodplains.

Depth to water at the site varies from 20 to 40 feet bgs. Groundwater flow direction is typically to the west under an average hydraulic gradient of 0.002 feet per foot.

Four Department of Water Resources (DWR)-monitored groundwater wells are located within 1 mile of the center of the site. Information on the wells is included in Table 10. Well locations are shown on Figure 8.

**Table 10**
**DWR WELL INFORMATION**

| Site Code ID | Distance from Site | Use | Status | Total Depth (feet) | Depth to Water (feet)[1] | Years of Record |
|---|---|---|---|---|---|---|
| 384187N1217213W001 | 0.98 | Irrigation | Active | -- | 46 | 1964-1974 |
| 384157N1217304W001 | 0.60 | Irrigation | Active | 458 | 94 | 2011 |
| 384159N1217419W001 | 0.41 | Irrigation | Active | 364 | 40 | 1948-2004 |
| 384189N1217213W001 | 0.95 | Unknown | Active | -- | 33 | 1963-1989 |

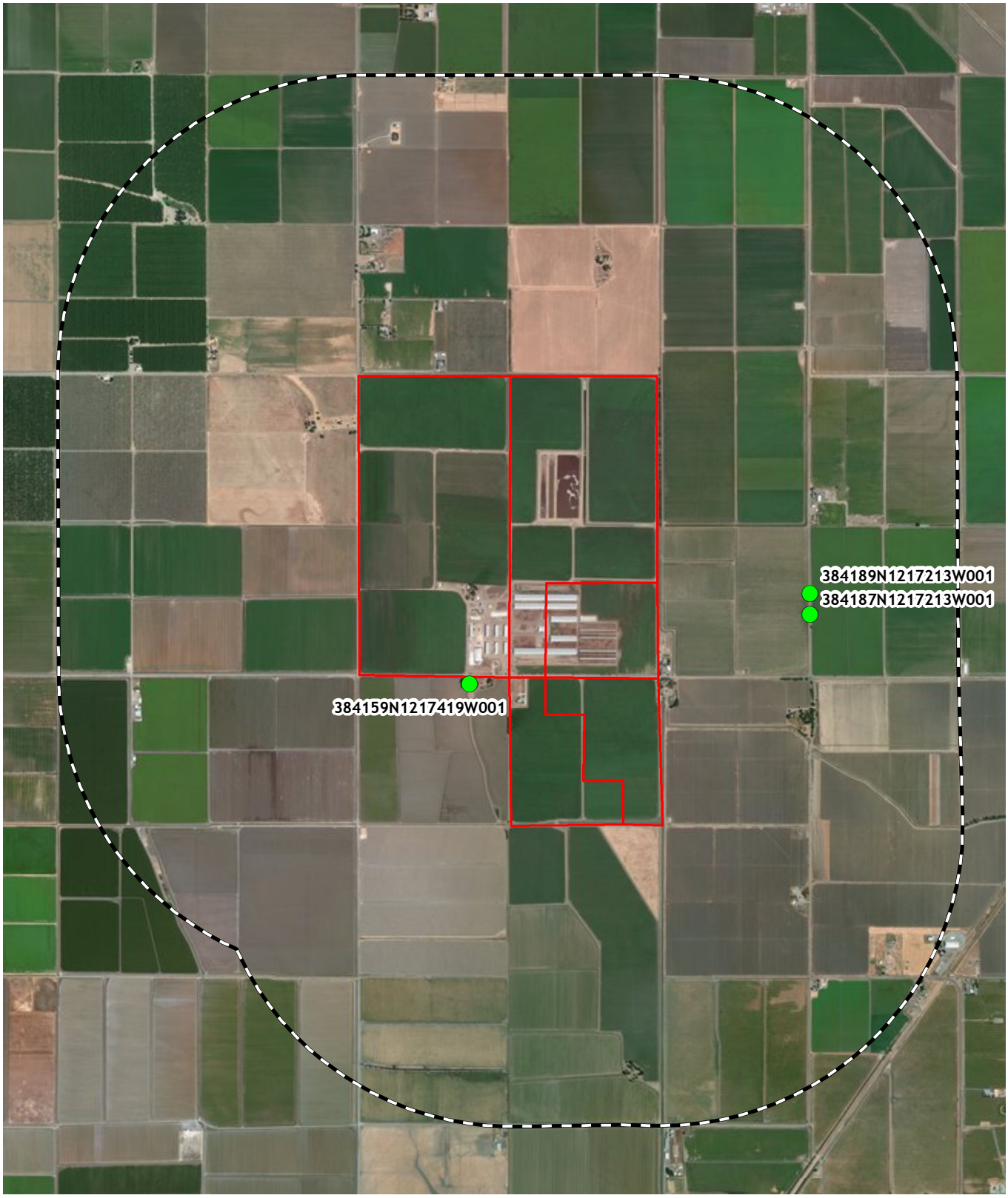
**Notes:**
**1** Average depth to water over period of record
-- = Not available or recorded

The DWR wells show seasonal decreases associated with irrigation use in the vicinity. The long-term capacity of the wells is not trending. Water use from the conversion of Holstein to Jersey cattle will not change as the total animal waste will remain unchanged. Table 11 shows actual water use will decrease at the site under the proposed project.

As points of reference, water-use estimates for lactating Holstein cows average 25 to 40 gallons/day assuming a 1,500-pound cow. This can increase up to 200 percent in times of stress. Lactating Jersey cows average 18 to 30 gallons/day assuming a 1,000-pound cow. As a general reference, non-lactating cattle water use is based on weight and a 60 degree external temperature as shown below. The project will reduce the amount of water consumed at the dairy and, therefore, will have no impact to site groundwater.

| Weight | Gallons/Day* |
|---|---|
| 1,500 | 12.0 |
| 1,200 | 10.8 |
| 1,000 | 9.6 |
| 800 | 8.2 |
| 600 | 6.5 |
| 400 | 4.6 |
| 200 | 2.4 |

*From Looper and Waldner, 2002




Groundwater Monitoring Well Location

Approximate Parcel Boundary

1-Mile Buffer Around Property

N

VESTRA

SOURCE: ESRI WORLD IMAGERY, 2016;
DWR WATER DATA LIBRARY

0 1,250 2,500 5,000 Feet

FIGURE 8
**GROUNDWATER MONITORING WELL LOCATIONS**
HD RANCH
SOLANO COUNTY, CALIFORNIA

P:\GIS\71328\CountyInitialStudy\71328_DWR_WellLocations.mxd

| Table 11<br>PROPOSED CATTLE WATER USE | | |
|---|---|---|
| **Cattle** | **Water Use[1] (gals/day)** | **Water Use (gals/day)** |
| Milk Cows | 105,000 | 84,000 |
| Dry Cows | 5,220 | 5,600 |
| Bred Heifers 15-24 mos. | 8,450 | 13,800 |
| Heifers 7-14 mos. | 4,140 | 5,376 |
| Calves 4-6 mos. | 1,140 | 1,915 |
| Calves 0-3 mos. | 700 | 1,120 |
| **Total** | **124,650** | **111,811** |

[1] Per head water usage calculated from equations provided in Beede, DK, 1992, Water for Dairy Cattle. In: Large Dairy Herd Management. Ed. H.H. Van Horn and C.J. Wilcox. Amer. Dairy Sci. Assoc. Champaign, Ill. Also found in Looper and Waldner Guide D-107 Water for Dairy Cattle (2002).

**c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or offsite?**

**No Impact.** The drainage pattern of the site will not change. No water which contacts manure is allowed to leave the site and is intercepted by the water reuse collection system and conveyed to the ponds. There is no change over baseline and, therefore, no impact.

**d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?**

**No Impact.** See discussion above. The facility is designed to limit run-on and direct run-off to the water reuse system. The grading and drainage patterns of the site will not increase surface runoff which would result in flooding on- or off-site. The site is not located in an area prone to flooding. Therefore, it is concluded that there is no impact.

**e) Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

**No Impact.** The project would not result in runoff; therefore, it would not exceed the capacity of a stormwater drainage system. The dairy is a baseline condition. There is no impact.

**f) Would the project otherwise substantially degrade water quality?**

**No Impact.** The proposed project will not substantially degrade water quality. Construction activity could expose soils to erosion and could result in the transportation of sediment into local drainages. Additionally, if fuel is accidentally

spilled during refueling of heavy equipment during construction or operation of the facility, water quality could be degraded. These impacts would be mitigated by implementing existing BMPs that are included in the construction SWPPP.

As stated previously, the water reuse system has been designed by a Professional Engineer to current standards and approved by the RWQCB. Water reuse is applied at agronomic rates to cropland as approved by the RWQCB in the Nutrient Management Plan. All solid manure is transported offsite. In addition, HD Ranch has completed the addition of a state-of-the-art manure separator in the water reuse system to remove manure prior entering the settling ponds, thereby improving pond water quality.

The baseline condition is that of an operating dairy. Animal units, and hence waste generation, will not change. There is no impact on the water reuse pond and management system and water quality.

**g) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

**Less Than Significant Impact.** The entire region of Solano County falls into the 1 percent annual flood (100-year flood), also known as the base flood area. No base flood elevation has been determined for the area. The baseline condition includes the operating dairy with four current residences (two recently approved under administrative permit). These have all been approved with the exception of one additional residence. Construction shall comply with the following:

> *New construction and substantial improvements of any structure shall have the lowest floor, including the basement, elevated at least one foot above the base flood elevation. Upon the completion of subfloor or slab being installed on the lowest level of the structure, the elevation of the lowest floor, including the basement, shall be certified by a registered professional engineer or surveyor. Such certification or verification shall be provided to the floodplain administrator (Building and Safety Division).*
>
> *For all new construction and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood water.*

Based on these requirements, the impact is considered less than significant.

**h) Would the project place within a 100-year flood hazard area structures, which would impede or redirect flood flows?**

**Less Than Significant Impact.** The baseline condition occurs in the 1 percent inundation area. Structures in this floodway have already been constructed or approved for construction with the exception of the additional employee residence. There is no change from baseline condition and the impact of the single residence is

considered less than significant.

**i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?**

**Less Than Significant Impact.** The project area is within the mapped dam inundation zone for the Monticello Dam (Lake Berryessa). Although unlikely, catastrophic failure of this dam could potentially expose people or structures to a risk of loss, injury, or death as a result of flooding. However, all dams are routinely inspected and evaluated for seismic integrity as overseen by the California Division of Safety of Dams (DSOD). When a dam is found to have a failure potential, the water level behind the dam is reduced to allow for partial collapse without loss of water as required by DSOD. Thus, the probability of dam failure resulting in significant loss, injury, or death is low. Additionally, the project site is located approximately 20 miles away from the Monticello Dam and would not receive the worst of the effects of dam failure. Given the low risk of dam failure and the distance of the project area from the dam, potential impacts related to dam failure are considered less than significant.

**j) Would the project be subject to inundation by seiche, tsunami, or mudflow?**

**No Impact.** There would be no impact on the project site from inundation by seiche or tsunami because the project area is not located near large bodies of water that would pose a seiche or tsunami hazard. Intensive mudflows occur in areas with steep terrain, heavy rain, and loose soils. The site is not located near steep terrain, mountains, or steep slopes that would pose a mudflow hazard. Therefore, it is concluded that there is no impact.

## 2.10 Land Use and Planning

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Physically divide an established community? | ☐ | ☐ | ☐ | ■ |
| b. | Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☐ | ☐ | ■ |
| c. | Conflict with any applicable habitat conservation plan or natural community conservation plan? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

**a) Would the project physically divide an established community?**

**No Impact.** The proposed project would not physically divide an established community. All proposed onsite activities will be conducted within the exiting parcel. It is concluded that there is no impact as a result of this project.

**b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

**No Impact.** The General Plan land use designation for the site is "Agriculture" and the zoning is "Exclusive Agriculture – 40 acre minimum (A-40)." A dairy facility is a conditionally permitted use in the A-40 zoning classification. The project would be developed consistent with the General Plan land use goals and policies and no additional significant land use impacts over baseline would occur. It is concluded that there is no impact.

**c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?**

**No Impact.** There are no existing plans in the area of the project; therefore, there is no impact.

## 2.11 Mineral Resources

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | ☐ | ☐ | ☐ | ■ |
| b. | Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

**No Impact.** The proposed project would have no impact on oil, gas, and geothermal resources. Therefore, it is concluded that there is no impact on mineral resources as a result of the project.

## 2.12 Noise

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | ☐ | ☐ | ☐ | ■ |
| b. | Exposure of persons to or generation of, excessive ground borne vibration or ground borne noise levels? | ☐ | ☐ | ☐ | ■ |
| c. | A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | ☐ | ☐ | ☐ | ■ |
| d. | A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | ☐ | ☐ | ☐ | ■ |
| e. | For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ■ |
| f. | For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

**a) Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. Noise levels at the site are not expected to increase with the proposed project. The project site is located in an area of lands zoned for agricultural uses. No increase in noise is anticipated as a result of this project.

All equipment to be used is late model and in sound working order with proper sound-attenuating mufflers attached. Based on the aforementioned information, it is concluded that there is no additional impact from project-generated noise.

**b) Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy.

Sources of noise and vibration associated with the project include equipment, haul trucks, and other vehicles. These sources will increase with the proposed project and not produce excessive groundborne noise or vibration. Initial construction work was addressed in the previous permit documentation. It is concluded that there is no impact.

**c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. Ambient noise in the area is a result of the current condition as a milk cow dairy and the result of traffic on adjacent roadways and noise generated from nearby agricultural uses. It is anticipated that noise generated as a result of the herd conversion will not exceed the area's existing ambient noise levels. No permanent increase in ambient noise levels in the project vicinity will result. It is concluded that there is no impact.

**d) Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

**No Impact.** Baseline condition of the site is that of an operating milk cow dairy. Temporary or periodic increases in noise will occur during future construction activities; however, these were covered under previous CEQA review. This increase in noise will be sporadic and temporary. It is concluded that there is no impact.

**e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. The project site is not located within an airport land use plan or within 2 miles of a public airport or public use airport. Therefore, it is concluded that there is no impact.

**f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. Based on an analysis of digital aerial photographs from 2015, the project is not located in the vicinity of a private airstrip. It is concluded that there is no impact.

## 2.13 Population and Housing

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | ☐ | ☐ | ☐ | ■ |
| b. | Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ■ |
| c. | Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

The proposal would not displace existing housing or people within the area of the project. Construction of replacement housing would not be necessary with this project. Future activities associated with this project would not displace people or housing. Therefore, no impacts are anticipated.

## 2.14 Public Services

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: | | | | |
| 1) | Fire Protection? | ☐ | ☐ | ☐ | ■ |
| 2) | Police Protection? | ☐ | ☐ | ☐ | ■ |
| 3) | Schools? | ☐ | ☐ | ☐ | ■ |
| 4) | Parks? | ☐ | ☐ | ☐ | ■ |
| 5) | Other Public Facilities? | ☐ | ☐ | ☐ | ■ |

### Discussion:

The project proposes additional cattle consistent with the assumed number of animal units approved in 2001. Impacts associated with Fire, Sheriff, Schools, Parks and other public facilities are not anticipated**.**

## 2.15 Recreation

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | ☐ | ☐ | ☐ | ■ |
| b. | Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? | ☐ | ☐ | ☐ | ■ |
| c. | Physically degrade existing recreational resources? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

The project would not increase the use of existing regional parks and other recreational facilities and no substantial physical deterioration of these facilities would occur or be accelerated. There are no park facilities within the area of the project. The project does not include uses that will attract additional residents to the area and there will be no need to build additional recreational facilities or expand existing facilities. Therefore, no impacts are anticipated.

## 2.16 Transportation and Traffic

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | ☐ | ☐ | ■ | ☐ |
| b. | Conflict with an applicable congestion management program, including, but not limited to level of service standard and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? | ☐ | ☐ | ☐ | ■ |
| c. | Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? | ☐ | ☐ | ☐ | ■ |
| d. | Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible land uses (e.g., farm equipment)? | ☐ | ☐ | ☐ | ■ |
| e. | Result in inadequate emergency access? | ☐ | ☐ | ☐ | ■ |
| f. | Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities or otherwise decrease the performance or safety of such facilities? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

To access the project site, feed delivery and milk transport trucks normally travel west on State Highway 12 and then travel north on State Highway 113. From Highway 113, trucks turn onto Midway Road, approximately 2 miles south of Dixon, and travel east for 4.5 miles to the project site. Vehicle usage between October 2015 and September 2017 are shown in Table 12. The amount of feed delivered to HD Ranch and milk product shipped from the ranch is also included in Table 12. Current milk production requires 3.05 tanker truck trips per day (see Table 12). Transportation of milk from the change to Jersey cattle would require approximately 4 tanker trips per day (an increase of 0.95 truck trips per day). One Jersey cow produces approximately 60 pounds of milk per day, on average, and the proposed number of Jersey cows (3,800 head) would produce approximately 228,000 pounds of milk per day.

Jersey cows require approximately 20 percent less feed and have a higher feed efficiency despite producing less milk, overall, than Holstein cows. Jersey cows are

able to produce about 1.61 pounds of energy-corrected milk (ECM; milk that has been standardized for protein, fat and milk content) for every 1 pound of dry matter intake. Holstein cows produce about 1.38 pounds of ECM per 1 pound of dry matter intake. Over the past 24 months, an average of 391.59 tons of feed was delivered to HD Ranch per week, or 2.24 truck trips per day. The proposed herd of Jersey cows would require 735.42 tons of feed per week, or approximately 4 truck trips per day. Projected feed requirements and delivery truck trips are shown in Table 13.

25 dairy employees work per day, with 18 dairy employees during the day shift and 7 employees during the night shift. Currently, a total of 6 employees live onsite and, thus, do not require transportation to and from the site. After accounting for the employees living onsite, there is an average of 38 one-way trips per day for employee transportation. The addition of the proposed employee housing will increase the number of employees living onsite to 9. After accounting for the additional employees living onsite, there will be an average of 32 one-way trips per day for employee transportation. Midway Road is a County road that has a paved roadway width of 22 feet. There is no plan for additional employees or staff with the proposed change. The new proposed onsite employee housing will reduce the number of vehicle trips per day from the baseline condition. An estimated two additional feed-delivery truck trips and one additional milk-hauling truck trip per day (three total additional trips per day) will be required.

The project will not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system.

Traffic in the area of the project is generally agricultural and limited residential. The majority of truck traffic for this project is directed east out Midway Road to Interstate 80. Current vehicle traffic in the area consists of farm vehicles, trucks, and equipment.

Parking is available at the dairy for truck traffic and employee needs.

The increase in vehicle trips per day would not have a significant impact on current access roads or nearby connecting roads. The increase is not substantial based on roadway capacity.

**Table 12**
**CURRENT VEHICLE TRIPS***

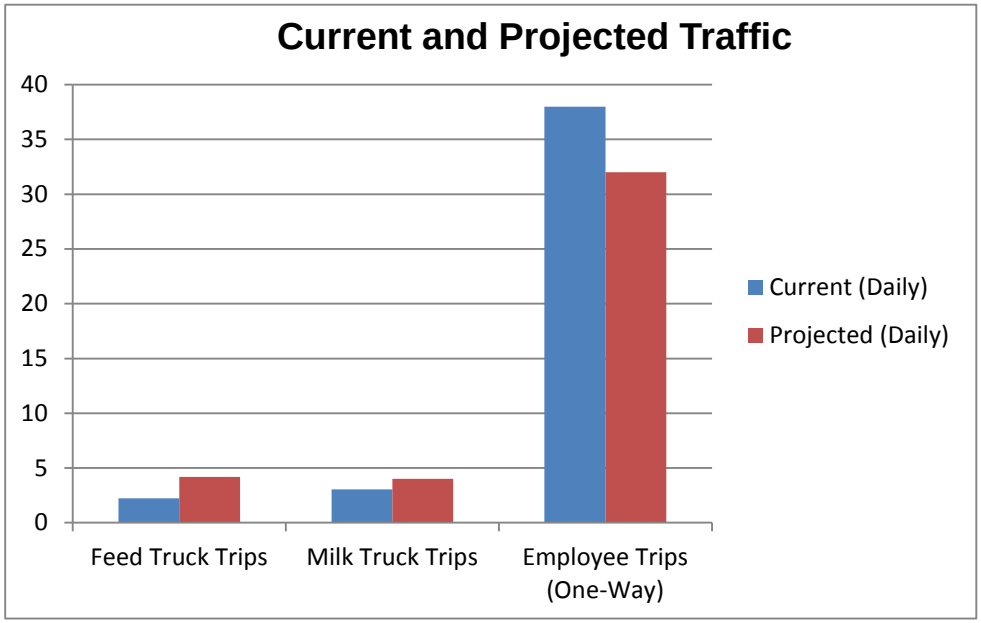
| Year | Month | Feed Delivered (Tons) | Monthly Feed Delivery Truck Trips | Daily Feed Delivery Truck Trips | Milk Shipped (Pounds) | Monthly Milk Shipment Truck Trips | Daily Milk Shipment Truck Trips | Employee Transportation (# One-Way Trips Per Day) |
|---|---|---|---|---|---|---|---|---|
| 2015 | October | 1587 | 63.5 | 2.05 | 5075545 | 89.04 | 2.87 | 38 |
| 2015 | November | 1539 | 61.6 | 2.05 | 4897069 | 85.91 | 2.86 | 38 |
| 2015 | December | 1511 | 60.4 | 1.95 | 4968025 | 87.16 | 2.81 | 38 |
| 2016 | January | 1345 | 53.8 | 1.74 | 5040428 | 88.43 | 2.85 | 38 |
| 2016 | February | 1185 | 47.4 | 1.63 | 4925753 | 86.42 | 2.98 | 38 |
| 2016 | March | 1546 | 61.8 | 1.99 | 5426718 | 95.21 | 3.07 | 38 |
| 2016 | April | 1546 | 61.8 | 2.06 | 5276178 | 92.56 | 3.09 | 38 |
| 2016 | May | 1695 | 67.8 | 2.19 | 5504268 | 96.57 | 3.12 | 38 |
| 2016 | June | 1635 | 65.4 | 2.18 | 5228229 | 91.72 | 3.06 | 38 |
| 2016 | July | 1709 | 68.4 | 2.21 | 5446918 | 95.56 | 3.08 | 38 |
| 2016 | August | 1738 | 69.5 | 2.24 | 5501012 | 96.51 | 3.11 | 38 |
| 2016 | September | 1752 | 70.1 | 2.34 | 5093926 | 89.37 | 2.98 | 38 |
| 2016 | October | 1942 | 77.7 | 2.51 | 5256804 | 92.22 | 2.97 | 38 |
| 2016 | November | 1975 | 79.0 | 2.63 | 5457741 | 95.75 | 3.19 | 38 |
| 2016 | December | 1831 | 73.2 | 2.36 | 5359691 | 94.03 | 3.03 | 38 |
| 2017 | January | 1841 | 73.6 | 2.45 | 5076383 | 89.06 | 2.87 | 38 |
| 2017 | February | 1550 | 62.0 | 2.21 | 4972363 | 87.23 | 3.12 | 38 |
| 2017 | March | 1838 | 73.5 | 2.45 | 5524535 | 96.92 | 3.13 | 38 |
| 2017 | April | 1800 | 72.0 | 2.40 | 5504677 | 96.57 | 3.22 | 38 |
| 2017 | May | 1896 | 75.8 | 2.45 | 5757654 | 101.01 | 3.26 | 38 |
| 2017 | June | 1877 | 75.1 | 2.50 | 5396793 | 94.68 | 3.16 | 38 |
| 2017 | July | 1895 | 75.8 | 2.45 | 5781637 | 101.43 | 3.27 | 38 |
| 2017 | August | 1821 | 72.8 | 2.35 | 5577003 | 97.84 | 3.16 | 38 |
| 2017 | September | 1734 | 69.4 | 2.31 | 5214757 | 91.49 | 3.05 | 38 |
| | **Average** | **1699.50** | **67.98** | **2.24** | **5302671** | **93.03** | **3.05** | **38** |

* Feed truck has a capacity of 25 tons
*Milk haul truck has a capacity of 57,000 lbs
* Employee transport will not change under the proposed revision

**Table 13**
**PROJECTED VEHICLE TRIPS**

| Cattle Type | Pounds per Head/Day | Total Head | Total Feed per Day (tons) | Total Feed per Week (tons) | Weekly Feed Truck Trips* | Daily Feed Truck Trips* | Milk Pounds/Day per Cow | Milk P/D [1] | Daily Milk Truck Trips [2] |
|---|---|---|---|---|---|---|---|---|---|
| Milk cow | 36.64 | 3800 | 69.62 | 487.31 | 19.49 | 2.78 | 60 | 228,000 | 4 |
| Dry cow | 17.63 | 650 | 5.73 | 40.11 | 1.60 | 0.23 | -- | -- | -- |
| Heifer (4-6 months) | 7.45 | 916 | 3.41 | 23.88 | 0.96 | 0.14 | -- | -- | -- |
| Heifer (7-14 months) | 11.88 | 1951 | 11.59 | 81.12 | 3.24 | 0.46 | -- | -- | -- |
| Heifer (15-24 months) | 13.70 | 2148 | 14.71 | 103.00 | 4.12 | 0.59 | -- | -- | -- |
| Calves (0-3 months) | -- | 827 | -- | -- | -- | -- | -- | -- | -- |
| **Total** | **87.30** | **10,291** | **105.06** | **735.42** | **29.42** | **4.20** | **60** | **228,000** | **4.0** |

*Feed truck capacity is 25 tons
[1] Milk P/D/C x 3,800 cows = 228,000
[2] Milk truck capacity is 57,000 pounds (228,000 ÷ 57,000 = 4


Current and Projected Traffic
40
35
30
25
20
15
10
5
0
Feed Truck Trips
Milk Truck Trips
Employee Trips (One-Way)
Current (Daily)
Projected (Daily)

**a) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?**

**Less Than Significant Impact.** See the discussion above. The site is an operating milk cow dairy. The project would not conflict with a county congestion management program. An estimated two additional feed-delivery truck trips and one additional milk-hauling truck trip per day will be required for the proposed herd conversion.

**b) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. The proposed project would not result in a change in air traffic patterns that would result in safety risks. The project is not dependent upon air-transport-related materials, manpower, or services, and would therefore not result in increases of air traffic levels or changes in air traffic locations. No project design feature will obstruct air traffic patterns. Therefore, it is concluded that there is no impact as a result of this project.

**c) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. The proposed project would not substantially increase traffic hazards due to a design feature or incompatible uses. The project does not include potentially hazardous design features such as sharp curves or dangerous intersections. The project will not render existing features of nearby roadways hazardous. The project will not be incompatible with other uses of nearby roadways. This project does not involve changes to existing access roads.

**d) Would the project result in inadequate emergency access?**

**No Impact.** The project would not result in inadequate emergency access because Midway Road provides for adequate ingress and egress to the site. Baseline traffic and projected operational traffic volumes will not change and will not hinder emergency response time. It is concluded that there is no impact on emergency access as a result of the project.

**e) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?**

**No Impact.** The project will not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. This project will not conflict with plans, policies or programs related to the transit system. There are no bicycle or pedestrian facilities located within the vicinity of the project. It is concluded that there is no impact as a result of the project.

## 2.17 Utilities and Service Systems

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | ☐ | ☐ | ☐ | ■ |
| b. | Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | ☐ | ☐ | ☐ | ■ |
| c. | Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | ☐ | ☐ | ☐ | ■ |
| d. | Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | ☐ | ☐ | ■ | ☐ |
| e. | Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | ☐ | ☐ | ☐ | ■ |
| f. | Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | ☐ | ☐ | ☐ | ■ |
| g. | Comply with federal, state, and local statutes and regulations related to solid waste? | ☐ | ☐ | ☐ | ■ |

**Discussion:**

### a) Would the project exceed water reuse treatment requirements of the applicable Regional Water Quality Control Board?

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. The onsite water reuse treatment system was approved by the County under previous CEQA review. The current water reuse treatment system has also been reviewed by the RWQCB. The proposed project has also been reviewed and approved by the RWQCB and the water reuse system found to be adequate to accommodate the change from Holstein to Jersey cattle. The proposed project will not require the services of a water reuse treatment provider. All water reuse generated is managed though the onsite collection and storage system. The system is in place and there will be no expansion of the water reuse collection and storage

system. Therefore, it is concluded that there is no impact to this baseline condition.

**b) Would the project require or result in the construction of new water or water reuse treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**No Impact.** See response to comment (a) above. The baseline condition of the site is that of an operating milk cow dairy. The project will not require the services of a water reuse treatment provider. The project will not require or result in new or expanded facilities which could cause significant environmental effects. The system is in place and there will be no expansion of the water reuse collection and storage system. Therefore, it is concluded that there is no impact to this baseline condition.

**c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. All stormwater which contacts manure is required to be retained onsite. The proposed project includes the construction of a new calf hutch and heifer corral area that will receive stormwater. The facility collection and storage system has been determined by a licensed engineer and approved by the RWQCB to be adequately sized to contain the required stormwater runoff. The system is in place and there will be no expansion of the water reuse collection and storage system. Therefore, it is concluded that there is no impact to this baseline condition.

**d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?**

**Less Than Significant Impact.** The project does not require new or expanded entitlements for water supplies. No additional wells are required for the project. Overall water use will decrease. Existing groundwater entitlements and resources would be sufficient to serve the project. There is a less-than-significant impact on water supplies.

**e) Would the project result in a determination by the water reuse treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

**No Impact.** There is no municipal water reuse treatment provider required for this site. No water reuse treatment facilities will need to be constructed or expanded. Therefore, there is no impact.

**f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. No increase in refuse is anticipated with the proposed project. No additional litter is the generation, handling, or disposal of solid waste. anticipated to be generated by the facility. It is concluded that there is no impact over the current baseline condition. The herd conversion will not result in any additional demands over what was evaluated under original Use Permit UP-01-06. Solano Garbage Company accepts solid waste from the site. The addition will not generate additional significant solid waste nor conflict with government regulations concerning

**g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. No increase in refuse is anticipated with the proposed project. No additional waste is anticipated to be generated by the facility. All solid manure is removed from the site and used on agricultural fields. This manure is reported and transported in accordance with RWQCB requirements. No other solid waste will be generated onsite. The site currently complies and will continue to comply with federal, state, and local statutes and regulations relating to solid waste. It is concluded that there is no impact over the current baseline condition.

## 2.18 Mandatory Findings of Significance

| Checklist Items: Would the project | | Significant Impact | Less Than Significant Impact With Mitigation | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a. | Does the project have the potential to (1) degrade the quality of the environment, (2) substantially reduce the habitat of a fish or wildlife species, (3) cause a fish or wildlife population to drop below self-sustaining levels, (4) threaten to eliminate a plant or animal community, (5) reduce the number or restrict the range of a rare or endangered plant or animal, or (6) eliminate important examples of the major periods of California history or prehistory? | ☐ | ☐ | ■ | ☐ |
| b. | Does the project have impacts that are individually limited, but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. | ☐ | ☐ | ■ | ☐ |
| c. | Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☐ | ■ | ☐ |

**Discussion:**

**a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

**Less Than Significant Impact.** All impacts associated with the project have been fully identified in this document. Impacts on biological resources and cultural resources were discussed in sections IV and V above. The project would not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. All impacts have been reduced to a less than significant level through incorporation of mitigation measures and conditions of approval and implementation of adopted best management practices and codified federal, state, and local regulations. Therefore, all impacts associated with the project are less than significant.

**b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?**

**Less Than Significant Impact.** The baseline condition of the site is that of an operating milk cow dairy. The project may have cumulative impacts on air quality, greenhouse gas emissions, hydrology and water quality, noise, and transportation and traffic; however, impacts will be reduced either through mitigation measures, adopted best practices, or implementation of applicable federal, state, and county standards.

**c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

**No Impact.** The baseline condition of the site is that of an operating milk cow dairy. The current adjoining land uses are agricultural and are anticipated to be agricultural into the future. The proposed project does not change the current condition of the site. The proposed project does not increase the use of hazardous materials onsite. It is concluded that the project will not have environmental effects which could cause substantial adverse effects on human beings, either directly or indirectly.

# 3.0 Agency Coordination and Public Involvement

## 3.1 Consultation and Coordination with Public Agencies

The Initial Study is being circulated for public comment and referred to the State Clearinghouse for coordinated review by state agencies. In addition, it will be sent to the Department of Conservation and the Solano County Agriculture Commissioner and other local agencies for review and comment.
(See Section 5.0 Distribution List)

## 3.2 Public Participation Methods

The Initial Study is available at the Solano County Department of Resource Management and online at the Department's Planning Services Division website at:

http://www.solanocounty.com/depts/rm/documents/eir/default.asp

Interested parties may contact the planner assigned to this project at the contact points provided below:

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## 4.0 List of Preparers

This Initial Study was prepared by the Solano County Department of Resource Management. The following staff and consultants contributed to the preparation of this Initial Study:

**Solano County Department of Resource Management**
Nedzlene Ferrario
Mathew Walsh

**Other Preparers**

Wendy Johnston, VESTRA Resources, Inc., applicant

## 5.0 Distribution List

**Federal Agencies**

None

**State Agencies**

Caltrans District 4
Department of Conservation
Department of Fish and Wildlife
Central Valley Regional Water Quality Board

**Regional Agencies**

Yolo Solano Air Quality Management District

**Local Agencies**

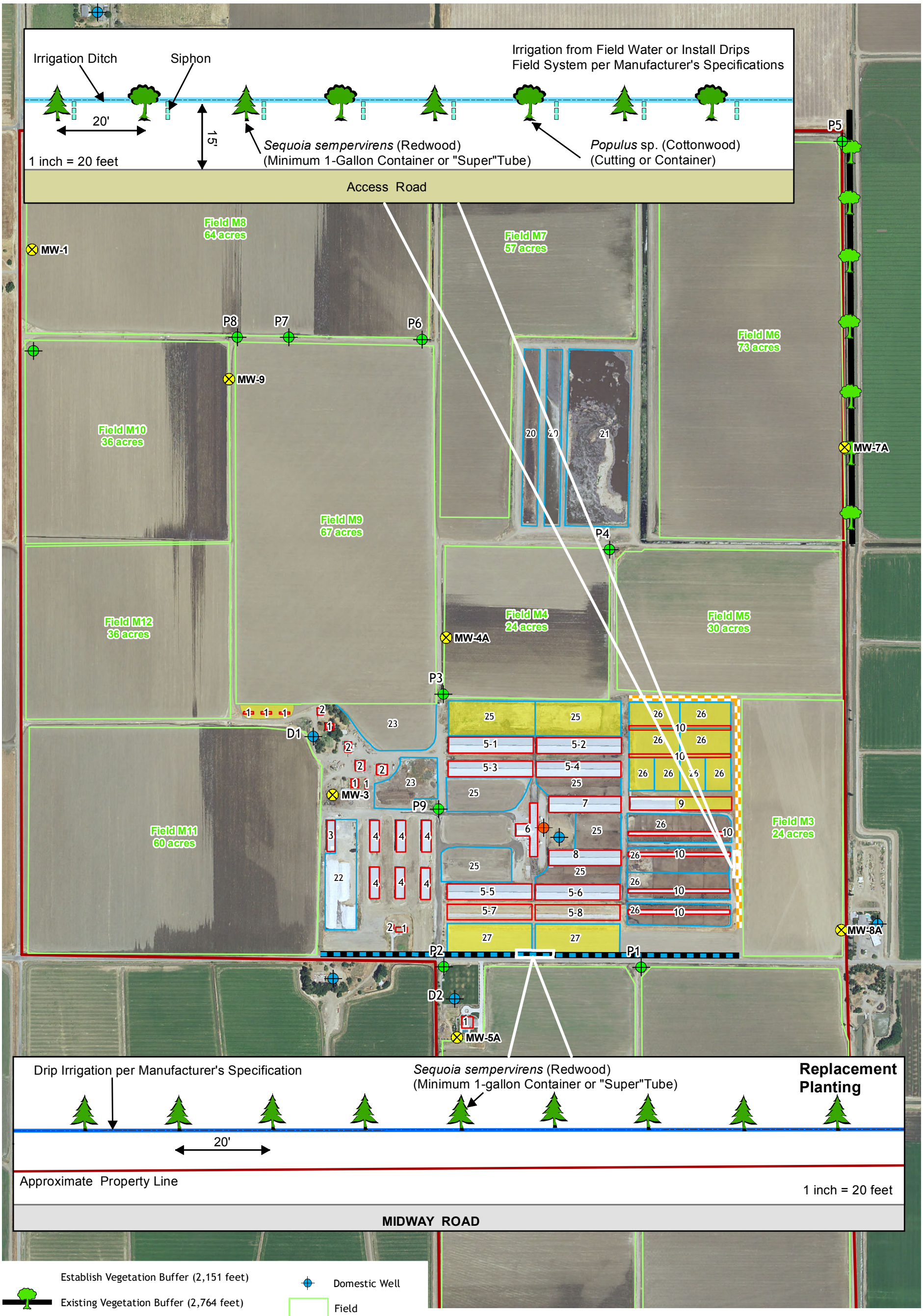
Solano County Agricultural Commissioner
City of Dixon

# 6.0 Appendices

## 6.1 Appendix A - AQMD Vegetative Environmental Buffer Plan

Appendix A

# Vegetative Environmental Buffer Plan




VESTRA

SOURCE: 2014 NAIP AERIAL PHOTOGRAPH

FIGURE 4
**PROPOSED WINDBREAK AND VEGETATIVE ENVIRONMENTAL BUFFER**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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VESTRA

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GIS, Environmental, & Engineering Services

September 8, 2017

71328

Mr. Kyle Rohlfing
Yolo-Solano AQMD
1947 Galilea Court, Suite 103
Davis, CA 95618

***Via Email***
***krohlfing@ysaqmd.org***

**RE: Proposed Vegetative Buffer for Dust Mitigation**
**HD Ranch**
**Dixon, California**

Dear Mr. Rohlfing:

In order to respond to District concerns regarding $PM_{10}$ emissions, HD Ranch proposes the following vegetative buffer for mitigation of dust emissions resulting from the addition of heifer corrals. The plan provides for the reconstruction of the original visual buffer along Midway Road and an additional Vegetative Environmental Buffer (VEB) on the east end and along a portion of the north side of the proposed new heifer corrals. These two vegetative buffers should result in reduced dust impacts from the site.

## Introduction

The current HD Ranch Use Permit (U-01-06) allows the existing dairy facility consisting of 3,000 head of milking cattle and 3,000 head of support stock (6,582 animal units) and the structures listed in Table 1. Site location is shown on Figure 1. Current and proposed layout is shown on Figure 2.

The proposed Use Permit Amendment covers the conversion from Holstein to Jersey cattle, addition of employee housing, extending the calf barn, and construction of additional heifer corrals.

Generally, the Jersey is considered to be a more efficient producer of milk destined for processing (such as cheese). Because of their smaller size and weight (1,000 pounds versus 1,400 pounds/cow average), they produce proportionally less waste. In general, the Jersey produces 71 percent of the waste of a Holstein cow (Tulare RMA, 2013). This is further supported by numerous studies that show decreases in feces of 30 to 35 percent and urine waste of 28 percent for Jerseys over Holsteins (Knowlton, 2010). Overall, water usage is reduced by 32 percent and greenhouse gas (GHG) emissions are reduced by 20 percent per pound of cheese produced due to the use of Jersey versus Holstein cattle (Capper, 2010). The conversion to Jersey cattle will result in a more profitable and environmentally sustainable operation. The total animal units do not change.

Current and proposed cattle numbers are shown in Table 2. Animal units are calculated based on the 1,000-pound base animal.

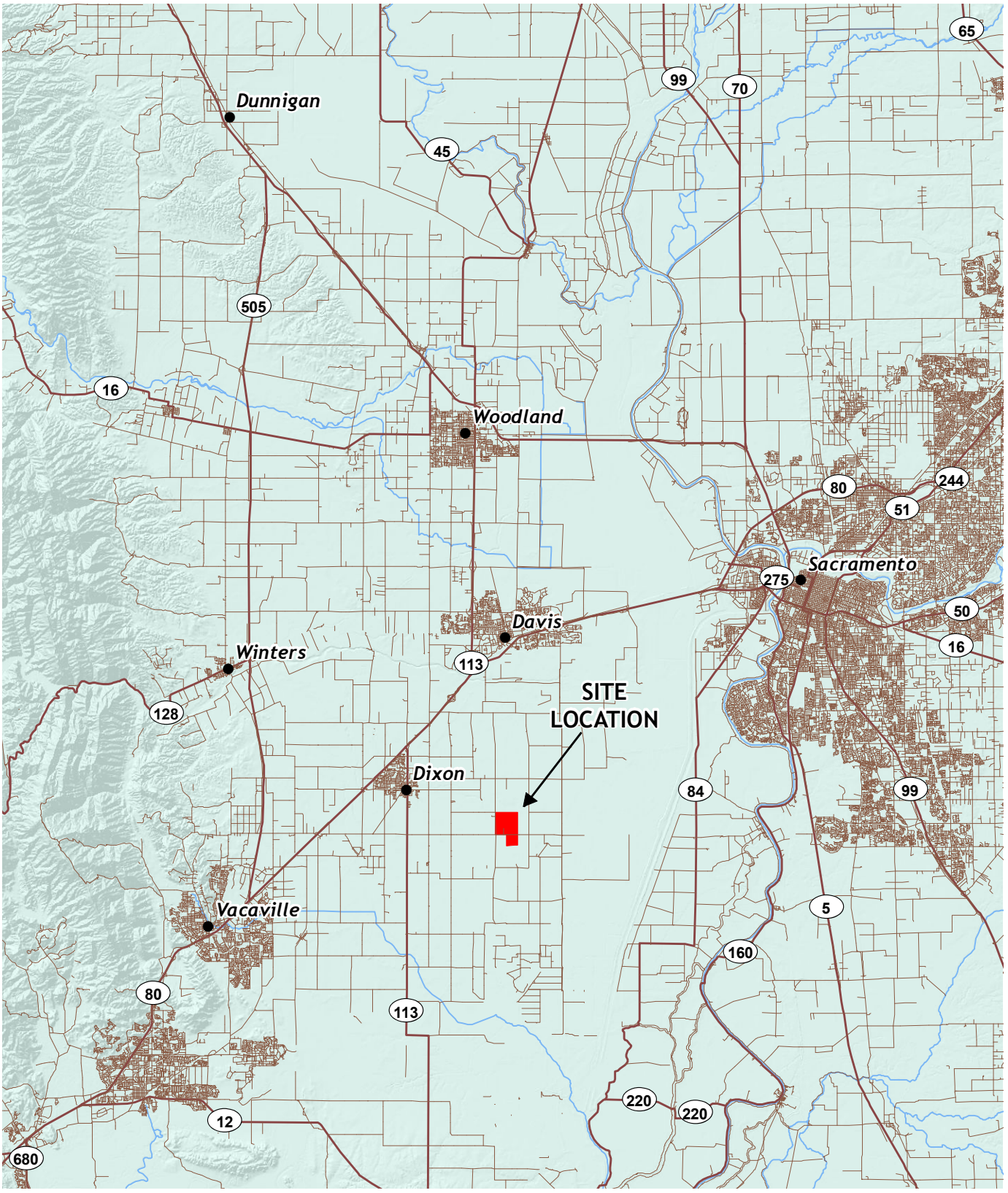


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FIGURE 1
**GENERAL SITE LOCATION**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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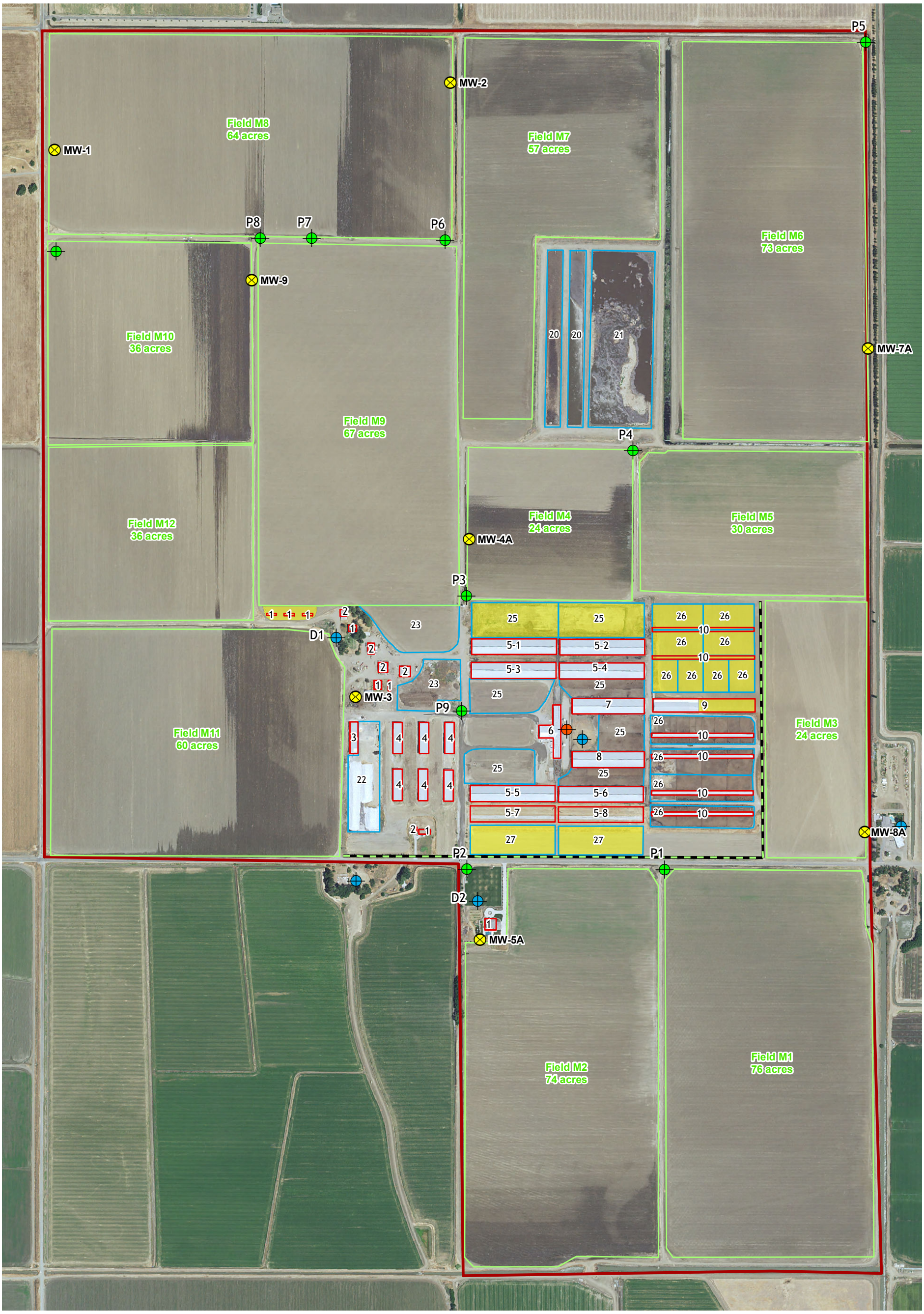


Monitoring Well Location
Barn Well
Irrigation Well
Domestic Well

Re-Establish Vegetation Buffer
Field
Property Boundary
Buildings
Property Features
Proposed New Feature

1 - House
2 - Shop
3 - Commodity Barn
4 - Hay Barn
5-# - Freestall Barn
6 - Milk Parlor
7 - Heifer Barn
8 - Fresh/Hospital Barn
9 - Calf Hutches
10 - Corral Shade
20 - Settling Pond
21 - Lagoon
22 - Silage Slab
23 - Bedding/Manure
24 - Beef Pen
25 - Exercise Pen
26 - Corral
27 - Grazing Pen

0 300 600 1,200 Feet

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SOURCE: 2014 NAIP AERIAL PHOTOGRAPH

FIGURE 2
**SITE PLAN**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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| Table 1<br>CURRENT BUILDINGS AND APPURTENANCES | |
|---|---|
| **Structure** | **Size (ft)** |
| Milk Barn | 477 x 48 |
| Scale/Office | 80 x 12 |
| Maternity/Hospital Barn | 400 x 100 |
| Heifer Corral 1 | 640 x 330 |
| Heifer Corral 2 | 640 x 330 |
| Close-up Heifer Barn | 400 x 100 |
| Freestall Barn 1 | 440 x 100 |
| Freestall Barn 2 | 440 x 100 |
| Freestall Barn 3 | 440 x 100 |
| Freestall Barn 4 | 440 x 100 |
| Freestall Barn 5 | 440 x 100 |
| Freestall Barn 6 | 440 x 100 |
| Freestall Barn 7 (permitted, not constructed) | 440 x 100 |
| Freestall Barn 8 (permitted, not constructed) | 440 x 100 |
| Calf Pen Area | 300 x 100 |
| Commodity Barn | 150 x 50 |
| Hay Barn 1 | 200 x 60 |
| Hay Barn 2 | 200 x 60 |
| Hay Barn 3 | 200 x 60 |
| Hay Barn 4 | 200 x 60 |
| Hay Barn 5 | 200 x 60 |
| Hay Barn 6 | 200 x 60 |
| Concrete Silage Storage Slab | 488 x 250 |
| Settling Pond 1 | 1,125 x 100 |
| Settling Pond 2 | 1,125 x 100 |
| Wastewater Lagoon | 1,125 x 400 |

| Table 2<br>CURRENT/PROPOSED CATTLE | | | |
|---|---|---|---|
| **Cattle** | **Original Permit No. of Cattle** | **Original Permit Animal Units[1]** | **Proposed Animal Units[2]** |
| Milk Cows | 3,000 | 4,200 | 3,400 |
| Dry Cows | 500 | 566 | 650 |
| Bred Heifers 15-24 mos. | 1,250 | 1,275 | 1,451 |
| Heifers 7-14 mos. | 925 | 453 | 761 |
| Calves 4-6 mos. | 150 | 40 | 229 |
| Calves 0-3 mos. | 175 | 48 | 91 |
| Total | 6,000 | 6,582 | 6,582 |

[1] = Holstein cattle
[2] = Jersey cattle

Proposed changes at the site will be phased. These are summarized below and included on Figure 2.

**Phase 1**

- Extension of the calf barn to the end of the heifer corrals for 350 additional hutches. The additional hutches will not be under a barn, but will be open and have a flush lane beneath them as do the current hutches.
- The addition of heifer corrals on the north side of the calf barn (see No. 26 on Figure 2) and along the north side of the current freestall barns. These will be sloped (3 percent) and compacted to meet the County standards in Section 27. They will generally be scraped twice a month in the summer and as accessible in the winter. The heifer corrals will be sloped to drain to the waste management system.

**Phase 2**

- Construct Freestall Barns 7 and 8 (already approved under the current CUP) on the south side of the existing barn along Midway Road. These barns will house approximately 500 additional Jersey lactating cows and an additional 250 dry cows and 250 heifers.
- Add pasture feed pens to Freestall Barns 7 and 8 (proposed).
- Addition of a total of three worker housing units (two of which were approved under administrative permit in 2017).

All buildings, corrals, shades, flush lanes, feed lanes will be built in a similar style and with the same directional flow to all existing buildings and corrals.

The Yolo-Solano AQMD has requested mitigation for $PM_{10}$ emissions from the facility. Research has demonstrated that VEB barriers can impede, alter, absorb, and/or dissipate both odor and dust emissions from agricultural operations such as confined feeding operations. As air moves across vegetative surfaces, leaves and other aerial plant surfaces remove some of the dust, gas, and microbial constituents of airstreams. Trees and other woody vegetation are among the most efficient natural filtering structures in a landscape, in part due to the very large total surface area of leafy plants, often exceeding the surface area of the soil containing those plants upwards of several hundred-fold. Additionally, VEBs can improve the visual perception of a facility.

Vegetative Environmental Buffers (VEBs) have been shown to incrementally mitigate odors and particulates, including ammonia, through a complex of dynamics. Among the most important of these dynamics are:

- Enhancement of vertical atmospheric mixing through forced mechanical turbulence – leading to enhanced dilution and dispersion;
- Filtration through particulate interception and retention – capturing particulates also captures odors;

- Odor/particulate fallout due to gravitational forces enhanced by reduced wind speed;
- Improved producer/community relations by using highly visible odor management technology.

As a dust mitigation technology, VEBs have a number of advantages over other approaches. This technology is useful for all sources of agriculture-related impacts and is adaptable to the landscape, allowing for different system designs. There is evidence that the presence of trees in agricultural landscapes has socio-aesthetic benefits that most other odor and dust mitigation technologies lack. A proper VEB can serve as a visual screen and a dust and odor filter. In addition, VEBs may be the only mitigation technology that can increase in effectiveness over time. As the trees of a VEB system grow larger and more morphologically complex, their ability to mitigate dust and odors through particulate filtration and increased landscape turbulence can become increasingly efficient.

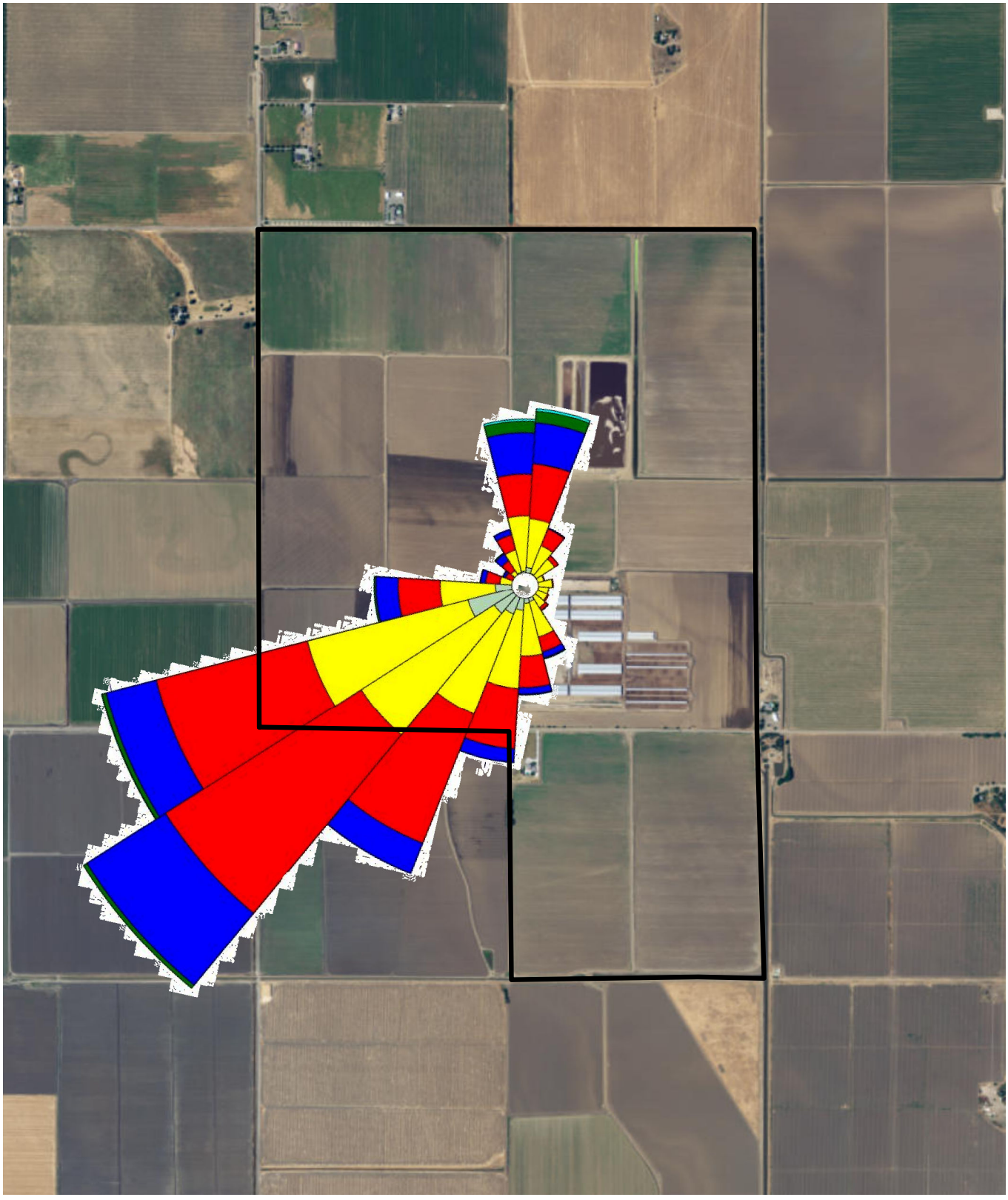
## Implementation

The plan includes the reconstruction of the original visual vegetative buffer along Midway Road. This will be a single row planting of evergreen trees.

The prevailing wind directions for the site are shown on Figure 3. Based on the prevailing wind direction and District request for $PM_{10}$ mitigation, the VEB along the heifer corrals will include the planting of a wind barrier located along the eastern fenceline of the new and existing heifer corrals and extending around the edge of the north side (see Figure 4). A mix of coniferous and deciduous trees will be planted. The mix is designed to have a variety of leaf sizes and shape, as well as texture, to maximize entrapment of particulate. The diversity of species will also mitigate loss or destruction of the windbreak if insects or diseases occur on certain species. Coniferous and deciduous trees will be mixed in the same row. The species were selected for rapid growth and their ability to sustain the high summer temperatures of the Solano County area.

**Deciduous Tree**
Cottonwood (*Populus* ssp.) will compose the deciduous tree row of the windbreak. These native, fast-growing trees thrive in full sun exposure and are resistant to disease. Cottonwoods have a high growth rate of up to 24 inches per year, and can reach heights of 40 to 50 feet and widths of 20 to 30 feet.

**Evergreen Conifer**
Redwoods (*Sequoia sempervirens*) will also be planted in the tree row. These are large trees that can reach 50 feet in height in just 20 years. With proper spacing, they will have a full canopy and reach 30 feet in width. The hybrid commercial plantings of this species are also highly immune to pests and disease. Redwoods are an adaptable landscape plant, but they require a lot of moisture. These species were selected because they are fast-growing and do well in areas of high sun exposure.



HD Ranch Boundary

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SOURCE: 2016 NAIP AERIAL PHOTOGRAPH;
YOLO/SOLANO AQMD, NUT TREE STATION 93241

0 750 1,500 3,000 Feet

FIGURE 3
**PREVAILING WIND DIRECTION**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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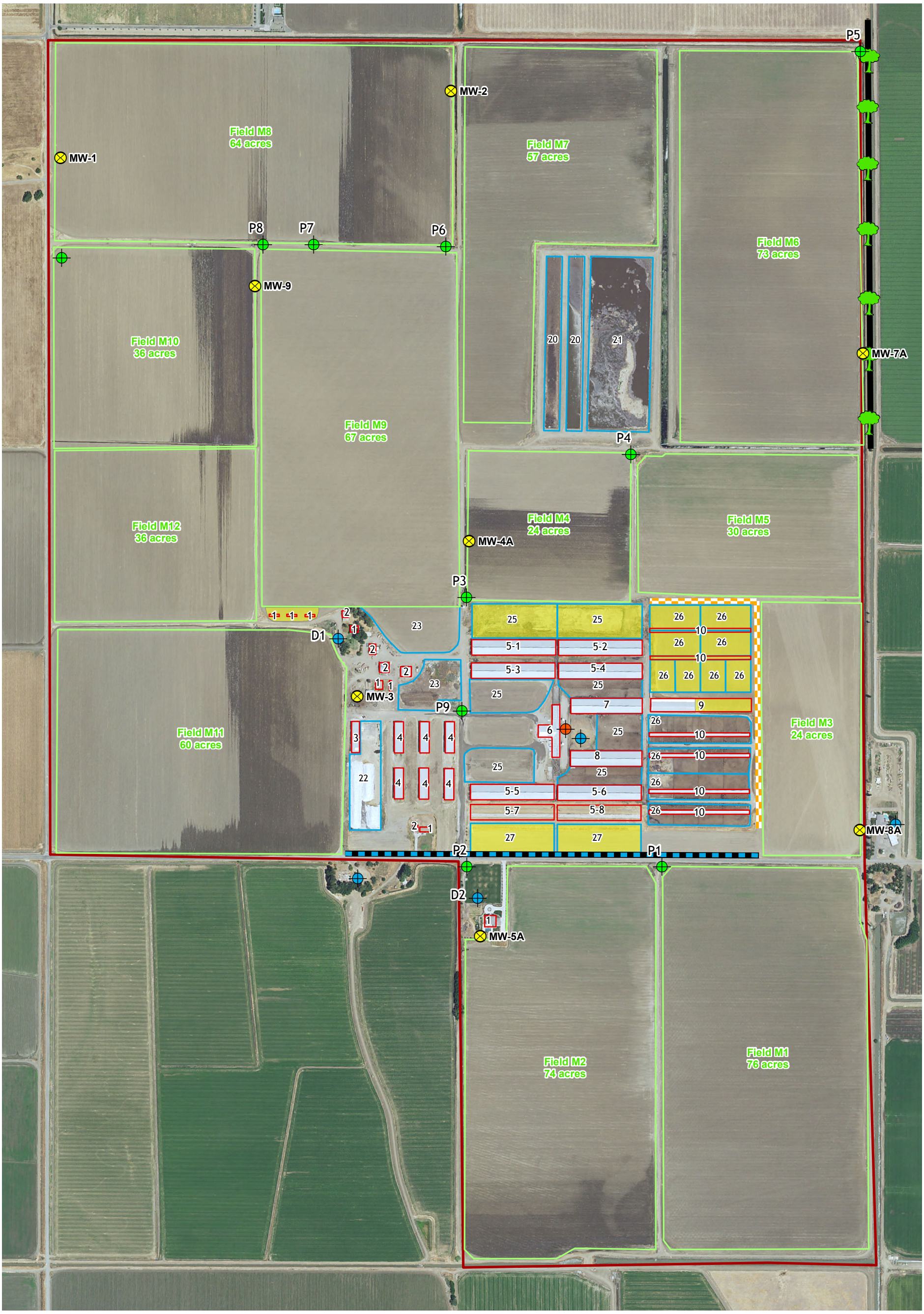


FIGURE 4
**PROPOSED WINDBREAK AND VEGETATIVE ENVIRONMENTAL BUFFER**
HD RANCH
SOLANO COUNTY, CALIFORNIA

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SOURCE: 2014 NAIP AERIAL PHOTOGRAPH

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The trees will be planted at a spacing of 20 feet. This spacing will provide enough area for the trees to grow unhindered and healthy, but will also provide sufficient vegetative density to create the desired atmospheric turbulence and visual and particulate buffer. All trees and shrubs will be irrigated to meet moisture requirements during the dry summer months.

Please call me with questions at (530) 223-2585.

Sincerely,

**VESTRA Resources, Inc.**

Wendy Johnston
Project Manager

Attachments