Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Feed Mitigation Measures	
Feed according to National Research Council (NRC) guidelines.	Feeding according to the NRC guidelines is a feed formulation practice used to improve animal health and productivity. This typically limits the overfeeding of certain feed that has the potential of increasing emissions. This mitigation measure requires that the NRC guidelines be strictly followed in formulating diets.
Feed animals high moisture corn or steam-flaked corn and not feed animals dry rolled corn	This mitigation measure requires that animals be fed high moisture corn or steam-flaked corn instead of dry rolled corn. This optimizes protein to improve feed efficiency and reduces starch excretions in manure and reduces volatile fatty acids excreted in the manure.
At least once every 14 days remove feed from the area where animals stand to eat feed (concrete feed lanes).	This mitigation measure requires that wasted feed be removed from the concrete feed lanes at least once every 14 days. Regular cleaning of feed from all areas of the facility limits the quantity of time that the feed is onsite, hence decreasing the amount of VOCs emitted.
At least once every 14 days remove spilled feed from the area where equipment travels to place feed in the feed bunk (feed storage and feeding areas).	This mitigation measure requires that spilled feed be removed at least once every 14 days from all areas where feed trucks or other equipment travel.
Remove uneaten wet feed from feed bunks within twenty-four hours of a rain event.	This mitigation measure requires that uneaten feed be removed from the feed bunks within twenty-four hours of a rain event.
Feed or dispose of rations within 48 hours of grinding and mixing rations.	This mitigation measure requires that all rations that have been mixed or ground be fed to the animals or disposed of within 48 hours.
Store grain in a weatherproof storage structure from October through May.	This mitigation measure requires that grain should be stored in a weatherproof storage structure from October through May. There are various options for covering silage and grain. These include, but are not limited to: covered commodity barns, silos, tarps, and bags.
Cover the horizontal surface of silage piles, except for the area where feed is being removed from the pile.	This mitigation measure requires that silage piles be completely covered except for the face of the pile. There are various options for covering silage. These include, but are not limited to: silos, tarps, and bags.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Collect leachate from the silage piles and transfer it to a waste treatment system such as a lagoon at least once every 24 hours.	This mitigation measure requires that silage piles be placed in a manner where the leachate from the pile can be collected and transfered to a treatment system or the lagoons/storage ponds. The leachate should be sent to the treatment system at least once every 24 hours.
Enclose silage in a bag and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%. (Please note: Source testing per Section 7.2 of Rule 4570 will be required.)	This mitigation measure requires that silage piles be fully enclosed inside of a bag and the gases collected be vented to a VOC control device which has a combined VOC capture and control efficiency of at least 80%. There are various options for controlling the collected gas. These include, but are not limited to, biofilters, digesters, oxidizers. If this mitigation measure is chosen, source testing will be required to demonstrate the required control efficiency.
Enclose silage in a weatherproof structure and vent to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%. (Please note: Source testing per Section 7.2 of Rule 4570 will be required.)	This mitigation measure requires that silage piles be fully enclosed inside of a weatherproof structure and the collected gases be vented to a VOC control device which has a combined VOC capture and control efficiency of at least 80%. A weatherproof structure is a covering, such as a building or tarp, constructed, installed, maintained, and operated such that the material inside or underneath the covering is not moved or moistened by weather conditions outside of the covering including, but not limited, to wind and rain. There are various options for controlling the collected gas. These include, but are not limited to, biofilters, digesters, oxidizers. If this mitigation measure is chosen, source testing will be required to demonstrate the required control efficiency.
Eliminate silage from animal diet	Fermenting processes, such as the process used to produce silage, emit large amounts of VOC. Substituting unfermented feed (grain, dry hay) for fermented feed (silage) would reduce VOC emissions. This mitigation measure requires that silage be removed from the animal diet.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Milking Parlor Mitigation Measures	
Flush or hose milk parlor immediately prior to, immediately after, or during each milking	This mitigation measure requires that the milk parlor floor be flushed or hosed down immediately prior to, after, or during each milking.
Enclose and vent the milk parlor to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80% when animals are in the parlor	This mitigation measure requires that the milk parlor be designed to be fully enclosed and the gases be vented to a VOC control device with an overall capture and control efficiency of at least 80%. Plastic "curtains" similar to those used in poultry houses, in addition to traditional wall material, have been used for enclosures.
Freestall Barn	
Vacuum or scrape freestall flush lanes immediately prior to, immediately after, or during each milking.	This mitigation measure requires that concrete feed lanes be vacuumed or flushed immediately prior to, after, or during each milking.
Inspect water pipes and troughs and repair leaks at least once every 14 days.	This mitigation measure requires that water pipes and water troughs be inspected for leaks at least once every 14 days. The leaks should be repaired within 14 days.
Use non-animal waste-based bedding and non-separated solids based bedding for at least 90% of the bedding material, by weight, for freestalls (e.g. rubber mats, almond hulls, sand, or waterbeds).	This mitigation measure requires that at least 90% by weight of the bedding material consist of non-animal waste and non-separated solids. Rubber mats, almond hulls, sand, or water beds are good examples of non-animal waste and non-separated solids.
Remove animal waste that is not dry from individual cow freestall beds at least once every 14 days.	This mitigation measure requires that wet or moist animal waste be removed from each individual cow freestall bed at least once every 14 days.
Groom (rake, harrow, scrape, or grade) bedding in freestalls at least once every 14 days.	This mitigation measure requires that bedding in the freestalls be groomed at least once every 14 days by any of the following methods: raked, harrowed, scraped, or graded.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Use a dry animal waste handling system, such as scraping, instead of a liquid animal waste handling system, such as a flush system.	This mitigation measure requires the use of a dry waste handling system and the elimination of a liquid manure management system. The manure at the entire dairy should be scraped, dried immediately and piled. Scraped manure can also be applied to land and disked into the soil, or manure can be sent to a digester. Animal waste can also be vacuumed and dried as long as no additional water or moisture is added to the waste.
Have no animals in exercise pens, corrals, or drylots at any time.	This mitigation measure requires that all animals **only** be housed in freestalls or in calf hutches. At no time should cows have access to exercise pens, corrals, or drylots.
Flush freestalls more frequently than the milking schedule.	This mitigation measure requires that the concrete feed lanes for the milk and dry cows (for both freestalls and open corrals) be flushed more frequently than the milking schedule. If cows are milked twice per day, the concrete feedlanes should be flushed more than two times per day.
Vacuum animal waste instead of flushing or scraping and apply animal waste directly to land either through injection or incorporation within 72 hours of removal from animal housing or vacuum truck.	This mitigation measure requires that the animal waste be vacuumed instead of flushed or scraped. The waste should be directly applied to land either through injection or incorporation (through disking or similar methods) within 72 hours of removal from animal housing or vacuum truck.
Corral Mitigation Measure	
Clean animal waste from corrals at least 4 times per year with at least 60 days between cleaning.	This mitigation measure requires that animal waste from the corrals be removed at least 4 times per year with at least 60 days between cleaning.
Clean corrals at least once between April and July and at least once between October and December.	This mitigation measure requires that animal waste from the corrals be removed at least once between April and July and at least once between October and December.
Clean concreted areas such that the depth of animal waste does not exceed 12 inches at any location or time, except for in-corral mounding.	This mitigation measure requires that the all concrete areas, specifically the concrete feed lanes in both the freestalls and open lots, be cleaned such that the depth of animal waste does not exceed 12 inches at any one location or time. The mounding in the corrals does not need to be removed.
Maintain corrals to ensure drainage and prevent water from standing more than 48 hours after a storm.	This mitigation measure requires that the corrals be properly maintained with the necessary slope to ensure drainage and to prevent water from standing for more than 48 hours after a storm.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Maintain corrals and drylots so that there are no indentions in the surface where puddles may form and remain for more than 48 hours	This mitigation measure requires that the corrals and drylots be properly maintained so that there are no indentions on the surface. If indentions are found, they should be covered and smoothed with top soil to prevent puddles from forming and lingering for more than 48 hours.
Install no shade structures in the corrals.	This mitigation measure requires that no shade structures exist or be installed inside the corrals.
Install shade structures constructed with a light permeable roofing material.	This mitigation measure requires that only shade structures with a light permeable roof material be constructed. Shade structures with impermeable covers, such as metal coverings will not be considered a mitigation measure.
Install all shade structures uphill of any slope in the corral	This mitigation measure requires that shade structures are placed uphill of any slope in the corral.
Use lime or a similar absorbent material in the pens according to the manufacturer's recommendations to minimize moisture in the pens.	This mitigation measure requires that lime or a similar absorbent material be applied to the entire corral so that the moisture in the corral is minimized. Lime or a similar absorbent material should be replaced as necessary to maintain low moisture in the corrals.
Apply thymol to corral soil in accordance with the manufacturer's recommendation.	Thymol is plant oil derived from thyme. Thymol causes the pH of the manure to drop more rapidly, inhibiting microbial activity and air emissions. This mitigation measure requires that thymol be applied to the soil in accordance with the manufacturer's recommendation. The manufacturer's recommendations should be provided to the District as part of the mitigation plan.
Manage corrals such that the animal waste depth in the corral does not exceed 12 inches at any location or time, except for in-corral mounding.	This mitigation measure requires that animal waste in the corrals be removed such that the depth of the animal waste does not exceed 12 inches at any one location or time. The mounding in the corrals does not need to be removed.
Knockdown fence line animal waste build-up prior to it exceeding a height of 12 inches at any location or time.	This mitigation measure requires that animal waste that is built up around the fence line be removed prior to the height exceeding 12 inches at any location or time.
Scrape or flush feed aprons in corrals at least once every seven (7) days.	This mitigation measure requires that concrete feed lanes for the heifers be scraped or flushed at least once every seven (7) days.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Slope the surface of the pens at least 3% where the available space for each animal is 400 square feet or less. Slope the surface of the pens at least 1.5% where the available space for each animal is more than 400 square feet per animal.	This mitigation measure requires that the corrals/pens be sloped at least 3% where the available space for each animal is 400 square feet or less and at least 1.5% where the available space for each animal is more than 400 square feet per animal.
Install floats on the troughs or use another method approved by the APCO, ARB, and EPA to ensure that the water in the troughs does not overflow or spill onto an earthen surface.	This mitigation measure requires that the troughs have floats or other similar devices approved by the APCO, ARB, and EPA. This will ensure that the water in the troughs does not overflow or spill onto an earthen surface.
Inspect water pipes and troughs and repair leaks at least once every 14 days.	This mitigation measure requires that the water pipes and water troughs be inspected for leaks at least once every 14 days. All leaks should be repaired within the 14 day period.
Harrow, rake, or scrape pens to maintain a dry surface.	This mitigation measure requires that the corrals/pens be harrowed, raked, or scraped as needed to maintain a dry surface.
House animals in an enclosure vented to a VOC control device with a combined VOC capture and VOC control efficiency of at least 80%.	This mitigation measure requires that the cow housing be designed to be fully enclosed and the gases be vented to a VOC control device with an overall capture and control efficiency of at least 80%. Plastic "curtains" similar to those used in poultry houses, in addition to traditional wall material, have been used for enclosures.
Solid Waste Mitigation Measure	
Remove separated solids from the facility within 72 hours of separation with a solid separation system.	This mitigation measure requires that the separated solids from the facility be removed within 72 hours after exiting the separation system.
Store no separated solids outside of anaerobic digesters or aerobic digesters.	This mitigation measure requires that separated solids be immediately removed from the facility or controlled by a control device (anaerobic digester, aerobic digester, covered with gas vented to biofilter, etc). At no time should there be a pile of separated solids at the facility except for the pile formed from the mechanical separator.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Cover dry animal waste piles outside the pens with a weatherproof covering from October through May, except for times, not to exceed 24 hours per event, when wind events remove the covering.	This mitigation measure requires that the dry animal waste piles outside of the pens be covered with a weatherproof covering from October through May, except for times when wind events remove the covering. These piles should not be left uncovered for more than 24 hours after a wind event.
Cover dry separated solids outside the pens with a weatherproof covering from October through May, except for times, not to exceed 24 hours per event, when wind events remove the covering.	This mitigation measure requires that the dry separated solids piles outside of the pens be covered with a weatherproof covering from October through May, except for times when wind events remove the covering. These piles should not be left uncovered for more than 24 hours after a wind event.
Remove animal waste from the facility within 72 hours of removal from the pens or corrals.	This mitigation measure requires that the animal waste from the facility be removed within 72 hours of removal from the open corrals/pens.
Compost animal waste removed from pens with an aerated static pile vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.	This mitigation measure requires that the animal waste from the facility be composted by an Aerated Static Pile (ASP) system. An ASP composting system consists of a series of blowers and perforated piping underneath the piles which mechanically aerate (provide an oxygen supply to) the compost piles. An ASP system encloses the compost mix in a bag, vessel, or structure and then mechanically aerates the mixture. In all the systems, the captured air should be vented to a secondary control device with an overall capture and control efficiency of at least 80%.
Store all animal waste removed from animal housing areas in an enclosure vented to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.	This mitigation measure requires that the animal waste from the facility be stored in some sort of enclosure (building, bags, etc.) and the gases be vented to a control device with an overall capture and control efficiency of at least 80%.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Send at least 51% of the animal waste removed from animal housing to a digester, with a VOC control device with an overall VOC capture and control efficiency of at least 80%.	This mitigation measure requires that at least 51% of the animal waste from the cow housing areas be sent to an anaerobic digester. The digester should be designed to achieve an overall VOC capture and control efficiency of at least 80%.
Liquid Waste Mitigation Measures	
Use a phototropic lagoon. (Please note: Testing per Section 7.2 of Rule 4570 will be required.)	This mitigation measure requires that the liquid manure handling systems be designed to produce phototropic bacteria in the lagoons/storage ponds. A phototropic lagoon is defined in Rule 4570 as a lagoon where at least 10% of the bacteria in the lagoon are photosynthetic bacterium; the bacteriochlorophyll a concentration is above 1081µg/L; or that is designed, constructed, maintained, and operated according to other standards approved by the APCO, ARB, and EPA. If this mitigation measure is chosen, testing of the lagoon will be required to demonstrate the required bacteriochlorophyll concentration.
Use an anaerobic treatment lagoon designed in accordance with the NRCS Guideline (359). (Please note: Testing per Section 7.2 of Rule 4570 will be required.)	This mitigation measure requires that the lagoons/storage ponds be designed as an anaerobic treatment lagoon system. An anaerobic treatment lagoon is a lagoon designed, constructed, maintained, and operated in accordance with the standards for anaerobic lagoons in the Natural Resources Conservation Service (NRCS) California Field Office Technical Guide Code 359 or other applicable standards approved by the APCO, ARB, and EPA. If this mitigation measure is chosen, testing of the lagoon will be required to demonstrate that the system is designed correctly.
Use an aerobic lagoon. (Please note: Testing per Section 7.2 of Rule 4570 will be required.)	This mitigation measure requires that the lagoon be designed as an aerobic lagoon. In this system, sufficient concentration of dissolved oxygen should be maintained to enable aerobic digestion to occur. Aerobic digestion is the decomposition of organic compounds by microbes in an oxygen-rich environment. The microbes reduce the organic compounds in the waste to carbon dioxide, water, nitrates, sulfates, and biomass (sludge). If this mitigation measure is chosen, testing of the lagoon will be required to demonstrate that the Dissolved Oxygen content in the lagoon is sufficient to be considered an aerobic system.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Use a mechanically aerated lagoon (aerators). (Please note: Testing per Section 7.2 of Rule 4570 will be required.)	This mitigation measure requires that the lagoons/storage ponds be designed in accordance with the NRCS Guideline 359 for mechanically aerated lagoons. Please provide the details of this system demonstrating that it is designed in accordance to NRCS Guideline 359. If this mitigation measure is chosen, testing of the lagoon will be required to demonstrate that the lagoon is properly designed.
Manage the facility such that there are no lagoons at the facility.	This mitigation measure requires that there be no lagoons/storage ponds at the facility. Lagoons are defined as a basin constructed, maintained, and operated to store and treat animal waste. This does not include basins primarily used to collect runoff and storm water.
Remove solids from the waste system with a solid separator system, prior to the waste entering the lagoon.	This mitigation measure requires that solids separators be used prior to the animal waste entering the lagoons/storage ponds to reduce the loading into the lagoon. Mechanical separators, settling basins, and weeping walls are considered solids separating systems.
Maintain lagoon pH between 6.5 and 7.5. (Please note: Testing per Section 7.2 of Rule 4570 will be required.)	This mitigation measure requires that the pH in the lagoon be maintained between 6.5 and 7.5. If this mitigation measure is chosen, testing of the lagoon will be required to demonstrate that the pH in the lagoon is within this range.
Maintain organic loading in the lagoon such that the total solids are less than 3.5 mg/mL on a dry weight basis, or total volatile solids are less than 3.5 mg/mL.	This mitigation measure requires that the organic loading in the lagoon be maintained such that the total solids are less than 3.5 mg/mL (dry weight basis) or the total volatile solids are less than 3.5 mg/mL. If this mitigation measure is chosen, testing of the lagoon will be required to demonstrate that the organic loading in the lagoon is within this range.
Use additional non-standard equipment or chemicals on the solids separator system, such as a roller, screw press, or chemical coagulants and flocculants that increase the percent of solid separation achieved by the separator and that is approved by the APCO, ARB, and EPA.	This mitigation measure requires that the solids separation efficiency of the separation system be increased so that more solids are removed prior to the animal waste entering the lagoons/storage ponds. The solids separation efficiency can be increased by adding chemical coagulants and flocculants, or adding additional equipment such as screw or roller presses, finer screens or additional screens.

Rule 4570 - Description of Mitigation Measures

Mitigation Measures	Description
Cover the lagoon or storage pond and vent to a VOC control device with an overall VOC capture and VOC control efficiency of at least 80%.	This mitigation measure requires that the primary lagoon be covered and the biogas vented to a VOC control device (IC Engine, Flare, etc) which can achieve an overall capture and control efficiency of at least 80%.
Land Application Mitigation Measures	
Allow liquid animal waste to stand in the fields no more than 24 hours after irrigation.	This mitigation measure restricts the liquid animal waste from standing in the fields to no more than 24 hours.
Apply no liquid animal waste.	This mitigation measure requires that the application of liquid animal waste to cropland be discontinued.
Apply no solid animal waste with a moisture content of more than 50%.	This mitigation measure requires that the application of solid waste with a moisture content of more than 50% to cropland be discontinued.
Apply no solid animal waste.	This mitigation measure requires that the application of solid animal waste to cropland be discontinued.
Incorporate all solid animal waste into cropland within 72 hours of removal from animal housing.	This mitigation measure requires that all animal waste be incorporated into the soil within 72 hours of removal from the animal housing.
Only apply solid or liquid animal waste that has been treated in an anaerobic or aerobic lagoon or digester system.	This mitigation measure requires that both the solid and liquid animal waste be applied to land after it has been treated in an anaerobic treatment lagoon (designed to the NRCS Guideline), an aerobic lagoon, or an anaerobic digester.