# 4.8 HUMAN HEALTH / RISK OF UPSET

# 4.8 HUMAN HEALTH/RISK OF UPSET

This section evaluates potential public health and environmental risks associated with the proposed project, including potential impacts associated with the release of hazardous substances[1] during operation of existing and proposed dairy facilities, the potential exposure of people to harmful substances, the development of adverse conditions related to mosquito and fly breeding, and the potential for release of pathogens associated with dairy manure. Mitigation measures are recommended, as necessary, to reduce significant or potentially significant impacts of the project. The analysis contained in this section is based on information acquired from the General Plan, review of Federal, State, and local regulations, and interviews with County and State regulatory officials.

## SETTING

The proposed project presents goals, objectives, and policies for development of new or expanded dairies within agricultural areas of Kings County. The dominant land use in the proposed Dairy Development Overlay Zones (DDOZs) and Nutrient Spreading Overlay Zones (NSOZs) is irrigated agricultural crop production. Other existing uses include animal confinement facilities for dairy cattle, poultry, sheep, goats, pigs and hogs, and horses. Additional land uses include agricultural crop processing facilities, grain storage facilities, and irrigation water supply canals and reservoirs.

The use and management of chemicals, including hazardous materials, within the agricultural areas of Kings County are dominated by the application of fertilizer and pesticides[2] for crop production. In 1997, commercial fertilizer was applied to 387,592 acres within the County (USDA, undated). Over 5.1 million pounds of pesticides were applied in the County in 1998 (U.C. Davis Integrated Pest Management Program, undated).

Hazardous materials management in agricultural areas also includes storage and use of hydrocarbon fuel. Diesel fuel is used to power mobile farm equipment (e.g., trucks, tractors, combines) and stationary equipment, including irrigation pumps and groundwater well

[1] The California Health and Safety Code defines a hazardous material as, "...any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment." (Health and Safety Code § 25501)

[2] A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling or mitigating insects, rodents, nematodes, fungi, weeds, or other pests.

pumps. Gasoline is also stored at some dairy facilities. Other hazardous materials used at dairies can include chlorine and other disinfectants, oils and lubricants, and antifreeze.

# REGULATORY FRAMEWORK

## HAZARDOUS MATERIALS MANAGEMENT

The use, storage, and disposal of hazardous materials, including management of contaminated soils and groundwater, are regulated by numerous local, State, and Federal laws and regulations. The United States Environmental Protection Agency (U.S. EPA) is the Federal agency that administers hazardous materials and waste regulations. State agencies include the California EPA (Cal EPA), which includes the California Department of Toxic Substances Control (DTSC), the Central Valley Regional Water Quality Control Board (RWQCB), the California Air Resources Board (CARB), and other offices. The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) has jurisdiction over the San Joaquin Valley air basin, which includes Kings County. Local regulatory agencies include the Kings County Department of Environmental Health Services and the Kings County Agricultural Commissioner's Office (KCACO). A description of agency jurisdiction and involvement in management of hazardous materials is provided below.

### *U.S. Environmental Protection Agency*

The U.S. EPA is the Federal agency responsible for enforcement and implementation of Federal laws and regulations pertaining to hazardous materials. The legislation includes the Resource Conservation and Recovery Act of 1986 (RCRA), the Superfund Amendments and Reauthorization Acts of 1986 (SARA), and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The Federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (40 CFR). The U.S. EPA provides oversight and supervision for site investigations and remediation projects, and has developed land disposal restrictions and treatment standards for the disposal of certain hazardous wastes.

### *Department of Toxic Substances Control*

The California Department of Toxic Substances Control works in conjunction with the U.S. EPA to enforce and implement specific laws and regulations pertaining to hazardous wastes. The California legislation, for which DTSC has primary enforcement authority, includes the Hazardous Waste Control Act and the Hazardous Substance Account Act. Most State hazardous waste regulations are contained in Title 22 of the California Code of Regulations (CCR). The California Department of Toxic Substances Control generally acts as the lead agency for soil and groundwater cleanup projects, and establishes cleanup and action levels for subsurface contamination that are equal to, or more restrictive than, Federal levels.

### *Central Valley Regional Water Quality Control Board*

The project site is located in the jurisdiction of the Central Valley RWQCB. The RWQCB is authorized by the California Porter-Cologne Water Quality Act of 1969 to implement water quality protection laws. The RWQCB provides oversight for sites where the quality of groundwater or surface waters are threatened, and has the authority to require investigations and remedial actions.

### *California Air Resources Board and San Joaquin Valley Unified Air Pollution Control District*

CARB and SJVUAPCD have joint responsibility for developing and enforcing regulations needed to achieve and maintain State and Federal ambient air quality standards in the San Joaquin Valley air basin, which includes all of Kings, San Joaquin, Stanislaus, Merced, Madera, Fresno, and Tulare counties, and a portion of Kern County. CARB is responsible for enforcing the Clean Air Act and California's State Ambient Air Quality Standards. SJVUAPCD is responsible for regulating air emissions from stationary sources, monitoring air quality, and reviewing air quality issues in environmental documents.

## LOCAL HAZARDOUS MATERIALS MANAGEMENT

The primary agencies responsible for local enforcement of State and Federal laws and regulations controlling hazardous materials management include the Kings County Environmental Health Services (KCEHS) agency. The KCEHS is a Certified Unified Program Agency (CUPA), the local agency responsible for coordination of hazardous waste generator programs, underground fuel tank management, and tiered permitting process for waste treatment. The KCEHS is also responsible for regulation of small water systems. Permitting of on-site sewage disposal systems is the responsibility of the Kings County Building Department. In general, most dairies would not meet the definition of a public water system (greater than five connections or more than 25 people served more than 60 days per year) and therefore would not be regulated by the California Department of Health Services, but rather would be regulated by the local health officer, in this case KCEHS (Tucker, 1999).

The KCEHS has contracted with the Tulare County Health and Human Services Agency, Environmental Health Division, Milk Inspection Service (Tulare County) to implement the dairy/milk inspection program. Tulare County conducts six inspections annually, checking milk houses, milking barns, corrals, and other areas at each dairy for cleanliness and fly infestation. In addition, Tulare County collects and analyzes water samples for biological contamination (coliform) from water supply wells on an annual basis. If coliform is detected in a supply well, the dairy operator is notified and instructed to treat the well and system with chlorine to disinfect the well (Johnson, 1999).

The Kings County Planning Department reviews applications for aboveground storage tanks (ASTs) in conjunction with zoning and building permits in the County. The plans for ASTs are reviewed by the Fire Department for conformance with the Uniform Fire Code. The KCACO issues pesticide use permits and collects information on agricultural (e.g., farmland) sites handling hazardous materials.

### WORKER HEALTH AND SAFETY

Worker health and safety is regulated at the Federal level by the Federal Department of Industrial Relations. Under this jurisdiction, workers at hazardous waste sites must receive specialized training and medical surveillance according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations (29 CFR Section 1210.120). Additional regulations have been developed for construction workers potentially exposed to lead (29 CFR Section 1926.62) and asbestos (29 CFR Section 1926.1101). The U.S. EPA administers Federal regulations for the protection of agricultural workers involved in pesticide use (40 CFR).

Worker health and safety in California is regulated by the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal OSHA). California standards for workers dealing with hazardous materials are contained in CCR Title 8 and include practices for all industries (General Industry Safety Orders), and specific practices for construction, and hazardous waste operations and emergency response. Cal OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices. State regulations pertaining to agricultural workers potentially exposed to pesticides (CCR Title 3) are administered by the California Department of Pesticide Regulations (Cal DPR), and are generally enforced by KCACO. These agencies also administer programs for the licensing of pesticide applicators and permitting of application of restricted use agricultural chemicals.

## PEST CONTROL

The control of mosquito populations in Kings County is the responsibility of two active mosquito abatement districts, which are public agencies funded by property taxes. The Consolidated Mosquito Abatement District (CMAD) includes a relatively small area in the northeastern portion of the County. The Kings Mosquito Abatement District (KMAD) encompasses most of the northern and central portions of the County, including the areas surrounding Corcoran. The mission of the abatement districts is to suppress the population of mosquitoes to minimize the potential transmission of disease and reduce annoyance caused by these insects. As discussed above, dairy process water ponds can provide habitat for mosquito breeding and larval development. In addition, standing water within dairies and in associated agricultural fields can also provide mosquito habitat.

The KMAD recognizes the potential for mosquito habitat and infestation at dairy facilities and has developed mosquito control requirements for dairy process water management. These requirements are attached as conditions for dairy permits in Kings County, including facilities outside the boundaries of the KMAD. The requirements restrict the width of process water holding ponds and manure separation pits to ensure that all areas of these facilities can be treated for mosquito control, if necessary. The KMAD also requires that ponds be constructed with relatively steep slopes to minimize shallow water environments at the edges of the ponds. Additional requirements include adequate access for mosquito control equipment and removal of vegetation from within and around ponds.

# RELEVANT GOALS, OBJECTIVES, AND POLICIES

The Kings County Draft Dairy Element (Element) (Appendix A) specifically addresses the control of hazards and risk of upset. This policy supports conformance at dairy facilities with all applicable laws and regulations controlling the management of hazardous materials discussed above. The Element also contains other goals, objectives, and policies that would reduce potential risks to public health and the environment. The requirements for comprehensive nutrient management (**Goal DE 4**) help control the potential release of pollutants contained in manure and process water to surface and groundwater. Protecting the quality of surface water and groundwater reduces the potential for human contact with pollutants. **Policy DE 4.3b** requires the preparation and implementation of an ~~Integrated~~ Pest and Vector Management Plan (~~IPM~~ PVMP) for new and expanded dairies. Implementation of ~~IPMs~~ PVMPs at dairies would appropriately control insect and rodent pests. Similarly, **Goal DE 5** promotes the protection of air quality in the San Joaquin Valley. Requirements under **Objective DE 5.1** include the preparation and implementation of an Odor Management Plan (OMP) (**Policy DE 5.1b**) and a Manure Treatment Management Plan (MTMP) (**Policy DE 5.1c**). The required OMP and MTMP will promote dairy design and operations that will reduce the potential for insect infestations by controlling the storage, handling, and disposal of manure and process water generated during dairy operations. The potential adverse effects of constructing dairy facility structures above or near abandoned oil or gas wells is addressed by **Objective DE 3.5** and attendant **Policies DE 3.5a and 3.5b**.

# IMPACTS AND MITIGATION MEASURES

## SIGNIFICANCE CRITERIA

The revised CEQA Guidelines include the following specific criteria for identifying when a project would result in significant health or safety hazard impacts:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

- 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;

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-fourth mile of an existing or proposed school;

- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

### Impact 4.8-1

**Workers could be exposed to hazardous materials during dairy operation, resulting in adverse health impacts. This is a less-than-significant impact.**

Hazardous materials would be used for the operation of dairies under the Element and continued agricultural production at the project site. The use of fuel stored in aboveground tanks, lubricants, and cleaning solutions would be required for the operation and maintenance of equipment during and after construction of the dairy facilities. Pesticides (for control of vectors) and medicines would be used at the dairy. Agricultural chemicals, including insecticides, herbicides, and fertilizer, would be used for continued farming; however implementation of the Element would result in reduced acreage of cropland and a reduction in agricultural chemical use.

The RWQCB requires that a Water Pollution Prevention Plan (WPPP) be prepared for the dairies in compliance with the provisions of the General Waste Discharge Requirements for Milk Cow Dairies. The WPPP is required to include provisions for the safe storage, use, and disposal of hazardous materials. The Business Plans for the dairies, which are required to be submitted to Kings County Environmental Health Services (KCEHS), also need to include similar provisions. In addition, all use of restricted agricultural chemicals is controlled by Federal and State laws and regulations enforced by the California Department of Pesticide Regulations (CDP) and KCACO.

Construction workers could be exposed to pesticide residues from past applications and from current pesticide applications in soils during grading and excavation. Agricultural workers (who would continue to farm the row crop portion of the site under the proposed project) could also be exposed to residual contamination in soil from past or current applications or directly exposed to the agricultural chemicals themselves during mixing, application, and

harvesting. Use of pesticides and herbicides is strictly regulated to minimize exposure to workers. The regulations prescribe, among other things, times of application and length of time after applications before workers can reenter fields. Reentry restrictions would also apply to dairy construction workers. The potential for exposure of workers associated with project activities would be similar to exposure of farm workers for existing agricultural activities at the site (existing conditions). The Element does not propose significant changes in agricultural chemical use in the County.

The Element specifically addresses the potential exposure of workers and the public to unsafe conditions. **Objective DE 4.3** promotes dairy facility management practices that protect worker and public health and the environment; **Policy DE 4.3a** supports this objective by requiring conformance by dairy facilities with all applicable laws and regulations controlling the management of hazardous materials.

***Mitigation 4.8-1***

*None required.*

## Impact 4.8-2

**Potential exposure to residual agricultural chemicals during construction of the dairy facilities, resulting in adverse health impacts. This is a less-than-significant impact.**

Construction of the dairies will require extensive grading of areas formerly under agricultural production. Past agricultural activities have included the application of a variety of chemicals (e.g., pesticides) to the surface soils at the site. Agricultural practices in the past and currently include the application of pesticides and herbicides. Until 1972, DDT was widely used throughout the United States. DDT is persistent in the environment and is still found in agricultural soils, creek and river sediments, and creeks and coastal bays more than 27 years after its ban (CDFA, 1985). The levels of residual DDT (and its breakdown products, such as DDE and DDD) in the environment vary depending on the history of the types of crops grown, the past application rates, and the past location of storage and mixing facilities of the pesticide. As part of a study prepared by the California Department of Food and Agriculture (CDFA, 1985), soil samples were collected from each county in the State. Two soil samples were collected in Kings County; the samples collected contained relatively low levels of DDT.

The agricultural fields in the County currently receive pesticide and herbicide applications, both ground and aerial. The pesticides and herbicides used today are strictly regulated and generally have short half-lives (the time it takes a chemical to degrade to half its original concentration). For example, in Kings County, the most frequently applied herbicide on cotton is Starfire (Kings County, 1999). Starfire includes paraquat with a half-life of 100 to 1,000 days (Extoxnet, 1996).

***Mitigation Measure 4.8-2***

*None required.*

## Impact 4.8-3

**Operation of the dairies could result in increased vector activity, potentially creating adverse human health impacts. This is a less-than-significant impact.**

The generation and storage of manure and process water at the dairies and use of process water as fertilizer for agricultural fields at a site present the possibility of increased vector activity. Mosquito and fly infestations have been observed at dairies in the past, particularly at manure separation pits and ponds that have not been properly maintained (Cook, 1999). When vegetation becomes established around the pond perimeter or excessive floatable material persists in pits and ponds (often allowing establishment of vegetation on the floatables), mosquito infestations can occur. Mosquito infestation can create a significant risk to public health. Mosquito species common to Kings County that can feed on dairy cattle can be vectors for several significant infectious diseases, including the Western Equine and St. Louis viruses, forms of encephalitis.

The KMAD has established regulations for mosquito control at dairy facilities. These controls are aimed at preventing the development of mosquito habitat in process water ponds and manure separation pits and providing access for mosquito control equipment. The requirements include the installation of manure separation ~~pits~~ systems at all dairy facilities to limit the amount of manure solids delivered to process water ponds, reducing the potential for excessive floatable materials. Design requirements for pits and ponds ensure that shallow water habitat is limited. The KMAD inspects dairy facilities throughout the mosquito breeding season to ensure that conditions promoting mosquito breeding do not develop. Although the KMAD does not provide vegetation or solids removal services, vegetation and solids removal is the responsibility of the dairy operator.

Flies are another potential vector problem at a dairy operation. The KMAD does not provide services related to abatement of flies; but KCEHS responds to complaints regarding nuisance conditions associated with flies. The County has had numerous calls regarding fly problems at existing dairy operations in the County. Typically, complaints are made from residences within 0.5 to 3.0 miles of a dairy (depending on predominant wind direction) with a fly infestation (Cook, 1999). Most of these complaints have been directed at older dairies where drainage is often a problem and facility design makes maintenance and good housekeeping practices difficult (Cook, 1999).

Flies (predominantly house flies, but stable flies are also of local concern) typically deposit eggs in wet, decaying organic matter, such as manure and spilled feed (Stevenson, 1997). An

average female fly will produce about 500 to 600 eggs in her lifetime. The life cycle of the fly includes four stages: the egg, larva (maggot), pupa, and winged adult. Just one pound of manure can yield more than 1,500 maggots. As an adult fly feeds, it continually regurgitates droplets of food and saliva since it can only consume food in liquid form. This style of eating, and choice of food material, makes the dairy fly a constant threat to milk production and animal and human health (Stevenson, 1997).

Particular areas that have been identified as preferred breeding sites at dairies in the County include calving areas (flies are particularly attracted to the composition of calf manure) (Rutz, et al., 1993), around water troughs, leaking pipes or other moist areas, along fence lines (cows walking in corrals stepping on manure kill many maggots, but the fence lines are often untrampled), around the edges of solids separation areas, and areas where grain is spilled (Rutz, et al., 1993; Cook, 1999).

Control of fly populations has been demonstrated to result in increased milk production at dairies; the greater the number of flies on a dairy cow, the lower the milk production; up to 30 percent reduction in milk production has been documented with stable fly infestations. Therefore, dairy operators are motivated to aggressively minimize fly populations. It has been demonstrated that use of pesticides as a primary means of controlling populations is less effective than a tiered approach that first employs cultural controls (e.g., good housekeeping practices), then biological controls (e.g., encouragement of parasitic wasp populations), and careful pesticide application only when necessary (Rutz, et al., 1993). Parasitic wasps and other biological controls can effectively control flies if conditions at the dairy are suitable. Wasps lay eggs inside the fly pupa. When the wasp egg hatches, the larva feeds on the dead fly. The developed wasp breaks out and repeats the cycle. Proper spraying of pesticides will not reduce wasp populations. Reduced wasp populations could force a dairy to require more frequent pesticide use as the flies recover more quickly after each application than the wasps.

Research indicates that dairies employing biological controls as part of a~~n Integrated~~ Pest and Vector Management Plan (~~IPM~~ PVMP) ~~program~~ (e.g., wasp releases) use 80 percent less pesticides than dairies that rely on chemical controls. In addition, fly populations at dairies using biological controls are typically 50 percent lower than conventionally managed farms (Rutz, et al., 1993). Potential public health hazards associated with flies represent a significant impact.

Mice are a common vector problem at concentrated animal feeding operations where feed and grain are stored. KCACO provides oversight for vertebrate pest control at dairies including mice, rats, pigeons and other vertebrate pests. Loss of feed to mice reduces the profitability of the dairy, and therefore mice populations are minimized to the extent possible at successful dairy operations. The County has not received complaints of nuisance conditions associated

with mice in the vicinity of operating dairies (Cook, 1999). Potential public health hazards associated with rodents at the proposed dairies represent a less-than-significant impact.

The Element specifically addresses the need to control flies, mosquitos, and other pests. **Policy DE 4.3b** requires development and implementation of ~~an Integrated~~ Pest and Vector Management ~~Program~~ Plan as part of all dairy applications. Under **Policy DE 4.3c**, all dairy operators are required to comply with the guidelines of the Kings Mosquito Abatement District, even those dairies outside the jurisdiction of the district.

Implementation of these policies will reduce this impact to a less-than-significant level.

***Mitigation Measure 4.8-3***

*None required.*

## Impact 4.8-4

**Operation of the dairy facilities could expose people to dairy manure pathogens, potentially causing adverse human health impacts. This is a less-than-significant impact.**

Pathogens[3] (including bacteria, viruses, fungi, protozoa, and parasites) have been demonstrated to be serious contaminants in drinking water supplies, frequently impacting public health (U.S. EPA, 1998d). The dairy facilities would generate large volumes of solid and liquid bovine manure, which contains pathogens. Pathogens most commonly associated with bovine manure include cryptosporidium, *Escherichia coli* 0157 (*E. coli* 0157), and salmonella. Cryptosporidium (a single cell parasite) and *E. coli* 0157 (a bacterium) are found in most dairy cattle manure, but elevated levels commonly occur in manure produced by newborn calves. These pathogens can cause disease within cattle herds and are a health management concern for dairy operations. These pathogens can also be transmitted to humans. Infection with cryptosporidium and *E. coli* can cause gastrointestinal illness, particularly to persons with compromised immune systems.

Physical factors controlling the transport of pathogens include the concentration of the source, natural disinfection ability of the subsurface,[4] and the distance to a sensitive receptor. Pathogens could enter the groundwater system by 1) infiltrating downward through the unsaturated zone, and/or 2) through poorly constructed water supply wells that are not properly sealed at the surface to prevent infiltration into the well casing or surrounding gravel

[3] Pathogens are defined as disease-causing microorganisms.

[4] Natural disinfection factors include sediment type, transport velocity, and temperature of the subsurface.

pack. Once in the groundwater system, pathogens could impact on-site wells and/or could be transported off-site to domestic wells.

For pathogens to present a public health impact, the pathogens must reach a sensitive receptor (e.g., a drinking water user). Since all surface water runoff from the dairy operations would be contained and managed, it is unlikely that the proposed project would directly impact the quality of surface water supplies.

The distances pathogens can travel in various hydrogeological environments are not well defined, and considerable ranges have been reported in the literature. Setback distances between wells and pollutant sources have long been used by regulating agencies to provide some level of protection for groundwater users. Setbacks generally range between 100 and 1,000 feet between a pathogen source and a drinking water supply well. The Tulare County Milk Inspection Program enforces a 100-foot setback between water supply wells and animal holding areas (Johnson, 1999).

The Element recognizes the importance of protecting water quality from the release of dairy pathogens. **Policy DE 4.1a.B.2.i** includes the following provision:

> "The potential for discharge of water-borne pathogens to existing and proposed domestic water supply wells shall be minimized by ensuring that the domestic wells are constructed in accordance with the California Well Standards and that appropriate minimum setbacks (150 feet~~)~~, or other distance set in the Waste Discharge Requirements issued for the dairy by the RWQCB) between ~~the~~ domestic wells and potential sources of pollution are maintained."

In addition, the Element requires that all process water be collected and stored in ponds with low permeability liners (**Policy DE 4.1a.B.2**), reducing the potential release of pathogens to water supplies.

Implementation of this policy will reduce this impact to less than significant.

***Mitigation Measure 4.8-4***

*None required*

### Impact 4.8-5

**Residual manure remaining at dairy facilities following cessation of manure management facilities operation could expose people to elevated methane and nitrate levels, potentially causing adverse human health impacts. This is a less-than-significant impact.**

Large amounts of manure are generated during the operational phase of dairy facilities. The Element includes objectives and associated policies that require that the manure be managed under a ~~Comprehensive~~ Manure Nutrient Management Plan (~~C~~MNMP), (**Objective DE 4.1**), CDPW~~D~~AP (**Policy DE 4.2a**), and a Manure Treatment Management Plan (MTMP) (**Policy DE 5.1c**) to control potential emission of pollutants to the environment. However, it is possible that, upon closure, significant residual amounts of manure could be left at dairy sites. For example, process water ponds or other containment facilities could be abandoned without having manure removed. If significant quantities of manure are buried, the manure could undergo anaerobic decomposition and produce methane, which could migrate to the surface. If structures are built above buried decomposing manure, it is possible that significant levels of methane could accumulate within the structures. In addition to the potential for methane to be generated, residual manure could be a source of releases of nitrate or pathogens (including bacteria, viruses, fungi, protozoa, and parasites) to surface or subsurface water which is discussed in Impact 4.3-7 of this EIR.

The Element includes a provision which directly addresses the potential impacts associated with residual manure. **Policy DE ~~5.1k~~ 5.1j** requires that, prior to conversion of dairy facilities to other land uses, the owner(s) of such facility submit documentation that all manure has been removed. The management of the removed manure must be shown to be in compliance with the facility's Comprehensive Dairy Process Water ~~Disposal~~ Application Plan and its Manure Treatment Management Plan.

Implementation of this policy will reduce the impacts associated with residual manure to a less-than-significant level.

***Mitigation Measure 4.8-5***

*None required.*

## Impact 4.8-6

**Construction of dairy facility structures over or near improperly abandoned oil or gas wells could result in accumulation of natural gas within the structures, presenting the potential for fire and explosion. This is a less-than-significant impact.**

As described in Section 4.1 (Geology, Soils, and Seismicity) of this PEIR, oil and gas exploration and production have occurred and can be expected to continue in portions of Kings County, including the Tulare Lake Bed. It is possible that there are active or abandoned wells within potential dairy development sites in the DDOZs designated by the Element. The appropriate abandonment (closure) of inactive oil and gas wells is required by Division 3 of the California Public Resources Code. A well is properly abandoned when it has been shown, to the satisfaction of the California Department of Conservation Division of Oil, Gas, and

Geothermal Resources (DOGGR), that all proper steps have been taken to isolate all oil-bearing or gas-bearing strata encountered in the well, to protect water quality, and prevent subsequent damage to life, health, property, and other resources. It is possible that some abandoned wells do not meet these standards. If DOGGR determines that a well has not been appropriately abandoned, that the integrity of a properly abandoned well has been compromised, or that access to an improperly abandoned well would be impeded by construction of improvements, the DOGGR can require that the well be "reabandoned." Construction of structures over improperly abandoned wells presents the potential for natural gas leaking from the wells to accumulate within the structures. The accumulation of natural gas could present the potential of fire or explosion.

**Objective DE 3.5** of the Element addresses the potential adverse effects posed by abandoned oil and gas wells. **Policy DE 3.5a** requires that applicants for dairy development projects contact DOGGR to determine if abandoned oil and gas wells are present at the proposed dairy site. **Policy DE 3.5b** further requires that all oil and gas wells located beneath or within 300 feet of proposed dairy structures be abandoned in accordance with specifications developed by DOGGR. The policies contained in the Element reduce the impact to a less than significant level.

***Mitigation Measure 4.8-6***

*None required.*