

Appendix 3.14-B
High-Speed Train Effects on Confined
Animal Agriculture

Executive Summary

This appendix is composed of two analyses: (1) an examination of the effects of the Fresno to Bakersfield High-Speed Train (HST) Project on confined animal agricultural operations, and (2) the effects of the project on wastewater application lands used by confined animal agricultural operations.

Within the project study area, most of the confined animal operations that are affected are dairies. Fifteen dairies are located along the BNSF Alternative: 2 in Fresno County, 11 in Kings County, and 2 in Tulare County. Four dairies in Kings County are located along the Hanford West Bypass 1 Alternative and Hanford West Bypass 1 Modified Alternative. Three dairies in Kings County are located along the Hanford West Bypass 2 Alternative and Hanford West Bypass 2 Modified Alternative. Two dairies in Tulare County lie along the Corcoran Bypass and Corcoran Elevated alternatives. Other types of animal operations, such as feedlots and poultry farms, would also be affected. One poultry farm in Fresno County, one feedlot in Kings County, and one feedlot in Tulare County lie along the BNSF Alternative. One feedlot in Kings County is located along the Corcoran Bypass and Corcoran Elevated alternatives.

The HST alignments and related improvements would affect confined animal operations, and the effects would range in severity, from the potential for relocation of the entire operation or the need to relocate key facilities elsewhere on the operation (e.g., animal holding areas and wastewater treatment lagoons) to minor effects resulting from project acquisition of non-facility land (i.e. land that does not contain any key facilities used in the operation). The severity of the effect on confined animal agricultural operations was determined using the following criteria¹:

- Severe: Operations are unlikely to continue in same location.
- Moderate: Relocation of facilities at current location, but operations are likely to continue.
- Negligible: No facilities are affected and acquisition of non-facility land would not bisect the operation.

The indirect noise and vibration effects on dairy cattle were also evaluated. Based on existing research, the Federal Railroad Administration (FRA) has established a threshold for high-speed train noise effects on livestock at 100 A-weighted decibels (dBA) sound exposure level (SEL) and for vibration effects at 75 vibration velocity level (VdB) (FRA 2005). As discussed in Section 3.4, Noise and Vibration, the noise level for project operations on all alternatives would reach 100 dBA SEL at a distance of up to 100 feet, and the vibration level would reach 75 VdB at a distance of up to 70 feet from the track centerline. Therefore, for animal-holding areas closer than 100 feet to the track centerline, the noise and vibration effects would be considered moderate and could require relocation of the animals or the implementation of sound mitigation measures.

Table 1 provides a listing of all affected confined animal agricultural operations in the study area, and Table 2 summarizes the effects, by alignment, on confined animal operations. Descriptions of the effects on each operation are provided in Section II of this appendix.

¹ The determination as to whether an operation is likely to continue in the same location and the general severity of the effect in terms of lost economic value and the need for site reconfiguration will be made during negotiations for right-of-way acquisition following the selection of a preferred alternative.

Table 1
 Affected Confined Animal Agricultural Facilities

| Figure # | Address | APN | Operation Type | County | Alternative | Acres Affected | % of Parcel Affected |
|-------------------------|--|--------------|----------------|--------|--|----------------|----------------------|
| Severe Effects | | | | | | | |
| B-22 | 9846 Lansing Avenue | 28206005000 | Dairy | Kings | Hanford West Bypass 1 Alternative | 19.70 | 21.0 |
| | | | | | Hanford West Bypass 1 Modified Alternative | 20.60 | 22.0 |
| | | | | | Hanford West Bypass 2 Alternative | 3.80 | 4.1 |
| B-21 | 16500 11 th Avenue | 028150023000 | Dairy | Kings | Hanford West Bypass Alternative | 0.73 | 1.9 |
| | | | | | Hanford West Bypass 1 Modified Alternative | 7.57 | 19.7 |
| | | | | | Hanford West Bypass 2 Alternative | 1.28 | 3.3 |
| | | | | | Hanford West Bypass 2 Modified Alternative | 1.56 | 4.1 |
| Moderate Effects | | | | | | | |
| B-2 | 7750 East Davis Avenue | 05603055S | Dairy | Fresno | BNSF Alternative | 13.86 | 21.8 |
| B-7 | 7615 7½ Avenue | 014090007000 | Dairy | Kings | BNSF Alternative | 4.36 | 6.3 |
| B-8 | 7601 Fargo Avenue | 014130058000 | Dairy | Kings | BNSF Alternative | 1.70 | 5.0 |
| B-13 | 8480 Kansas Avenue | 028202030000 | Dairy | Kings | BNSF Alternative | 0.90 | 0.5 |
| B-15 | Nevada Avenue and 8 th Avenue | 028290017000 | Feedlot | Kings | BNSF Alternative | 14.80 | 6.4 |
| | | | | | Corcoran Bypass Alternative | 11.05 | 4.8 |
| | | | | | Corcoran Elevated Alternative | 10.98 | 4.7 |
| B-16 | 2400 Avenue 136 | 291030043 | Dairy | Tulare | BNSF Alternative | 10.15 | 17.4 |
| | | | | | Corcoran Bypass Alternative | 8.92 | 15.0 |
| | | | | | Corcoran Elevated Alternative | 9.68 | 16.7 |

Table 1
 Affected Confined Animal Agricultural Facilities

| Figure # | Address | APN | Operation Type | County | Alternative | Acres Affected | % of Parcel Affected |
|---------------------------|-------------------------------------|--------------|----------------|--------|---|----------------|----------------------|
| B-17 | 2799 Avenue 136 | 291020022 | Dairy | Tulare | BNSF Alternative | 22.80 | 23.4 |
| | | | | | Corcoran Bypass Alternative | 24.03 | 24.6 |
| | | | | | Corcoran Elevated Alternative | 23.90 | 24.6 |
| B-19 | 6502 13 th Avenue | 006050004000 | Dairy | Kings | Hanford West Bypass 1 Alternative | 1.60 | 1.0 |
| | | | | | Hanford West Bypass1 Modified Alternative | 2.60 | 1.7 |
| | | | | | Hanford West Bypass 2 Alternative | 1.60 | 1.0 |
| | | | | | Hanford West Bypass 2 Modified Alternative | 2.60 | 1.7 |
| B-20 | Iowa Avenue/12 th Avenue | 018250033000 | Dairy | Kings | Hanford West Bypass 1 and Hanford West Bypass 2 | 0.36 | 0.2 |
| | | | | | Hanford West Bypass 1 Alternative | 0.45 | 0.3 |
| | | | | | Hanford West Bypass 2 Modified Alternative | 0.41 | 0.3 |
| Negligible Effects | | | | | | | |
| B-4 | 8000 East Davis Avenue | 05603044S | Poultry | Fresno | BNSF Alternative | 0.50 | 0.3 |
| B-5 | 7705 Flint Avenue | 014090002000 | Dairy | Kings | BNSF Alternative | 0.22 | 0.2 |
| B-6 | 7334 7 th Avenue | 014090035000 | Dairy | Kings | BNSF Alternative | 5.33 | 7.6 |
| B-11 | 12270 7 th Avenue | 016200005000 | Dairy | Kings | BNSF Alternative | 0.60 | 1.5 |
| B-12 | 8520 Kent Avenue | 028160031000 | Dairy | Kings | BNSF Alternative | 2.23 | 0.8 |
| B-14 | 8000 Lansing Avenue | 028260005000 | Dairy | Kings | BNSF Alternative | 6.45 | 1.0 |
| B-18 | 3800 Avenue 120 | 291060019 | Feedlot | Tulare | BNSF Alternative | 8.40 | 2.3 |

Table 1
 Affected Confined Animal Agricultural Facilities

| Figure # | Address | APN | Operation Type | County | Alternative | Acres Affected | % of Parcel Affected |
|----------|----------------------------------|------------------------------|----------------|--------|------------------|----------------|----------------------|
| B-3 | 8025 Excelsior Avenue | 14010065000 | Dairy | Kings | BNSF Alternative | 0.13 | 0.3 |
| B-9 | 7871 Houston Avenue | 016200032000 | Dairy | Kings | BNSF Alternative | 0.37 | 3.8 |
| B-1 | E Elkhorn Avenue/S Fowler Avenue | 38518062 | Dairy | Fresno | BNSF Alternative | 0.24 | 0.2 |
| B-10 | 7315 Houston Avenue | 016200035000 016200034000 | Dairy | Kings | BNSF Alternative | 0.50 | 0.6 |

Acronyms and Abbreviations:
 APN = Assessor's Parcel Number
 % = percent
 # = number

Table 2
 Effects on Confined Animal Agricultural Facilities by Alternative

| Alternative/Option | Severe | Moderate | Negligible | Total |
|--|--------------------------------------|----------|------------|-------|
| BNSF Alternative | 0 | 7 | 11 | 18 |
| | Changes Relative to BNSF Alternative | | | |
| Hanford West Bypass 1 Alternative | +1 | -5 | -10 | 4 |
| Hanford West Bypass 1 Modified Alternative | +2 | -5 | -11 | |
| Hanford West Bypass 2 Alternative | 0 | -4 | -10 | 4 |
| Hanford West Bypass 2 Modified Alternative | 0 | -5 | -10 | 3 |
| Corcoran Elevated Alternative | 0 | -4 | -11 | 3 |
| Corcoran Bypass Alternative | 0 | -4 | -11 | 3 |

This appendix also examines the potential project effects associated with project acquisition of manure management land (wastewater lands) used by confined animal operations in Kings County. Animal operations in Kings County face restrictions on the amount of manure-enriched wastewater that can be spread per acre of farmland (Kings County 2002). Some operations have enough cropland on site to manage all of their manure. In this analysis, this situation is referred to as "onsite wastewater land." Other operations must move manure wastewater off site to comply with these regulations. In this analysis this situation is referred to as "offsite wastewater land." Therefore, project acquisition of onsite and offsite manure management land could force operations to alter their current manure management plans and could create a need to find new replacement locations for wastewater application. If replacement lands are not available or if it is not economically feasible for an operation to move its wastewater to available lands, operations

would be required to reduce manure production (i.e., reduce the number of animals housed at the facility).

The amount of wastewater land affected was evaluated by reviewing aerial imagery of wastewater-permitted land to determine the acreage of land with the potential for manure management. Along the BNSF Alternative 336.32 acres of onsite and offsite wastewater lands would be affected. Along the Hanford West Bypass 1 Alternative 121.83 acres would be affected, and along the Hanford West Bypass 1 Modified 120.12 acres would be affected. Along the Hanford West Bypass 2 Alternative 104.75 acres would be affected, and along the Hanford West Bypass 2 Modified Alternative 117.76 acres would be affected. Along the Corcoran Bypass and Corcoran Elevated alternatives, 4.17 acres would be affected. Along Corcoran West BNSF 21.83 acres would be affected. For the Hanford heavy maintenance facility (HMF), 298.5 acres would be affected.

To be conservative, it was assumed that operations would need to reduce their production in the short term by reducing animal head count until the operation could find a replacement for its lost wastewater land. The financial implications of these displaced wastewater lands are detailed in Section 3.12, Socioeconomics, Communities, and Environmental Justice. It was also assumed that all onsite croplands are used for wastewater application. Section II of this appendix describes the effects on these acres, and Section III of this appendix provides details on all offsite wastewater application parcels that would be affected by the project.

1.0 Confined Animal Agriculture Operations

This section describes the effects on each of the confined animal operations affected by the project. The operations are grouped according to the severe, moderate, and negligible criteria discussed above.

1.1 Severe Effects

Dairy — 9846 Lansing Avenue APN 28206005000 (Figure B-22)

Hanford West Bypass 1 Alternative, Hanford West Bypass 1 Modified, and Hanford West Bypass 2 Alternatives

The dairy located at 9846 Lansing Avenue in Kings County would experience severe effects from the construction of the HST project under the Hanford West Bypass 1 Alternative and the Hanford West Bypass 1 Modified Alternative. The tracks, traction power substation, and road overpass under the Hanford West Bypass 1 Alternative would require approximately 19.70 acres of land, or 21.0% of the parcel, which would bisect the property from the northwestern to the southwestern corner. Further, under Hanford West Bypass 1 Modified the tracks, traction power substation and road overpass would require approximately 20.60 acres, or 22.0% of the parcel. A roadway for the Hanford West Bypass 2 Alternative would result in a moderate impact of 3.8 acres of cattle holding areas or 4.14% of the parcel. The affected land contains cattle holding areas on the northern portion of the operation that would be bisected, and a large percentage of the holding areas and a residence on the southern portion of the operation would be displaced. Relocation of the affected facilities would require approximately 31 acres of land. After the project acquired land for the tracks, traction power substation, and road overpass, 40 acres of adjacent continuous unaffected land would be available.

Due to the number of facilities affected and the limited available unaffected acreage, it is likely that this dairy would need to be relocated in order to continue operation. If the operation is not relocated but rather facilities are rearranged on the current parcel, any holding areas reestablished would likely be within 100 feet of the HST track centerline, and therefore indirect

noise and vibration effects would be moderate. During the right-of-way acquisition process, engineering solutions may be identified that would make it possible for continued operation in the current location. For example, right-of-way agents could work with alignment engineers to minimize the acquisition associated with the road overpass and traction power substation and also to provide noise mitigation. However, this is a speculative outcome, and at this time it is assumed that the severity of the effect likely precludes the ability of the dairy to continue operation at this location.

Dairy — 16500 11th Avenue APN 028150023000 (Figure B-21)

Hanford West Bypass 1 Alternative, Hanford West Bypass 1 Modified Alternative, Hanford West Bypass 2, Hanford West Bypass 2 Modified

The dairy located at 16500 11th Avenue in Kings County would experience severe effects from construction of the HST project under the Hanford West Bypass 1 Modified Alternative. The tracks would require the acquisition of 7.57 acres of land, or 19.7% of the parcel, and would bisect the property in half from the north to the southeast corner. The affected land contains a large percentage of the cattle holding areas that would be bisected and displaced. Relocation of the affected facilities would require approximately 40 acres of land. Due to the number of facilities affected and the size of the parcel it is likely that this dairy would need to be relocated in order to continue operations. Due to the limited amount of available land for the relocation of operations at this time it is assumed that the severity of the effect likely precludes the ability of the dairy to continue operation at this location.

The roadway underpass would require acquisition of approximately 0.73 acres or 1.9% of the parcel, at the southern portion of the property for the Hanford West Bypass 1 Alternative; 1.28 acres, or 3.3%, for the Hanford West Bypass 2; and 1.56 acres, or 4.1%, for the Hanford West Bypass 2 Modified Alternative. Impacts under these three alignments are negligible, as they do not require the acquisition or modification of dairy facilities on the parcel. The HST track centerline would be approximately 600 to 800 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be moderate on these three alternatives.

1.2 Moderate Effects

Dairy — 7750 East Davis Avenue APN 05603055S (Figure B-2)

BNSF Alternative

The dairy at 7750 East Davis Avenue in Fresno County would experience moderate effects from construction of the HST project under the BNSF Alternative, including construction of the tracks, an associated roadway overpass, and a traction power substation. The overpass and traction power substation would require acquisition of 13.86 acres of agricultural land, or 21.8% of the parcel, on the northern portion of the property. The alignment would displace about 1 acre on the eastern portion of the property, which contains cattle holding areas and associated buildings. Relocation of the affected facilities would require 2.5 acres of land. After the project acquired land for the tracks, roadway overpass, and traction power substation, 11.6 acres of continuous unaffected land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The HST track centerline would be approximately 50 feet from the cattle holding areas, and therefore indirect noise and vibration effects would be moderate.

Dairy — 7615 7½ Avenue APN 014090007000 (Figure B-7)***BNSF Alternative***

The dairy at 7615 7½ Avenue in Kings County would experience moderate effects from construction of the HST project under the BNSF Alternative. The project would require acquisition of approximately 4.36 acres of land, or 6.3% of the parcel, which would bisect the property. However, all dairy facilities are in the eastern portion of the property and would not be separated. The land directly affected by the alignment contains cattle holding areas and associated buildings, as well as a residence. Relocating the affected facilities would require about 9 acres of land. After the project acquired land for the tracks there would be 20 acres of adjacent continuous unaffected land remaining. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The HST track centerline would be about 50 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be moderate.

Dairy — 7601 Fargo Avenue APN 014130058000 (Figure B-8)***BNSF Alternative***

The dairy at 7601 Fargo Avenue in Kings County would experience moderate effects from the construction of a road overpass along the HST alignment under the BNSF Alternative. The road overpass would require acquisition of a 1.70-acre portion of land, or 5.0% of the parcel. Cattle holding areas and one residential structure would be affected. Relocating the affected cattle holding area and affected residence would require 6.35 acres of land. After the project acquired land for the road overpass, approximately 5 acres of continuous unaffected land would remain. The available unaffected acreage is limited, and therefore special consideration would need to be given to finding adjacent lands if the holding area and residences are relocated. Due to the relatively small size of the acquired land, it is likely the dairy would continue operation at this location. The HST track centerline would be approximately 180 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be negligible.

Dairy — 8480 Kansas Avenue APN 028202030000 (Figure B-13)***BNSF Alternative***

The dairy located at 8450 Kent Avenue in Kings County would experience moderate effects from the construction of the HST project under the BNSF Alternative. The alignment would require the acquisition of approximately 0.90 acres of land, or 0.5% of the parcel, which contains a wastewater treatment lagoon. Relocation of the wastewater treatment lagoon would require 6.4 acres of land. After the project acquired land for the tracks, 105 acres of adjacent continuous land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The HST track centerline would be approximately 95 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be moderate.

Feedlot — Nevada Avenue and 8th Avenue APN 028290017000 (Figure B-15)***BNSF Alternative, Corcoran Bypass Alternative and Corcoran Elevated Alternative***

The heifer feedlot located at the intersection of Nevada Avenue and 8th Avenue in Kings County would experience moderate effects from the construction of the HST project under the BNSF Alternative and a negligible effect from the Corcoran Bypass and Corcoran Elevated alternatives, including the construction of tracks and a roadway. Under the BNSF Alternative, tracks and road construction would require acquisition of approximately 14.80 acres of land, or 6.4% of the

parcel, along the east and southeast corner of the property. The affected land contains cattle holding areas, storage facilities, and a wastewater treatment lagoon. The road construction would occur over an existing access road through the parcel. Relocation of the affected facilities would require 37 acres of land. After the project acquired land for the tracks and roadway, 166 acres of adjacent continuous unaffected land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the feedlot to continue operation. The BNSF Alternative track centerline would be approximately 50 feet from the closest cattle holding area, and therefore the indirect noise and vibration effects would be moderate.

The Corcoran Bypass and Corcoran Elevated alternatives would each require acquisition of approximately 11.05 (4.8% of parcel) and 10.98 (4.7% of parcel) acres each, due to road construction bypass and would have a similar effect, although the HST track alignment for these alternatives would be located off of the parcel and east of the existing railroad. The overall effects on the operation from the Corcoran Bypass and Corcoran Elevated alternatives would also be moderate as they would require acquisition of cattle holding areas. The centerlines for these two alternatives would be approximately 560 feet from the holding area; therefore, indirect noise and vibration effects would be negligible.

Dairy — 2400 Avenue 136 APN 291030043 (Figure B-20)

BNSF Alternative, Corcoran Bypass Alternative and Corcoran Elevated Alternative

The dairy at 2400 Avenue 136 in Tulare County would experience moderate effects from the construction of the HST project under the BNSF Alternative and the Corcoran Bypass and Corcoran Elevated alternatives. The tracks and road closure would require approximately 8.92 acres of land, or 15.0% of the parcel, along the eastern perimeter and southeastern corner of the property for the Corcoran Bypass Alternative. It would require 9.68 acres of land (16.7% of the parcel) in the same area for the Corcoran Elevated Alternative and 10.15 (17.4% of the parcel) acres for the BNSF Alternative. The affected land contains cattle holding areas and storage facilities. Relocating the facilities would require 6 acres of land. After the project acquired land for the tracks and road closure, 45 acres of adjacent continuous unaffected land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The HST track centerline would be approximately 50 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be moderate.

Dairy — 2799 Avenue 136 APN 291020022 (Figure B-17)

BNSF Alternative, Corcoran Bypass Alternative and Corcoran Elevated Alternative

The dairy at 2799 Avenue 136 in Tulare County would experience moderate effects from the construction of the HST project under the BNSF Alternative, and the Corcoran Bypass and Corcoran Elevated alternatives. The alignment tracks and the road closure would require acquisition of approximately 22.80 (23.4% of the parcel) acres for the BNSF Alternative, 24.03 (24.6% of the parcel) acres for the Corcoran Bypass Alternative, and 23.90 (24.6% of the parcel) acres of land for the Corcoran Elevated Alternative, on the northern and eastern areas of the property. The land contains animal holding areas and associated buildings, storage facilities, and wastewater treatment lagoons. Relocating the facilities would require approximately 25 acres of land. After the project acquired land for the tracks and road closure, approximately 10.4 acres of continuous unaffected land would remain. The available unaffected acreage is limited, and therefore special consideration would need to be given to finding adjacent lands if these facilities are to be relocated. Because of the relatively small size of the affected acreage, it is likely the dairy will continue operating at this location. The HST track centerline would be approximately 50 feet from the closest cattle holding area, and therefore the indirect noise and vibration effects would be moderate.

Dairy — 6502 13th Avenue APN 006050004000 (Figure B-19)***Hanford West Bypass 1 Alternative, Hanford West Bypass 1 Modified, Hanford West Bypass 2 Alternative and Hanford West Bypass 2 Modified***

The dairy located at 6502 13th Avenue in Kings County would experience moderate effects from the construction of a road overpass for the HST project under the Hanford West Bypass 1, Hanford West Bypass 1 Modified Alternative, Hanford West Bypass 2 Alternative and Hanford West Bypass 2 Modified Alternative. The road overpass would require approximately 1.60 acres of land, or 1.0% of the parcel, on the southwestern corner of the property for the Hanford West Bypass 1 Alternative; 2.60 acres, or 1.7% of the parcel, for the Hanford West Bypass 1 Modified Alternative; 1.60 acres, or 1.0% of the parcel, for Hanford West Bypass 2 Alternative; and 2.60 acres, or 1.7% of the parcel, for the Hanford West Bypass 2 Alternative. Impacts among alternatives would be similar. Relocating the affected cattle holding areas would require 19 acres of land. After the project acquired land for the road overpass there would be 107 acres of continuous unaffected land remaining. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operating. The HST track centerline would be approximately 450 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be negligible.

Dairy - Iowa Avenue/12th Avenue APN 018250033000 (Figure B-16)***Hanford West Bypass 1 Alternative, Hanford West Bypass 1 Modified Alternative, Hanford West Bypass 2, Hanford West Bypass 2 Modified***

The dairy at Iowa Avenue/12th Avenue in Kings County would experience moderate effects from the construction of a roadway overpass associated with the HST project under the Hanford West Bypass 1 and 2 and Hanford West Bypass Modified 1 and 2 alternatives. The overpass would require the acquisition of 0.36 acre of cattle holding land, or 0.2% of the parcel, for the Hanford West Bypass 1 and 2 alternatives on the northeastern portion of the property; 0.45 acres, or 0.3% of the parcel, under the Hanford West Bypass 1 Modified Alternative; and 0.41 acres, or 0.3% of the parcel, under the Hanford West Bypass 2 Modified Alternative. Relocating the affected cattle holding areas would require 2.28 acres of land. After the project acquired land for the road overpass there would be 152 acres of continuous unaffected land remaining. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operating. The HST track centerline would be approximately 1,300 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be negligible.

1.3 Negligible Effects

Poultry Operation — 8000 East Davis Avenue APN 05603044S (Figure B-4)***BNSF Alternative***

The poultry operation at 8000 East Davis Avenue in Fresno County would be partially affected by the construction of the HST project under the BNSF Alternative. The alignment would require acquisition of about 0.50 acres, or 0.3% of the parcel, on the southwestern corner of the property. Because no facilities would be affected and the acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 200 feet from the closest poultry buildings, and therefore indirect noise and vibration effects would be negligible.

Dairy — 7705 Flint Avenue APN 014090002000 (Figure B-5)***BNSF Alternative***

The dairy at 7705 Flint Avenue in Kings County would be partially affected by the construction of the HST project under the BNSF Alternative, including the construction of tracks and a roadway overpass. The overpass would require the acquisition of a very small (0.22 acre) portion or 0.2% of the parcel, on the northwestern corner of the property, and would not affect any dairy facilities. The alignment would also require acquisition of a very small (0.1 acre) amount of land on the eastern portion of the property for the relocation of the canal on the property. Because no facilities would be affected and the acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 125 feet from the animal holding areas, and therefore indirect noise and vibration effects would be moderate.

Dairy — 7334 7th Avenue APN 014090035000 (Figure B-6)***BNSF Alternative***

The dairy located at 7334 7th Avenue in Kings County would be affected by the construction of the HST project under the BNSF Alternative. The alignment would require acquisition of approximately 5.33 acres of agricultural land, or 7.6% of the parcel. Because no facilities would be affected and the acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 1,500 feet west of the dairy facilities, and therefore noise and vibration effects would be negligible.

Dairy — 7315 Houston Avenue APN 016200035000 (Figure B-10)***BNSF Alternative***

The dairy at 7315 Houston Avenue in Kings County would experience moderate effects from the construction of a road overpass along the HST alignment under the BNSF Alternative. The road construction would require acquisition of 0.50 acre of agricultural land, or 0.6% of the parcel. The neighboring property contains a residence and facility buildings that probably support the dairy facility and cattle holding areas on the adjacent property at 12270 7th Avenue. Relocating the residence and facility buildings would require 5.40 acres of land. The HST track centerline would be about 1,217 feet from the closest animal holding area, and therefore the indirect noise and vibration effects that would occur would be negligible.

Dairy — 12270 7th Avenue APN 016200005000 (Figure B-11)***BNSF Alternative***

The dairy at 12270 7th Avenue in Kings County would be affected by the construction of a roadway overpass along the HST project under the BNSF Alternative, which would require acquisition of a small (0.60 acre) portion of land, or 1.5% of the parcel, at the northern part of the property. Because no facilities would be affected and acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 1,200 feet west of the dairy facilities, and therefore indirect noise and vibration effects would be negligible.

Dairy — 8520 Kent Avenue APN 028160031000 (Figure B-12)***BNSF Alternative***

The dairy at 8520 Kent Avenue in Kings County would be affected by the construction of the HST project under the BNSF Alternative, including the construction of the tracks and traction power

substation. The alignment would require the acquisition of approximately 2.23 acres of agricultural land, or 0.8% of the parcel, which would bisect the property; however, all dairy facilities would remain together in the western portion of the property. The traction power substation would require a small amount of land (0.3 acres) on the eastern portion of the property that contains agricultural land. Because no dairy facilities would be affected and acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 1,000 feet from the closest cattle holding area, and therefore indirect noise and vibration effects would be negligible.

Dairy — 8000 Lansing Avenue APN 028260005000 (Figure B-14)

BNSF Alternative The dairy located at 8000 Lansing Avenue in Kings County would be affected by the construction of the HST project under the BNSF Alternative including the construction of tracks and a traction power substation. The BNSF Alternative and its associated traction power substation would require acquisition of approximately 6.45 acres of agricultural land, or 1.0% of the parcel. The BNSF Alternative track would run approximately 100 feet west of the residence located on the lot; therefore, although the residence is not directly in the footprint it may be relocated. The cattle holding areas and associated buildings would remain together on the eastern portion of the property. Because no dairy facilities would be affected and acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 1,200 feet from the cattle holding areas, and therefore indirect noise and vibration effects would be negligible.

Feedlot — 3800 Avenue 120 APN 291060019 (Figure B-18)

BNSF Alternative

The feedlot at 3800 Avenue 120 in Tulare County would be affected by the construction of a roadway overpass associated with the HST project under the BNSF Alternative. The overpass would require the acquisition of 8.40 acres of agricultural land, or 2.3% of the parcel, on the southwestern portion of the property. Because no dairy facilities would be affected and acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be located approximately 1,400 feet from the cattle holding areas, and therefore indirect noise and vibration effects would be negligible.

Dairy -8025 Excelsior Avenue APN 14010065000 (Figure B-3)

BNSF Alternative

The dairy at 8025 Excelsior Avenue in Kings County would be affected by the construction of a roadway overpass associated with the HST project under the BNSF Alternative. The overpass would require the acquisition of 0.13 acre of agricultural land, or 0.3% of the parcel, on the northeastern portion of the property. Because no dairy facilities would be affected and acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be about 2,400 feet from the cattle holding areas, and therefore indirect noise and vibration effects would be negligible.

Dairy -7871 Houston Avenue APN 016200032000 (Figure B-9)

BNSF Alternative

The dairy at 7871 Houston Avenue in Kings County would be affected by the construction of an HMF associated with the HST project under the BNSF Alternative. The overpass would require the acquisition of 0.37 acre of agricultural land, or 3.8% of the parcel, on the northeastern portion of the property. Because no dairy facilities would be affected and acquisition of non-facility land

would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 2,500 feet from the cattle holding areas, and therefore indirect noise and vibration effects would be negligible.

Dairy - E Elkhom Avenue/S Fowler Avenue APN 38518062 (Figure B-1)

BNSF Alternative

The dairy at E Elkhom Avenue/S Fowler Avenue in Fresno County would be affected by the construction of a roadway overpass associated with the HST project under the BNSF Alternative. The overpass would require the acquisition of 0.24 acre of agricultural land, or 0.2% of the parcel, on the southeastern portion of the property. Because no dairy facilities would be affected and acquisition of non-facility land would not bisect the operation, the effects would be negligible. The HST track centerline would be approximately 4,500 feet from the cattle holding areas, and therefore indirect noise and vibration effects would be negligible.

2.0 Offsite Wastewater Application Lands

Table 3 provides a parcel-by-parcel listing of all the offsite wastewater application lands that are affected by each of the project alternatives. This table provides the total acres affected on each parcel, as well as the number of these total acres that have the potential to be used for wastewater application. This potential for wastewater application was determined using aerial imagery of croplands, and excluding acreage that is currently not used for crop production (e.g., storage yards, roads, and parking areas). The effects on these parcels can be viewed in the designated figures; the figures follow Section 3, the References list, in this document.

Table 3
 Affected Wastewater Lands by Alternative (including HMF)

| APN | Total Acres Affected | Acres with Potential for Manure Management |
|-------------------------|----------------------|--|
| BNSF Alternative | | |
| 014060006000 | 5.82 | 5.82 |
| 014090002000 | 1.03 | 1.03 |
| 014090007000 | 3.55 | 3.55 |
| 016130047000 | 0.65 | 0.65 |
| 016200010000 | 7.89 | 7.89 |
| 016200011000 | 83.43 | 80.98 |
| 016200019000 | 38.34 | 38.34 |
| 016200026000 | 2.03 | 2.03 |
| 016200035000 | 9.72 | 9.72 |
| 016260001000 | 4.87 | 4.87 |
| 016260014000 | 15.40 | 15.40 |
| 016260015000 | 0.15 | 0.15 |
| 016260019000 | 16.41 | 16.41 |
| 016260026000 | 2.03 | 2.03 |
| 028050003000 | 0.30 | 0.30 |
| 028050006000 | 6.09 | 6.09 |

Table 3
 Affected Wastewater Lands by Alternative (including HMF)

| APN | Total Acres Affected | Acres with Potential for Manure Management |
|---|----------------------|--|
| 028050015000 | 3.65 | 3.65 |
| 028050016000 | 7.14 | 7.14 |
| 028080008000 | 10.84 | 10.84 |
| 028160011000 | 17.74 | 17.74 |
| 028160031000 | 10.16 | 10.16 |
| 028170040000 | 11.05 | 11.05 |
| 028170041000 | 3.80 | 3.80 |
| 028170042000 | 1.47 | 1.47 |
| 028202003000 | 5.09 | 5.09 |
| 028202005000 | 29.16 | 29.16 |
| 028202030000 | 8.92 | 8.92 |
| 028202034000 | 2.06 | 2.06 |
| 028202038000 | 0.23 | 0.23 |
| 028202039000 | 9.48 | 9.48 |
| 028203013000 | 0.038 | 0.038 |
| 028260005000 | 17.67 | 17.67 |
| 028290017000 | 7.07 | 7.07 |
| Hanford West Bypass 1 Alternative (At-Grade and Below-Grade Options) | | |
| 002220034000 | 3.07 | 3.07 |
| 006020003000 | 0.40 | 0.36 |
| 006020004000 | 0.60 | 0.41 |
| 006050005000 | 0.23 | 0.23 |
| 006050020000 | 8.48 | 8.48 |
| 009010002000 | 7.47 | 7.47 |
| 009010028000 | 13.63 | 13.63 |
| 009010031000 | 0.18 | 0.18 |
| 009010032000 | 9.25 | 8.25 |
| 018250033000 | 16.08 | 15.08 |
| 028020011000 | 0.17 | 0.17 |
| 028020059000 | 4.53 | 4.53 |
| 028150021000 | 10.29 | 10.29 |
| 028150025000 | 0.41 | 0.41 |
| 028220058000 | 1.10 | 1.10 |
| 028220059000 | 3.01 | 3.01 |
| 028220060000 | 6.94 | 6.94 |
| 028260019000 | 1.76 | 1.76 |
| 028260033000 | 3.90 | 3.90 |

Table 3
 Affected Wastewater Lands by Alternative (including HMF)

| APN | Total Acres Affected | Acres with Potential for Manure Management |
|---|----------------------|--|
| 028260035000 | 13.82 | 13.82 |
| 028260036000 | 3.99 | 3.99 |
| 028260039000 | 0.38 | 0.38 |
| 028260040000 | 18.73 | 18.73 |
| 028260045000 | 0.51 | 0.51 |
| 028260047000 | 0.26 | 0.26 |
| Hanford West Bypass 2 Modified | | |
| 002220034000 | 3.11 | 3.11 |
| 006020003000 | 0.44 | 0.40 |
| 006020004000 | 0.64 | 0.41 |
| 006050005000 | 0.23 | 0.23 |
| 006050020000 | 8.71 | 8.71 |
| 009010002000 | 7.47 | 7.47 |
| 009010028000 | 15.42 | 15.42 |
| 009010031000 | 0.41 | 0.41 |
| 009010032000 | 12.22 | 11.22 |
| 018250033000 | 19.00 | 18.08 |
| 028020011000 | 0.44 | 0.44 |
| 028020059000 | 5.27 | 5.27 |
| 028110010000 | 0.21 | 0.21 |
| 028150021000 | 0.11 | 0.11 |
| 028220058000 | 1.34 | 1.34 |
| 028220059000 | 3.30 | 3.30 |
| 028220060000 | 2.74 | 2.74 |
| 028260019000 | 2.31 | 2.31 |
| 028260033000 | 1.77 | 1.77 |
| 028260035000 | 16.52 | 16.52 |
| 028260036000 | 5.35 | 5.35 |
| 028260039000 | 0.38 | 0.38 |
| 028260040000 | 19.27 | 19.27 |
| 028260043000 | 1.65 | 1.65 |
| 028260045000 | 0.53 | 0.53 |
| 028260047000 | 0.29 | 0.29 |
| Hanford West Bypass 2 Alternative (At-Grade and Below-Grade Options) | | |
| 002220034000 | 3.07 | 3.07 |
| 006020003000 | 0.40 | 0.36 |
| 006020004000 | 0.60 | 0.41 |

Table 3
 Affected Wastewater Lands by Alternative (including HMF)

| APN | Total Acres Affected | Acres with Potential for Manure Management |
|--|----------------------|--|
| 006050005000 | 0.23 | 0.23 |
| 006050020000 | 8.48 | 8.48 |
| 009010002000 | 7.47 | 7.47 |
| 009010028000 | 13.63 | 13.63 |
| 009010031000 | 0.18 | 0.18 |
| 009010032000 | 9.25 | 8.25 |
| 018250033000 | 16.08 | 15.08 |
| 028020011000 | 0.03 | 0.03 |
| 028020059000 | 4.67 | 4.67 |
| 028100017000 | 5.86 | 5.38 |
| 028260005000 | 4.75 | 4.75 |
| 028260033000 | 15.64 | 15.64 |
| 028260035000 | 4.42 | 4.42 |
| 028260039000 | 23.17 | 23.17 |
| 028260044000 | 0.12 | 0.12 |
| Hanford West Bypass2 Modified Alternative | | |
| 002220034000 | 3.11 | 3.11 |
| 006020003000 | 0.44 | 0.40 |
| 006020004000 | 0.64 | 0.41 |
| 006050005000 | 0.23 | 0.23 |
| 006050020000 | 8.71 | 8.71 |
| 009010002000 | 7.47 | 7.47 |
| 009010028000 | 15.42 | 15.42 |
| 009010031000 | 0.41 | 0.41 |
| 009010032000 | 12.22 | 11.22 |
| 018250033000 | 17.68 | 16.68 |
| 028020059000 | 4.67 | 4.67 |
| 028220058000 | 1.96 | 1.96 |
| 028220060000 | 3.41 | 3.41 |
| 028260005000 | 4.75 | 4.75 |
| 028260033000 | 16.43 | 16.43 |
| 028260035000 | 3.98 | 3.98 |
| 028260039000 | 23.62 | 23.62 |
| Corcoran Bypass | | |
| 028290017000 | 4.17 | 4.17 |
| Corcoran Elevated | | |
| 028290017000 | 4.17 | 4.17 |

Table 3
 Affected Wastewater Lands by Alternative (including HMF)

| APN | Total Acres Affected | Acres with Potential for Manure Management |
|----------------------------------|----------------------|--|
| Hanford HMF | | |
| 016200019000 | 57.8 | 57.8 |
| 016200011000 | 123.5 | 117.3 |
| 016260001000 | 123.4 | 123.4 |
| HMF = heavy maintenance facility | | |

3.0 References

Federal Railroad Administration (FRA). 2005. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. Washington, DC: U.S. Department of Transportation. October 2005. http://www.fra.dot.gov/downloads/RRDev/final_nv.pdf.

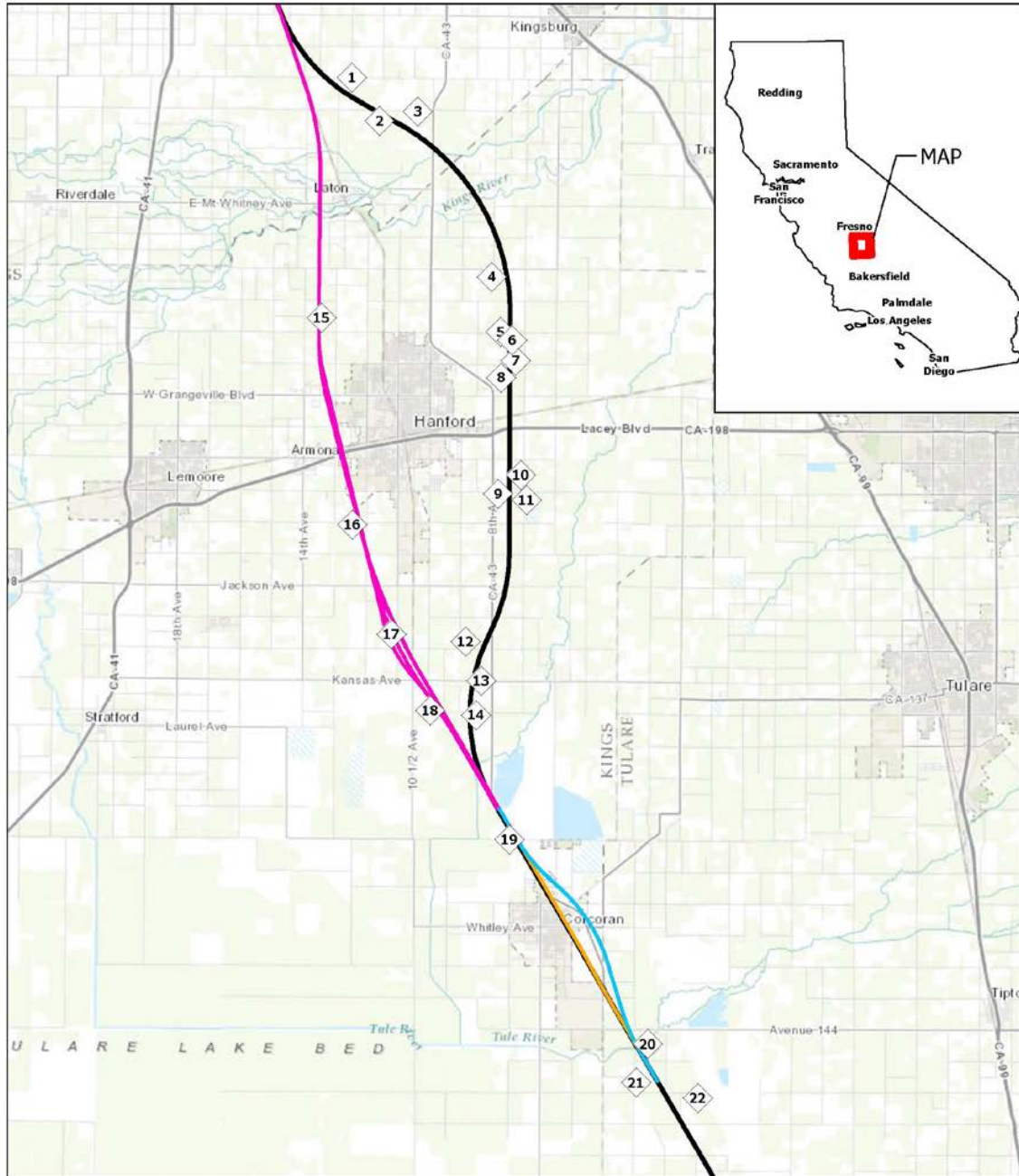
Kings County. 2002. "Dairy Element of the Kings County General Plan." Hanford, CA: Kings County Community Development Agency. July 30, 2002. <http://www.countyofkings.com/planning/dairy.html>

Figures

Figures

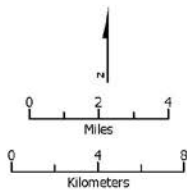
Index Sheet

| | |
|------|-------------------|
| B-1 | APN: 28518062 |
| B-2 | APN: 05603055S |
| B-3 | APN: 05603044S |
| B-4 | APN: 014010065000 |
| B-5 | APN: 014090002000 |
| B-6 | APN: 014090035000 |
| B-7 | APN: 014090007000 |
| B-8 | APN: 014130058000 |
| B-9 | APN: 016200032000 |
| B-10 | APN: 016200035000 |
| B-11 | APN: 016200005000 |
| B-12 | APN: 028160031000 |
| B-13 | APN: 028202030000 |
| B-14 | APN: 028260005000 |
| B-15 | APN: 006050004000 |
| B-16 | APN: 018250033000 |
| B-17 | APN: 028150023000 |
| B-18 | APN: 028206005000 |
| B-19 | APN: 028290017000 |
| B-20 | APN: 291030043 |
| B-21 | APN: 291020022 |
| B-22 | APN: 291060019 |



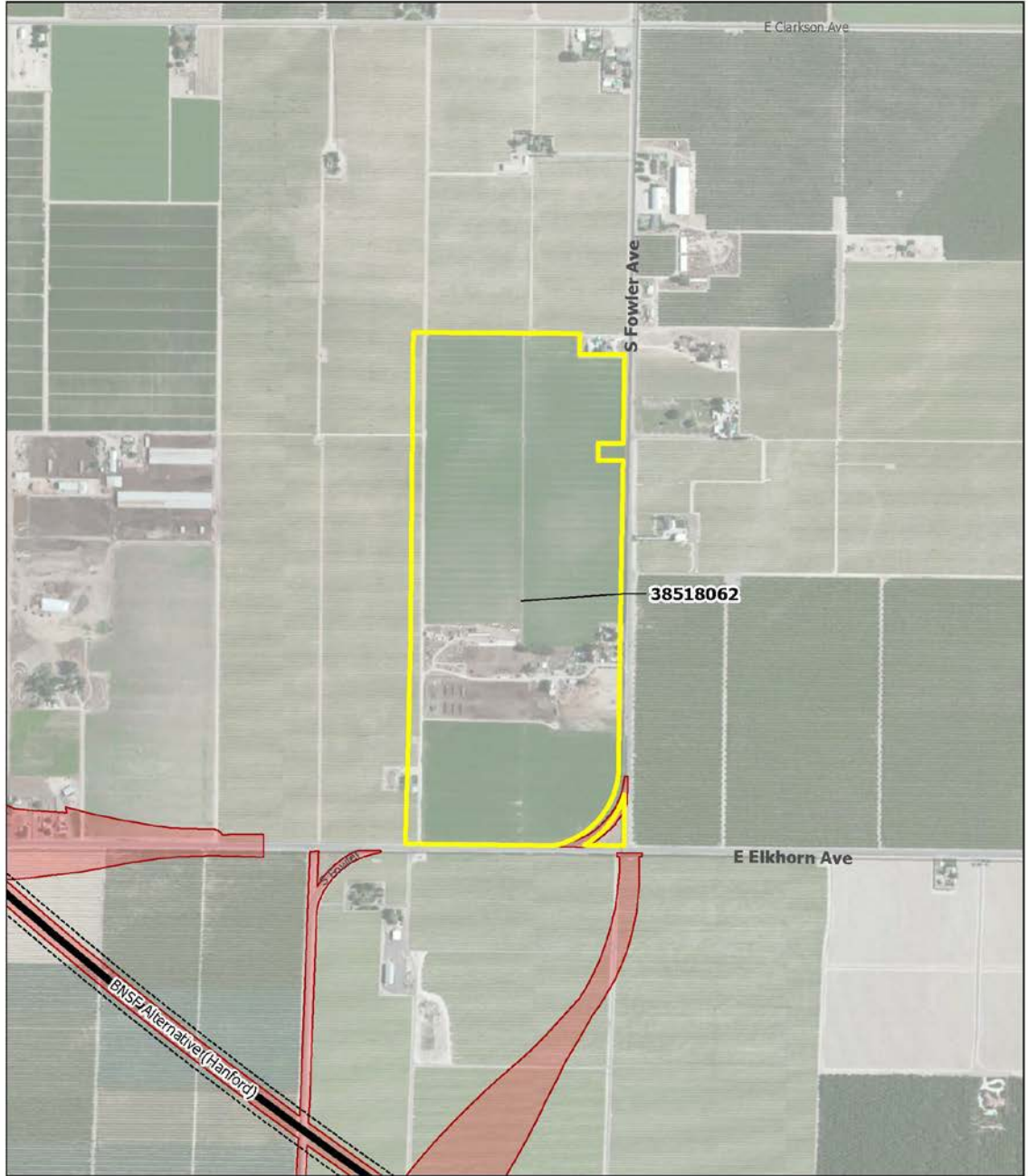
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



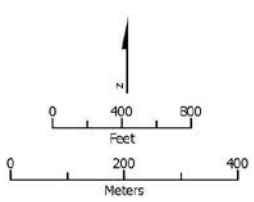
- ◊ Map number
- Alignment alternatives**
- BNSF Alternative
- Hanford West Bypass Alternatives
- Corcoran Elevated
- Corcoran Bypass

Index Sheet



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



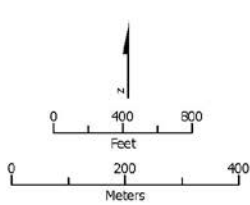
- Alternative alignments
- 100-ft buffer of alignment
- Footprint
- Farmland Type**
- Confined Animal Operation
- Waste Water

Figure B-1
 APN: 38518062



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



- | | |
|----------------------------|--|
| Alternative alignments | Farmland Type: Confined Animal Operation |
| 100-ft buffer of alignment | Farmland Type: Waste Water |
| Footprint | |

Figure B-2
 APN: 056030555



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
Image source: ESRI

November 8, 2013

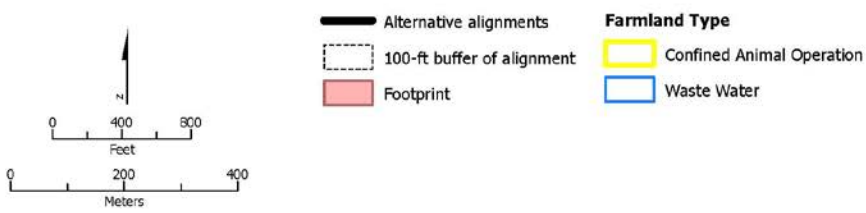
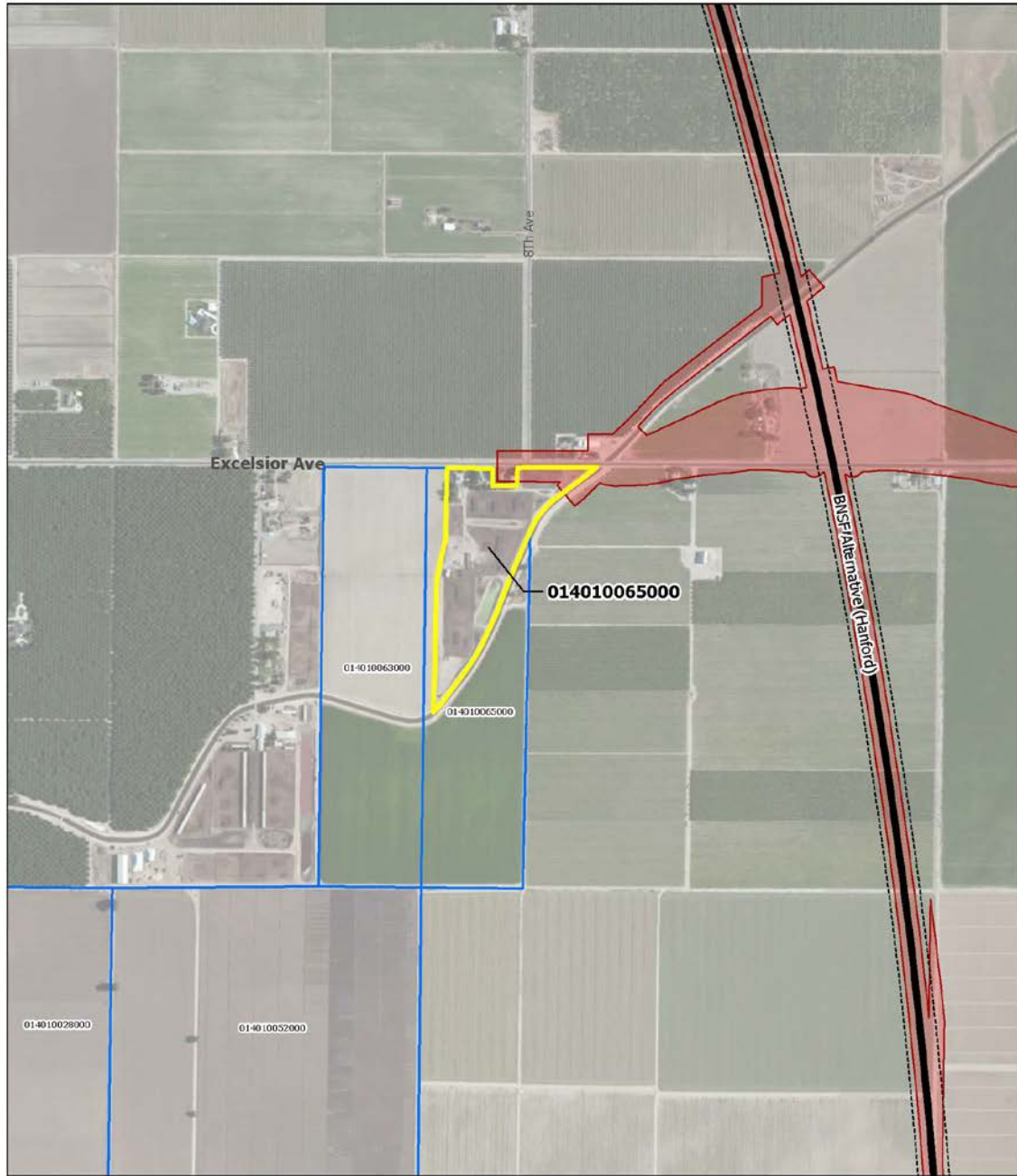
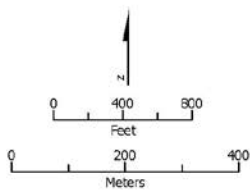


Figure B-3
APN: 05603044S



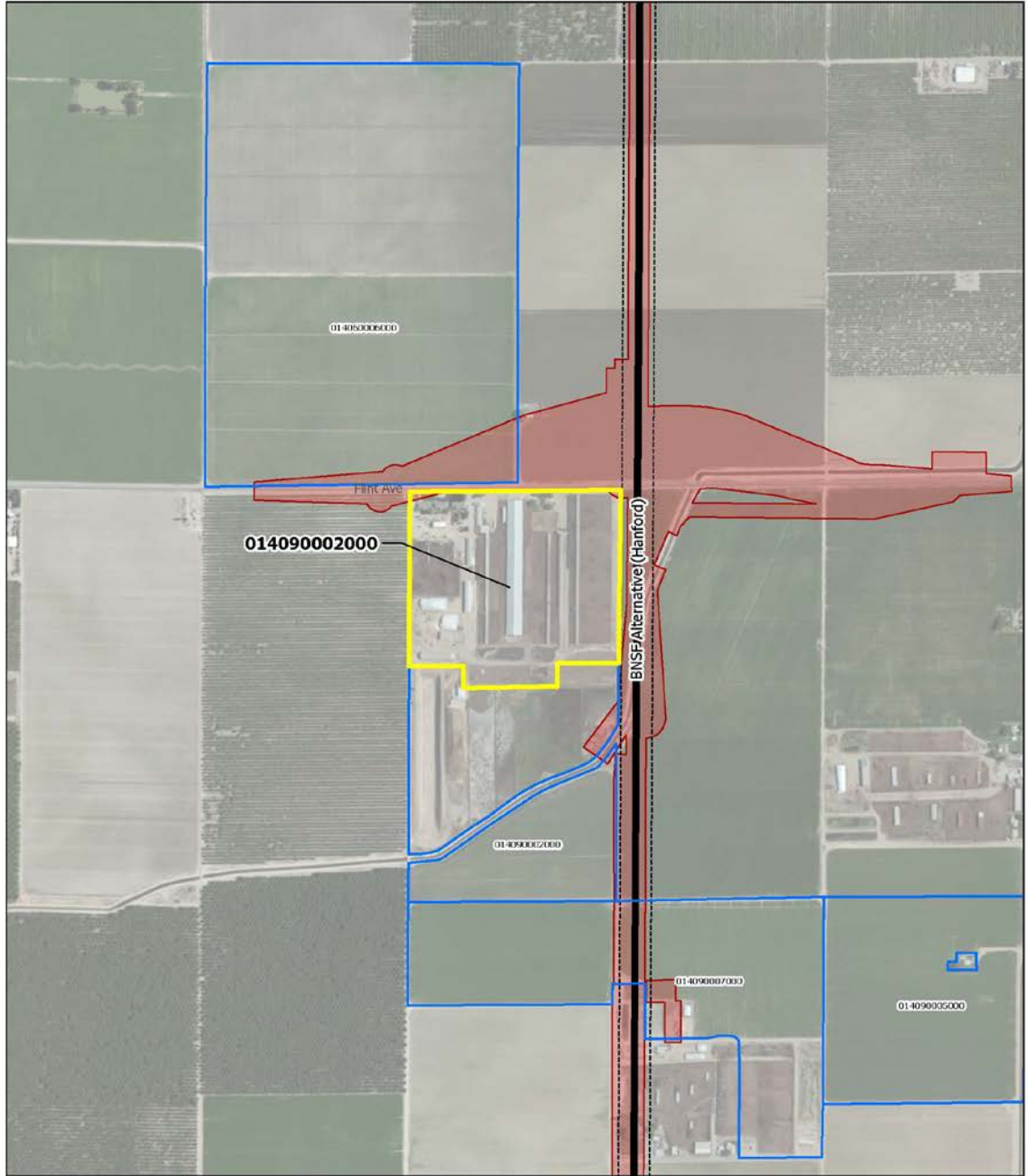
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



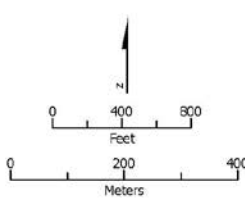
- | | |
|----------------------------|--|
| Alternative alignments | Farmland Type Confined Animal Operation |
| 100-ft buffer of alignment | Waste Water |
| Footprint | |

Figure B-4
 APN: 014010065000



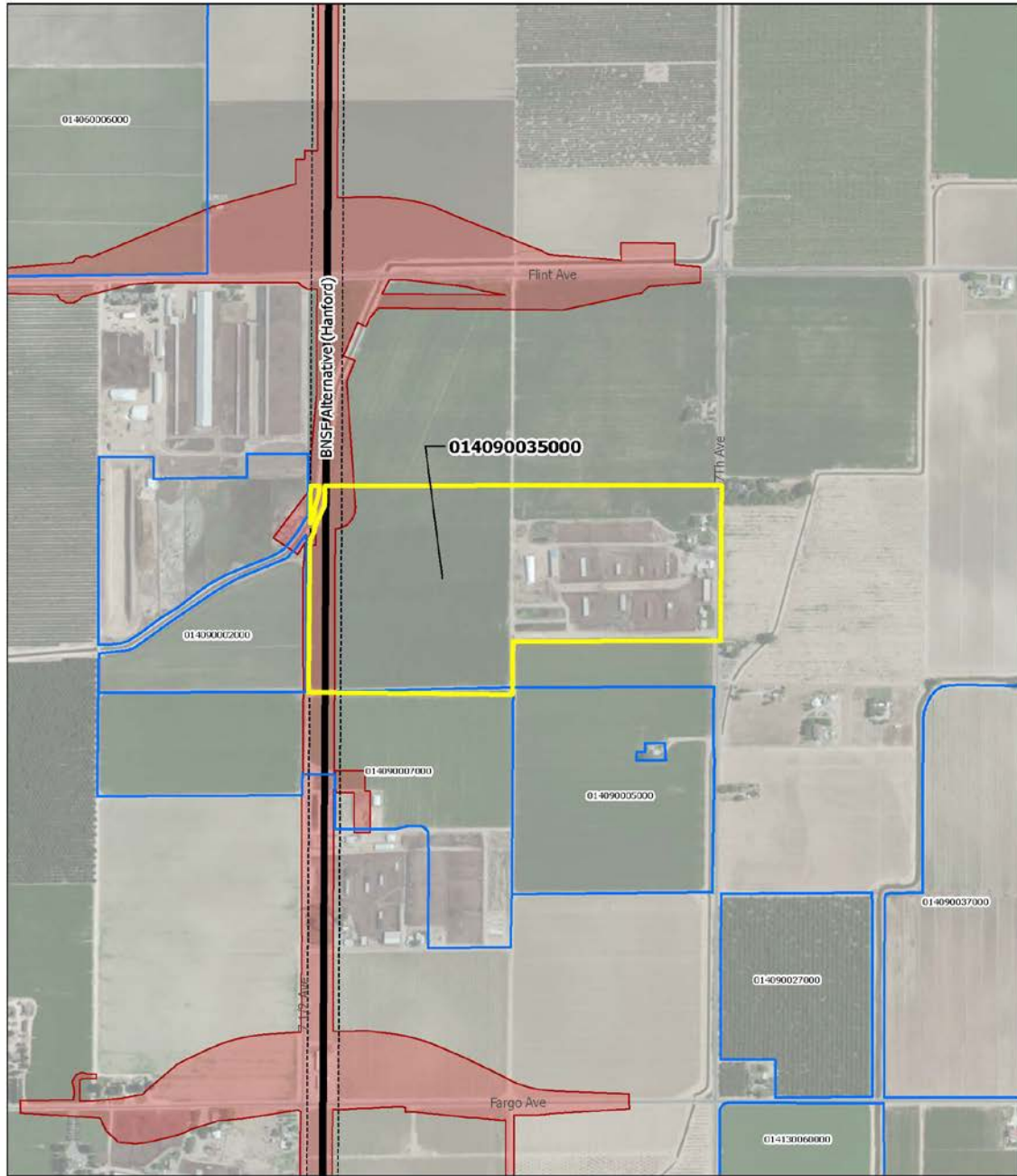
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



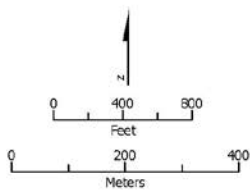
- | | |
|----------------------------|---------------------------|
| Alternative alignments | Confined Animal Operation |
| 100-ft buffer of alignment | Waste Water |
| Footprint | |

Figure B-5
 APN: 014090002000



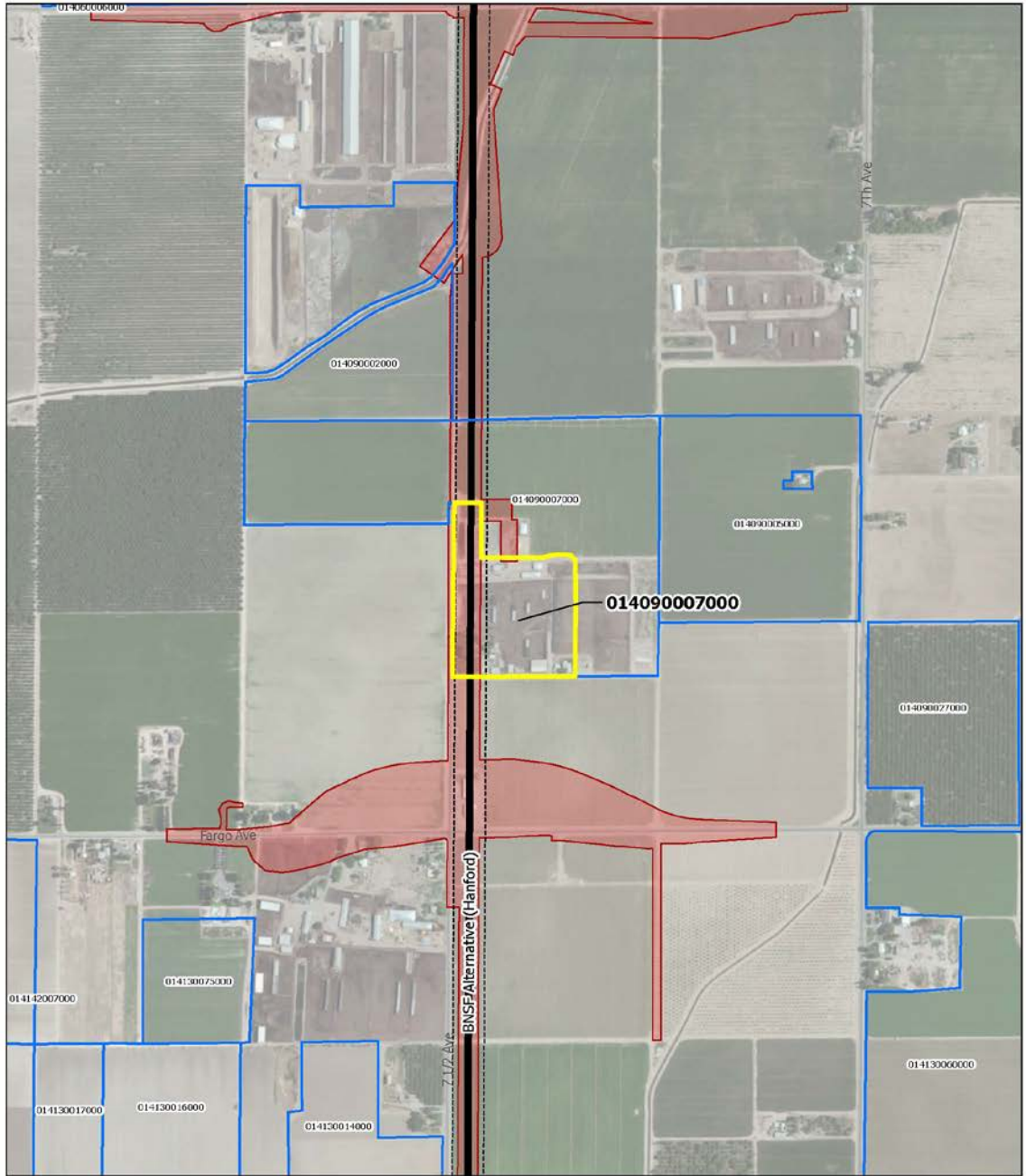
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



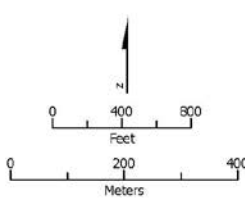
- | | |
|----------------------------|--|
| Alternative alignments | Farmland Type Confined Animal Operation |
| 100-ft buffer of alignment | Waste Water |
| Footprint | |

Figure B-6
 APN: 014090035000



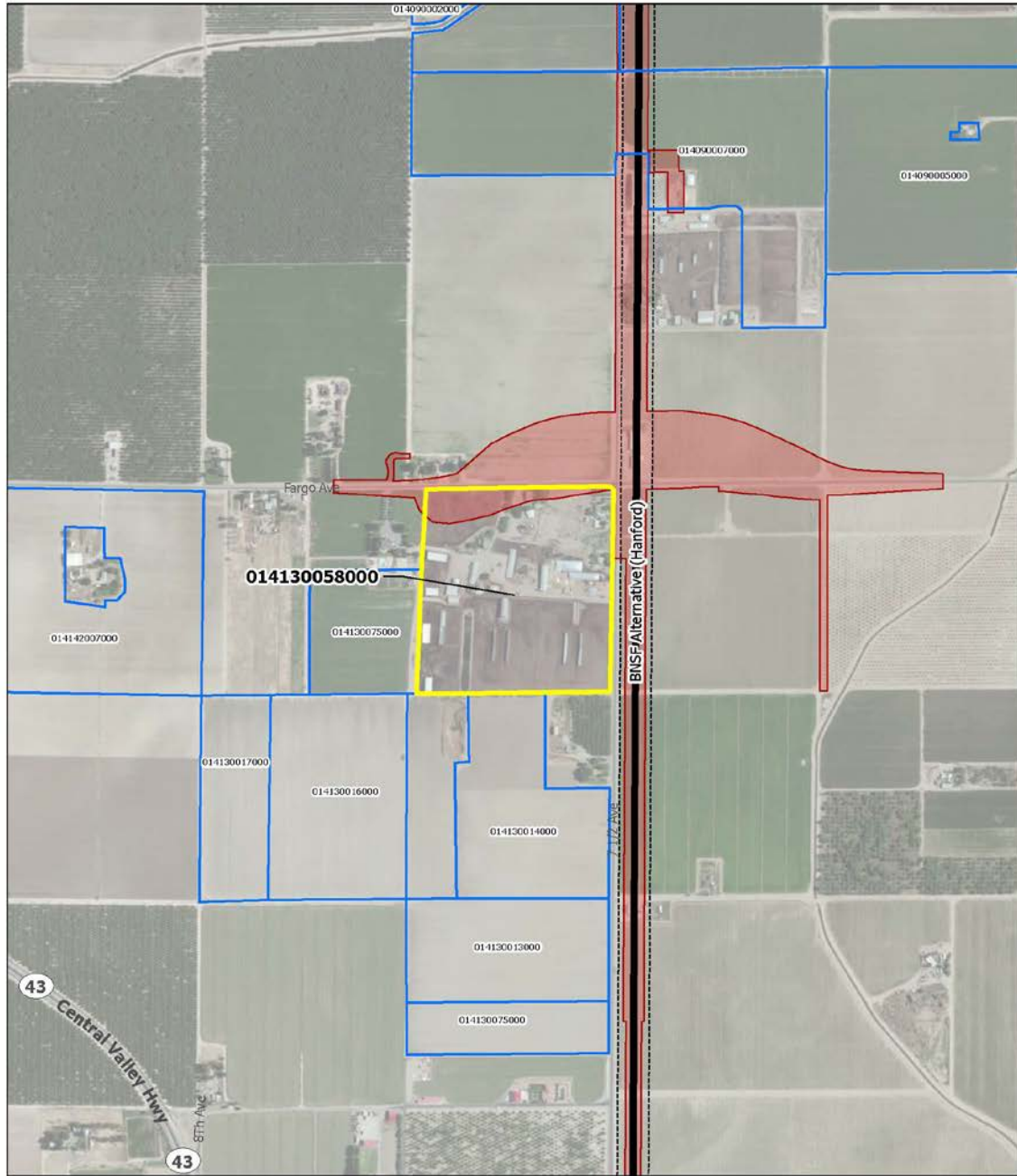
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



- Alternative alignments
- 100-ft buffer of alignment
- Footprint
- Confined Animal Operation
- Waste Water

Figure B-7
 APN: 014090007000



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

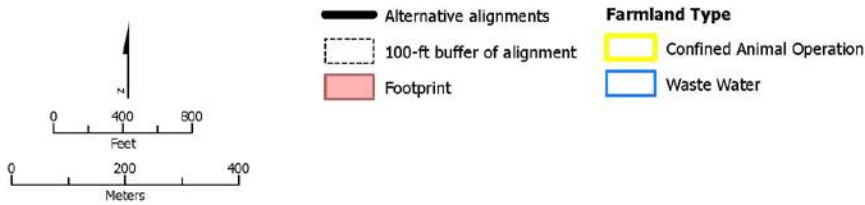
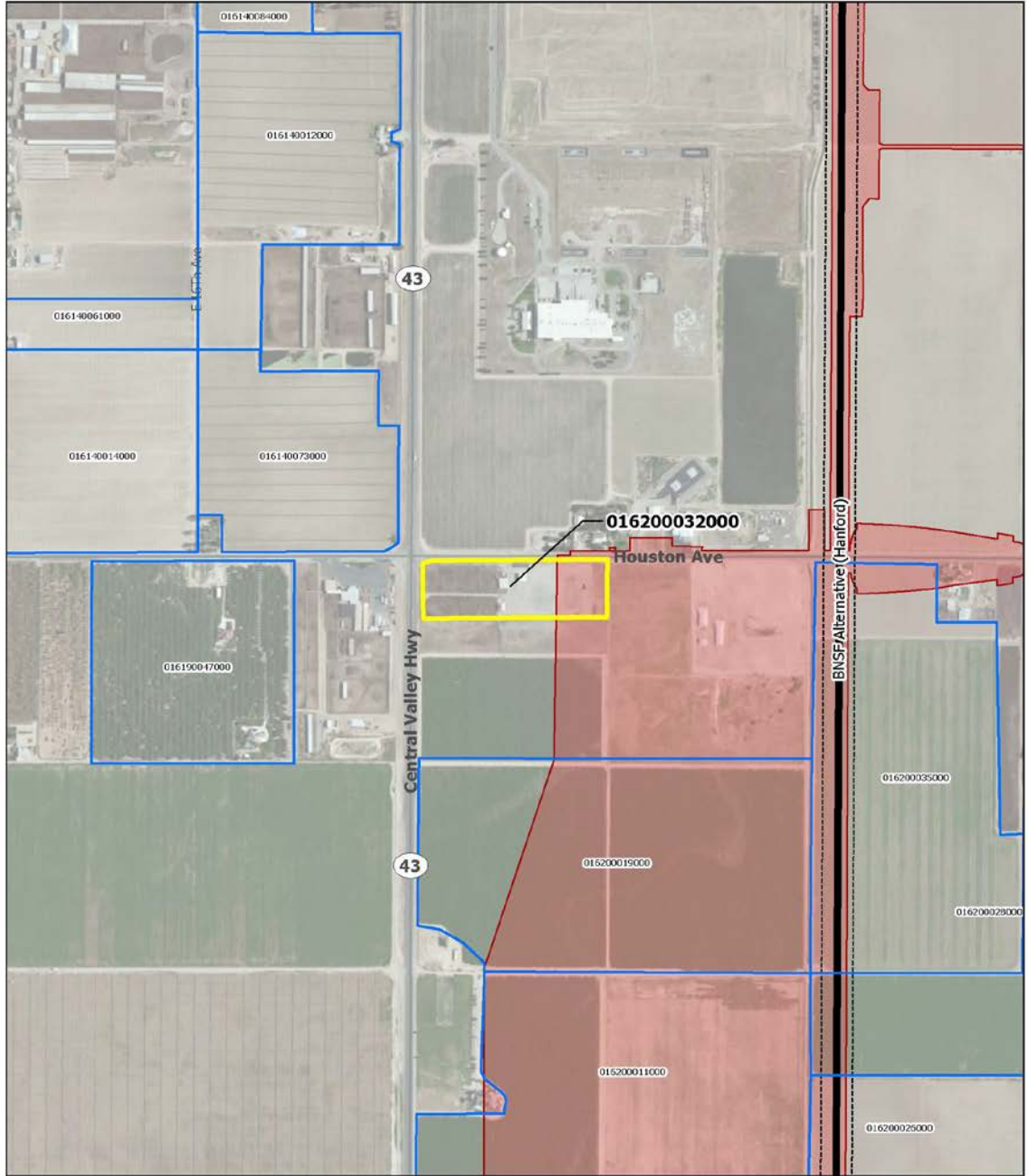


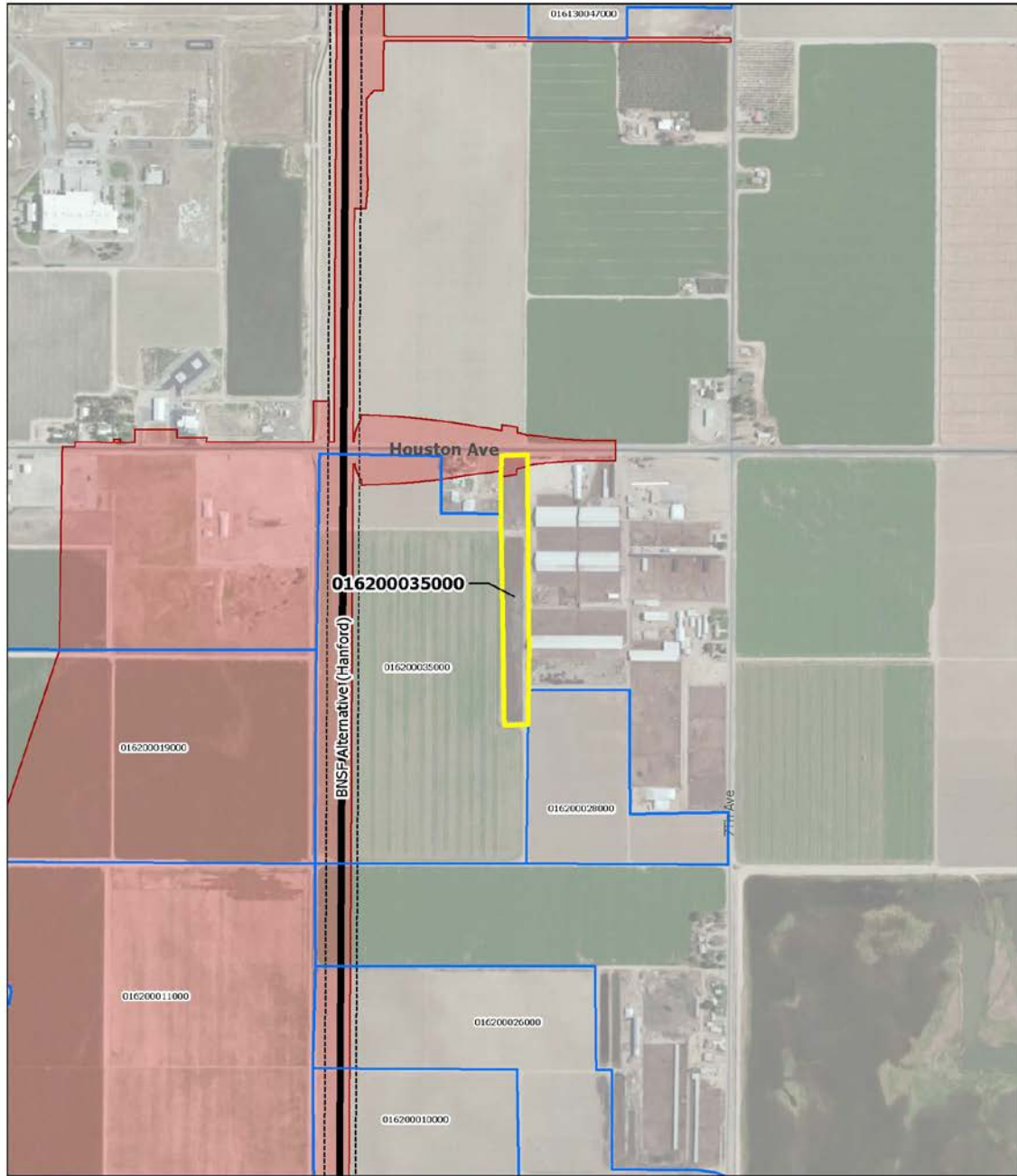
Figure B-8
 APN: 014130058000



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

Figure B-9
 APN: 016200032000



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

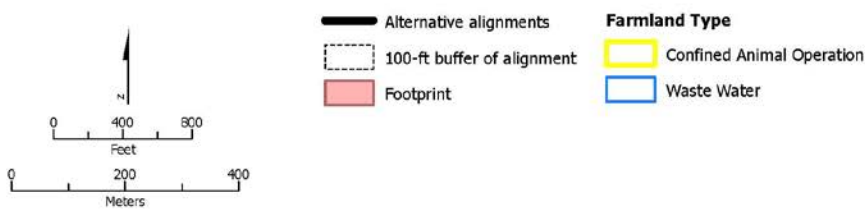
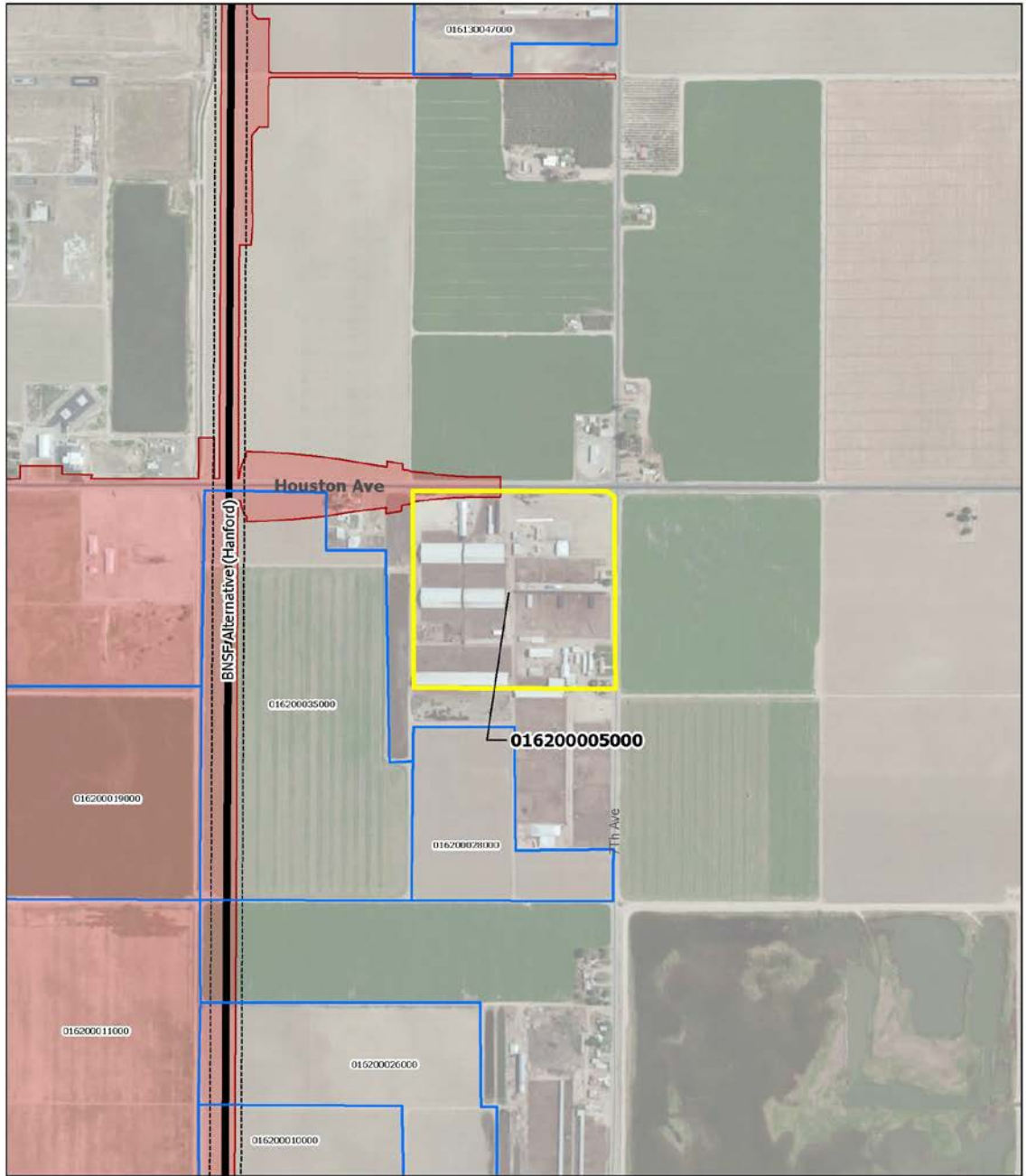
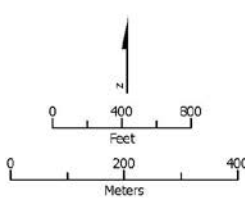


Figure B-10
 APN: 016200035000



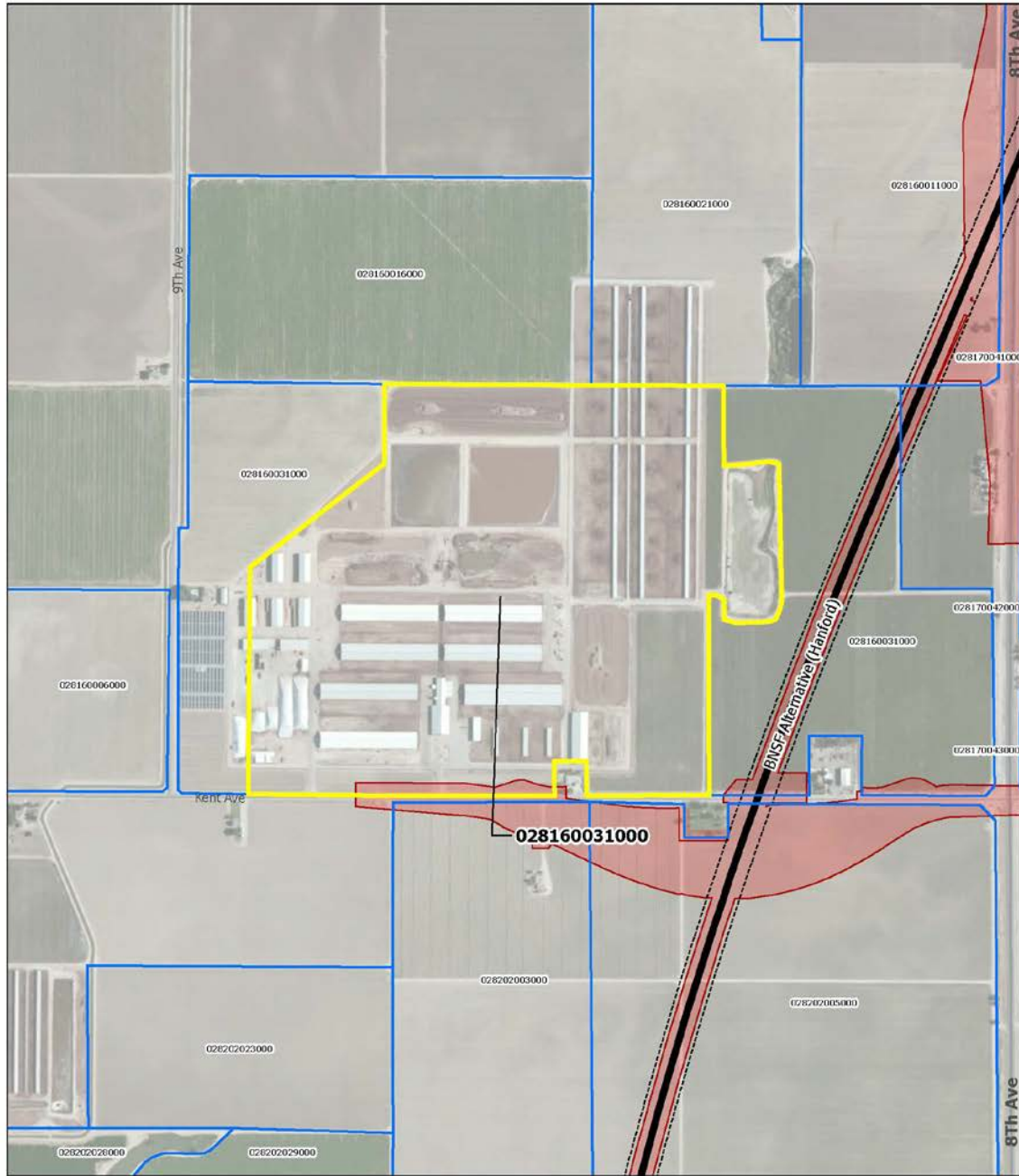
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



- | | |
|----------------------------|---|
| Alternative alignments | Farmland Type Confined Animal Operation |
| 100-ft buffer of alignment | Waste Water |
| Footprint | |

Figure B-11
 APN: 016200005000



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

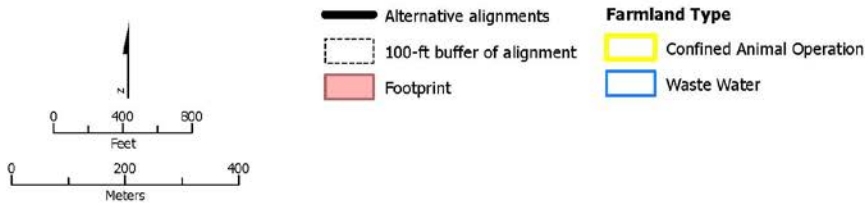
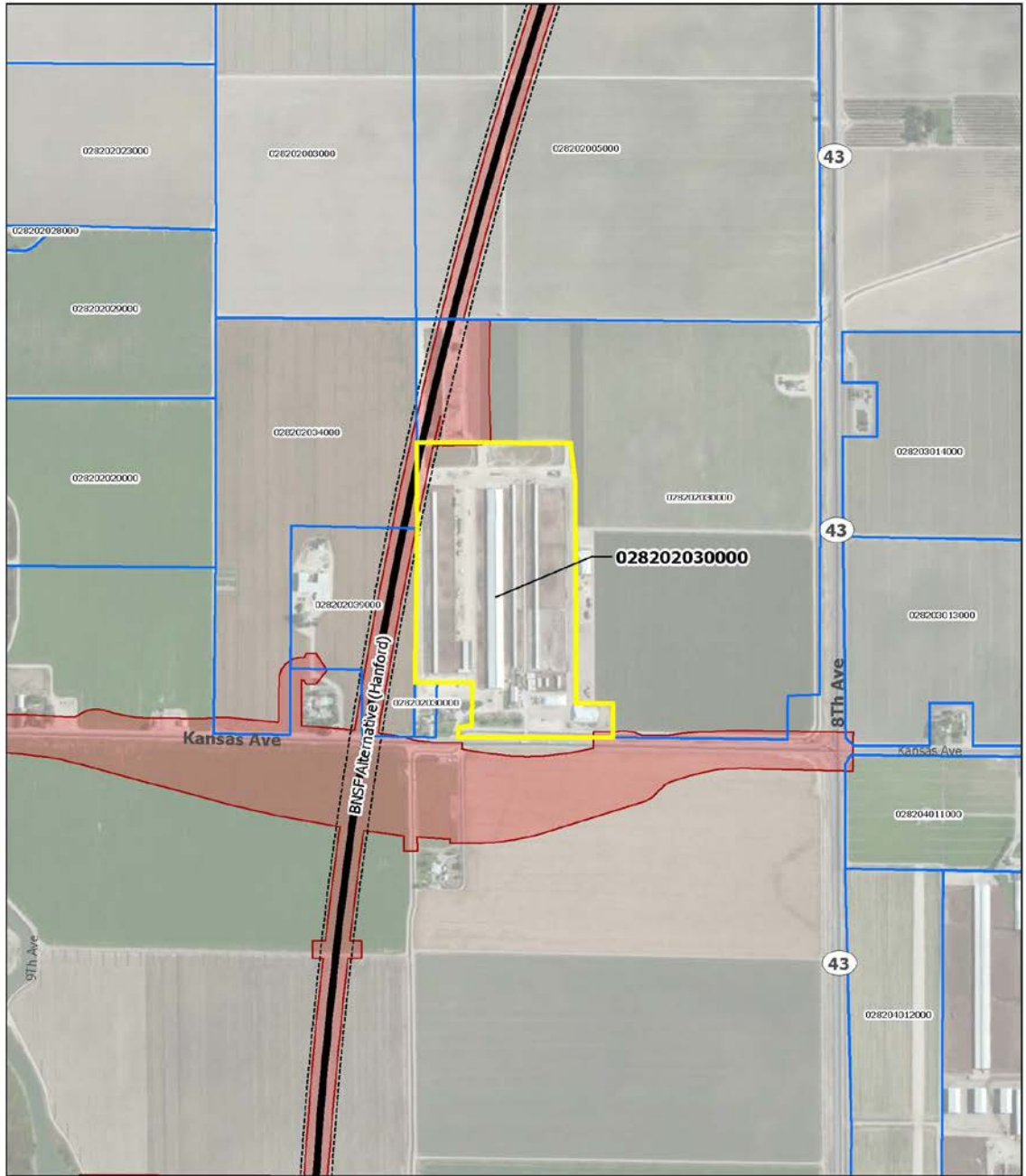
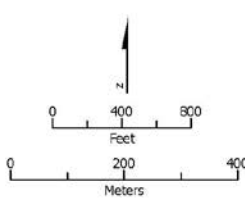


Figure B-12
 APN: 028160031000



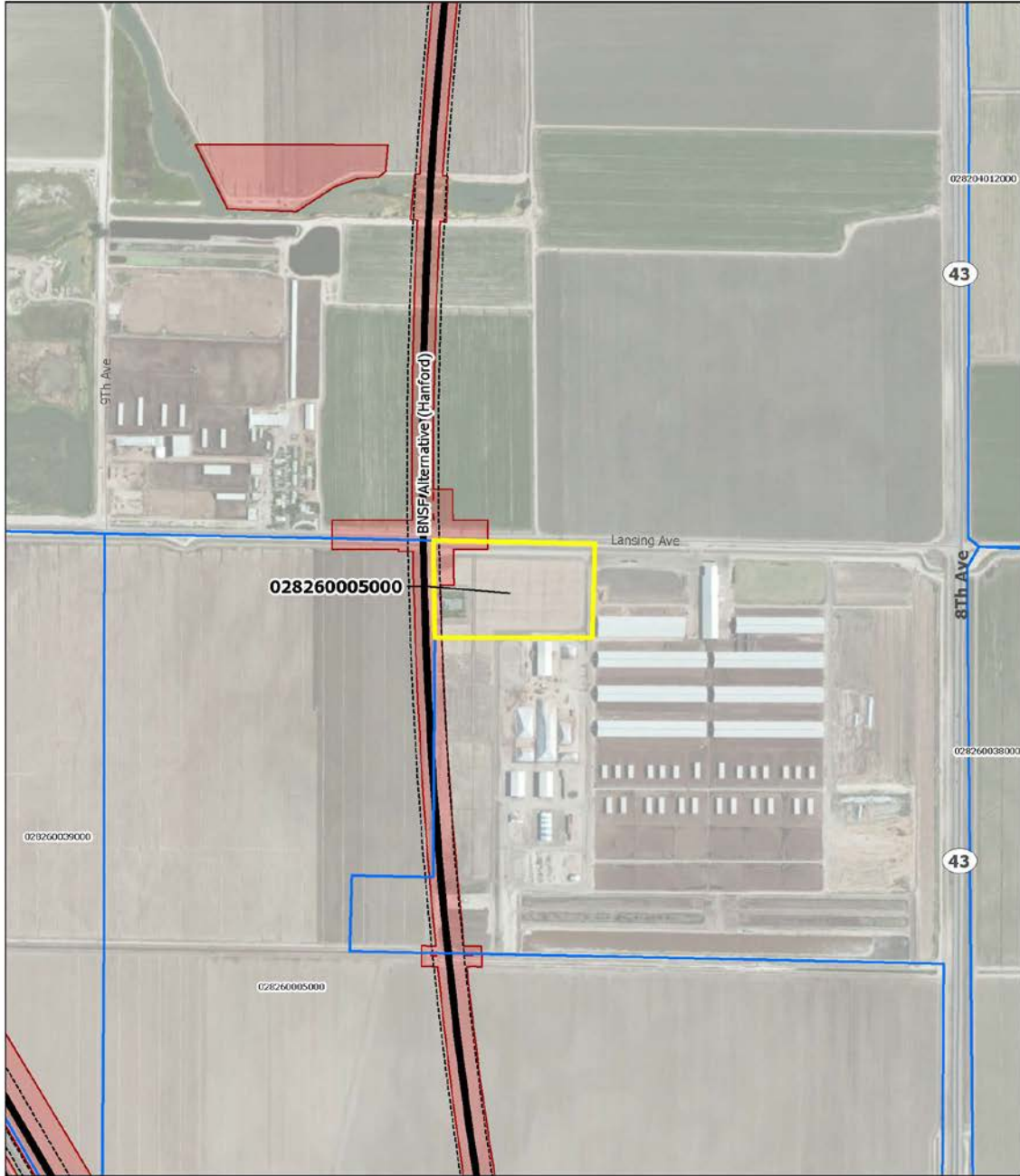
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



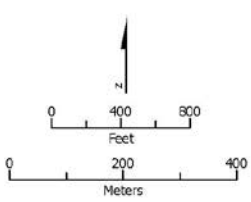
- | | |
|----------------------------|--|
| Alternative alignments | Farmland Type Confined Animal Operation |
| 100-ft buffer of alignment | Waste Water |
| Footprint | |

Figure B-13
 APN: 028202030000



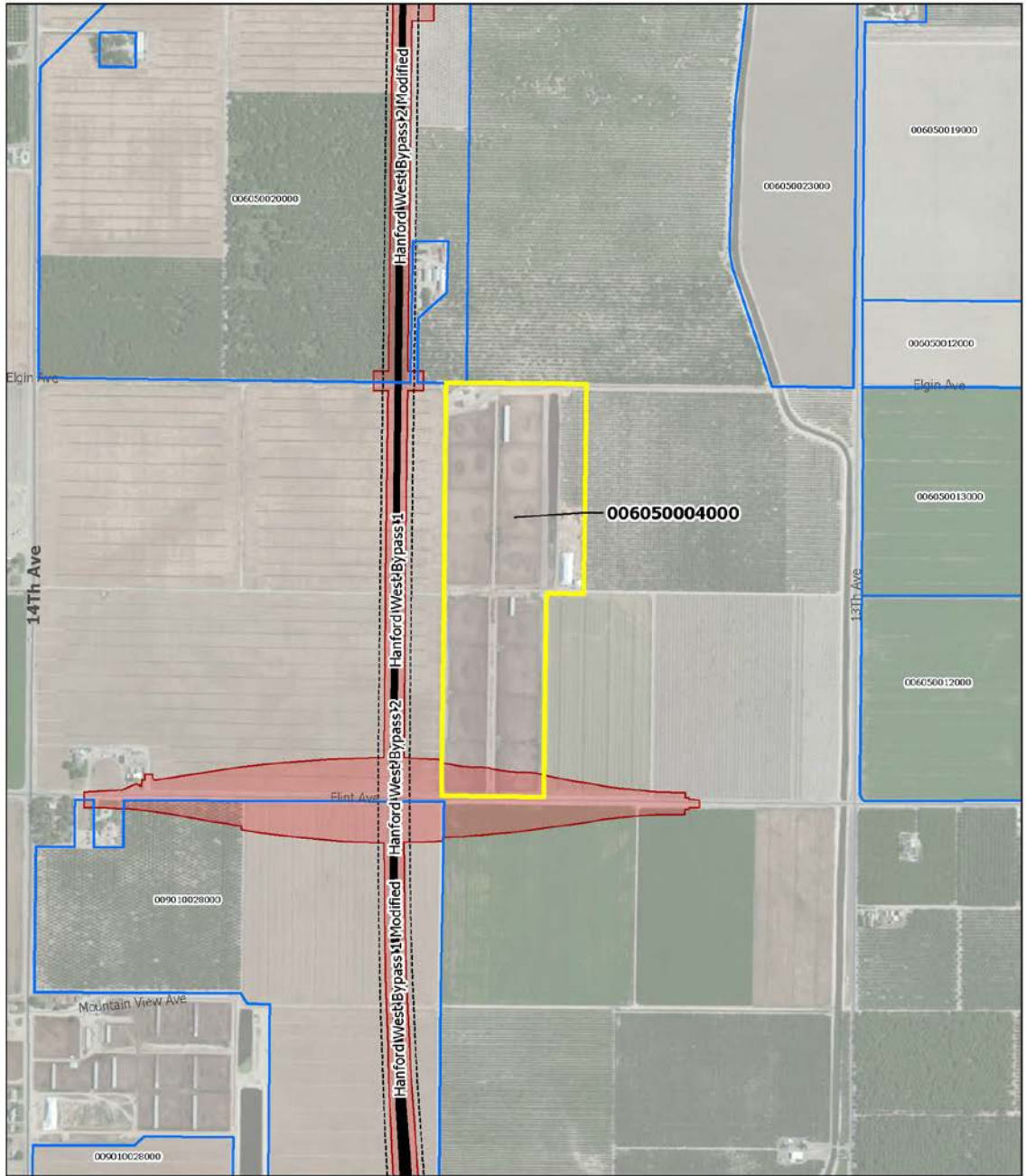
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



- Alternative alignments
- 100-ft buffer of alignment
- Footprint
- Farmland Type
Confined Animal Operation
- Waste Water

Figure B-14
 APN: 028260005000



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

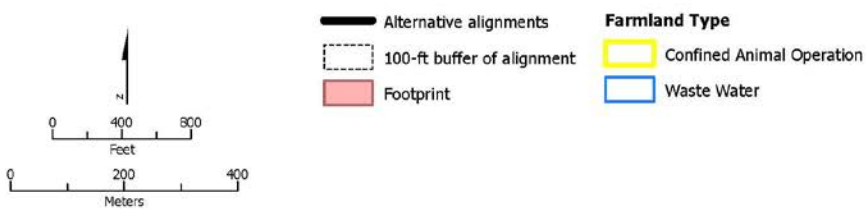
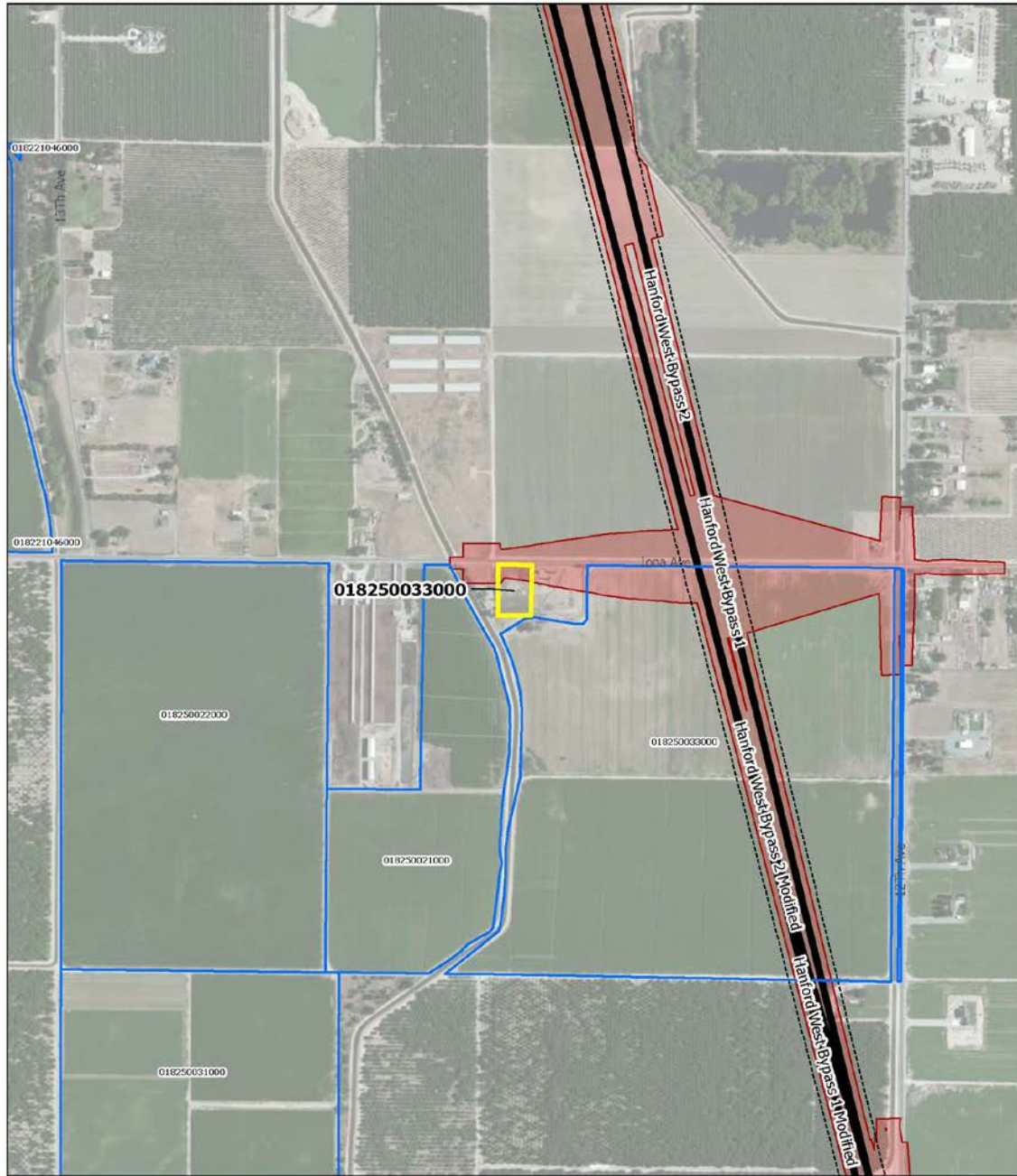


Figure B-15
 APN: 006050004000



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

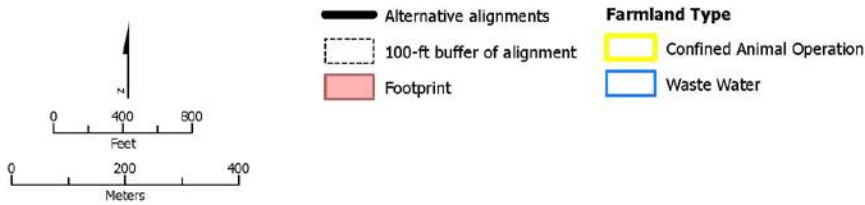
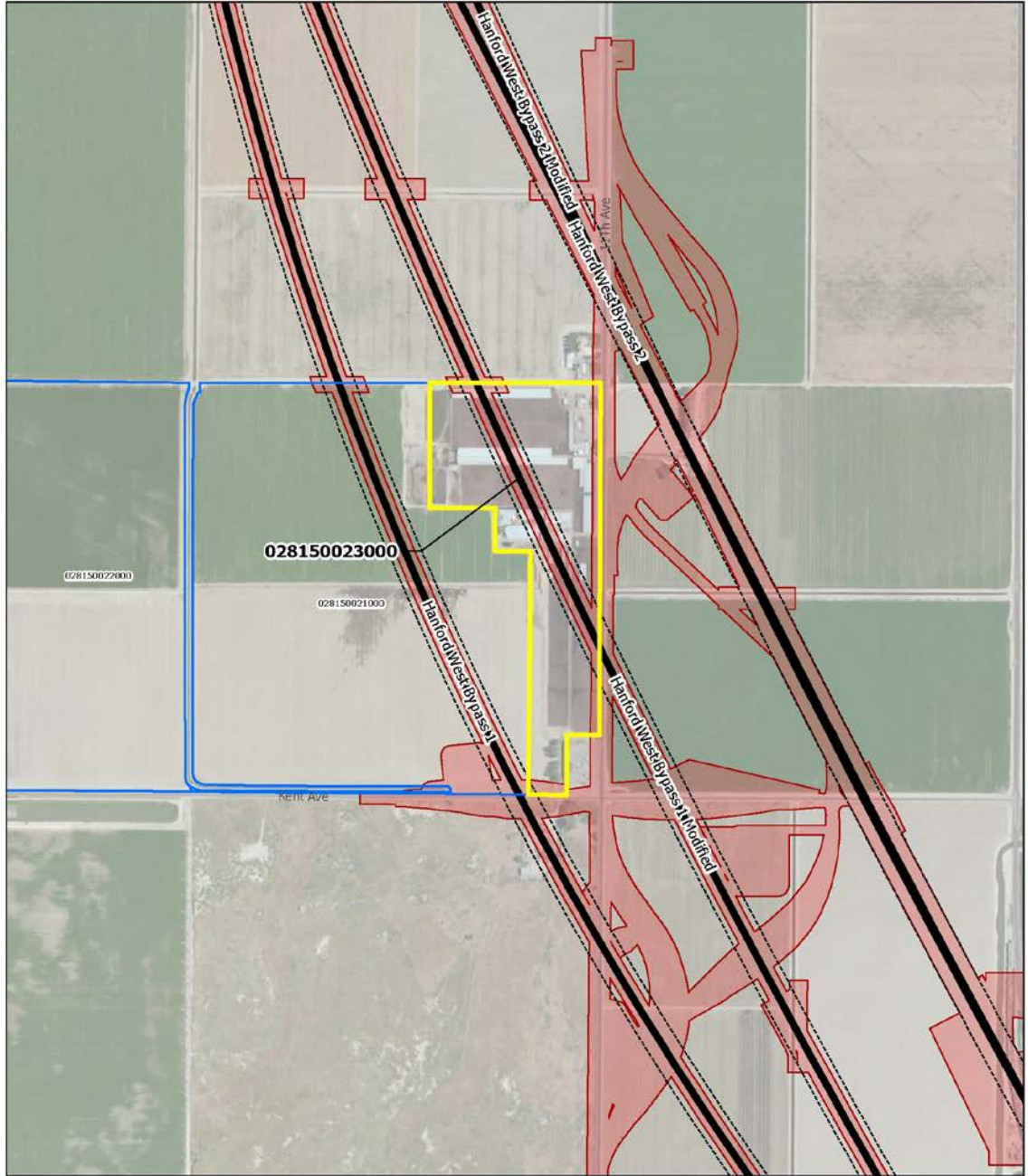
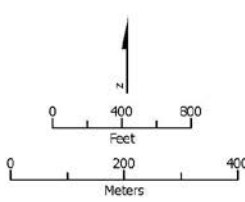


Figure B-16
 APN: 018250033000



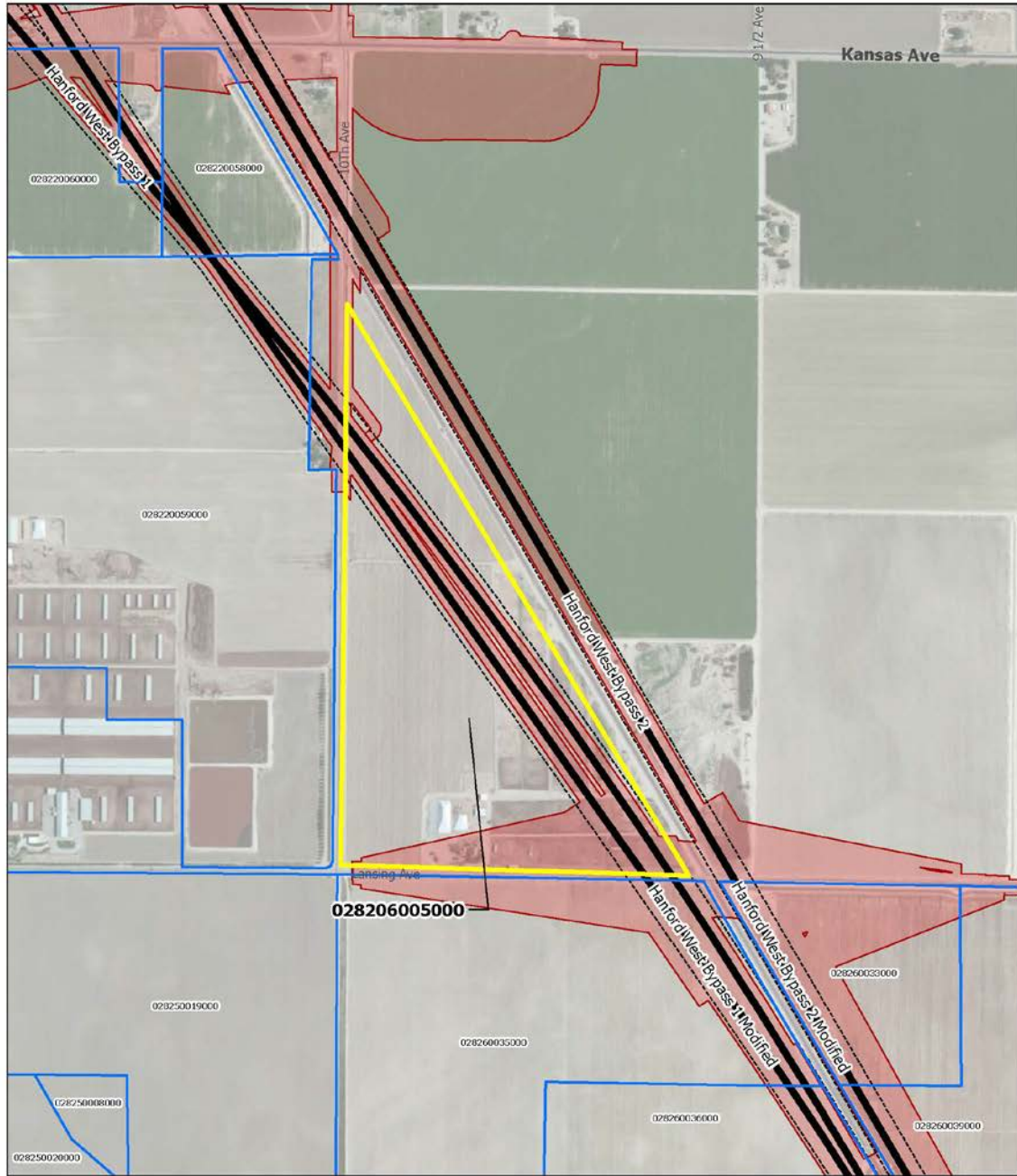
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



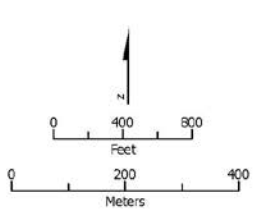
- Alternative alignments
- 100-ft buffer of alignment
- Footprint
- Farmland Type
Confined Animal Operation
- Waste Water

Figure B-17
 APN: 028150023000



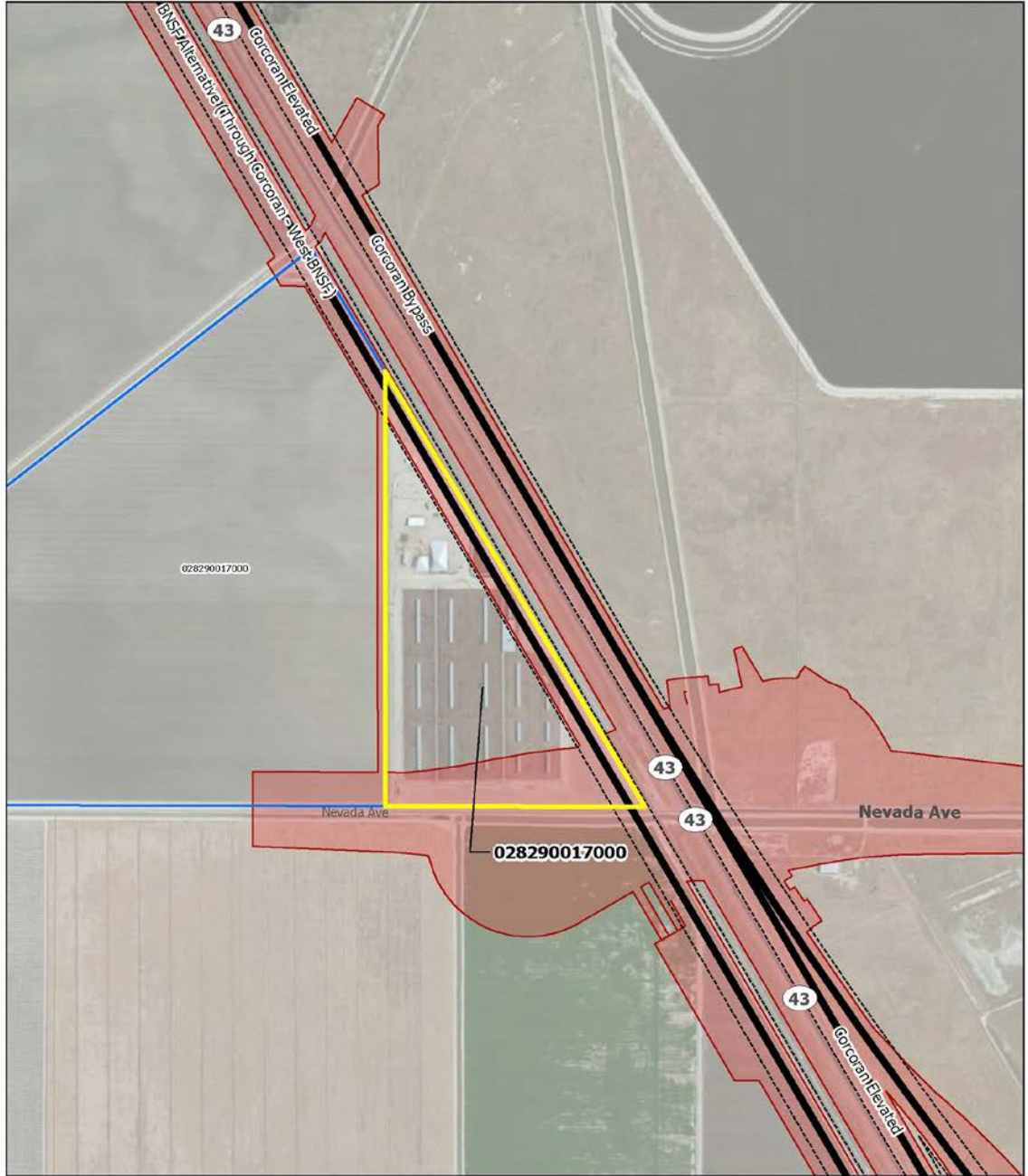
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013



- Alternative alignments
- 100-ft buffer of alignment
- Footprint
- Confined Animal Operation
- Waste Water

Figure B-18
 APN: 028206005000



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013. November 8, 2013
 Image source: ESRI

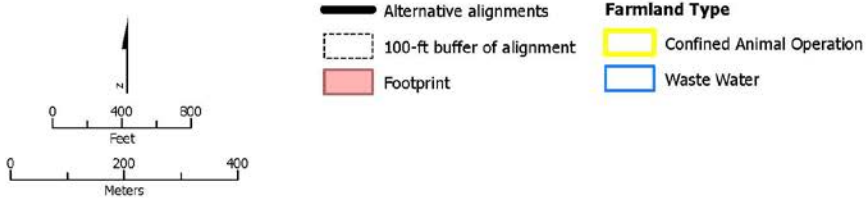
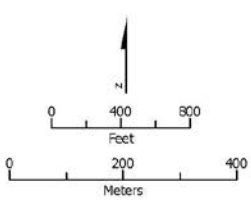


Figure B-19
 APN: 028290017000



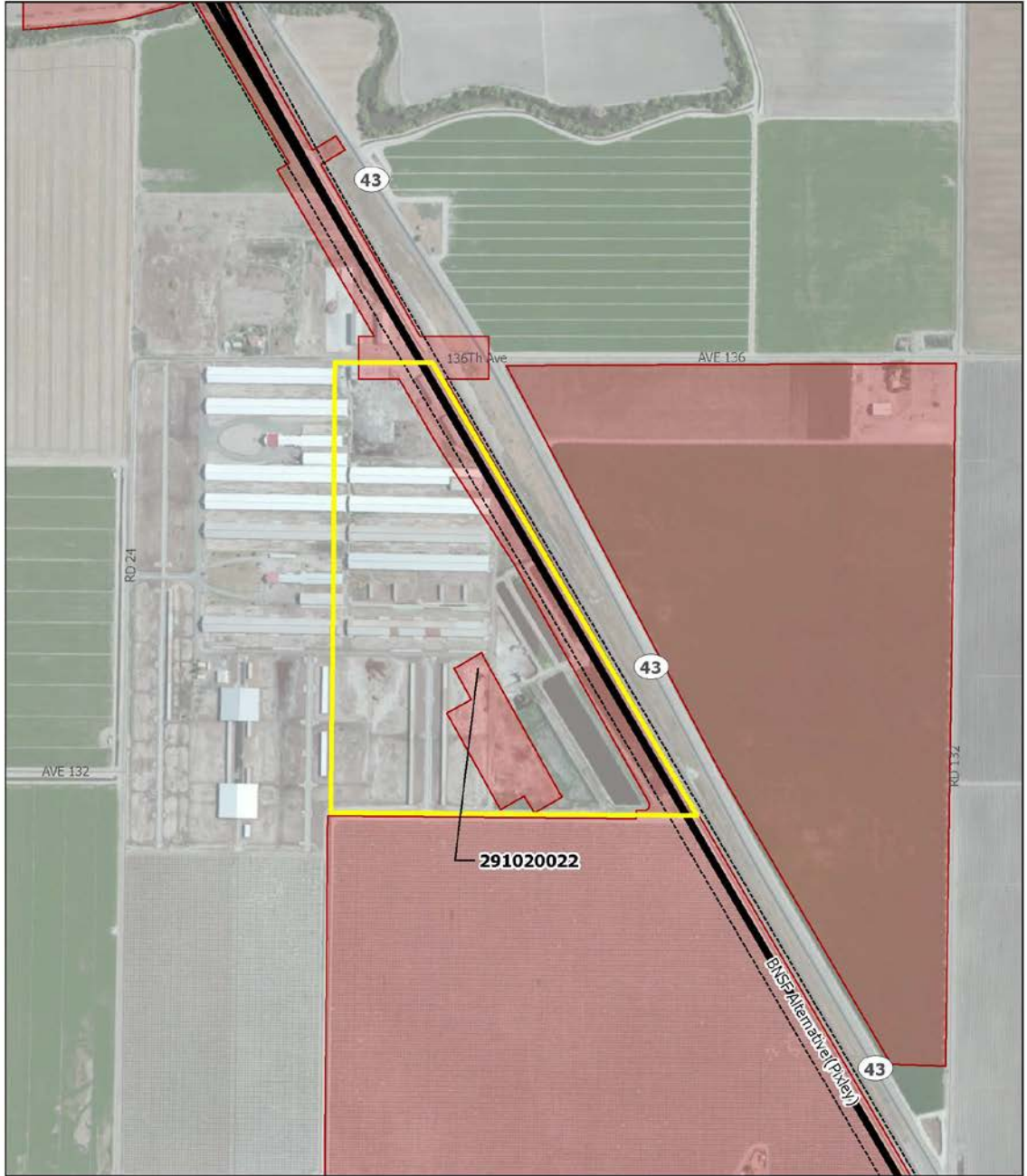
Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

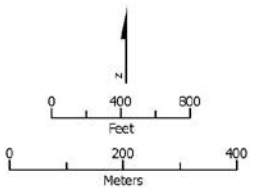


- Alternative alignments
- 100-ft buffer of alignment
- Footprint
- Confined Animal Operation
- Waste Water

Figure B-20
 APN: 291030043



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013. November 8, 2013
 Image source: ESRI



- Alternative alignments
- 100-ft buffer of alignment
- Footprint
- Farmland Type**
- Confined Animal Operation
- Waste Water

Figure B-21
 APN: 291020022



Source: Kings County, 2012-2013; URS/HMM/Arup JV, 2013.
 Image source: ESRI

November 8, 2013

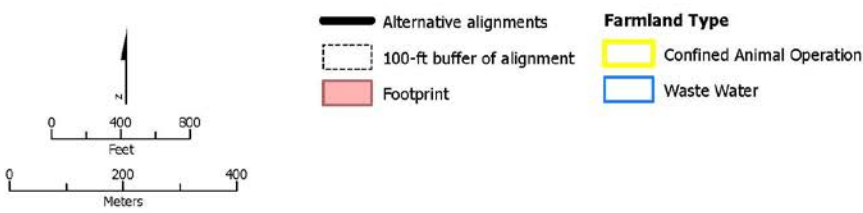


Figure B-22
 APN: 291060019