4.7 NOISE

4.7.1 Environmental Setting

This section describes the existing noise environment in and around site of The Village at Loomis (proposed project) and identifies noise levels expected to be generated by construction and operation of the proposed project. Receptors that may potentially be affected by noise are identified, and the criteria used to evaluate the effect of project-generated noise upon the existing noise environment. The discussion also describes the fundamentals of acoustics, the results of a site reconnaissance, sound level measurements, acoustical calculations, and assessment of potential noise impacts from construction and project operation.

The proposed project includes 418 dwelling units, 56,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space. The project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units that were evaluated in the Draft EIR, and omitting the southern portion of the trail along the eastern side of the open space. The reduction in dwelling units and shortening of the trail increases the amount of open space in the center of the project from the 9.55 acres evaluated in the Draft EIR. The applicant also proposes to implement measures to reduce project impacts under the Transportation Alternative that was evaluated in the Draft EIR. The Modified Transportation Alternative includes 418 total dwelling units, 49,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 acres of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space.

One comment regarding noise was received in response to the Notice of Preparation from a resident in the area. The letter requests that a sound wall be constructed on the freeway side of the project site to reduce freeway noise to new and existing residences. The Notice of Preparation and comments received in response to that document are provided in Appendix A of this ~~draft~~ environmental impact report (EIR).

The information used to prepare this analysis is based on the Environmental Noise Analysis prepared for the project by Bollard Acoustical Consultants, which is provided in Appendix F of this ~~draft~~ EIR.

Characteristics of Environmental Noise

Fundamentals of Acoustics

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels over an extended period has been demonstrated to cause hearing loss, the principal human response to noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise, its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by a number of variables including frequency and intensity. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above approximately 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is approximately 3 dB. An increase (or decrease) in sound level of approximately 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness, this relation holds true for loud sounds and for quieter sounds.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example:

60 dB + 60 dB = 63 dB, and
80 dB + 80 dB = 83 dB

Hertz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. A particular tone that makes the drum vibrate 100 times per second generates a sound pressure wave that is oscillating at 100 Hz; this pressure oscillation is perceived as a tonal pitch of 100 Hz. Sound frequencies between 20 Hz and 20,000 Hz are within the range of sensitivity of the human ear.

Sound from a tuning fork (a pure tone) contains a single frequency. In contrast, most sounds one hears in the environment consist of a broad band of frequencies differing in sound level. The

method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound according to a weighting system that reflects the fact that human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from several sources that creates a relatively steady background noise in which no particular source is identifiable. A single descriptor called the equivalent sound level (L_{eq}) represents the "equivalent" constant sound level that would have to be produced by a given source to equal the fluctuating level measured. L_{eq} is the mean A-weighted sound level during a measured time interval. In addition, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the L_{max} and L_{min} indicators. They represent the maximum and minimum noise levels measured.

To describe the time-varying character of environmental noise, the statistical noise descriptors L_{10}, L_{50}, and L_{90} are commonly used. They are the noise levels equaled or exceeded during 10%, 50%, and 90% of a stated time. Sound levels associated with the L_{10} typically describe transient or short-term events, while levels associated with the L_{90} describe the steady-state (or most prevalent) noise conditions.

Another sound measure known as the day/night average noise level (L_{dn}) is defined as the A-weighted average sound level for a 24-hour day. It is calculated by adding a 10 dBA penalty to sound levels in the night (10 p.m. to 7 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. The L_{dn} is used by agencies such as the U.S. Department of Housing and Urban Development, the State of California, Placer County, and the Town of Loomis (Town) to define acceptable land use compatibility with respect to noise.

Community Noise

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), over a given time period (usually 1 hour). The L_{eq} is the foundation of the day/night average noise descriptor (L_{dn}), and shows very good correlation with community response to noise for the average person.

The L_{dn} is based on the average noise level over a 24-hour day, with a +10 dB weighting applied to noise occurring during nighttime (10 p.m. to 7 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Where short-term noise sources are an issue, noise impacts may be assessed in terms of maximum noise levels, hourly averages, or other statistical descriptors.

Perception of Loudness

The perceived loudness of sounds and corresponding reactions to noise are dependent on many factors, including sound pressure level, duration of intrusive sound, frequency of occurrence, time of occurrence, and frequency content. As mentioned above; however, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. Table 4.7-1 shows examples of noise levels for several common noise sources and environments.

Table 4.7-1
Typical A-Weighted Sound Levels of Common Noise Source

Sound	Sound Level(dBA)
12-gauge shotgun	160
Jet takeoff	140
Pneumatic riveter	124
Hammer drill	114
Chainsaw	110
Rock concert	105
Motorcycle	100
Tractor/hand drill	97
Lawnmower	90
Vacuum cleaner	80
City traffic	78
Conversation	65
Air conditioning unit	60
Floor fan	50
Electrical transformer	45
Refrigerator hum	40
Rustling leaves	30
Pin falling	15

Source: Bollard Acoustical Consultants 2015 (Appendix F).

Sound Propagation

It is commonly understood that sound decreases with distance. However, the propagation of sound is dependent on considerably more variables than distance alone. Those variables include the type of noise source (point, moving point, or line sources), the directionality of the noise source, the frequency content of the source (low frequency sound is absorbed in the atmosphere at a slower rate than high-frequency sound and therefore carries farther), atmospheric conditions (wind, temperature, humidity, gradients), ground type (e.g., dirt, grass fields, concrete), shielding (structures, noise barriers, topography), and vegetation.

For the purposes of assessing noise sources within the project site, traffic on public roadways is considered a "moving point" source. The sound level decay rate for this type of source is 4.5 dB per doubling of distance from the source.

Existing (Baseline) Noise Environment

The project site is adjacent to the north side of Interstate 80 (I-80), between King Road and Horseshoe Bar Road. The existing noise environment within the project site varies by location but is primarily defined by traffic noise. The most pervasive noise source affecting the project area is traffic on I-80.

Existing General Ambient Noise Environment

To quantify the existing ambient noise environment at the project site, long-term (continuous) ambient noise level measurements were conducted at five locations within the proposed project site from December 30, 2014, to January 1, 2015. The locations of the continuous noise monitoring sites are shown in Figure 4.7-1, Ambient Noise Measurement Locations, and the detailed results are shown in Appendix F.

Larson Davis Laboratories Model 820 precision integrating sound level meters were used for the long-term ambient noise level measurement surveys. The meters were calibrated before use with Larson Davis Laboratories Model CAL200 acoustical calibrators to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute.

The results of the long-term ambient noise measurement survey are summarized in Table 4.7-2. The data in Table 4.7-2 indicate that existing noise levels within the project site vary depending on location of the noise monitoring site relative to I-80. Inspection of the data showed that monitoring locations with the most direct view of I-80 recorded the highest noise levels during sampling. As shown in Table 4.7-2, the noise monitoring locations on the project site were

exposed to existing traffic noise levels at or below 65 dBA L_{dn}. This was observed to be due primarily to shielding by intervening topography.

Table 4.7-2
Measured Baseline Noise Levels at Long-Term Monitoring Sites

Site	Location	Distance (feet)	Measured dBA L_{dn}
1	Along proposed extension of Doc Barnes Drive	210	64
2	Middle of site	230	63
3	Northern end of site	300	62
4	Southern end of site near Raley's property line	310	62
5	Southern end of site, mostly unshielded from I-80	250	65

Source: Bollard Acoustical Consultants 2015 (Appendix F).

Traffic Noise Assessment

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used with the CALVENO noise emission curves to predict existing traffic noise levels at the project site.

The FHWA Model provides reasonably accurate traffic noise predictions under "ideal" roadway conditions. Ideal conditions are generally considered to be long, straight roadway segments with uniform vehicle speeds, a flat roadway surface, good pavement conditions, a statistically large volume of traffic, and an unimpeded view of the roadway from the receiver location. Such conditions are not present at this project site due to topographical shielding partially obscuring the roadway from view. As a result, noise level data collected during the long-term monitoring conducted at the site were used with the FHWA Model to determine the amount of traffic noise reduction provided by topographic shielding.

The FHWA Model was used with existing traffic volumes for I-80 obtained from the California Department of Transportation 2013 Average Daily Traffic (ADT) count data to determine unshielded traffic noise levels at each of the five long-term monitoring sites. These predicted levels were then compared with the average measured levels to determine the amount of noise reduction provided by topographic shielding at these locations. The detailed FHWA inputs and results are shown in Appendix F, and the resulting offsets are shown in Table 4.7-3. Table 4.7-3 indicates that significant topographic shielding of I-80 traffic noise is present at the project site under existing conditions.

Table 4.7-3
Noise Reduction Offsets due to Existing Topographic Shielding

Site	Distance (ft)	Measured L_{dn}	FHWA Predicted L_{dn}	Offset (dB)
1	210	64	72	−8
2	230	63	72	−9
3	300	62	70	−8
4	310	62	70	−8
5	250	65	71	−6

Source: Bollard Acoustical Consultants 2015 (Appendix F).

The FHWA Model was used with traffic data provided by the project transportation consultant, KD Anderson & Associates, to predict existing traffic noise levels in the project vicinity. Table 4.7-4 shows the predicted existing traffic noise levels at a reference distance of 100 feet from the roadway centerlines, and the distances to the unshielded L_{dn} contours. The FHWA Model Inputs for baseline conditions are provided in Appendix F.

Table 4.7-4
Existing (Baseline) Traffic Noise Levels and Distances to Traffic Noise Contours

Roadway	Segment	dBA L_{dn}[1]	Distance to L_{dn} Contour (feet)		
			70	*52*	*60*
Taylor Road	South of Horseshoe Bar Road	58	16	34	74
Taylor Road	Horseshoe Bar Road – Webb Street	61	24	51	110
Taylor Road	Webb Street – King Road	60	21	46	99
King Road	Taylor Road – Boyington Drive	59	17	37	80
Horseshoe Bar Road	Taylor Road – Library Drive	59	20	42	91
Horseshoe Bar Road	Library Drive – Doc Barnes Drive	62	29	64	137
Horseshoe Bar Road	Doc Barnes Drive – I-80	62	29	64	137
Horseshoe Bar Road	I-80 – Laird Road	60	20	43	93
Day Avenue	King Road – David Avenue	46	2	5	11
Laird Street	Horseshoe Bar Road – Webb Street	48	4	8	17
Sun Knoll Drive	King Road – Thornwood Drive	45	2	5	10
Boyington Road	North of King Road	55	9	20	44
Webb Street	Taylor Road – Laird Street	46	3	6	12
Webb Street	King Road – Taylor Road	54	8	17	37
Doc Barnes Drive	Horseshoe Bar Road – Gates Drive	—	—	—	—
Doc Barnes Drive	Gates Drive – Blue Anchor Drive	—	—	—	—
Doc Barnes Drive	Blue Anchor Drive – King Road	—	—	—	—
Library Drive	Horseshoe Bar Road – Gates Drive	38	1	2	3
Interstate 80	Horseshoe Bar Road – Penryn Road	77	301	648	1,397

Source: Bollard Acoustical Consultants 2015 (Appendix F).
[1] dBA L_{dn} was computed at a standardized distance of 100 feet from the roadway centerline.

4.7.2 Regulatory Setting

Federal and State Regulations

The 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations, provide some guidance as to the significance of changes in ambient noise levels due to transportation noise sources. The FICON recommendations are based on studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that interferes with speech and conversation, sleep, or the desire for a tranquil environment.

The rationale for the FICON recommendations is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of L_{dn}. The changes in noise exposure relative to existing noise levels, as shown in Table 4.7-5, are considered to be noticeable changes that result in increased annoyance experienced at sensitive land uses. Although the FICON recommendations were specifically developed to address aircraft noise impacts, they are used in this analysis for traffic noise described in terms of L_{dn}.

As shown in Table 4.7-5, an increase in noise from similar sources of 5 dBA or more would be noticeable where the ambient level is less than 60 dBA. Where the ambient level is between 60 and 65 dBA, an increase in noise of 3 dBA or more would be noticeable, and an increase of 1.5 dBA or more would be noticeable where the ambient noise level exceeds 65 dBA L_{dn}. The rationale for the criteria shown in Table 4.7-5 is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

Table 4.7-5
Measures of Substantial Increase for Transportation Noise Exposure

Ambient Noise Level Without Project	Significant Impact Occurs if the Project Increases Ambient Noise Levels by:
<60 dBA	+ 5 dBA or more
<60–65 dBA	+ 3 dBA or more
>65 dBA	+ 1.5 dBA or more

Source: FICON 1992.

Local Regulations

Town of Loomis General Plan

The following goals and policies are presented in the Town's General Plan Noise Element and are applicable to the proposed project (Town of Loomis 2001):

Goals

1. To protect Town residents and workers from the harmful and annoying effects of noise.
2. To mitigate the effects of noise created by roadway traffic and non-residential land uses while discouraging the construction of sound walls.
3. To maintain and where possible enhance the quiet, rural ambiance of the Town.
4. To minimize the noise effect of railroad operations on residential uses and other sensitive land uses.

Policies

1. New commercial and industrial development in the Town shall be sited and designed to minimize the potential for harmful or annoying noise to create conflict with existing land uses.
2. Loomis shall encourage the mitigation of noise impacts in all new developments as necessary to maintain the quiet, rural ambiance of the Town.
3. Individual noise exposure analysis shall be required for proposed development projects as part of the environmental review process, to ensure that the Town's noise standards are meet [sic]. The use of mitigation measures (noise buffers, sound insulation) may be required to reduce noise impacts to acceptable levels.
4. Loomis shall discourage the construction of sound walls to mitigate noise impacts, unless it is the only feasible alternative. New sensitive noise receptors shall not be permitted if the only feasible mitigation for noise impacts is a sound wall.
5. Where noise mitigation is necessary, the following order of preference among options shall be considered: distance from the noise source; muffling of the noise source; design and orientation of the receptor; landscaped berms; landscaped berms in combination with walls.
6. Use the land use/noise compatibility matrix shown on Figure 8-4 [in the General Plan Noise Element] to determine the appropriateness of land uses relative to roadway noise.
7. Provide for alternative transportation modes such as bicycle paths and pedestrian walkways to minimize the number of automobile trips.
8. Require that automobile and truck access to industrial and commercial properties adjacent to residential areas be located at the maximum practical distance from the residential area.
9. Limit the use of leaf blowers, motorized lawn mowers, parking lot sweepers, or other high-noise equipment on commercial properties if their activity will result in noise which adversely affects residential areas.

10. Require that the hours of truck deliveries to industrial and commercial properties adjacent to residential uses be limited to daytime hours unless there is no feasible alternative or there are overriding transportation benefits by scheduling deliveries at night.
11. Require that construction activities adjacent to residential units be limited as necessary to prevent adverse noise impacts (Town of Loomis 2001).

As shown in Table 4.7-6, the Noise Element establishes an exterior noise level standard of 65 dBA L_{dn} for transportation noise sources, applied at outdoor activity areas (backyards) of residential land uses. The intent of this standard is to provide an acceptable exterior noise environment for outdoor activities. Additionally, the Town uses an interior noise level standard of 45 dBA L_{dn} or less within noise-sensitive residential dwellings. The intent of this interior noise limit is to provide a suitable environment for indoor communication and sleep.

Table 4.7-6
Maximum Allowable Noise Exposure Levels (L_{dn})

Noise Sensitive Land Use	Outdoor Activity Areas[1, 2]	Interior Spaces	
	dBA L_{dn}	*dBA L_{dn}*	*dBA L_{eq}*
Residential	65	45	—
Transient lodging	65	45	—
Hospitals and nursing homes	65	45	—
Theaters, auditoriums, music halls	—	—	35
Churches, meeting halls	65	—	40
Office buildings	—	—	45
Schools, libraries, museums	—	—	45
Playgrounds, neighborhood parks	70	—	—

Source: Town of Loomis 2001, Table 8-3.

1 Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

2 Where it is not possible to reduce noise in outdoor activity areas to 65 dBA L_{dn}/Community Noise Equivalent Level (CNEL) or less using practical application of the best available noise reduction measures, an exterior noise level of up to 70 dBA L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

The General Plan also includes standards for short duration noise events near residential areas that are otherwise normally quiet. These standards, shown in Table 4.7-7, apply to land uses within close proximity to land uses or other activities that can produce high noise levels of a shorter duration.

Table 4.7-7
Noise Standards for Short Duration Events Near Residential Areas

Noise Sensitive Land Use	Duration of Sound (minutes per hour)	Standard	
		Day/Evening (7 am–10 pm) dBA	*Night (10 pm–7 am) dBA*
All Residential	30–60	50	40
	15–30	55	45
	5–15	60	50
	1–5	65	55
	<1 minute	70	60

Source: Town of Loomis 2001, Table 8-4.
Note: Where the offensive noise contains a steady, audible tone (such as a screech or hum), or is a repetitive noise such as hammering, or contains speech or music, the standard limits shown shall be reduced by 5 dBA.

4.7.3 Impacts

Methods of Analysis

The Town of Loomis General Plan Noise Element establishes an exterior noise level standard of 65 dBA L_{dn} for exterior and 45 dBA L_{dn} for interior residential land uses. As shown in Table 4.7-7, the Town does not have a noise ordinance that exempts short-term construction noise, but does provide standards for acceptable noise levels for specific durations.

The project site is located approximately 10 miles southeast of the Lincoln Regional Airport, 16 miles northeast from McClellan Airfield, 20 miles west of the Cameron Airpark, and 10 miles southeast from the Auburn Municipal Airport. The project is not within an adopted Airport Land Use Plan or within two miles of an airport or private landing strip that would expose future residents and employees to excessive noise. There would be no impact associated with noise from planes; therefore, these issues are not further addressed.

Significance Criteria

Potential impacts associated with noise have been evaluated using the following criteria, as identified in Appendix G of the CEQA Guidelines:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Impacts

IMPACT 4.7-1:	Generation of construction noise exceeding established noise standards or that causes a substantial temporary or periodic increase in ambient noise levels.
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 4.7a
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

During project construction, heavy equipment would be used for demolition, grading, paving, and building construction, which would increase ambient noise levels. Standard construction equipment, such as graders, backhoes, loaders, and trucks, would be used for this work. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project site would also vary depending on the proximity of construction activities to that point.

The range of maximum noise levels for various types of construction equipment at a distance of 50 feet is depicted in Table 4.7-8. The noise values represent maximum noise generation, or full-power operation of the equipment. As one increases the distance between equipment, or increases separation of areas with simultaneous construction activity, dispersion and distance attenuation reduce the effects of combining separate noise sources.

Table 4.7-8
Construction Equipment Noise Emission Levels

Equipment	Typical Sound Level (dBA) 50 Feet from Source
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, mobile	83

Table 4.7-8
Construction Equipment Noise Emission Levels

Equipment	Typical Sound Level (dBA) 50 Feet from Source
Dozer	85
Generator	81
Grader	85
Impact wrench	85
Jackhammer	88
Loader	85
Paver	89
Pneumatic tool	85
Pump	76
Roller	74
Saw	76
Truck	88

Source: FTA 2006.

The nearest sensitive receptors to the proposed project are the residences located adjacent to the western and northern boundaries of the project site. The nearest residences are located directly adjacent to the project site. Other residences are located farther to the west and north. Construction of the proposed project would expose these sensitive receptors to increased ambient exterior noise levels. As shown in Table 4.7-8, outdoor noise levels at noise-sensitive receptors 50 feet from the noise source could reach as high as 89 dBA. The noise levels from construction operations decrease at a rate of approximately 6 dBA per doubling of distance from the source. In addition, a typical building can reduce noise levels by 25 dBA with the windows closed, which would reduce the maximum noise level to 64 dBA.

Noise generated by project construction could exceed the Town's standards for short duration events near residential areas, as listed in Table 4.7-7. Therefore, a potentially significant noise impact could occur during project construction. **Mitigation Measure 4.7a** identifies management practices to be implemented during construction to reduce noise exposure for adjacent residences to the extent feasible. These include limiting construction to daytime hours, using mufflers and noise-reducing features for construction equipment, using electrically powered equipment where feasible, locating material stockpiles and equipment staging areas as far as practicable from noise-sensitive receptors, limiting vehicle speed within the construction site, using signals, horns, and alarms for safety warning purposes only, and requiring that any public address or music systems must not be audible at any adjacent noise-sensitive receptor.

Existing residences that are closest to the project site would experience the greatest noise levels during the times when construction occurs at the perimeter of the site. Noise levels for adjacent residences would be lower when construction occurs within the central and southern portions of

the site. Further, the noise levels provided in Table 4.7-8 reflect the maximum noise level generated by the equipment when operating at full power. During construction, the use of equipment varies such that equipment is typically not operated continuously at full power. Therefore, individual existing residences would not be continually exposed to the maximum construction noise levels. With implementation of the construction management practices included in **Mitigation Measure 4.7a**, the impacts from project construction would be reduced to a **less than significant** level.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. Due to this reduction, the construction associated with this implementation measure would be slightly reduced. Thus, the result would be a slightly reduced impact; the impact would remain **less than significant.**

Modified Transportation Alternative

The Modified Transportation Alternative proposes the same number of dwelling units as the proposed project and 7,000 fewer square feet of commercial space. As a result, the Modified Transportation Alternative would result in similar impacts as the proposed project and implementation of the construction management practices included in **Mitigation Measure 4.7a** would be necessary to reduce impacts from project construction to a **less than significant** level.

IMPACT 4.7-2:	Exposure of people within the project site to traffic noise levels that exceed established noise standards.
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measures 4.7b, 4.7c, 4.7d, 4.7e
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

Exterior Noise Impacts

As described previously, the primary noise source affecting proposed residences on the project site is I-80. Proposed internal roadways, Doc Barnes Drive and Library Drive, which would be extended through the site as the primary site access roads, also contribute to the project area

noise environment, but to a lesser extent. The FHWA Model was used to predict exterior traffic noise levels for internal project roadways. The results of that analysis are shown in Table 4.7-9.

Table 4.7-9
Cumulative Plus Project Traffic Noise Levels – Interior Roadways

Roadway	Segment	dBA L_{dn} at 100 feet	Distance to 60 dBA Contour (feet)
Doc Barnes Drive	Horseshoe Bar Road – Gates Drive	55	46
Doc Barnes Drive	Gates Drive – Blue Anchor Drive	52	31
Doc Barnes Drive	Blue Anchor Drive – King Road	52	28
Library Drive	Horseshoe Bar Road – Gates Drive	49	19

Source: Bollard Acoustical Consultants 2015 (Appendix F).

As shown in Table 4.7-9, traffic noise levels from internal roadways are predicted to be well within compliance with the Town of Loomis 65 dBA L_{dn} exterior noise standard at future residences constructed adjacent to these roadways. For the loudest roadway segment, Doc Barnes Drive between Horseshoe Bar Road and Gates Drive, the 60 dBA contour would be 46 feet from the roadway centerline. With a roadway width of 50 feet and a 17-foot-6-inch-wide landscape and trail section adjacent to the roadway, the nearest residential property would be 42 feet from the centerline. Similarly, Library Drive would have a 52-foot-wide right-of-way and the nearest residential property would be a minimum of 26 feet from the centerline.

As noted previously, the most substantial traffic noise source affecting the project site is I-80. I-80 traffic noise is currently reduced at the project site due to topographic shielding by intervening topography. The proposed grading plans indicate that I-80 traffic noise would continue to be partially shielded by intervening topography. This shielding is conservatively estimated to reduce exposure at the site to I-80 noise by 4 dBA.

Accounting for the estimated 4 dBA offset provided by intervening topography following site grading, and based on the predicted Cumulative Plus Project traffic volumes on I-80 (as identified in the Traffic Impacts Analysis in Appendix E), the predicted noise level at the nearest residences is approximately 71 dBA L_{dn}, which exceeds the Town's 65 dBA L_{dn} exterior standard. Therefore, impacts would be significant and **Mitigation Measure 4.7b** requires construction of a sound wall along Doc Barnes Drive to provide the necessary amount of noise attenuation to achieve compliance with the Town's exterior noise level standards.

As noted in Section 4.7.2, Regulatory Setting, the Town discourages the construction of sound walls to mitigate noise impacts unless it is the only feasible alternative. In addition, where noise mitigation is necessary, the Town's noise policy states that the following order of preference among options shall be considered: increasing distance from the noise source, muffling of the

noise source, modifying the design and orientation of the receptor, landscaped berms, and landscaped berms in combination with walls.

The design of this project is such that noise mitigation measures have been incorporated in the project plans. Specifically, setbacks from I-80 have been built into the project design by locating Doc Barnes Drive adjacent to the I-80 right-of-way, with the nearest proposed residences located farther north. The project grading plans also incorporate a degree of topographic shielding to provide additional reduction of I-80 traffic noise levels at the project site. The use of 6-foot-tall noise barriers would provide the final degree of noise reduction required to achieve satisfaction with the Town's noise standards.

Interior Noise Impacts

Interior noise levels within the project site would be dependent on the exterior noise levels described above, and the level of noise attenuation achieved through standard construction practices. With construction of the noise barrier required by **Mitigation Measure 4.7b**, exterior noise levels would be approximately 65 dBA or less at first-floor façades. Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof) typically results in an exterior to interior noise reduction of approximately 25 dBA with windows closed, and approximately 15 dBA with windows open. Therefore, standard construction practices would be adequate for first-floor façades of all residences constructed within the project, provided mechanical equipment is included in the project construction to allow occupants to close doors and windows as desired for additional acoustical isolation. To that end, **Mitigation Measure 4.7c** requires that air conditioning units be provided in each residential unit so that residents would have the option of leaving doors and windows closed.

Due to reduced ground absorption and topographic shielding at elevated positions, second-floor traffic noise levels would be approximately 4 dBA higher than first-floor levels. In addition, second-floor façades would not be shielded by the required noise barriers. As a result, second floor exposure of the residences proposed adjacent to I-80 would be approximately 75 dBA L_{dn}. As described above, standard construction practices would result in an exterior to interior noise reduction of about 25 dBA with windows closed, and approximately 15 dBA with windows open. Even with the 25 dBA reduction with windows closed, interior noise levels would be 50 dBA, which exceeds the Town's interior noise standard of 45 dBA. Therefore, impacts would be significant and **Mitigation Measure 4.7d** is provided to ensure interior noise levels comply with the Town's standard by requiring higher STC ratings on second-floor windows with a view of I-80.

Noise Impacts on Future High-Density Residential Uses

In addition to the proposed development considered in the analysis above, high-density residential uses are proposed in the southwestern portion of the project site. Because specific site development plans have not been completed for this component of the project, it is not feasible to evaluate potential noise impacts at exterior or interior spaces of that future development. However, due to I-80 traffic noise exposure and noise generated by periodic truck deliveries to the adjacent Raley's store, it is possible that noise impacts could occur at this future high-density residential component of the proposed project. Therefore, potential impacts would be significant, and **Mitigation Measure 4.7e** is provided to require that future development plans for the multifamily component of the project are reviewed by an acoustical consultant to verify that project design incorporates appropriate measures to ensure that the Town's noise standards are achieved and impacts are reduced to a **less than significant** level.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. However, the location of new residences would not be altered and the project's impacts due to exterior and interior residential noise levels remain the same as evaluated above.

Modified Transportation Alternative

The Modified Transportation Alternative would develop the same number of dwelling units as the proposed project and 7,000 fewer square feet of commercial space. However, the location of new residences would be the same as in the proposed project and the impacts of the Modified Transportation Alternative due to exterior and interior residential noise levels remain the same as evaluated above. With implementation of **Mitigation Measures 4.7b, 4.7c, 4.7d and 4.7e** the Modified Transportation Alternative would result in **less-than-significant** impacts due to exposure of people within the project site to traffic noise.

IMPACT 4.7-3:	Excessive groundborne vibration/noise.
SIGNIFICANCE:	No Impact
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	No Impact

Proposed Project

As described under Impact 4.7-1, project construction would involve use of a variety of heavy equipment; however, the types of equipment anticipated to be used would not generate groundborne vibration levels that would impact off-site sensitive receptors. The construction would include site grading, excavation for utilities, foundation work and building construction, and paving. Even with potential use of a vibratory roller for compaction of structural foundation areas, none of these construction activities is a source for substantial temporary groundborne vibration. The project construction would not involve the principal sources for vibration generation and complaints, which are pile driving and blasting. After construction, the project would not include any operations that would result in groundborne vibration or noise that would be perceptible off site. Therefore, the project would have **no impacts** with respect to groundborne vibration and noise.

The project applicant's proposal increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project would not alter the types of construction equipment needed to construct the project and would not change the potential for construction to generate groundborne vibration levels that would impact off-site sensitive receptors. The impact would remain **no impact.**

Modified Transportation Alternative

The Modified Transportation Alternative would construct the same number of dwelling units as the proposed project and 7,000 fewer square feet of commercial space. The Modified Transportation Alternative would require the same construction equipment as the proposed project. As a result, construction of the Modified Transportation Alternative would have a ~~**less than significant**~~**no impact** potential to generate groundborne vibration levels that would impact off-site sensitive receptors**.**

IMPACT 4.7-4:	Traffic noise levels causing a substantial permanent increase in ambient noise levels.
SIGNIFICANCE:	No Impact
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	No Impact

Proposed Project

Existing and Existing Plus Project Traffic Noise

With development of the proposed project, traffic volumes on the local roadway network would increase. Those increases in daily traffic volumes would result in a corresponding increase in traffic noise levels. The FHWA Model was used with traffic data provided by K.D. Anderson & Associates for the project to predict existing and Existing Plus Project traffic noise levels, and the project-related noise level increases. The FHWA Model input data is contained in Appendix F. Table 4.7-10 shows existing and Existing Plus Project traffic noise levels on the regional roadway network and the amount of changes in noise levels.

Table 4.7-10
Existing and Existing Plus Project Traffic Noise Levels

Roadway	Segment	Existing dBA L_{dn}	Existing + Project dBA L_{dn}	Change (dBA)	Substantial Increase?
Taylor Road	South of Horseshoe Bar Road	58.1	58.5	0.4	No
Taylor Road	Horseshoe Bar Road – Webb Street	60.6	60.4	−0.2	No
Taylor Road	Webb Street – King Road	59.9	59.7	−0.2	No
King Road	Taylor Road – Boyington Drive	58.6	57.6	−0.9	No
Horseshoe Bar Road	Taylor Road – Library Drive	59.4	59.6	0.2	No
Horseshoe Bar Road	Library Drive – Doc Barnes Drive	62.0	62.2	0.2	No
Horseshoe Bar Road	Doc Barnes Drive – I-80	62.0	62.9	0.8	No
Horseshoe Bar Road	I-80 – Laird Road	59.5	59.7	0.1	No
Day Avenue	King Road – David Avenue	45.5	45.5	0.0	No
Laird Street	Horseshoe Bar Road – Webb Street	48.4	49.4	1.0	No
Sun Knoll Drive	King Road – Thornwood Drive	45.0	45.0	0.1	No
Boyington Road	North of King Road	54.6	54.8	0.2	No
Webb Street	Taylor Road – Laird Street	46.1	47.0	0.9	No
Webb Street	King Road – Taylor Road	53.6	53.6	0.1	No
Doc Barnes Drive	Horseshoe Bar Road – Gates Drive	—	55.7	N/A	N/A

Table 4.7-10
Existing and Existing Plus Project Traffic Noise Levels

Roadway	Segment	Existing dBA L_{dn}	Existing + Project dBA L_{dn}	Change (dBA)	Substantial Increase?
Doc Barnes Drive	Gates Drive – Blue Anchor Drive	—	53.0	N/A	N/A
Doc Barnes Drive	Blue Anchor Drive – King Road	—	52.3	N/A	N/A
Library Drive	Horseshoe Bar Road – Gates Drive	37.8	49.0	11.2	Yes
I-80	Horseshoe Bar Road – Penryn Road	77.2	77.2	0.0	No

Source: Bollard Acoustical Consultants 2015 (Appendix F).

As shown in Table 4.7-10, the project would not result in any substantial increases in traffic noise levels except for along Library Drive. However, Library Drive traffic is not the primary noise source at the nearest noise-sensitive receptor (an outdoor activity/picnic area near the existing library, approximately 100 feet from the centerline of Library Drive) due to a low existing traffic volume on the roadway. To more accurately quantify the existing ambient noise level in this area, Bollard Acoustical Consultants conducted a short-term (15 minute) noise level measurement at the site on August 18, 2015. The location of this measurement is shown on Figure 4.7-1, and the results are summarized below in Table 4.7-11.

Table 4.7-11
Short-Term Noise Measurement Results

Site	Location	Measured L_{eq} (dB)	Predicted L_{dn} (dB)[1]	Change with Project
A	Library Drive outdoor activity/picnic area	47	53	Insignificant[2]

Source: Bollard Acoustical Consultants 2015 (Appendix F).
1 Predicted L_{dn} estimated with conservative assumption that measured L_{eq} is constant.
2 Existing L_{dn} plus project traffic L_{dn} would be less than 1 dBA greater than existing L_{dn}.

As shown in Table 4.7-11, the existing measured ambient noise level at the outdoor activity/picnic area is greater than the predicted Library Drive traffic noise level after project construction. Additionally, both the existing and Existing Plus Project noise levels at this area are predicted to be well below the Town's exterior noise standard of 70 dBA L_{dn} for neighborhood parks. As a result, the proposed project would result in **no impact** related to increases in off-site traffic noise impacts relative to existing conditions.

The project applicant's proposal to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project would slightly reduce the amount of new traffic generated by the project but this slight reduction would not alter the noise levels associated with project-generated traffic. The impact would remain as **no impact.**

Modified Transportation Alternative

The Modified Transportation Alternative would develop the same number of dwelling units and 7,000 fewer square feet of commercial space compared to the proposed project. The Modified Transportation Alternative would construct the Webb Street extension and its associated roundabouts, which would alter traffic patterns in the Town by diverting some traffic from segments of Taylor Road and Horseshoe Bar Road to other local roadways. Table 4.7-12 identifies the noise levels associated with vehicle traffic in the project area under the Modified Transportation Alternative.

Table 4.7-12
Existing and Existing Plus Modified Transportation Alternative Traffic Noise Levels

Roadway	Segment	Existing dBA L_{dn}	Existing + Project dBA L_{dn}	Change (dBA)	Substantial Increase?
Taylor Road	South of Horseshoe Bar Road	58.1	58.4	0.3	No
Taylor Road	Horseshoe Bar Road – Webb Street	60.6	58.9	−1.7	No
Taylor Road	Webb Street – King Road	59.9	59.7	−0.2	No
King Road	Taylor Road – Boyington Drive	58.6	57.9	−0.7	No
Horseshoe Bar Road	Taylor Road – Library Drive	59.4	57.7	-1.7	No
Horseshoe Bar Road	Library Drive – Doc Barnes Drive	62.0	62.3	0.3	No
Horseshoe Bar Road	Doc Barnes Drive – I-80	62.0	62.4	0.2	No
Horseshoe Bar Road	I-80 – Laird Road	59.5	59.9	0.3	No
Day Avenue	King Road – David Avenue	45.5	45.5	0.0	No
Laird Street	Horseshoe Bar Road – Webb Street	48.4	42.7	-5.7	No
Sun Knoll Drive	King Road – Thornwood Drive	45.0	45.0	0.0	No
Boyington Road	North of King Road	54.6	54.8	0.2	No
Webb Street	Taylor Road – Laird Street	63	64	1	No
Webb Street	King Road – Taylor Road	53.6	53.7	0.1	No
Doc Barnes Drive	Laird Road – Horseshoe Bar Road	—	56.0	N/A	N/A
Doc Barnes Drive	Horseshoe Bar Road – Gates Drive	—	55.7	N/A	N/A
Doc Barnes Drive	Gates Drive – Blue Anchor Drive	—	53.0	N/A	N/A
Doc Barnes Drive	Blue Anchor Drive – King Road	—	52.3	N/A	N/A
Library Drive	Horseshoe Bar Road – Gates Drive	37.8	48.1	**10.3**	**Yes**
I-80	Horseshoe Bar Road – Penryn Road	77.2	77.2	0.0	No

The Modified Transportation Alternative would not result in substantial increases in traffic noise for all of the road segments evaluated except for the segment of Library Drive between Horseshoe Bar Road and Gates Drive. As discussed previously and shown in Table 4.7-11, the existing measured ambient noise level at the outdoor activity/picnic area is greater than the

predicted Library Drive traffic noise level after project construction. Additionally, both the existing and Existing Plus Project noise levels at this area are predicted to be well below the Town's exterior noise standard of 70 dBA L_{dn} for neighborhood parks. As a result, the Modified Transportation Alternative would result in **no impact** related to increases in off-site traffic noise impacts relative to existing conditions.

IMPACT 4.7-5:	Traffic noise levels causing a substantial permanent increase in cumulative noise levels.
SIGNIFICANCE:	No Impact
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	No Impact

Proposed Project

Cumulative and Cumulative Plus Project Traffic Noise

Using the same methodology described previously, traffic noise levels were predicted for future (cumulative, Year 2030) and future plus project conditions. Table 4.7-13~~2~~ shows the results of the cumulative traffic noise analysis.

Table 4.7-1~~2~~3
Cumulative and Cumulative Plus Project Traffic Noise Levels

Roadway	Segment	Cumulative dBA L_{dn}	Cumulative + Project dBA L_{dn}	Change (dBA)	Substantial Increase?
Taylor Road	South of Horseshoe Bar Road	59.1	59.2	0.1	No
Taylor Road	Horseshoe Bar Road – Webb Street	61.6	61.5	−0.1	No
Taylor Road	Webb Street – King Road	60.4	60.4	−0.1	No
King Road	Taylor Road – Boyington Drive	60.1	59.9	−0.2	No
Horseshoe Bar Road	Taylor Road – Library Drive	60.3	60.1	0.1	No
Horseshoe Bar Road	Library Drive – Doc Barnes Drive	63.0	63.1	0.1	No
Horseshoe Bar Road	Doc Barnes Drive – I-80	62.9	63.7	0.8	No
Horseshoe Bar Road	I-80 – Laird Road	61.3	61.1	−0.2	No
Doc Barnes Drive	Horseshoe Bar Road – Gates Drive	—	55.0	N/A	N/A
Doc Barnes Drive	Gates Drive – Blue Anchor Drive	—	52.4	N/A	N/A
Doc Barnes Drive	Blue Anchor Drive – King Road	—	51.6	N/A	N/A
Library Drive	Horseshoe Bar Road – Gates Drive	37.8	49.3	11.5	Yes
I-80	Horseshoe Bar Road – Penryn Road	78.6	78.6	0.0	No

Source: Bollard Acoustical Consultants 2015 (Appendix F).

As shown in Table 4.7-132, the project would result in a substantial increase in traffic noise levels along Library Drive relative to cumulative conditions without the project. The proposed project would add office uses, Village Residential, and High-Density Multiple Family uses along Library Drive. However, because ambient noise levels at this location are greater than the noise that would be generated by project traffic noise, the project traffic noise would not alter ambient noise levels in this location, as described under Impact 4.7-4. As a result, the proposed project would result in **no impact** related to off-site traffic noise impacts relative to cumulative baseline conditions.

The project applicant's proposal to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project would not alter the degree to which the project would change traffic noise levels in the project area under the cumulative scenario, thus project would continue to have **no impact** related to contributions to cumulative traffic noise levels.

Modified Transportation Alternative

The Modified Transportation Alternative would develop the same number of dwelling units and 7,000 fewer square feet of commercial space compared to the proposed project, thus it would generate slightly less traffic than the proposed project. The Modified Transportation Alternative would also construct the Webb Street extension and its associated roundabouts, which would alter traffic patterns in the Town by diverting some traffic from segments of Taylor Road and Horseshoe Bar Road to other local roadways. Table 4.7-14 identifies the noise levels associated with vehicle traffic in the project area under the cumulative plus Modified Transportation Alternative scenario.

Table 4.7-14
Cumulative and Cumulative Plus Modified
Transportation Alternative Traffic Noise Levels

Roadway	Segment	Cumulative dBA L_{dn}	Cumulative + Project dBA L_{dn}	Change (dBA)	Substantial Increase?
Taylor Road	South of Horseshoe Bar Road	59.1	59.1	0.0	No
Taylor Road	Horseshoe Bar Road – Webb Street	61.6	59.6	−2.0	No
Taylor Road	Webb Street – King Road	60.4	59.1	−1.4	No
King Road	Taylor Road – Boyington Drive	60.1	60.3	0.2	No
Horseshoe Bar Road	Taylor Road – Library Drive	60.3	57.9	-2.4	No
Horseshoe Bar Road	Library Drive – Doc Barnes Drive	63.0	62.9	-0.1	No
Horseshoe Bar Road	Doc Barnes Drive – I-80	62.9	63.9	1.0	No
Horseshoe Bar Road	I-80 – Laird Road	61.3	61.1	−0.2	No
Doc Barnes Drive	Laird Street – Horseshoe Bar Road	—	57.1	N/A	N/A

Table 4.7-14
Cumulative and Cumulative Plus Modified Transportation Alternative Traffic Noise Levels

Roadway	Segment	Cumulative dBA L_{dn}	Cumulative + Project dBA L_{dn}	Change (dBA)	Substantial Increase?
Doc Barnes Drive	Horseshoe Bar Road – Gates Drive	—	55.0	N/A	N/A
Doc Barnes Drive	Gates Drive – Blue Anchor Drive	—	52.4	N/A	N/A
Doc Barnes Drive	Blue Anchor Drive – King Road	—	51.6	N/A	N/A
Library Drive	Horseshoe Bar Road – Gates Drive	37.8	49.3	**11.5**	**Yes**
I-80	Horseshoe Bar Road – Penryn Road	78.6	78.6	0.0	No

As shown in Table 4.7-14, the Modified Transportation Alternative would result in a substantial increase in traffic noise levels along Library Drive relative to cumulative conditions without the project. The Modified Transportation Alternative would add office uses, Village Residential, and High-Density Multiple Family uses along Library Drive. However, because ambient noise levels at this location are greater than the noise that would be generated by project traffic noise, the Modified Transportation Alternative traffic noise would not alter ambient noise levels in this location, as described under Impact 4.7-4. As a result, the Modified Transportation Alternative would result in **no impact** related to off-site traffic noise impacts relative to cumulative baseline conditions.

4.7.4 Mitigation Measures

4.7a The project applicant shall ensure that all contractors implement the following measures during construction of the proposed project:

- Project construction activities shall be limited to daytime hours of 7:00 a.m. to 7:00 p.m. Monday through Friday, and 8:00 a.m. to 7:00 p.m. on Saturdays unless conditions warrant that certain construction activities occur during evening or early morning hours (e.g., extreme heat).
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specifications. Mobile or fixed "package" equipment (e.g., arc welders, air compressors) shall be equipped with shrouds and noise-control features that are readily available for that type of equipment.

- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors. Material stockpiles and staging areas shall be indicated on project plans prior to issuance of grading and building permits.
- Construction site and access road speed limits shall be established and enforced during the construction period. Speed limits shall be noted on project plans prior to issuance of grading and building permits.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only. This prohibition shall be noted on project plans prior to issuance of grading and building permits.
- No project-related public address or music system shall be audible at any adjacent receptor. This prohibition shall be noted on project plans prior to issuance of grading and building permits.

4.7b To ensure compliance with the Town of Loomis's (Town) 65 dBA L_{dn} exterior noise level standard, the project applicant shall install 6-foot-high solid noise barriers adjacent to the proposed residential uses along the eastern boundary of the project site, as shown in Figure 4.7-2, Project Site Plan and Recommended Noise Barrier Locations, to reduce traffic noise levels from Interstate 80. The noise barriers shall be constructed of concrete or other solid material that is rigid and sufficiently dense (at least 20 kilograms/square meter) (FHWA 2015). The Town of Loomis shall ensure that the noise barriers are shown on construction plans prior to issuance of grading permits and shall verify the barriers have been constructed as required prior to issuance of certificates of occupancy.

4.7c The project applicant shall install air conditioning in all residences constructed within the proposed project to allow occupants to close doors and windows as desired for additional acoustical isolation. The Town of Loomis shall ensure that building plans include the required air conditioning equipment prior to issuance of building permits.

4.7d To ensure compliance with the Town's 45 dBA L_{dn} interior noise level standard, all second-floor bedroom windows of the lots adjacent to Doc Barnes Drive from

which Interstate 80 is visible shall have a minimum Sound Transmission Class (STC) rating of 32. The ~~lots~~ locations requiring window upgrades are shown in Figure 4.7-2. The Town of Loomis shall ensure that building plans include STC 32 windows on second-floor bedroom windows of the lots adjacent to Doc Barnes Drive from which Interstate 80 is visible prior to issuance of building permits.

4.7e At the time specific site development plans are developed for the proposed high-density residential component of the project, those plans shall be reviewed by an acoustical consultant to ensure that adequate shielding of outdoor activity areas and adequate interior sound isolation have been incorporated into the design and construction details to ensure compliance with the Town's 45 dBA L_{dn} interior and 65 dBA L_{dn} exterior noise standards.

SOURCE: Bing Maps 2016; Google Maps 2016

FIGURE 4.7-1

Ambient Noise Measurement Locations

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The Village at Loomis Draft EIR

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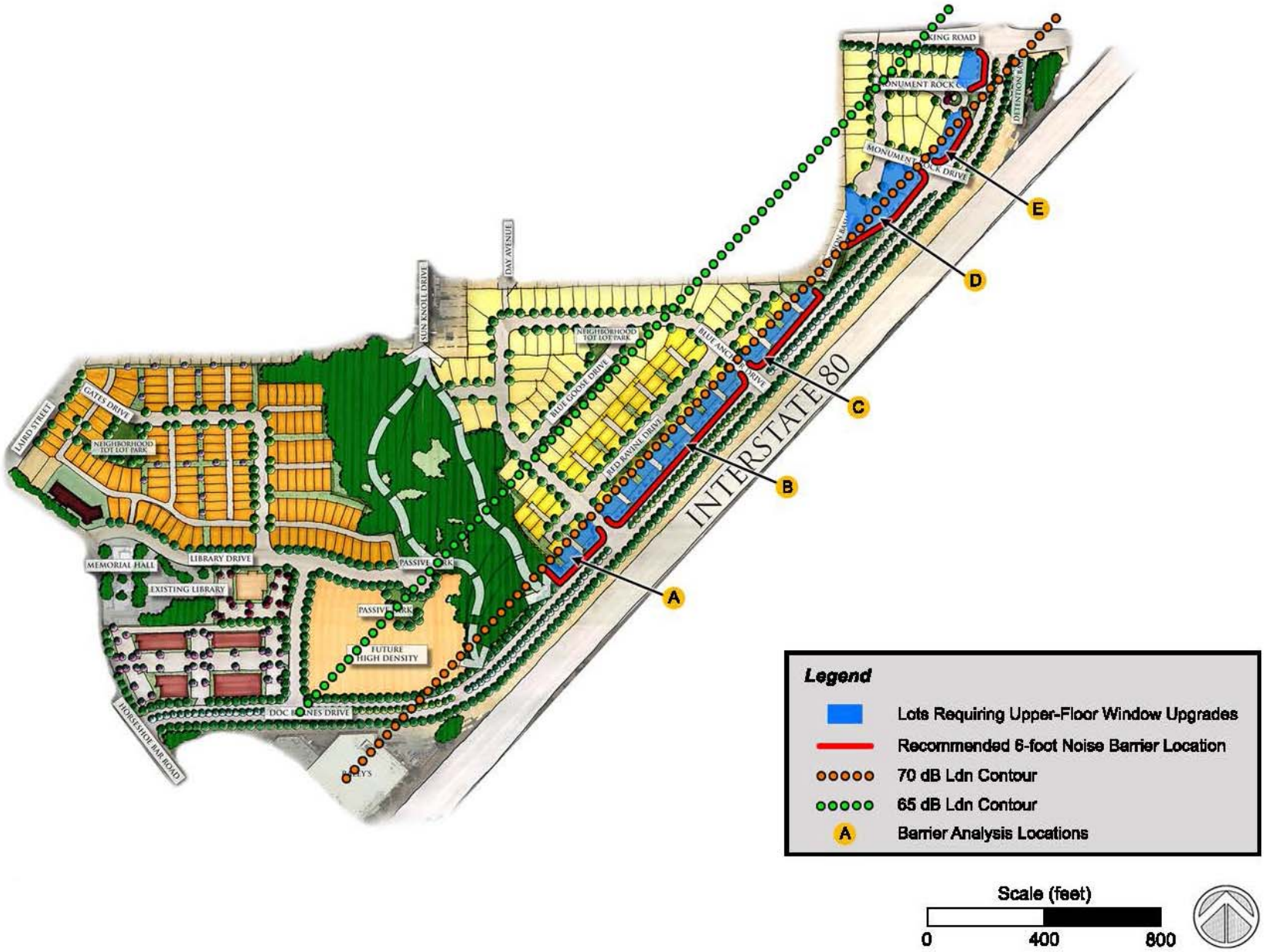

SOURCE: BOLLARD ACOUSTICAL CONSULTANTS 2016

FIGURE 4.7-2

Project Site Plan and Recommended Noise Barrier Locations

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4.8 AIR QUALITY

Development of The Village at Loomis (proposed project) is expected to generate air pollutant emissions during construction activities (including the associated infrastructure and roads) and occupancy of the proposed project. The proposed project includes 418 dwelling units, 56,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space. The project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units that were evaluated in the Draft EIR, and omitting the southern portion of the trail along the eastern side of the open space. The reduction in dwelling units and shortening of the trail increases the amount of open space in the center of the project from the 9.55 acres evaluated in the Draft EIR. The applicant also proposes to implement measures to reduce project impacts under the Transportation Alternative that was evaluated in the Draft EIR. The Modified Transportation Alternative (MTA) includes 418 total dwelling units, 49,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 acres of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space. Placer County is in a federal nonattainment area for ozone (O_3) and is designated as a nonattainment area for state O_3 and particulate matter (PM_{10}) standards. This section addresses project impacts on air quality by analyzing the type and quantity of emissions that would be generated by development of the proposed project.

During the Notice of Preparation (NOP) comment period, the Town of Loomis (Town) received a comment letter from the Placer County Air Pollution Control District (PCAPCD). The comment letter notes that the PCAPCD's California Environmental Quality Act (CEQA) Handbook should be referenced to prepare the air quality analysis. In addition, the letter notes that impacts from greenhouse gas emissions/climate change should be addressed, and any health risks associated with locating sensitive uses within 500 feet of a major roadway or within 300 feet of a large gas station. In issuing the opinion in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) Cal.4th (Case No. S213478), the California Supreme Court found that CEQA does not require analysis of the effect of the environment on a proposed project, such as the recommended health risk assessment; consideration of this issue is presented in Section 4.8.3, Impacts. The letter also includes current PCAPCD thresholds for pollutants, and provides recommendations for specific models to use to quantify air emissions. The NOP and comments received in response to the NOP are provided in Appendix A.

Air pollutant emissions that would be generated by the proposed project were estimated using the California Emissions Estimator Model (CalEEMod) program. The results of the CalEEMod modeling are provided in Appendix G.

4.8.1 Environmental Setting

Air quality in California is regulated and monitored by the California Air Resources Board (CARB). The state is divided into 15 air basins, within which local authority is given to air pollution control districts and air quality management districts. Air basin boundaries were developed in recognition of geographic features and existing political boundaries, and air district boundaries are typically coterminous with political boundaries (e.g., county limits). Air districts are charged with enforcing the air quality standards established by the state and federal governments while providing local expertise and knowledge of local conditions. In general, local districts are responsible for control of stationary sources of emissions, and state and federal regulations control mobile source emissions.

The project site is located in the Town of Loomis, which lies within the Sacramento Valley Air Basin. The proposed project site encompasses approximately 66 acres and is currently undeveloped, with the exception of six residences and one commercial building on the site. The existing land uses on site are not a substantial source of air pollutant emissions.

Air quality in the project vicinity is influenced by local and distant emissions sources. Air pollutant sources in the immediate project vicinity include emissions from vehicular traffic on Interstate 80 (I-80), Horseshoe Bar Road, and Taylor Road; area sources such as landscaping maintenance and agricultural activities; and stationary sources such as residential woodstoves and barbeques. Other significant air pollutant sources in the region include vehicular traffic on Sierra College Boulevard, as well as local agricultural, commercial, and industrial land uses. Distant emissions sources include the vehicular traffic, agricultural activities, and various industries in the Sacramento metropolitan area and beyond to the west.

Climate and Topography

Mild, wet winters and hot, dry summers characterize the climate of central and western Placer County. Precipitation generally occurs between November and April. Prevailing winds are from the south and southwest, and local air quality is influenced by the transport of emissions from upwind mobile and stationary pollution sources in south Placer County, the Sacramento metropolitan area, and the San Francisco Bay area.

Air quality in central Placer County is also affected by inversion layers, which occur when a layer of warm air traps a layer of cold air beneath it, preventing vertical dispersion of air contaminants. Calm atmospheric conditions that contribute to the creation of these inversion layers frequently occur in the region during late fall and early spring. The presence of an inversion layer results in higher concentrations of pollutants near ground level.

Air Quality Standards and Existing Concentrations

Ozone (O_3) and PM_{10} are pollutants of particular concern in central Placer County. Under the air quality standards mandated by the California Clean Air Act, the Sacramento Valley Air Basin is currently in nonattainment for PM_{10} and is designated as serious nonattainment for $O_{3.}$ This air basin is also in a nonattainment area for the Federal Clean Air Act O_3 and $PM_{2.5}$ standards. (See Table 4.8-1 for relevant federal and state air quality standards.) Continued nonattainment status under the Federal Clean Air Act could result in economic penalties and restrictions on development in the region. As shown in Table 4.8-2, violations of O_3 and particulate matter standards have occurred and continue to occur within the region.

Carbon monoxide (CO) is another pollutant of concern in the region because south Placer County is designated as a federal maintenance area for CO standards. This region was in nonattainment for federal CO standards until 1998.

Table 4.8-1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard
	8 hours	0.070 ppm (137 μg/m³)	0.075 ppm (147 μg/m³)	
NO_2	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as Primary Standard
	Annual arithmetic mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)	—
	Annual arithmetic mean	—	0.030 ppm (for certain areas)	—
PM_{10}	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual arithmetic mean	20 μg/m³	—	
$PM_{2.5}$	24 hours	—	35 μg/m³	Same as Primary Standard
	Annual arithmetic mean[f]	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[g]	30-day average	1.5 μg/m³	—	
	Calendar quarter	—	1.5 μg/m³ (for certain areas)	Same as Primary Standard
	Rolling 3-month average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[g]	24 hours	0.01 ppm (26 μg/m³)	—	—
Sulfates	24 hours	25 μg/m³	—	—

Table 4.8-1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
Visibility-reducing particles	8-hour (10:00 a.m. to 6:00 p.m. PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%	—	—

Source: CARB 2013a.

ppm = parts per million by volume; μg/m^3 = micrograms per cubic meter; mg/m3= milligrams per cubic meter; PST = Pacific Standard Time.

[a] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth-highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For NO_2 and SO_2, the standard is attained when the 3-year average of the 98th and 99th percentiles, respectively, of the daily maximum 1-hour average at each monitor within an area does not exceed the standard (effective April 12, 2010). For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm (parts per million) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] On December 14, 2012, the Environmental Protection Agency Administrator signed the notice of final rule revising the annual $PM_{2.5}$ standard from 15.0 to 12.0 μg/m^3. The final rule has not been published in the Federal Register as of the date of this report, and an effective date for the ruling has not been set.

[g] CARB has identified lead and vinyl chloride as Toxic Air Contaminants (TACs) with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

The closest air quality monitoring station to the project site is in Roseville. Table 4.8-2 provides a summary of the frequencies of the most current air quality standard violations at that monitoring station.

Table 4.8-2
Frequency of Air Quality Standard Violations

Monitoring Site	Year	Number of Days Exceeding Standard					
		State 1-Hour O_3	*State 8-Hour O_3*	*Federal 8-Hour O_3*	*State 24-Hour PM_{10}*[a]	*National 24-Hour PM_{10}*	*National $PM_{2.5}$*
Roseville–N Sunrise Boulevard	2010	9	15	21	0	0	0
	2011	11	15	23	6.1	0	6.1
	2012	9	13	28	0	0	0
	2013	2	2	8	0	0	–[b]
	2014	4	10	21	0	0	0

Source: CARB 2014.

[a] Measurements of PM_{10} are usually collected every 6 days. "Number of days exceeding the standard" is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored.

[b] There was insufficient (or no) data available to determine the value.

Ozone

O_3 is a colorless gas that has a pungent odor and causes eye and lung irritation, visibility reduction (O_3 is a primary constituent of smog), and crop damage. O_3 in the upper atmosphere absorbs harmful ultraviolet light, but ground-level ozone is damaging to the tissues of plants, animals, and humans. O_3 reacts chemically with internal body tissues, such as the lungs, and can cause adverse effects on the human respiratory system. Prolonged exposure can reduce lung function, aggravate asthma, and increase susceptibility to respiratory infections.

O_3 is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NO_x) and reactive organic gases (ROGs). Because these reactions occur on a regional scale, O_3 is considered a regional air pollutant. Industrial fuel combustion and motor vehicles are primary sources of NO_x and ROGs.

As shown in Table 4.8-2, O_3 concentrations have exceeded federal and state ambient air quality standards at the Roseville air quality monitoring station from 2010 to 2014. These violations, together with violations throughout the Sacramento area, have resulted in the region as being in nonattainment of the state O_3 standards and in serious nonattainment of the federal 8-hour O_3 standard. The nonattainment region is called the Sacramento Federal Nonattainment Area, and includes all of Sacramento and Yolo Counties, and portions of El Dorado, Placer (western Placer County), Sutter, and Solano Counties.

Particulate Matter

Particulate matter is generally composed of particles in the air such as dust, soot, aerosols, fumes, and mists. Of particular concern are inhalable particulates that have aerodynamic diameters of 10 micrometers or less (PM_{10}). A subgroup of these particulates is fine particulates (particles with aerodynamic diameters less than 2.5 micrometers, $PM_{2.5}$), which have different characteristics, sources, and potential health effects than coarse particulates (particles with aerodynamic diameter between 2.5 to 10 micrometers). Coarse particulates are generated by sources such as windblown dust, agricultural fields, and dust from vehicular traffic on unpaved roads. $PM_{2.5}$ is generally emitted from activities such as industrial combustion, vehicle exhaust, and residential wood-burning stoves and fireplaces. $PM_{2.5}$ is also formed in the atmosphere when gases such as sulfur dioxide (SO_2), NO_x, and volatile organic compounds emitted by combustion activities are transformed by chemical reactions in the air. Separate standards for $PM_{2.5}$ were established in 1997 because these smaller particles can penetrate deep into the respiratory tract and cause their own unique, adverse health effects. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases; heart and lung disease; and coughing, bronchitis, and respiratory illnesses in children. PM_{10} and $PM_{2.5}$ can aggravate respiratory disease and cause lung damage, cancer, and premature death.

Measured concentrations at the Roseville monitoring station did not exceed federal PM_{10} standards between 2012 and 2014. However, there were 6 days in 2011 when the state PM_{10} standard and national $PM_{2.5}$ standard were exceeded. These measured concentrations have contributed to the region being classified as nonattainment for the state PM_{10} standard and national $PM_{2.5}$ standard.

Carbon Monoxide

CO is an odorless, colorless gas that can impair the transport of oxygen in the bloodstream; aggravate cardiovascular disease; and cause fatigue, headache, confusion, and dizziness. When CO gets into the body, it combines with chemicals in the blood and prevents the blood from providing oxygen to cells, tissues, and organs. Because the body requires oxygen for energy, high-level exposure to CO can cause serious health effects. At high concentrations, CO can cause heart difficulties in people with chronic diseases, and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and death.

CO forms through incomplete combustion of fuels in vehicles, wood stoves, industrial operations, and fireplaces. In Placer County, vehicular exhaust is a major source of CO. CO tends to dissipate rapidly into the atmosphere and, consequently, is generally a concern at the local level, particularly at major road intersections.

No violations of CO standards at the Roseville monitoring station have occurred in the last 5 years. All of Placer County is in attainment of the CO standards.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas. It is a respiratory irritant that can cause lung damage and pneumonia, can lower the resistance to respiratory infections, and may affect those with existing respiratory illness, including asthma. Airborne NO_2 can also impair visibility through the formation of smog. NO_x, which includes NO_2, is a key precursor to O_3 and acid rain. NO_x forms when fuel is burned at high temperatures, and principally comes from transportation sources and stationary fuel combustion sources such as electric utility and industrial boilers.

There have been no violations of NO_2 standards at the Roseville monitoring station in the last 5 years. All of Placer County is in attainment of the NO_2 standards.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless acidic gas with a strong odor. High concentrations of SO_2 affect breathing and may aggravate existing respiratory and cardiovascular disease. Current scientific evidence links short-term exposures to SO_2, ranging from 5 minutes to 24 hours, with a adverse respiratory effects including bronchoconstriction and increased asthma symptoms. These effects can result in particularly adverse consequences for asthmatics at elevated ventilation rates (e.g., while exercising or playing). Studies also show increased visits to emergency departments and hospital admissions for respiratory illnesses associated with short term exposures, particularly in at-risk populations such as children, older adults, and asthmatics (EPA 2016).

SO_2 is also a primary contributor to acid deposition, which causes acidification of lakes and streams and can damage trees, crops, building materials, and statues. In addition, sulfur compounds in the air can contribute to visibility impairment. The major source category for SO_2 is fuel-burning equipment combusting fossil fuels.

SO_2 is not measured at the Roseville station. However, the project area is designated as unclassified for federal and state standards. A summary of the attainment status for Placer County is provided in Table 4.8-3.

Table 4.8-3
Placer County Attainment Status

Criteria Pollutant	2013 State Designation	Federal Designation
CO	Unclassified	Unclassified/Attainment
NO_x	Attainment	Unclassified/Attainment
SO_x	Attainment	Unclassified/Attainment

Table 4.8-3
Placer County Attainment Status

Criteria Pollutant	2013 State Designation	Federal Designation
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Unclassified	Nonattainment (Sacramento Valley) Unclassified/Attainment (Mountain Counties)
O_3 (1-hour)	Nonattainment	—
O_3 (8-hour)	Moderate – Nonattainment	Severe – Nonattainment
Lead	Attainment	Unclassified/Attainment
Sulfates	Attainment	—
Hydrogen sulfide	Unclassified	—
Visibility reducing PM	Unclassified	—

Source: CARB 2014.

Existing Emissions Sources

Air pollutant concentrations in a region are usually the result of emissions from human-caused and natural sources. Human-caused sources of emissions are generally divided into three types: stationary, area-wide, and mobile sources. The contributions of these source categories vary from region to region. CARB maintains an emissions inventory to determine the sources and quantities of air pollution generated within the state's counties and air basins. Table 4.8-4 presents a summary of the estimated 2012 pollutant emissions data for the Sacramento Valley portion of Placer County and general source categories. Emissions from mobile sources constitute the majority of ROG, CO, NO_x, and sulfur oxides (SO_x) emissions in the area. Area-wide emissions contribute more than 75% of the PM_{10} emissions in the County.

Table 4.8-4
Summary of 2012 Estimated Annual
Average Emissions in Placer County (tons per day)

Source	TOG	ROG	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Stationary Sources							
Fuel combustion	0.9	0.4	3.0	3.4	0.1	0.3	0.3
Waste disposal	14.4	0.1	-	-	-	-	-
Cleaning and surface coatings	2.2	1.8	-	-	-	0	0
Petroleum production and marketing	13.4	0.7	-	-	-	-	-
Industrial processes	2.3	1.6	0.2	0.1	0.0	1.0	0.5
Total Stationary Sources	*33.3*	*4.6*	*3.2*	*3.4*	*0.1*	*1.3*	*0.8*
Area Sources							
Solvent evaporation	3.0	2.6	-	-	-	-	-

Table 4.8-4
Summary of 2012 Estimated Annual
Average Emissions in Placer County (tons per day)

Source	TOG	ROG	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Miscellaneous processes	4.5	1.5	8.1	0.7	0.1	7.1	1.8
Total Area Sources	*7.5*	*4.1*	*8.1*	*0.7*	*0.1*	*7.1*	*1.8*
Mobile Sources							
On-road motor vehicles	3.9	3.6	30.7	7.2	0.0	0.6	0.3
Other mobile sources	4.5	3.9	18.5	4.1	0.0	0.3	0.3
Total Mobile Sources	*8.4*	*7.6*	*49.2*	*11.3*	*0.1*	*1.0*	*0.6*
Total All Sources	**49.2**	**16.2**	**60.4**	**15.4**	**0.2**	**9.3**	**3.2**

Source: CARB 2013b.
TOG = total organic gases

Asbestos

Asbestos is a known carcinogen and therefore considered a Toxic Air Contaminant (TAC). Health effects of exposure to asbestos can include lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs) (CARB 2010). Naturally occurring asbestos is found in some areas throughout California, most commonly where ultramafic rock or serpentinite rock is present. Another form of asbestos, known as tremolite, can be found associated with ultramafic rock, particularly near faults. When construction activities occur in areas with naturally occurring asbestos in the soils or rock, the asbestos can become airborne and may be inhaled.

The California Department of Conservation's California Geological Survey prepared a map and accompanying report on the relative likelihood for the presence of naturally occurring asbestos in Placer County. Areas that were determined "most likely" and "moderately likely" to contain naturally occurring asbestos are areas with soil types and geologic units where chemical and physical conditions may have supported formation of asbestos. The project site is in an area where soil is from weathered granitic rocks. This soil type and geologic unit does not typically support formation of naturally occurring asbestos. The project site is in an area considered "least likely" to contain naturally occurring asbestos (USGS 2011).

4.8.2 Regulatory Setting

The federal Clean Air Act Amendments of 1977 required that each state adopt a State Implementation Plan (SIP) outlining pollution control measures to attain the federal standards in nonattainment areas of the state. CARB coordinates and oversees both state and federal air pollution control programs in California. CARB oversees activities of local air quality

management agencies, and is responsible for incorporating Air Quality Management Plans (AQMPs) from local air basins into a SIP for federal Environmental Protection Agency (EPA) approval. CARB also maintains air quality monitoring stations throughout the state in conjunction with local air districts. Data collected at these stations are used by CARB to classify air basins as "attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards.

The 1976 Lewis Air Quality Management Act established the air districts throughout California, including the PCAPCD. Significant authority for air quality control has been given to local APCDs or AQMDs, which regulate stationary source emissions and develop local attainment plans. PCAPCD has the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution (e.g., motor vehicles at an intersection, a mall, or highway). CARB regulates motor vehicles and fuels.

Federal and State Regulations

The federal government, through the EPA, has established primary and secondary national ambient air quality standards (NAAQS) for criteria pollutants under the provisions of the Clean Air Act (CAA), including replacing the 1-hour O_3 standard with an 8-hour O_3 standard and adopting a $PM_{2.5}$ standard. A large region consisting of Sacramento and parts of Yolo, Placer (including this project area), and Solano Counties has received a serious nonattainment designation for the 8-hour average O_3 NAAQS. This nonattainment area is called the Sacramento Federal Nonattainment Area. The EPA, under the provisions of the CAA, requires each state with regions that have not attained the NAAQS to prepare a SIP, detailing how these standards are to be met in each local area. The SIP is not a single document, but a compilation of new and previously submitted plans, programs, district rules, state regulations, and federal controls. In California, CARB is the lead agency for developing this SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards the SIP revisions to EPA for approval and publication in the Federal Register.

The APCDs within the Sacramento Federal Nonattainment Area had developed the 1994 Sacramento Area Regional Ozone Attainment Plan to satisfy the SIP requirement for the 1-hour O_3 standard. The project area is located in the Sacramento Valley Air Basin, which is in severe nonattainment for federal ozone standards. The region was initially designated as "serious" nonattainment in 2004 based on the 8-hour ozone standard. The region was given a target attainment date of 2013. As a part of the SVAB federal ozone nonattainment area, the PCAPCD worked with the other local air districts within the Sacramento area to develop a regional air quality management plan to describe and demonstrate how Placer County and the Sacramento nonattainment area would attain the required federal 8-hour ozone standard by the proposed

attainment deadline. However, because the region must rely on longer-term emissions reduction strategies from state and federal programs, the 2013 date could not be met. In 2008, CARB submitted a letter to the EPA requesting a voluntary reclassification of the area from "serious" to "severe" nonattainment and an extension of the target attainment date to 2019. In accordance with the requirements of the CAA, the PCAPCD, along with the other air districts in the region, prepared the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Ozone Attainment Plan) in December 2008. The PCAPCD adopted the Ozone Attainment Plan on February 19, 2009, and CARB determined that the plan meets CAA requirements and approved it, on March 26, 2009, as a revision to the SIP. Accordingly, the Ozone Attainment Plan is the applicable air quality plan for the region.

The state has established its own ambient air quality standards for criteria air pollutants, which are, in general, more stringent than the federal standards. CARB, the state's air quality management agency, enforces these standards by regulating mobile emissions sources and overseeing activities of the county APCDs and regional AQMDs. The proposed project is located in a nonattainment area for state O_3 and PM_{10} standards.

The California CAA requires that each area exceeding the state ambient air quality standards for O_3, CO, SO_2, and NO_2 develop a plan aimed at achieving those standards (California Health and Safety Code 40911). The California Health and Safety Code, Section 40914, requires air districts to design a plan that achieves an annual reduction in district-wide emissions of 5% or more, averaged every consecutive 3-year period. To satisfy this requirement, the PCAPCD has developed an Air Quality Attainment Plan (AQAP) outlining strategies for achieving the state ambient air quality standard for O_3. The AQAP outlines both stationary and mobile emission source control measures and emphasizes Transportation Control Measures and Indirect Source Control Measures to reduce mobile source emissions. These measures are also incorporated into the SIP to satisfy federal requirements.

Local Regulations

At the local level, the PCAPCD regulates air quality by establishing local air quality regulations, permitting stationary sources, and planning activities related to air quality. The PCAPCD is also responsible for enforcing and implementing federal and state standards. Through its enhanced CEQA review process, the PCAPCD has developed significance thresholds for land use projects that generate air pollutants. These thresholds apply to both short- and long-term air pollutant emissions. Projects with the potential to generate emissions exceeding the thresholds would have a significant impact on air quality. If the project's impact exceeds any of the significance criteria, various mitigation measures are available depending on the nature of the air quality impact. Table 4.8-5 presents the significance thresholds for criteria pollutants.

Table 4.8-5
Placer County Air Pollution Control District Significance Thresholds

Pollutant	Project Significance Thresholds (pounds per day)	Cumulative Significance Thresholds (pounds per day)
ROG	82	10
NO_x	82	10
Sulfur oxides	136	10
PM_{10}	82	none
CO	550	none

Source: Placer County APCD 2012.

Town of Loomis General Plan

The Town's General Plan includes goals and policies related to the reduction of air pollutants. An analysis of the project's consistency with General Plan policies that support the goals listed in the following text, as well as other goals related to resource protection, is provided in Appendix B to this draft EIR. Applicable goals and policies include the following (Town of Loomis 2001):

Natural Resources and Open Space Goals

1. To help protect groundwater and air quality within the Sacramento region.

Natural Resources and Open Space Policies

1. **Air quality.** Loomis will contribute toward the attainment of State and Federal air quality standards in the Sacramento Valley Air Basin through the following, and other feasible measures.
    a. Site preparation and development activities shall incorporate effective measures to minimize dust emissions and the emissions of pollutants by motorized construction equipment and vehicles.
    b. During the review of development plans, the Town should require that project proponents conduct their own air quality analysis to determine air quality impacts and potential mitigation measures.
    c. Recognizing that trees and other vegetation can provide a biological means of reducing air contaminants, existing trees should be retained and incorporated into project design wherever feasible. The additional planting of a large number of trees along roadways and in parking areas shall be encouraged.

d. The Town shall require carbon monoxide modeling for development projects that, in combination with regionally cumulative traffic increases, would result in a total of 800 or more trips at an affected intersection or cause the level of service to drop to D or lower at the intersection.

e. The Town shall encourage that large residential projects be phased or timed to be coordinated with development that provides primary wage-earner jobs.

f. If an initial air quality screening indicates that emissions of any pollutant could exceed 10 pounds per day, the Town shall require such development projects to submit an air quality analysis to Placer County APCD for review. Based on the analysis, the Town may require appropriate mitigation measures consistent with the latest version of the AQAP or other regional thresholds of significance adopted for the air basin.

g. New development shall pay its fair share of the cost to provide alternative transportation systems, including bikeways, pedestrian paths, and bus stop facilities.

h. The Town shall require that new developments dedicate land sufficient for park-and-ride lots, when the location is appropriate for such facilities.

4.8.3 Impacts

Methods of Analysis

This section identifies and discusses the environmental impacts resulting from the proposed project and suggests mitigation measures to reduce the level of impact. A detailed discussion of mitigation measures is also included in this section.

Development of the proposed project could potentially be detrimental to air quality during the construction and operation phases. Construction activities would result in criteria pollutant emissions from site grading activities, construction of infrastructure, application of architectural coatings, and vehicle and construction equipment exhaust. Proposed project operation would result in criteria pollutant emissions primarily from vehicular sources; however, landscape maintenance equipment, heating sources (e.g., natural gas heaters) and other miscellaneous activities would also generate pollutant emissions. The CalEEMod land use and emissions modeling program was used to estimate air pollutant emissions that would be generated during construction and operation of the proposed project. These are compared to the applicable PCAPCD criteria pollutant thresholds to determine whether there would be significant air quality impacts.

Based on the results of the traffic study, which found that the project would not degrade an intersection to a level of service E or F as a result of this project under existing or cumulative conditions, a CO hotspot analysis was not conducted and CO hotspots are not evaluated in this EIR.

The project site is located within 500 feet of I-80, which is a source of TACs such as diesel particulate matter. The CARB Land Use and Transportation Handbook recommends that new sensitive receptors should be located at least 500 feet from a major transportation facility, which is defined as a roadway carrying at least 100,000 vehicles per day. As documented in the project's Traffic Impacts Analysis (KD Anderson & Associates 2015, provided in Appendix E), I-80 in the area of the project carries approximately 84,000 vehicles per day currently. With the addition of the proposed project, I-80 is expected to carry 84,220 vehicles per day. As the traffic volumes are below 100,000 vehicles per day, the project site is not expected to be exposed to substantial concentrations of TACs associated with I-80. There are no other substantial sources of TACs in the vicinity. Therefore, the potential for project site residents to be exposed to TACs is not evaluated further in this EIR.

None of the proposed land uses typically generate objectionable odors that could adversely affect existing or planned residences. Therefore, potential odor impacts are not evaluated in this EIR.

Significance Criteria

Based on the guidance in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), the project would have a significant impact on air quality if:

- Air pollutants emitted from the proposed project would cause or contribute to a localized exceedance of any ambient air quality standard (Table 4.8-1 provides a summary of ambient air quality standards).
- The amount of air pollutants emitted from the implementation of the proposed project would exceed the significance emission thresholds set forth by the PCAPCD.
- Implementation of the proposed project would conflict with the policies identified in the Air Quality Element of the Town of Loomis General Plan or the goals of the PCAPCD.

Impact Discussion

IMPACT 4.8-1:	Generate air pollutant emissions that would cause or contribute to a localized exceedance of any ambient air quality standard or exceed PCAPCD's emission thresholds.
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measures 4.8a ~~and~~ through 4.8~~b~~c
RESIDUAL SIGNIFICANCE:	Significant and Unavoidable for construction emissions, Less Than Significant for operational emissions

Proposed Project

Construction Emissions

Emissions modeling was prepared for the proposed project using the CalEEMod land use and emissions modeling program (version 2013.2.2). Modeling inputs were based on the proposed project as presented in Chapter 3, Project Description, the project-specific construction timeline (which anticipates construction occurring each year from 2016 through 2019) and equipment usage information provided by the project applicant.

The construction phases, maximum daily emissions for each phase, and total maximum daily emissions from all simultaneous phases are shown in Table 4.8-6. The emissions shown in Table 4.8-6 are classified by the year in which the emissions would occur, the individual construction phase within each year and the specific months of that year during which that phase would occur.

Nine CalEEMod modeling runs were completed to estimate emissions from construction based on the proposed project phasing. Appendix G includes results for annual and summer emissions for each construction phase, and annual, summer, and winter emissions for overall project operation. The construction schedule is approximate, and actual dates may vary from those modeled. However, the modeling provides a reasonable estimate of the likely impacts of the project construction. The nine CalEEMod runs are as follows:

1. Site Preparation and Overall Project Operation: This modeling run includes the following construction phases:
    a. Demolition from May 1, 2016, to May 20, 2016
    b. Site Preparation from May 10, 2016, to May 21, 2016
    c. Grading from May 15, 2016, to July 15, 2016

d. Utilities/Trenching from June 15, 2016, to August 15, 2016

e. Backbone Roadway Paving from August 15, 2016, to August 30, 2016

f. Doc Barnes Drive Extension Paving from September 1, 2016, to September 6, 2016

2. Phase A Single Family (143 homes), including:

   a. Building Construction from September 1, 2016, to August 1, 2019

   b. Architectural coatings from December 1, 2016, to September 1, 2019

3. Phase A Multi-Family (modeling was completed for 125 units, 117 units are proposed):

   a. Additional site preparation, grading, utilities, and paving from April 1, 2017, to May 15, 2017

   b. Building Construction from May 1, 2017, to December 1, 2017

   c. Architectural coatings from November 1, 2017, to January 31, 2018

4. Phase A Commercial (42,000 square feet of commercial space and 166 parking spaces):

   a. Grading from April 1, 2017, to April 27, 2017

   b. Paving from April 28, 2017, to May 17, 2017

   c. Building Construction from May 18, 2017, to December 1, 2017

   d. Architectural coatings from December 1, 2017, to December 31, 2017

5. Phase B (60 homes), including:

   a. Building Construction from September 1, 2016, to January 1, 2018

   b. Architectural coatings from December 1, 2016, to February 1, 2018

6. Phase C (71 homes):

   a. Building Construction from September 1, 2016, to January 1, 2018

   b. Architectural coatings from December 1, 2016, to February 1, 2018

7. Phase D (29 homes):

   a. Building Construction from December 1, 2017, to August 1, 2018

   b. Architectural coatings from March 1, 2018, to September 1, 2018

8. Phase E (25,000 square feet of office space and 100 parking spaces):

   a. Grading from April 1, 2017, to April 17, 2017

   b. Paving from April 18, 2017, to May 2017

   c. Building Construction from May 1, 2017, to December 1, 2017

d. Architectural coatings from December 1, 2017, to December 15, 2017

9. Phase F – Mixed Use (12,000 square feet commercial space, 8 dwelling units, and 50 parking spaces):
    a. Additional site preparation, grading, utilities, and paving from April 1, 2018, to April 30, 2018
    b. Building Construction from May 2, 2018, to December 1, 2018
    c. Architectural coatings from December 1, 2018, to December 15, 2018.

As reflected in the CalEEMod results and summarized in Table 4.8-6, project construction would generate more than 82 pounds per day of NO_x emissions during the initial grading phase between May 15 and July 15, 2016. When combined with other concurrent phases, NO_x emissions during construction would result in a **significant** impact because the emissions would exceed the PCAPCD thresholds. Specifically, NO_x emissions would total 162.51 pounds per day between May 15 and May 20, 104.24 pounds per day between May 21 and June 14, and 137.83 pounds per day between June 15 and July 15.

In compliance with PCAPCD rules, **Mitigation Measure 4.8a** requires that the project implement the standard emissions reduction measures recommended by PCAPCD to ensure that construction emissions are reduced to the extent feasible. In addition, **Mitigation Measure 4.8b** requires use of a construction equipment fleet that achieves a 20% reduction in NO_x emissions compared to the statewide fleet average used in grading to further reduce NO_x emissions. As reflected in the CalEEMod modeling, use of oxidation filtration that can remove 25% of the NO_x emissions for grading equipment would reduce emissions by 22.78 pounds per day. This would result in the following construction NO_x emissions during 2016: 139.73 pounds per day between May 15 and May 20, 81.46 pounds per day between May 21 and June 14, and 115.05 pounds per day between June 15 and July 15. Additional reduction would be anticipated from implementation of **Mitigation Measure 4.8b**; however, between May 15 and May 20 and June 15 and July 15, construction NO_x emissions could still exceed the PCACPD threshold; therefore, construction emissions during these periods would be **significant and unavoidable.**

During 2017, construction emissions from each individual phase would remain below the applicable thresholds. However, many of the 2017 phases substantially overlap each other, resulting in emissions of both NO_x and ROG that would exceed the PCAPCD thresholds, representing a **significant** impact. Specifically, NO_x emissions between April 1 and December 15 would range between 82.10 and 144.43 pounds per day, and ROG emissions between November 1 and December 31 would range between 83.52 and 137.73 pounds per day. Implementation of **Mitigation Measure 4.8b** would reduce emissions from each individual

phase but combined emissions are expected to continue to exceed the PCAPCD thresholds; therefore, construction emissions during these periods would be **significant and unavoidable.**

The NO_x emissions would temporarily exceed the PCAPCD thresholds, which could make it more difficult to obtain attainment with state and federal air quality standards. As the state and federal air quality standards were adopted to protect public health and welfare, nonattainment with those standards would lead to increases in respiratory and cardiovascular diseases.

As mentioned above, the project applicant proposes to implement measures to eliminate eight dwelling units to reduce the project's biological impacts. While this would slightly reduce construction- related emissions, it would not reduce the extent of grading necessary at the site and the impact would remain **significant and unavoidable**.

Table 4.8-6
Construction Air Pollutant Emissions (pounds per day)

Construction Year	Construction Phase	Timing	Emissions					
			ROG	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2016	Demolition	May 1 – May 20	2.38	23.90	18.75	0.21	1.73 *(1.72)*	1.25
	Site Preparation	May 10 – May 21	3.20	34.37	26.32	0.02	19.58 *(9.84)*	8.91 *4.93)*
	Grading	May 15 – July 15	9.02	***104.24 (81.46)***	64.65	0.08	6.34 *(5.17)*	4.78 *(4.71)*
	Utilities/Trenching	June 15 – August 15	3.28	33.59 *(30.99)*	23.32	0.03	2.15 *(2.13)*	1.87 *(1.87)*
	Paving Backbone Roadways	August 15 – August 30	2.51	17.46	11.99	0.02	1.20 *(1.19)*	1.03
	Paving Doc Barnes Drive Extension	September 1 – September 6	2.51	17.46	11.99	0.02	1.20 *(1.19)*	1.03
	Phase A Single-Family Construction	September 1 – December 31	2.95	19.04	18.15	0.03	2.33 *(2.24)*	1.42 *(1.30)*
	Phase A Single-Family Architectural Coatings	December 1 – December 31	7.10	4.08	4.23	—	0.54 *(0.52)*	0.39 *(0.38)*
	Phase B Construction	September 1 – December 31	2.4	17.26	12.15	0.02	1.35 *(1.33)*	1.14
	Phase B Architectural Coatings	December 1 – December 31	9.10	4.01	3.34	—	0.36	0.33
	Phase C Construction	September 1 – December 31	2.44	17.45	12.52	0.02	1.40 *(1.38)*	1.16 *(1.15)*
	Phase C Architectural Coatings	December 1 – December 31	9.35	4.01	3.38	—	0.37 *(0.36)*	0.34
	Combined Demolition and Grading Phases May 15 – May 20		*14.85*	***162.51 (107.14)***	*109.72*	*0.31*	*27.65*	*14.94*
	Combined Grading and Utilities/Trenching Phases June 15 – July 15		*12.30*	***137.83***	*87.97*	*0.11*	*8.49*	*6.65*
	Combined Paving and Phase 1 Phases September 1 – September 6		*10.30*	*71.21*	*54.81*	*0.09*	*6.28*	*4.75*
	Combined Phases September 7 – November 30		*7.79*	*3.75*	*42.82*	*0.07*	*5.08*	*3.72*
	Combined Phases A, B, and C December 1 – December 31		*33.34*	*65.85*	*53.77*	*0.07*	*6.35*	*4.78*

Table 4.8-6
Construction Air Pollutant Emissions (pounds per day)

Construction Year	Construction Phase	Timing	Emissions					
			ROG	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
2017	Phase A Single-Family Construction	January 1 – December 31	2.66	17.44	17.10	0.03	2.21 *(2.11)*	1.30 *(1.28)*
	Phase A Single-Family Architectural Coatings	January 1 – December 31	7.03	3.75	4.09	—	0.50 *(0.48)*	0.35 *(0.34)*
	Phase A Multi-Family Grading	April 1 – April 27	2.85	29.99	21.22 (20.88)	0.02	7.93 *(4.46)*	4.81 *(2.97)*
	Phase A Multi-Family Paving	April 28 – May 15	1.99	14.93	11.13	0.02	0.89	0.78
	Phase A Multi-Family Construction	May 1 – December 1	4.33	28.71	26.97	0.05	3.16 *(3.05)*	2.11 *(2.09)*
	Phase A Multi-Family Architectural Coatings	November 1 – December 31	40.24	2.34	2.95	—	0.40 *(0.38)*	0.24 *(0.23)*
	Phase A Commercial Grading	April 1 – April 27	2.49	25.97	17.45	0.02	7.61 *(4.21)*	4.61 *(2.78)*
	Phase A Commercial Paving	April 28 – May 17	2.08	17.21	12.98	0.02	1.15 *(1.14)*	1.02
	Phase A Commercial Construction	May 18 – December 1	3.23	23.03 *(22.93)*	18.43	0.02	1.92 *(1.86)*	1.51
	Phase A Commercial Architectural Coatings	December 1 – December 31	29.83	4.48	4.10	—	0.42 *(0.41)*	0.37
	Phase B Construction	January 1 – December 31	2.17	15.87	11.71	0.02	1.23 *(1.20)*	1.03 *(1.02)*
	Phase B Architectural Coatings	January 1 – December 31	9.04	3.69	3.30	—	0.32	0.29
	Phase C Construction	January 1 – December 31	2.20	16.04	12.05	0.02	1.28 *(1.26)*	1.04
	Phase C Architectural Coatings	January 1 – December 31	9.29	3.70	3.33	—	0.33	0.30
	Phase D Construction	December 1 – December 31	1.45	11.24	7.43	0.01	0.80 *(0.79)*	0.65
	Phase E Grading	April1 – April 17	2.16	22.58	14.69	0.02	6.14	3.66
	Phase E Paving	April 18 – May 1	1.88	15.03	11.71	0.02	1.01 *(1.00)*	0.92

Table 4.8-6
Construction Air Pollutant Emissions (pounds per day)

Construction Year	Construction Phase	Timing	Emissions					
			ROG	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
	Phase E Construction	May 2 – November 30	3.33	23.09	18.64	0.03	1.75 *(1.73)*	1.50
	Phase E Architectural Coatings	December 1 – December 15	33.82	4.55	4.05	—	0.40 *(0.39)*	0.37
	Combined Phases January 1 – March 31		*32.39*	*60.49*	*51.58*	*0.07*	*5.87*	*4.31*
	Combined Phases April 1 – April 17		*39.91*	***139.04***	*105.13*	*0.12*	*27.6*	*17.1*
	Combined Phases April 18 – April 27		*36.76*	***101.49***	*80.74*	*0.11*	*14.49*	*9.84*
	Combined Phases April 28 – April 30		*38.34*	***107.66***	*87.4*	*0.13*	*9.92*	*7.03*
	Combined Phases May 1		*42.67*	***136.37***	*114.37*	*0.18*	*12.08*	*9.14*
	Combined Phases May 2 – May 17		*44.12*	***144.43***	*121.30*	*0.19*	*12.82*	*9.72*
	Combined Phases May 18 – October 31		*43.28*	***135.32***	*115.62*	*0.17*	*12.70*	*9.43*
	Combined Phases November 1 – November 30		***83.52***	***137.66***	*118.57*	*0.17*	*13.10*	*9.67*
	Combined Phases December 1 – December 15		***137.73***	***82.10***	*70.11*	*0.11*	*7.97*	*5.94*
	Combined Phases December 16 – December 31		***103.91***	*77.55*	*66.06*	*0.08*	*7.49*	*5.57*
2018	Phase A Single-Family Construction	January 1 – December 31	2.34	15.61	16.05	0.03	2.06 *(1.97)*	1.16 *(1.14)*
	Phase A Single-Family Architectural Coatings	January 1 – December 31	6.97	3.45	3.98	—	0.46 *(0.44)*	0.31 *(0.30)*
	Phase A Multi-Family Architectural Coatings	January 1 – January 31	40.19	2.16	2.84	—	0.38 *(0.36)*	0.22 *(0.21)*
	Phase B Architectural Coatings	January 1 – February 1	8.98	3.39	3.26	—	0.29 *(0.28)*	0.25
	Phase C Architectural Coatings	January 1 – February 1	9.23	3.40	3.29	—	0.29	0.26
	Phase D Construction	January 1 – August 1	1.26	9.95	7.01	0.01	0.70 *(0.69)*	0.56
	Phase D Architectural Coatings	March 1 – September 1	9.99	3.38	3.19	—	0.27	0.25
	Phase F Grading	April 1 – April 18	1.77	16.33	12.02	0.02	1.82 *(1.38)*	1.36 *(1.13)*

Table 4.8-6
Construction Air Pollutant Emissions (pounds per day)

Construction Year	Construction Phase	Timing	Emissions					
			ROG	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
	Phase F Paving	April 19 – April 30	1.70	13.93	12.27	0.02	0.88 *(0.87)*	0.80
	Phase F Construction	May 1 – November 30	2.69	19.65	16.50	0.02	1.42 *(1.40)*	1.22
	Phase F Architectural Coatings	December 1 – December 15	33.17	4.18	3.97	—	0.34	0.31
	Combined Phases January 1 – January 31		*68.97*	*37.96*	*36.43*	*0.04*	*4.18*	*2.76*
	Combined Phases February 1 – February 28		*10.57*	*29.01*	*27.04*	*0.04*	*3.22*	*2.03*
	Combined Phases March 1 – March 30		*20.56*	*32.39*	*30.23*	*0.04*	*3.49*	*2.28*
	Combined Phases April 1 – April 18		*22.33*	*48.72*	*42.25*	*0.06*	*5.31*	*3.64*
	Combined Phases April 19 – April 30		*22.26*	*46.32*	*42.50*	*0.06*	*4.37*	*3.08*
	Combined Phases May 1 – August 1		*23.25*	*52.04*	*46.73*	*0.06*	*4.91*	*3.50*
	Combined Phases August 2 – August 31		*21.99*	*42.09*	*39.72*	*0.05*	*4.21*	*2.94*
	Combined Phases September 1 – September 30		*12.00*	*38.71*	*36.53*	*0.05*	*3.94*	*2.69*
	Combined Phases December 1 – December 15		*42.48*	*23.24*	*24.00*	*0.03*	*2.86*	*1.78*
	Combined Phases December 16 – December 31		*9.31*	*19.06*	*20.03*	*0.03*	*2.52*	*1.47*
2019	Phase A Single-Family Construction	January 1 – August 1	2.09	14.14	29.55	0.03	1.94 *(1.85)*	1.05 *(1.03)*
	Phase A Single-Family Architectural Coatings	January 1 – September 1	6.91	3.16	3.89	—	0.42 *(0.41)*	0.27
	Combined Phases January 1 – August 1		*9.00*	*17.3*	*33.44*	*0.03*	*2.36*	*1.32*

Source: Appendix G.
Bold text indicates a significant impact.

Operational Emissions

CalEEMod was also used to model air pollutant emissions from project operations. Air pollutant emissions would occur during project operation (occupation of the residences) through the consumption of electricity and use of motor vehicles, landscaping equipment, natural gas for heating devices (natural gas fireplaces and water heaters), individual barbeques, and consumer products (e.g., cleaning supplies and personal products such as hair spray). The CalEEMod estimates of pollutant emissions during operation of the proposed project are shown in Table 4.8-7.

Table 4.8-7
Unmitigated Operational Air Pollutant Emissions (pounds per day)

Source	Air Contaminant					
	ROG	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Summer						
Area sources	27.63	0.412	36.18	0.0002	0.20	0.20
Energy	0.38	3.25	1.51	0.02	0.26	0.26
Mobile	25.95	43.66	215.91	0.63	42.98	11.91
Combined	**53.96**	**47.34**	**253.60**	**0.66**	**43.44**	**12.37**
Winter						
Area sources	27.63	0.42	36.18	0.0002	0.20	0.20
Energy	0.38	3.25	1.51	0.02	0.26	0.26
Mobile	23.27	49.34	223.02	0.57	42.98	11.91
Combined	**51.29**	**53.01**	**260.71**	**0.59**	**43.44**	**12.37**

All of the air pollutant emissions from project operation would remain below the APCD thresholds, and the project is not expected to violate air quality standards. To ensure that no wood-burning devices are installed within the project site, which would increase emissions of NOX and particulate matter, Mitigation Measure 4.8c prohibits their use. With implementation of Mitigation Measure 4.8c, ~~T~~this impact would ~~be~~ remain **less than significant**.

As mentioned above, the project applicant proposes to implement measures to eliminate eight dwelling units to reduce the project's biological impacts. This would slightly reduce operational emissions and the impact would remain **less than significant.**

Modified Transportation Alternative

During construction, the Modified Transportation Alternative would be responsible for slightly fewer emissions because it would construct 7,000 fewer square feet of commercial space. The Modified Transportation Alternative would require the same amount of grading as the proposed project and would result in the same emissions, as summarized in Table 4.8-6. The Modified

Transportation Alternative construction would generate more than 82 pounds per day of NO_x emissions during the initial grading phase. When combined with other concurrent phases, NO_x emissions during construction would result in a **significant** impact because the emissions would exceed the PCAPCD thresholds. In compliance with PCAPCD rules, the Modified Transportation Alternative would also implement **Mitigation Measure 4.8a** and **Mitigation Measure 4.8b**; however, when grading occurs concurrent with demolition or utilities/trenching, construction NO_x emissions could exceed the PCACPD threshold; therefore, construction emissions during these periods would be **significant and unavoidable.** As was the case with the proposed project, many of the Modified Transportation Alternative phases substantially overlap each other, resulting in emissions of both NO_x and ROG that would exceed the PCAPCD thresholds, representing a **significant** impact. Implementation of **Mitigation Measure 4.8b** would reduce emissions from each individual phase but combined emissions are expected to continue to exceed the PCAPCD thresholds; therefore, construction emissions during these periods would be **significant and unavoidable.**

During operation, the Modified Transportation Alternative would have slightly less air pollutant emissions than the proposed project because this alternative contains 7,000 fewer square feet of commercial space and thus would generate slightly fewer vehicle trips. The Modified Transportation Alternative would also implement **Mitigation Measure 4.8c** to ensure there are no wood-burning devices within the project site. This impact would remain **less than significant**.

IMPACT 4.8-2:	Implementation of the proposed project would conflict with the policies identified in the Air Quality Element of the Town of Loomis General Plan or the goals of the PCAPCD.
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 4.8a
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

The Town's General Plan requires that site preparation and development activities incorporate effective measures to minimize dust emissions and the emissions of pollutants by motorized construction equipment and vehicles. The project would comply with this policy in implementing best management practices (BMPs) to control dust emission during project construction, as required by **Mitigation Measure 4.8a**. In addition, the project would comply with the Town's policy on using landscaping to reduce air contaminants, as trees would be planted throughout the project site, and the majority of the existing trees in the central riparian

corridor would be retained. With implementation of **Mitigation Measure 4.8a** and the proposed landscaping plan, the project would have a **less-than-significant** impact related to conflicts with the Town of Loomis General Plan.

Project emissions would remain below the PCAPCD thresholds. Therefore, the project would not conflict with the goals of the APCD, and this impact would be **less than significant**.

As mentioned above, the project applicant proposes to implement measures to eliminate eight dwelling units to reduce the project's biological impacts. This would not alter the project's consistency with the General Plan or the goals of the APCD and the impact would remain **less than significant.**

Modified Transportation Alternative

The Modified Transportation Alternative, just as the proposed project, would be required to comply with the Town's General Plan and policies; thus, with implementation of **Mitigation Measure 4.8a** and the proposed landscaping plan, the Modified Transportation Alternative would have a **less-than-significant** impact related to conflicts with the Town of Loomis General Plan.

IMPACT 4.8-3:	The proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in nonattainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measure 4.8d~~c~~
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

Due to its nonattainment status for the federal and state ozone standards, the geographic scope of the area for the proposed project cumulative analysis includes the areas within the Sacramento Federal Nonattainment Area (SFNA) for ozone. The SFNA includes the Counties of Sacramento, Yolo, Solano (partial), Sutter (partial), Placer (except the Lake Tahoe Air Basin), and El Dorado (except the Lake Tahoe Air Basin).

The SFNA is in nonattainment for O_3 and particulate matter. Ongoing development and operation of new land uses would generate additional emissions of O_3 precursors (ROG and NO_x) and particulate matter, which may adversely affect the ability of the region to achieve attainment with the applicable air quality standards. This would be a **significant cumulative** impact.

As discussed in Section 4.8.2, Regulatory Setting, regional air quality plans have been prepared to identify strategies to achieve attainment of the ambient air quality standards. New development in the SFNA that results in greater air pollutant emissions than was assumed in regional air quality plans could contribute to cumulative air quality impacts. Development of the site with primarily commercial uses was assumed in regional air quality planning, but the project proposes to develop residential and commercial land uses, which would generate more air pollutant emissions than were assumed for the site.

In accordance with PCAPCD guidance, a project with ROG and NO_x emissions in excess of 10 pounds per day would be considered cumulatively considerable. As shown in Table 4.8-7, the project's ROG emissions would be 53.96 pounds per day in the summer and 51.29 pounds per day in the winter, and NO_x emissions would be 47.34 pounds per day in the summer and 53.01 pounds per day in the winter. These emissions exceed the PCACPD cumulative threshold and would make a **cumulatively considerable** contribution to the significant cumulative impact. Therefore the project would have a **significant** impact in the cumulative scenario. **Mitigation Measure 4.8d~~c~~** requires the project applicant to contribute to the PCAPCD emissions offset program or implement a site-specific mitigation program to reduce the project's contribution to the cumulative impact. With implementation of **Mitigation Measure 4.8d~~c~~**, the project's impact in the cumulative scenario would be **less than significant**.

As mentioned above, the project applicant proposes to implement measures to eliminate eight dwelling units to reduce the project's biological impacts. While this would slightly reduce project emissions, implementation of **Mitigation Measure 4.8d** would still be required to reduce the project's contribution to the cumulative impact to a **less-than-significant** level.

Modified Transportation Alternative

The Modified Transportation Alternative will occur in the same the regulatory setting as the proposed project. While the air pollutant emissions may be slightly reduced under this alternative, the Modified Transportation Alternative would result in a similar contribution to cumulative air quality impacts as the proposed project. Implementation of **Mitigation Measure 4.8d** would reduce the Modified Transportation Alternative's impact in the cumulative scenario to **less than significant**.

4.8.4 Mitigation Measures

4.8a For each construction phase, the project applicant shall implement the following standard construction emissions reduction measures:

a. Prior to issuance of grading or building permits (as applicable), the applicant shall submit a Construction Emission/Dust Control Plan to the Placer County Air Pollution Control District (PCAPCD). If the PCAPCD does not respond within 20 days of the plan being accepted as complete, the plan shall be considered approved. The applicant shall provide written evidence, provided by the PCAPCD, to the Town of Loomis (Town) that the plan has been submitted to the PCAPCD. It is the responsibility of the applicant to deliver the approved plan to the Town. The applicant shall not break ground prior to receiving PCAPCD approval of the Construction Emissions/Dust Control Plan, and delivering that approval to the Town.

b. Include the following standard note on the Grading Plan and/or Building Plan, or as an attached form: The prime contractor shall submit to PCAPCD a comprehensive inventory (e.g., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower of greater) that will be used in aggregate of 40 or more hours for the construction project. If any new equipment is added after submission of the inventory, the prime contractor shall contact PCAPCD prior to the new equipment being used. At least three business days prior to the use of subject heavy-duty off-road equipment, the project representative shall provide PCAPCD with the anticipated construction timeline, including start date and the name and phone number of the property owner, project manager, and on-site foreman.

c. Include the following standard note on the Grading Plan and/or Building Plan, or as an attached form: During construction the contractor shall use existing power sources (e.g., power poles) or clean fuel (e.g., gasoline, biodiesel, natural gas) generators rather than temporary diesel power generators.

d. Include the following standard note on the Grading Plan and/or Building Plan, or as an attached form: During construction, the contractor shall minimize idling time to a maximum of 5 minutes for all diesel-powered equipment.

e. Signs shall be posted in the designated queuing areas of the construction site to remind off-road equipment operators that idling is limited to a maximum of 5 minutes.

f. Idling of construction-related equipment and construction-related vehicles is not recommended within 1,000 feet of any sensitive receptor. Material and equipment storage areas shall be located as far from sensitive receptors as feasible.

4.8b Prior to issuance of Grading or Building permits, the applicant shall provide a written calculation to PCAPCD for approval demonstrating that the heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet-average 20% oxides of nitrogen (NO_x) reduction and 45% diesel particulate matter reduction as compared to the California Air Resources Board statewide fleet average emissions. Acceptable options for reducing emissions may include use of late model engines, low-emissions diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The Construction Mitigation Calculator available at the following link shall be used to calculate compliance with this condition: http://www.airquality.org/ceqa/mitigation.shtml. The completed calculator worksheet shall be submitted to PCAPCD prior to the start of construction.

4.8c No wood-burning devices shall be installed in residences or non-residential structures within the project site.

4.8d ~~e~~ Prior to issuance of building permits, the project applicant shall pay its fair-share of the off-site mitigation fee through the PCAPCD Offsite Mitigation Program. The fee payment shall be sufficient to offset the project's reactive organic gas (ROG) and NO_x operational emissions in excess of 10 pounds per day. Using PCAPCD's fee calculation spreadsheet and the current fee rate of $18,030 per ton, the fee is estimated to be approximately $133,422. PCACPD shall use the fee for projects such as providing incentives to retrofit, repower, or replace heavy-duty diesel vehicles and construction equipment; lawn mower swap-outs; wood stove replacements; re-powering heavy-duty diesel with alternative fueled vehicles; and removing, replacing, retiring, or rebuilding older, heavy-duty diesel engines with newer, lower emitting engines

Or

Prior to issuance of building permits, the project applicant shall develop an off-site mitigation project (equivalent to the emissions reductions required for the proposed project to meet PCAPCD thresholds of significance), subject to review and approval by the Town of Loomis after consultation with PCAPCD. Examples include participation in a "biomass" program that provides emissions benefits;

retrofitting, repowering, or replacing heavy-duty engines from mobile sources (e.g., buses, construction equipment, on-road haulers); and other programs that the project proponent may propose to reduce emissions. The applicant must provide proof that the off-site mitigation project would reduce emissions at an equivalent amount as would be required of the proposed project under the PCAPCD fee program, which is estimated based on the CalEEMod modeling completed for this environmental impact report to be 7.40 tons.

4.9 GREENHOUSE GAS EMISSIONS

This section describes the potential effects on greenhouse gas (GHG) emissions associated with implementation of The Village at Loomis Project (proposed project). The proposed project includes 418 dwelling units, 56,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space. The project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units that were evaluated in the Draft EIR, and omitting the southern portion of the trail along the eastern side of the open space. The reduction in dwelling units and shortening of the trail increases the amount of open space in the center of the project from the 9.55 acres evaluated in the Draft EIR. The applicant also proposes to implement measures to reduce project impacts under the Transportation Alternative that was evaluated in the Draft EIR. The Modified Transportation Alternative includes 418 total dwelling units, 49,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 acres of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space.

A comment letter from the Placer County Air Pollution Control District (PCAPCD) was received in response to the Notice of Preparation (NOP). The comment letter notes that impacts from GHG emissions/climate change should be addressed in the environmental impact report (EIR). The letter also includes recommended sources for adopted thresholds to assess the proposed project's GHG-related impacts and potential to interfere with GHG reduction goals. The NOP and comments received in response to the NOP are provided in Appendix A.

The information provided in this section was obtained from review of the following documents:

- *Town of Loomis General Plan* (Town of Loomis 2001)
- California Emissions Estimator Model (CalEEMod) modeling for the proposed project (provided in Appendix G)

4.9.1 Environmental Setting

The Earth's climate is determined by the balance between energy received from the sun and energy emitted back to space from the Earth and its atmosphere. Certain gases in the atmosphere, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), water vapor, and others, trap some of the outgoing energy, retaining heat in the Earth's atmosphere. Such gases are considered GHGs. The best understood GHGs emitted by human activities are CO_2, CH_4, N_2O, and certain fluorinated compounds. The increase in atmospheric concentrations of GHGs has resulted in more heat being held within the atmosphere, which is the accepted explanation for global climate change.

Changes in GHG emissions are influenced by many long-term factors, including population and economic growth, land use, energy prices, technological changes, and interannual temperatures. On an annual basis, combustion of fossil fuels, which accounts for most GHG emissions in the United States, generally fluctuates in response to changes in general economic conditions, energy prices, weather, and the availability of nonfossil alternatives.

Global Warming Potential

Global warming potential (GWP) is one type of simplified index (based on radiative properties) that can be used to estimate the potential future impacts of emissions of various gases. According to the U.S. Environmental Protection Agency (EPA), the GWP of a gas, or aerosol, to trap heat in the atmosphere is the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas (EPA 2013). The reference gas for comparison is CO_2. GWP is based on a number of factors, including the heat-absorbing ability of each gas relative to that of CO_2, as well as the decay rate of each gas relative to that of CO_2. The GWP of each gas is determined by comparing the radiative forcing associated with emissions of that gas versus the radiative forcing associated with emissions of the same mass of CO_2. CH_4 gas, for example, is estimated by the EPA to have a comparative GWP 21 times greater than that of CO_2, as shown in Table 4.9-1.

Table 4.9-1
Global Warming Potential and Atmospheric Lifetimes of Select GHGs

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
CO_2	50–200	1
CH_4	12±3	21
N_2O	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: CF_4	50,000	6,500
PFC: C_2F_6	10,000	9,200
SF_6	3,200	23,900

Source: EPA 2013.
HFC = hydrofluorocarbon; PFC = perfluorocarbon; CF_4 = tetrafluoromethane; C_2F_6 = hexafluoroethane; SF_6 = sulfur hexafluoride

At the extreme end of the scale, sulfur hexafluoride (SF_6) is estimated to have a comparative GWP 23,900 times that of CO_2. The "specified time horizon" is related to the atmospheric lifetimes of such GHGs, which are estimated by the EPA to vary from 50 to 200 years for CO_2 to 50,000 years for tetrafluoromethane. Longer atmospheric lifetimes allow GHG to build up in the

atmosphere; therefore, longer lifetimes correlate with the GWP of a gas. The common indicator for GHGs is expressed in terms of CO_2 equivalents (CO_2E) (EPA 2013).

According to the EPA, the United States accounts for nearly one-fifth of the total global emissions of CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and SF_6. The primary GHG emitted by human activities is CO_2, which accounted for 83% of U.S. GHG emissions in 2009. The next largest components, CH_4 and N_2O, represented 10% and 4% of the total U.S. GHG emissions in 2009, respectively. The primary sources of CH_4 emissions include domestic livestock sources, decomposition of wastes in landfills, and releases of natural gas systems, coal mine seepage, and manure management. The main human activities producing N_2O are agricultural soil management, fuel combustion in motor vehicles, nitric acid production, manure management, and stationary fuel combustion (EPA 2013).

Emissions of GHG by economic sector indicate that energy-related activities account for the majority of U.S. emissions. Electricity generation is the largest single-source, which accounted for 32% of all U.S. GHG emissions in 2009. Transportation is the second largest source, followed by industrial activities. The agricultural, commercial, and residential sectors account for the remainder of emissions. Emissions of GHG are offset by uptake of carbon and sequestration in forests, trees in urban areas, agricultural soils, and landfilled yard trimmings and food scraps (EPA 2013).

Uncertainty Regarding Global Climate Change

The scientific community has largely agreed that the Earth is warming and that humans are contributing to that change (IPCC 2007). However, the Earth's climate is composed of many complex mechanisms, including ocean currents, cloud cover, the jet stream, and other pressure/temperature weather guiding systems. These systems are, in turn, influenced by changes in ocean salinity, changes in the evapotranspiration of vegetation, the reflectivity (albedo) of ground cover, and numerous other factors. Some changes have the potential to reduce climate change, while others could form a feedback mechanism that would speed the warming process beyond what is currently projected. The climate system is inherently dynamic; however, the overall trend is toward a gradually warming planet.

Global Climate Change Analysis

Analyzing global warming presents several unique challenges, largely because of its "global" nature. Global warming presents the considerable challenge of analyzing the relationship between local and global activities. Typically, air quality analyses examine the project-specific impacts that a particular project is likely to generate on a local or regional level. With regard to global warming, however, the magnitude of global warming effects is so substantial and the contribution of an individual project to global warming is so small that direct impacts would be highly unlikely. Accordingly, the issue of global climate change is different from any other areas

of air quality impact analysis. A global climate change analysis must be conducted on a global level, rather than the typical local or regional setting, and requires consideration of not only emissions from the proposed project under consideration, but also the extent of the displacement, translocation, and redistribution of emissions. In the usual context, where air quality is linked to a particular location or area, it is appropriate to consider the creation of new emissions in that specific area to be an environmental impact whether or not the emissions are truly "new" emissions to the overall globe. In fact, the approval of a new developmental plan or project does not necessarily create new automobile drivers, which are the primary source of a land use project's emissions. Rather, a new land use project may simply redistribute existing mobile emissions; accordingly, the use of models that measure overall emissions increases without accounting for existing emissions will substantially overstate the impact of the development project on global warming. Thus, an accurate analysis of GHG emissions substantially differs from other air quality impacts, and the addition of redistributed emissions to a new locale can make a substantial difference to overall air quality in that area.

4.9.2 Regulatory Setting

GHG emissions are monitored through the efforts of various international, federal, state, regional, and local government agencies. The agencies work jointly and individually to reduce GHG emissions through legislation, regulations, planning, policy making, education, and a variety of programs. The agencies responsible for regulating and improving the air quality within the Town of Loomis (Town) are discussed in the following text.

International Regulations

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries in signing the United Nations' Framework Convention on Climate Change agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The Climate Change Action Plan currently consists of more than 50 voluntary programs.

Federal Regulations

U.S. Environmental Protection Agency

The EPA is responsible for enforcement of the National Ambient Air Quality Standards for atmospheric pollutants. The EPA regulates emission sources that are under the exclusive authority of the federal government, including emissions of GHGs. To track the national trend in emissions and removals of GHG since 1990, the EPA develops the official U.S. GHG inventory

each year. The national GHG inventory is submitted to the United Nations in accordance with the Framework Convention on Climate Change. The EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was signed into law in 1970. Congress substantially amended the CAA in 1977 and again in 1990.

Federal Clean Air Act

On December 7, 2009, the EPA issued findings under Section 202(a) of the CAA, concluding that GHGs are pollutants that could endanger public health. Under the so-called Endangerment Finding, the EPA found that the current and projected concentrations of the six key, well-mixed GHGs—CO_2, CH_4, N_2O, PFCs, SF_6, and HFCs—in the atmosphere threaten the public health and welfare of current and future generations. These findings do not, by themselves, impose any requirements on industry or other entities.

State Regulations

Assembly Bill 32

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, the California Climate Solutions Act of 2006. AB 32 delegated the authority for its implementation to the California Air Resources Board (CARB) and directs CARB to enforce the statewide cap that would begin phasing in by 2012. Among other requirements, AB 32 required CARB to (1) identify the statewide level of GHG emissions in 1990 to serve as the emissions limit to be achieved by 2020, and (2) develop and implement a scoping plan to be implemented by January 1, 2012. Accordingly, CARB has prepared the Climate Change Scoping Plan (scoping plan) for California, which was approved in 2008. The scoping plan provides the outline for actions to reduce California's GHG emissions. Based on the reduction goals called for in the 2008 scoping plan, a 29% reduction in GHG levels relative to a business-as-usual (BAU) scenario would be required to meet 1990 levels by 2020. A BAU scenario is a baseline condition based on what could or would occur on a particular site in the year 2020 without implementation of a proposed project or any required or voluntary GHG reduction measures (CARB 2008). A project's BAU scenario is project- and site-specific and varies from project to project. For example, if a project is proposed on a site that has existing operations that are currently emitting GHGs, the current GHG emissions would be the baseline or BAU condition and would be compared to the proposed project's GHG emissions (i.e., the BAU levels would be subtracted from the proposed project levels to determine the proposed project's net increase in GHG emissions).

In 2011, the baseline, or projected 2020 BAU, level for the scoping plan was revised to account for the economic downturn and state regulation emission reductions (i.e., Pavley, Low Carbon Fuel Standard, and Renewable Portfolio Standard). Again, the projected 2020 BAU condition is project- and site-specific and varies. The projected 2020 BAU scenario is based on what could or

would occur on a particular site in the year 2020 without implementation of a proposed project or consideration of any state regulation emission reductions or voluntary GHG reduction measures. Accordingly, the scoping plan emission reduction target from projected 2020 BAU levels required to meet 1990 levels by 2020 was modified from 29% to 21% (where projected 2020 BAU levels are based on 2010 levels) or 16% (where the projected 2020 BAU levels are based on 2010 levels including accounting for percentages of emission reductions captured for implementation of AB 1493 and the Renewable Portfolio Standard). The amended scoping plan was reapproved August 24, 2011. The first update to the scoping plan was approved on May 22, 2014 (CARB 2014).

Assembly Bill 1493

AB 1493, known as Pavley, was enacted on July 22, 2002. AB 1493 requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state." On June 30, 2009, the EPA granted a waiver of CAA preemption to California for the state's GHG emission standards for motor vehicles, beginning with the 2009 model year. Pursuant to the CAA, the waiver allows for the state to have special authority to enact stricter air pollution standards for motor vehicles than the federal government's. CARB estimates that the regulation would reduce GHG emissions from the light-duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030.

Executive Order S-3-05

In 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established total GHG emission targets. Specifically, emissions are to be reduced to year 2000 levels by 2010, 1990 levels by 2020, and to 80% below 1990 levels by 2050. The Executive Order directed the secretary of the California Environmental Protection Agency to coordinate a multiagency effort to reduce GHG emissions to the target levels. The secretary is also directed to submit biannual reports to the governor and state legislature describing (1) progress made toward reaching the emission targets, (2) impacts of global warming on California's resources, and (3) mitigation and adaptation plans to combat these impacts.

To comply with the Executive Order, the secretary of the California EPA created a Climate Action Team made up of members from various state agencies and commissions. In March 2006, the Climate Action Team released its first report. In addition, the Climate Action Team has released several white papers addressing issues pertaining to the potential impacts of climate change on California.

Executive Order S-01-07

On January 18, 2007, Governor Schwarzenegger signed Executive Order S-01-07, which mandates that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020. The Executive Order also requires that a Low Carbon Fuel Standard for transportation fuels be established for California.

Executive Order B-30-15

On April 29, 2015, Governor Jerry Brown signed Executive Order B-30-15, setting an interim target to cut California's GHG emissions to 40% below 1990 levels by 2030. The new interim target is consistent with the recommendation of CARB in its first update to the scoping plan (2014) (discussed previously under AB 32). The Executive Order requires CARB to update the scoping to express the 2030 target in terms of million metric tons of CO_2E. All state agencies with jurisdiction over GHG emission sources must implement measures to achieve the 2030 and 2050 targets. In addition, the California Natural Resources Agency is to update the state's climate adaptation strategy, the Safeguarding California Plan, every 3 years and to ensure that its provisions are fully implemented. The Safeguarding California Plan will help California adapt to climate change by identifying vulnerabilities by sector (e.g., vulnerabilities to the water supply, the energy grid, the transportation network); outlining primary risks of these vulnerabilities to people, property, and natural resources; specifying priority actions needed to reduce the risks; and identifying lead agencies to spearhead the adaption efforts for each sector. Each sector was then responsible for preparing an implementation plan outlining adaptation actions, and must report back to the Natural Resources Agency by June 2016 on the actions taken. The Executive Order also requires state agencies to take climate change into account in their planning and investment decisions and employ full life-cycle cost accounting to evaluate investments and alternatives.

Senate Bill 375

In September 2008, Governor Schwarzenegger signed Senate Bill (SB) 375, which is intended to build on AB 32 by attempting to control GHG emissions by curbing sprawl. SB 375 enhances CARB's ability to reach goals set by AB 32 by directing CARB to develop regional GHG emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. In addition, CARB will work with the state's 18 metropolitan planning organizations, including the Sacramento Area Council of Governments, to align their regional transportation, housing, and land use plans and to prepare a Sustainable Communities Strategy to reduce the amount of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its GHG reduction targets. SB 375 provides incentives for creating walkable and sustainable communities and revitalizing existing communities and allows home builders to get relief from certain environmental reviews under the California Environmental Quality Act

(CEQA) if they build projects consistent with the new sustainable community strategies. Furthermore, SB 375 encourages the development of alternative transportation options, which will reduce traffic congestion. The Sacramento Area Council of Governments adopted its Sustainable Communities Strategy in April 2012.

California Code of Regulations, Title 17, Sections 95100–95133

On December 6, 2007, CARB approved a regulation mandating the reporting of GHG emissions from major sources, pursuant to the California Global Warming Solutions Act of 2006. California Code of Regulations, Title 17, Sections 95100–95133, includes mandatory reporting that applies to major sources, including cement plants, refineries, and electricity generating facilities.

California Building Code

The California Building Code (CBC) contains standards that regulate the method of use, properties, performance, or types of materials used in the construction, alteration, improvement, repair, or rehabilitation of a building or other improvement to real property. The CBC is adopted every 3 years by the California Building Standards Commission (CBSC). In the interim, the CBSC adopts annual updates to make necessary mid-term corrections. The CBC standards apply statewide; however, a local jurisdiction may amend a CBC standard if the jurisdiction makes a finding that the amendment is reasonably necessary due to local climatic, geological, or topographical conditions.

Green Building Standards

In essence, green buildings standards are indistinguishable from any other building standards. Both are contained in the CBC and regulate the construction of new buildings and improvements. The only practical distinction between the two is that whereas the focus of traditional building standards has been protecting public health and safety, the focus of green building standards is to improve environmental performance (CBSC 2010).

AB 32, which mandates the reduction in GHG emissions in California to 1990 levels by 2020, increased the urgency around the adoption of green building standards. In the scoping plan for the implementation of AB 32, CARB identified energy use as the second largest contributor to California's GHG emissions, constituting roughly 25% of all such emissions. In recommending a green building strategy as one element of the scoping plan, CARB estimated that green building standards would reduce GHG emissions by approximately 26 million metric tons of CO_2E by 2020 (CBSC 2010).

2010 Green Building Code

On January 12, 2010, the CBSC adopted the 2010 California Green Building Standards Code, otherwise known as the CALGreen Code. In addition to the new statewide mandates, CALGreen encourages local governments to adopt more stringent voluntary provisions, known as Tier 1 and Tier 2 provisions, to further reduce emissions, improve energy efficiency, and conserve natural resources. If a local government adopts one of the tiers, the provisions become mandated for all new construction within that jurisdiction. The most significant features of the 2010 CALGreen Code include the following (CBSC 2010):

- Twenty percent mandatory reduction in indoor water use, with voluntary goal standards for 30%, 35%, and 40% reductions. Separate indoor and outdoor water meters to measure nonresidential buildings' indoor and outdoor water use with a requirement for moisture-sensing irrigation systems for larger landscape projects
- Diversion of 50% of construction waste from landfills, increasing voluntarily to 65% and 75% for new homes and 80% for commercial projects
- Mandatory periodic inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies
- Mandatory use of low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board

CEQA Guidelines Amendments of 2010

The California Natural Resources Agency, with input from the Governor's Office of Planning and Research, amended the CEQA Guidelines (14 CCR 15000 et seq.), effective March 18, 2010, to provide guidance for public agencies regarding the analysis and mitigation of GHG emissions and the effects of GHG emissions in draft CEQA documents. Legal principles for determining the significance of impacts from GHG emissions are provided in the amendments in addition to other directives on determining thresholds of significance. These CEQA Guidelines suggest a careful judgment be made by the lead agency that should make a good-faith effort, based on available information to describe, calculate, or estimate the amount of GHG emissions resulting from a project. A lead agency can use a model or methodology to quantify GHG emissions from a project or rely on a qualitative analysis or performance-based standards. When assessing the significance of impacts from GHG emissions on the environment, lead agencies can consider the extent to which the proposed project may increase or reduce GHG as compared to the existing environmental setting, whether the proposed project emissions exceed a threshold of significance determined applicable to the proposed project and/or the extent to which the proposed project complies with adopted regulations or requirements to implement a statewide,

regional, or local plan for the reduction or mitigation of GHG emissions. When adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

If GHG emissions of a project are determined to be significant, feasible means of mitigating GHG emissions may include the following:

- Measurement of the reduction of emissions required as part of the lead agency's decision
- Reductions in emissions resulting from the project through project features, design, or other measures
- Off-site measures, including offsets, to mitigate a project's emissions
- Measures that sequester GHG gases

If a GHG reduction plan, ordinance, regulation, or other similar plan is adopted, mitigation may include project-by-project measures or specific measures or policies found in the plan that reduces the cumulative effect of emissions.

Local Regulations

Placer County Air Pollution Control District

The PCAPCD's CEQA Air Quality Handbook recommends that the threshold of significance for GHG emissions selected by lead agencies be related to compliance with AB 32 reduction goals (PCAPCD 2012). Thus, in accordance with the revised 2020 reduction goals set forth in the amended 2011 scoping plan, the PCAPCD recommends a quantitative GHG analysis for development projects to demonstrate that a project would promote sustainability and implement operational GHG emission reduction strategies that would reduce GHG emissions to meet the statewide GHG emission reduction target of 21% (where projected 2020 BAU levels are based on 2010 levels) or 16% (where the projected 2020 BAU levels are based on 2010 levels, including accounting for percentages of emission reductions captured for implementation of Pavley and Renewable Portfolio Standard) (see Appendix C of the CEQA Air Quality Handbook; PCAPCD 2012).

The Sacramento Metropolitan Air Quality Management District worked with a committee that included other air districts in the Sacramento Region, including the PCAPCD to develop GHG threshold concepts based on guidance from the California Air Pollution Control Officers Association. ~~PCAPCD and other Air Pollution Control Districts in the Sacramento region developed a~~ The PCAPCD recommends that projects in the region be evaluated for GHG emissions relative to the ~~recommended~~ GHG threshold developed by the Sacramento

Metropolitan Air Quality Management District of 1,100 metric tons per year. Emission reduction measures for GHG could include compliance with local, state, or federal plans or strategies for GHG reductions, on-site and off-site mitigation recommendations from the Office of the Attorney General, and project design features.

Town of Loomis General Plan

The Town's General Plan provides goals and policies adopted by the Town to help guide the direction of future development. The following are goals and policies from the General Plan that are relevant to the GHG impacts of the proposed project (Town of Loomis 2001):

Community Development and Land Used Element: Community Design and Character

Policy 5: Design projects to minimize the need to use automobiles for transportation.

a. Emphasize pedestrian and bicycle circulation in all projects.
b. Give individual attention to each mode of transportation with potential to serve a project and the Town, including pedestrian, bicycle, transit, rail, and automobile.
c. Plan for trail systems, where appropriate to connect areas of development with natural and recreational resources.

Circulation Element: Issues, Goals, Policies and Implementation Measures – Bicycle Facilities

Policy 1: The Town shall promote bicycle travel, as appropriate, and shall pursue all available sources of funding for the development and improvement of bicycle facilities.

Policy 2: Bicycle facilities shall be provided in compliance with the *Placer County Bikeways Master Plan* (Placer County Transportation Commission 1988) or subsequent amended versions of that document, as well as on other appropriate routes at the discretion of the Town Council.

Circulation Element: Issues, Goals, Policies and Implementation Measure – Transit Service

Policy 1: The Town will promote and support a safe, efficient, and coordinated public transit system that meets residents' needs, reduces congestion, improves the environment, and helps provide a viable non-automotive means of transportation in and through the Town.

4.9.3 Impacts

This section identifies and discusses the environmental impacts resulting from the proposed project and suggests mitigation measures to reduce the level of impact. A detailed discussion of mitigation measures is included in Section 4.9.4, Mitigation Measures.

Methods of Analysis

The CalEEMod modeling program was used to estimate the proposed project's GHG emissions from all project sources, including in-home energy use, water consumption, and wastewater generation; mobile source emissions; and landfill emissions associated with solid waste generated at the site.

Significance Criteria

The significance criteria for evaluating GHG impacts associated with the implementation of the proposed project are as follows. Would the proposed project:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases?

Impact Discussion

IMPACT 4.9-1:	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measure 4.9
RESIDUAL SIGNIFICANCE:	Significant and Unavoidable

Proposed Project

Dudek prepared an analysis of GHG emissions for the proposed project using CalEEMod; the analysis and modeling output files are provided in Appendix G to this EIR. As shown in Table 4.9-2, the proposed project would generate between 251 and 1,811 tons per year of GHGs during project construction and 8,060 tons per year of GHGs during project operation. This amount reflects reductions in emissions attributed to compliance with the 2014 Title 24 requirements (the unmitigated values in the CalEEMod modeling reflects compliance with the 2008 Title 24 requirements), use of energy-efficient lighting (to reduce overall lighting energy demands by 10%), and the characteristics of the proposed project that reduce vehicle miles traveled (mixture of land uses, proximity to downtown Loomis, inclusion of a diversity of housing including multifamily units), installation of energy-efficient appliances, and provisions to reduce water

demand. **Mitigation Measure 4.9** establishes requirements to ensure that these measures are implemented during project construction.

Table 4.9-2
GHG Emissions (tons per year)

Source	GHG Emissions	
	Unmitigated	*Mitigated*
Construction 2016	581.16	N/A
Construction 2017	1,811.146	N/A
Construction 2018	747.216	N/A
Construction 2019	251.15	N/A
Operational Emissions		
Area sources	5.40	5.40
Energy demand	1,830.17	1,665.01
Mobile sources	6,800.41	6,085.27
Waste	209.07	209.07
Water consumption	105.01	96.01
Total Operational	**8,950.06**	**8,060,76**
Air Pollution Control District Thresholds	*1,100*	

As the proposed project would generate more than 1,100 tons per year of GHG emissions during construction in the year 2017 and throughout project operation, the proposed project would have a **significant** impact related to GHG emissions. The proposed project has incorporated design measures to minimize GHG emissions. Further reductions could be achieved by increasing the energy efficiency of each home and business, as required by **Mitigation Measure 4.9.** However, it would not be feasible to reduce emissions to less than 1,100 tons per year, and the impact would remain **significant and unavoidable.**

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would slightly decrease GHG emissions during construction and operation by reducing the number of homes constructed; however, the impact would still be **significant and unavoidable.**

Modified Transportation Alternative

Though the Modified Transportation Alternative would produce marginally fewer GHG emissions during construction and operation due to the reduction in commercial square footage, this alternative would result in GHG emissions that are well-above the1,100 tons per year PCAPCD GHG threshold. As with the proposed project, the Modified Transportation Alternative

could make further reductions by increasing the energy efficiency of each home and business (as required by **Mitigation Measure 4.9**). However, even with the implementation of **Mitigation Measure 4.9**, the Modified Transportation Alternative would still have **significant and unavoidable** impacts related to GHG emissions.

IMPACT 4.9-2:	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases.
SIGNIFICANCE:	Significant
MITIGATION:	Mitigation Measure 4.9
RESIDUAL SIGNIFICANCE:	Significant and Unavoidable

Proposed Project

The Town has not adopted any plans or policies for the purpose of reducing GHG emissions. Because PCAPCD's thresholds for GHG emissions were developed in concert with other Air Pollution Control Districts with the intention of reducing GHG emissions to meet state and federal requirements, compliance with the PCAPCD's GHG threshold of 1,100 tons per year is considered compatible with regulations related to GHG emissions reductions for a project-level analysis.

As the proposed project would generate more than 1,100 tons per year of GHG emissions during one yar of construction (the construction modeled to occur in the year 2017) and throughout project operation, the proposed project would have a **significant** impact related to GHG emissions. The proposed project has incorporated design measures to minimize GHG emissions. Further reductions could be achieved by increasing the energy efficiency of each home and business, as required by **Mitigation Measure 4.9**. However, it would not be feasible to reduce emissions to less than 1,100 tons per year, and the impact would remain **significant and unavoidable.**

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This represents a slight decrease in emissions due to fewer homes; however, the impact would still be **significant and unavoidable**

Modified Transportation Alternative

The Modified Transportation Alternative would construct the same number of homes and 7,000 fewer square feet of commercial space than the proposed project. Just as with the proposed

project, the Modified Transportation Alternative would not comply with the PCAPCD's thresholds for GHG emissions of 1,100 tons per year. Even with the inclusion of **Mitigation Measure 4.9**, the Modified Transportation Alternative would still result in a **significant and unavoidable** impact.

4.9.4 Mitigation Measures

4.9 The project shall incorporate the following requirements for all residences within the project site:

a. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application for each residence within the approved subdivision shall show that each residence includes a whole house ceiling fan.

b. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application for each residence within the approved subdivision shall show that each residence includes energy-efficient lighting (both indoor and outdoor).

c. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application for each residence within the approved subdivision shall show that each residence includes Energy Star appliances (e.g., stoves, dishwashers, and any other appliances typically included with the initial installation by the builder).

d. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application for each residence within the approved subdivision shall show that each residence includes an energy-efficient air-conditioning unit that exceeds the Seasonal Energy Efficiency Ratio by a minimum of two points at the time of building permit issuance.

e. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application for each residence within the approved subdivision shall show that each residence includes heating, ventilation, and air conditioning duct sealing and that the ductwork shall be pressure balanced prior to the issuance of a certificate of occupancy.

f. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application for each residence within the approved subdivision shall show that each residence shall only use programmable thermostat timers.

g. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application for each residence within the approved subdivision shall show that each residence shall only use low-flow water fixtures, such as low-flow toilets, faucets, showers, and others.

h. Prior to approval of Improvement Plans, the applicant shall only show energy-efficient lighting for all street, parking, and area lighting associated with the project, including all on-site and off-site lighting.

i. Prior to the issuance of a Building Permit, the floor plans and/or exterior elevations submitted in conjunction with the Building Permit application for each residence within the approved subdivision shall show that each residence includes an instant hot, pilotless hot water heating system.

j. Prior to the issuance of a Building Permit, the floor plans and/or exterior elevations submitted in conjunction with the Building Permit application for each residence within the approved subdivision shall show that each residence includes a rooftop solar array capable of generating at least 1.5 kilowatts of power.

k. Prior to the issuance of a Building Permit, the floor plans and/or exterior elevations submitted in conjunction with the Building Permit application for each residence within the approved subdivision shall show that each residence includes "Energy Star" rated (or greater) roofing materials.

l. Prior to the issuance of a Building Permit, the floor plans and/or exterior elevations submitted in conjunction with the Building Permit application for each residence within the approved subdivision shall show that each residence shall include an energy efficient heating system. Furnaces are to be low NOX with an AFUE of 94 percent.

~~h.~~m. The applicant shall insure all residential development to meet the "Energy Star" standards. All building plans submitted to the Town for plan check shall include evidence of their compliance.

Additionally, the project shall incorporate the following requirements for all nonresidential buildings within the project site:

~~i.~~n. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application shall show that each structure within the project includes "Energy Star" rated (or greater) roofing materials.

~~j.~~o. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application shall

show that each structure within the project includes energy-efficient lighting (both indoor and outdoor).

~~k.~~p. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application shall show that each structure within the project includes an energy-efficient air-conditioning unit that exceeds the minimum required Seasonal Energy Efficiency Ratio, as determined by the Federal Regional Standards for air conditioners, by at least of two points at the time of building permit issuance.

~~l.~~q. Prior to the issuance of a building permit, the plans submitted in conjunction with the building permit application shall show that each structure within the project includes heating, ventilation, and air conditioning duct sealing, and that the ductwork shall be pressure balanced prior to the issuance of a certificate of occupancy.

~~m.~~r. Prior to the issuance of a building permit, the floor plans and/or exterior elevations submitted in conjunction with the building permit application shall show that each structure within the project shall include an energy-efficient heating system.

~~n.~~s. Prior to the issuance of a building permit, the plans submitted in conjunction with the building permit application shall show that each structure within the project shall only use programmable thermostat timers.

~~o.~~t. Prior to the issuance of a building permit, the plans submitted in conjunction with the building permit application shall show that each structure shall only use low-flow water fixtures, such as low-flow toilets, faucets, showers, and others.

u. Prior to approval of Improvement Plans, the applicant shall only show energy-efficient lighting for all street, parking, and area lighting associated with the project, including all on-site and off-site lighting.

v. The applicant shall provide bicycle racks within all commercial and retail areas at the ratio of at least one bike rack space per 20 vehicle parking spaces. Each apartment complex shall include one bicycle parking space (i.e., a bicycle rack within the complex) for each unit without a garage.

~~p.~~w. The design of commercial parking lots shall include clearly marked and shaded pedestrian pathways between parking areas and building entrances, and between transit facilities and building entrances, if applicable. Shade trees installed within the project shall be selected from those species identified as "water-wise trees" on the Master Tree List in the Town's Landscape Development Guidelines. Parking lot design shall be in compliance with the Town's Strategic Energy Resources Report.

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4.10 GEOLOGY, SOILS, SEISMICITY, AND PALEONTOLOGY

This section addresses the potential impacts of The Village at Loomis Project (proposed project) to geologic, soils, and paleontological resources, as well as impacts related to seismic safety and soil stability. The proposed project includes 418 dwelling units, 56,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space. The project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units that were evaluated in the Draft EIR, and omitting the southern portion of the trail along the eastern side of the open space. The reduction in dwelling units and shortening of the trail increases the amount of open space in the center of the project from the 9.55 acres evaluated in the Draft EIR. The applicant also proposes to implement measures to reduce project impacts under the Transportation Alternative that was evaluated in the Draft EIR. The Modified Transportation Alternative includes 418 total dwelling units, 49,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 acres of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space.~~The proposed project would construct up to 426 residential units and a village-themed retail center with shops and restaurants, professional offices, parks, open space, and trails.~~

No comments addressing geology, soils, seismicity, or paleontological resources were received in response to the Notice of Preparation. The Notice of Preparation and comments received in response to the Notice of Preparation are included in Appendix A.

4.10.1 Environmental Setting

Geology

Regional Setting

The Town of Loomis (Town) is located near the boundary between the Great Valley geomorphic province and the Sierra Nevada geomorphic province on the eastern edge of California's Great Central Valley. Geomorphic provinces are areas comprised of similar geologic origin and erosional/depositional history. The Great Valley province encompasses the San Joaquin and Sacramento Valleys and is generally bounded by the Sierra Nevada Mountains to the east, the Coast Ranges to the west, the Transverse Ranges to the south, and the Klamath Mountains to the north. The Great Valley is a structural trough in which sediments from erosion of the surrounding mountain ranges have been deposited almost continuously since the Jurassic period (approximately 160 million years ago), leaving a flat valley floor composed of alluvial material (California Department of Conservation, California Geological Survey, 2002).

The Sierra Nevada geomorphic province extends approximately 400 miles from Lassen Peak in the north to the Mojave Desert in the south. The Sierra Nevada mountain range is a relatively recent formation, created 10 to 12 million years ago. Elevation increases gradually on the western slope and decreases more rapidly on the eastern slope. The mountain range is composed mainly of metamorphic and igneous rocks. The Sierra Nevada batholith is mostly composed of Mesozoic (144 million to 245 million years ago), plutonic, and volcanic rocks. Along the western edge of the batholith lies a metamorphic belt, characterized by extremely folded and faulted Paleozoic (286 million to 700 million years ago) to Mesozoic metavolcanic and metasedimentary rocks. Tertiary (5 million to 65 million years ago) and Quaternary (1.8 million years ago to present) age volcanic and alluvial deposits overlie the older basement rocks in some areas. These formations have been exposed to millions of years of weathering and erosion of surface structures, such as from glacial activities and stormwater runoff, leading to the creation of large rivers on both the western and eastern slopes (California Department of Conservation, California Geological Survey, 2002).

Project Site Conditions

The 1981 Geologic Map of the Sacramento Quadrangle, prepared by the California Division of Mines and Geology (CDMG), indicates that the project site is underlain by Mesozoic granodiorite (granitic) rocks, commonly referred to as the Penryn and Rocklin plutons. These granitic rock units are a large-scale intrusive body that is part of a series of magmatic intrusions that helped form portions of the Sierra Nevada. The rock is characterized as a light gray, course-grained igneous rock composed of minerals such as quartz, feldspar, hornblende, and biotite. This rock may also contain occasional xenoliths (an inclusion of a pre-existing rock fragment within the magma) of various sizes and shapes, and quartz veins. The Penryn and Rocklin plutons cover an area of approximately 150 square miles, extending from the Folsom area north to the Auburn area (CDMG 1981).

The primary geologic unit on site is Penryn Quartz Diorite, with alluvial units in the vicinity of the tributary to Secret Ravine Creek. Alluvial units are composed of terrace deposits resulting from sediment deposition and subsequent down cutting of the creek bed.

Topography

Regional Setting

The Sacramento Valley is the northern portion of the Central Valley, which is a broad and flat valley approximately 42,000 square miles in area. Topographic features defining the Sacramento Valley are the Coast mountain range to the west, the Klamath and Cascade mountain ranges to the north, and the Sierra Nevada to the east. Erosion of the surrounding mountain ranges and

subsequent transport and deposition of the eroded sediment in the valley over millennia has resulted in a nearly flat valley floor.

The Town is situated on the east side of the Sacramento Valley at the base of the western slope of the Sierra Nevada at an elevation of approximately 400 feet. Topography throughout the Town is also generally flat.

Project Site Conditions

The project site is characterized by gently rolling terrain bisected by a tributary to Secret Ravine Creek that runs generally north/south through the center of the site. The site slopes minimally from north to south, with on-site elevations ranging from ±410 feet at the northern boundary to ±390 feet at the site's southern boundary, as shown in Figure 4.10-1, Project Site Topography.

Mineral Resources

Information on the mineral resource potential within the study area was obtained from the CDMG Mineral Land Classification of Placer County (CDMG 1995). In accordance with California's Surface Mining and Reclamation Act of 1975, this document classifies the land in Placer County (County) according to "the presence, absence, or likely occurrence of significant mineral deposits in areas of the county subject to either urban expansion or other irreversible land uses incompatible with mining."

Regional Setting

Various mineral deposits are found in Placer County and throughout the foothills region, including sand, gravel, quarry rock, and gold. Some commercial mineral extraction operations exist within the County including aggregate and gold. Most of these mines are located in the eastern portion of the County in the foothills of the Sierra Nevada mountain range (CDMG 1995).

The initial study completed for the Town of Loomis General Plan Update in 2000 concluded that development proposed by the General Plan would have no effect on mining operations in the Town and the region and would have less-than-significant effects on availability of mineral resources (Town of Loomis 2000).

Project Site Conditions

No active commercial mineral extraction operations are located on the project site. The project site is not classified as a site with known or potential significant mineral deposits (CDMG 1995).

Soils

Soil type is one criterion used to evaluate potential impacts of development. Soils are typically considered for their resource value in agricultural production or for their potential development characteristics or constraints. Some soils are more stable under varying conditions and are better suited for development, and others are more susceptible to erosion and/or are subject to expansion under certain soil moisture conditions.

Regional Setting

Soils found within the Town and throughout the foothills region are derived from weathered granite. In the project area, these soils are typically 24 to 40 inches deep over a granitic bedrock unit. Soils from granitic parent material are typically fine grained and well drained (USDA 2015). The Storie Index given for each soil type is an agricultural suitability rating that is based on soil factors such as soil characteristics, soil texture, and slope. The lower the Index rating, the less suitable that particular soil is for general intensive agriculture.

Project Site Conditions

The Soil Survey of Placer County California, Western Part (USDA 2015) shows three soil types occurring within the project site. The soils found on the project site are described in the following text. The numeral preceding the soil name refers to the soil series assigned to each soil by the U.S. Department of Agriculture. Figure 4.10-2, Soil Types, depicts the distribution of each soil on site. The majority of the site is composed of Andregg coarse sandy loam, a small area in the northeast portion of the site is composed of Caperton-Andregg coarse sandy loams; the Xerorthents (an alluvial soil type) occur in association with the floodplain of a tributary to Secret Ravine Creek. The extent of the pre-development 100-year floodplain is shown in Figure 4.11-3 in Section 4.11, Hydrology and Water Quality.

106 – Andregg coarse sandy loam, 2% to 9% slopes. Andregg soil types are moderately deep, gently rolling well-drained soils that are underlain by weathered granitic bedrock. This soil type exhibits moderately rapid permeability, medium surface runoff, and moderate erosion hazard, although exposed soils erode rapidly. Depth of the soil to bedrock is 29 to 33 inches. The Storie Index rating for this soil is 54, placing it in agricultural suitability Grade 3, indicating that this soil is fair in regards to its suitability for agriculture. The limitations to development of this soil type are slopes. This soil type does not exhibit expansive characteristics.

130 – Caperton-Andregg coarse sandy loam, 2% to 15% slopes. The Caperton series consists of shallow, somewhat excessively drained moderately rapidly permeable soils that formed in material weathered mainly from granodiorite and quartz diorite. Caperton soils are on uplands and have slopes of 2% to 50%.

197 – Xerorthents, Placer areas. These soils are commonly found adjacent to streams where placer mining operations have occurred and are a mixture of rocks and silt. Because the soils are varied in their constituents, they exhibit variable permeability, runoff, and erosion hazards. The soil is not suited to agriculture, having a Storie Index rating of less than 5. Limitations to development on this soil type include slopes, flooding, and saturation. This soil type does not exhibit expansive characteristics. The occurrence of this soil type on the project site follows the unnamed drainage from north to south through the center of the project site.

Seismicity

Regional Setting

The major fault systems in the region tend to occur along the interface between differing geologic materials. The nearest major fault system near the Town is the Foothills Fault System, which traverses Amador, El Dorado, and Placer Counties in a path more than 215 miles long and several miles wide. Two segments of this system are relatively close to the Town: the segment of the Bear Mountain Fault Zone (Spenceville Fault) between Folsom and Auburn, and the Melones Fault Zone, approximately 15 miles to the east (Town of Loomis 2001).

No active faults are known to exist in the County, and no Alquist-Priolo Special Studies Zones are designated in the County. The nearest known active fault that has been mapped is the Dunnigan Hills Fault, well to the northwest of the Town across the Central Valley. However, investigations performed for the proposed Auburn Dam indicate that the Foothill Fault System may be undergoing reactivation in the vicinity of Folsom Lake and may be capable of producing a magnitude 6.5 Richter Scale event (Town of Loomis 2001). In 1975, a magnitude 5.7 earthquake was recorded on the Cleveland Hills Fault within the Foothills Fault System near Oroville, in a region thought at the time to be relatively free of seismic events of this severity. Consequently, even though the Bear Mountain and Melones Faults have not ruptured in the past 200 years, they are considered potentially active. The last seismic event recorded in the area with a magnitude of 4.0 or greater was in 1908, with an epicenter between Auburn and Folsom, possibly associated with the Bear Mountain Fault (Town of Loomis 2001).

An inactive inferred fault was mapped across the southern boundary of the Town planning area. The potential for seismic events originating from this fault is considered low (Town of Loomis 2001).

The underlying geologic foundation of the region is a relatively unbroken granitic batholith that extends along the Sierra Nevada. During seismic events, this material tends to react as a uniform block, which has the effect of reducing ground movement, acceleration, and the likelihood of ground rupture. Consequently, the CDMG classifies the region as a low severity earthquake area (CDMG 1995). The maximum expected intensity in a zone of this classification would range between VI and VII on the Modified Mercalli Scale. (The Modified Mercalli Scale is discussed

further in the Groundshaking section, under Seismic Hazards.) Events of this intensity level could result in cracks in weak masonry and chimneys, shaking or rustling of trees and bushes, furniture movement, and breaking of glassware.

Project Site Conditions

There are no known active faults beneath or near the project site, and no active fault trace is known to pass beneath the project site. The active fault nearest to the project site is the Cleveland Hills Fault, approximately 35 miles northeast, and the source of a magnitude 5.7 earthquake in 1975. In addition, studies indicate that there may be active faults, similar to the Cleveland Hills Fault, located within the Bear Mountain and Melones fault zones, approximately 15 miles east of the site (Town of Loomis 2001). The project site is not located in an area that is classified as a Special Studies Zone under the Alquist-Priolo Special Studies Zones Act of 1972.

Geologic and Seismic Hazards

The potential for typical geologic and seismic hazards to exist in the vicinity of the project site is described in the following text.

Geologic Hazards

Landslides. Landslides may be triggered by oversaturated soils (after heavy rains) or by earthquakes. Landslide potential is highest in steeply sloped areas, particularly those areas underlain with saturated and unconsolidated soil. Most areas within the Town, including the project site, are relatively level or gently sloping, and thus not highly susceptible to landslides. Although some areas within the Town have steep slopes, the underlying geology is generally mehrten volcanics and granite, which are not highly susceptible to landslides (Town of Loomis 2001).

Erosion. Soils throughout the Town generally exhibit moderate erosion potential, particularly when exposed on embankment faces and slopes. Each of the three soil types occurring within the project site also exhibit moderate erosion potential. Erosion is typically most pronounced in areas of unconsolidated alluvial soils adjacent to waterways, and therefore, subject to hydraulic erosive forces and areas of soil denuded of vegetation, typically associated with construction or agricultural activities. The effects of erosion range from nuisance problems, such as increased siltation in storm drains, to extreme cases where watercourses are downcut and gullies develop that can eventually undermine adjacent structures or vegetation (Town of Loomis 2001).

Seiche. Seiches are earthquake-generated waves within enclosed or restricted bodies of water. However, because no sizable lakes or reservoirs are present in the planning area, there are no seiche hazards in the Town, including at the project site.

Seismic Hazards

Surface rupture. Surface rupture during earthquakes is typically limited to those areas immediately adjacent to the fault on which the event is occurring. Because the Town, including the project site, contains no active faults, the likelihood of surface rupture in the area is considered low.

Groundshaking. The most serious direct earthquake hazard is the damage or collapse of buildings caused by groundshaking, which, in addition to property damage, can cause injury or death. Groundshaking is the vibration that radiates from the epicenter of an earthquake. The severity of groundshaking and its potential to cause damage to buildings is determined by several factors:

- The nature of the underlying soil and geology
- The location of the epicenter of the earthquake
- The duration and character of the ground motion
- The structural characteristics of a building
- The quality of workmanship and materials used in buildings

Groundshaking is the primary seismic concern for the Town. Portions of the Town are located on alluvial deposits, which can increase the potential for groundshaking damage. As earthquake waves pass from more dense rock to less dense alluvial material, they tend to reduce velocity but increase in amplitude. Ground motion lasts longer on loose, water-saturated materials than on solid rock. As a result, structures located on these types of materials may suffer greater damage and the potential for damage to result from groundshaking may be considered highest on the larger alluvial deposits along the creeks and ravines in the Town (Town of Loomis 2001).

Groundshaking is described in terms of ground acceleration of gravity or through the use of the Modified Mercalli Scale, which is a more descriptive method involving 12 levels of intensity denoted by Roman numerals. Modified Mercalli intensities range from I (not felt) to XII (total damage). Based on information from CDMG, the expected maximum probable groundshaking within the Town would range between VI and VII on the Modified Mercalli Scale (Town of Loomis 2001). Typical structural damage from groundshaking of this magnitude would be minimal if dwellings are constructed in compliance with applicable International Building Code (IBC) requirements. The typical effects of such groundshaking could include cracked chimneys, moved furniture, and broken glassware inside structures. However, historic records suggest a low probability of these maximum events occurring in the Town (Town of Loomis 2001).

Ground failure. In addition to structural damage caused by groundshaking, there are other ground effects caused by such shaking. These ground failure effects include liquefaction,

subsidence, lurch cracking, and lateral spreading. The potential for these hazards to occur in the Town is discussed in the following text.

Liquefaction. Liquefaction in soils and sediments can occur during earthquake events, when material is temporarily transformed from a solid to a liquid (gelatinous) by increases in interpore pressure. Earthquake-induced liquefaction most often occurs in low-lying areas with soils composed of unconsolidated, saturated, clay-free sands and silts. It can also occur in dry, granular soils or saturated soils with some clay content. Liquefaction also occurs in areas overlain by unconsolidated fill, particularly artificial fill. Within the project site, there are alluvial soils that have a moderate liquefaction potential (Town of Loomis 2001).

Subsidence. Subsidence is the compaction of soils and alluvium caused by groundshaking. It occurs irregularly and is largely a function of the underlying soils. Depending on the event, the amount of compaction can vary from a few inches to several feet. In the Town, the potential for subsidence is greatest in areas underlain by alluvium or other soft water-saturated soils. However, no significant subsidence problems have been identified in the project area (Town of Loomis 2001).

Lurch cracking and lateral spreading. Lurch cracking refers to fractures, cracks, and fissures produced by groundshaking and may occur far from an earthquake's epicenter. Lateral spreading is the horizontal movement of soil toward an open face of a stream bank or the side of a levee. Steep-sided artificial fill embankments are most susceptible to damage. The potential for these hazards is greatest on steep-sided alluvial soils where the groundwater table is high. In the Town, this includes areas adjacent to Antelope Creek, Secret Ravine, and Sucker Ravine. The project site does not support any steep slopes. A low potential for lurch cracking and lateral spreading is associated with the on-site tributary to Secret Ravine (Town of Loomis 2001).

Paleontological Resources

Paleontological resources are the fossilized remains or impressions of prehistoric plants and animals. They are valuable, nonrenewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. Fossils can be used to determine the relative ages of the depositional layers in which they occur and of the geologic events that created those deposits.

No state or local agencies have specific jurisdiction over paleontological resources or require a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private lands in a project site.

In the context of the California Environmental Quality Act (CEQA), fossils of land-dwelling vertebrates and their environment are considered important (i.e., significant) paleontological

resources. Such fossils typically are found in river, lake, and bog deposits, although they can occur in nearly any type of sedimentary deposit.

4.10.2 Regulatory Setting

Federal Regulations

The Clean Water Act, administered by the U.S. Army Corps of Engineers, regulates soils disturbance as it affects wetlands and other waters of the United States. The National Pollutant Discharge Elimination System is a federal regulation intended to protect surface water quality. These regulations may influence the extent and methodology of soil disturbance allowed to occur on-site. However, since the intent of these regulations is primarily to protect hydrologic and biological resources, they are discussed in Section 4.3, Biological Resources, and Section 4.11, Hydrology and Water Quality.

State Regulations

Building Codes and Standards

Construction within the Town is required to conform to the current version of the California Building Code (CBC), which is based on the IBC. The CBC incorporates the IBC and includes numerous more detailed and/or more stringent regulations to reflect conditions specific to California. Where no other building codes apply, the IBC/CBC regulates excavation, foundations, and retaining walls, and regulates grading activities, including drainage and erosion control and construction on expansive soils.

In addition, Section 19100 et seq. of the California Health and Safety Code, State Earthquake Protection Law, requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety requirements are set forth in the IBC and CBC. The CBC identifies seismic factors that must be considered in structural design. It provides seismic design and construction standards applicable for designated seismic zones in California based on the seismic event with potential to occur in each zone. The IBC is incorporated into Chapter 11.04 of the Town's Municipal Code (Town of Loomis 2015); thus, all construction within the Town must comply with the IBC.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act, codified in California Public Resources Code, Sections 2621–2630, prohibits construction of buildings used for human occupancy on the surface of active faults. This act also requires the State Geologist to establish regulatory zones, known as Earthquake Fault Zones, around the surface traces of active faults and to issue

appropriate maps to be used by local agencies in regulating and planning construction. As discussed previously, the project site is not included in an Alquist-Priolo earthquake hazard zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act, codified in California Public Resources Code, Sections 2690–2699.6, requires the California Department of Conservation to identify Seismic Hazard Zones within the state based on the probable seismic shaking exposure and soil conditions in a given area. Areas that may be subject to substantial shaking, or where soil conditions indicate the area may be prone to liquefaction or earthquake-induced landslides, are included in Seismic Hazard Zones.

Other State Regulations

Similar to the Clean Water Act, the State Water Resources Control Board and California Department of Fish and Wildlife have developed standards and guidelines related to disturbance of hydrologic and biological resources. These standards and guidelines may influence the extent and methodology of soil disturbance allowed to occur on site. In particular, these agencies require the use of best management practices (BMPs) to control soil erosion from entering waterways. Because the intent of these standards and guidelines is primarily to protect hydrologic and biological resources, they are discussed in Section 4.3, Biological Resources, and in Section 4.11, Hydrology and Water Quality.

Consideration of paleontological resources is required by CEQA (see Appendix G in the CEQA Guidelines (14 CCR 15000 et seq.)). Other state requirements for paleontological resource management are found in California Public Resources Code, Chapter 1.7, Section 5097.5, Archaeological, Paleontological, and Historical Sites. This statute specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute does not apply to the project because none of the property is state owned.

Local Regulations

Town of Loomis General Plan

The Public Health and Safety Element of the Town's General Plan contains a range of goals and policies related to the treatment of geologic and soil resources, and safety considerations related to geology and seismicity (Town of Loomis 2001). An analysis of the project's consistency with General Plan policies that support the goals listed here, as well as other goals related to resource protection, is provided in Appendix B to this draft environmental impact report (EIR). The goals

and policies listed in the following text are applicable to the analysis of the proposed project's impacts associated with geology, soils, and seismicity:

Goals

1. To reduce risks associated with natural and man-made hazards through compliance with State and Federal safety programs.
2. To reduce the risks associated with potential seismic activity, including groundshaking, liquefaction, and landslides.

Policies

1. Engineering analysis of new development proposals shall be required in areas with possible soil instability, flooding, earthquake faults, or other hazards, and prohibit development in high danger areas.
2. Loomis shall cooperate with Federal, State, and local authorities to ensure that loss due to seismic activity and other natural and man-made disasters is minimized.
3. Loomis shall encourage compliance with State requirements for unreinforced masonry buildings and seismic safety.

Town of Loomis Grading Ordinance

The Town's grading ordinance, codified in Chapter 12.04 of the Municipal Code, establishes requirements for grading, erosion and sediment control, and stormwater management. Development projects must comply with these requirements during grading and construction. The primary goals of the ordinance are to protect the health, safety, and general welfare of individuals working or living in the Town. Except in the case of certain exemptions specified in Section 12.04.050 of the Municipal Code, a grading permit issued by the director of public works is required for all grading activities within the Town. Grading permits may only be issued for projects that are consistent with General Plan goals and comply with all applicable local and state codes and regulations, including the CBC. The grading ordinance includes provisions intended to minimize safety hazards and erosion, maintain natural conditions, and protect public rights-of-way and drainage channels; avoid pollution of watercourses and maintain proper functioning of drainage infrastructure; and ensure restoration of areas disturbed as a result of grading (Town of Loomis 2015).

Grading permit requirements and design standards are detailed in Articles VI and VII of Chapter 12.04 of the Municipal Code. These conditions include requirements for control of dust, erosion and sediment, and limits on hours of operation for construction activities, as well as requirements to comply with required mitigation resulting from CEQA compliance. When issuing a grading

permit, the Town may impose any condition necessary to protect public health and welfare and avoid any hazardous conditions. The grading ordinance also specifies that grading projects cannot be allowed to violate the National Pollutant Discharge Elimination System or to interfere with the flow of stormwater (Town of Loomis 2015).

4.10.3 Impacts

Methods of Analysis

The project setting was developed by reviewing available geological documentation for the project area from the California Department of Mines and Geology, the U.S. Geological Survey, The U.S. Department of Agriculture, and the 2001 General Plan for the Town of Loomis. The understanding of potential impacts resulting from the proposed project was based on analysis of these documents.

CEQA requires that the project be analyzed for potential impacts including exposing people or property to risk from seismic events or ground instability, resulting in soil erosion, resulting in the alteration of existing land forms, or destroying paleontological resources. As discussed previously, no active commercial mineral extraction operations are located on the project site. The initial study completed for the Town's General Plan Update in 2000 concluded that development anticipated under the General Plan would have no effect on mining operations in the region and would have less-than-significant effects on availability of mineral resources. The project site is not classified as a site with known or potential significant mineral deposits. Therefore, development of the proposed project would not contribute to a loss of availability of important mineral resources, and there would be no impact associated with the project. This issue is not addressed further.

Significance Criteria

Potential impacts associated with soils, geology, and seismicity have been evaluated using the following criteria, based on Appendix G of the CEQA Guidelines. The proposed project would have a potentially significant impact related to geology, seismicity, and soils if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.
    - Strong seismic ground shaking.
    - Seismic-related failure including liquefaction.

- Be located on a geologic unit or soil that is unsuitable for the project, resulting in potential on-site or off-site landslide, lateral spreading, excessive expansion, subsidence, liquefaction or collapse.
- Result in substantial soil erosion or the loss of topsoil during construction activities and following completion of the proposed project.
- Result in substantial alterations to existing landforms.
- Directly or indirectly destroy paleontological resources.

Impact Discussion

IMPACT 4.10-1:	Project implementation could expose people or structures to substantial seismic risk.
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 4.10a
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

Although no faults capable of ground rupture have been identified on or adjacent to the project site, there is potential for seismic events to affect the project site. The project site is located approximately 15 miles west of portions of the Foothills Fault System. This system has been characterized as having the potential to produce earthquakes with a magnitude up to 6.5 (Town of Loomis 2001), although it is not designated as an active fault zone. The project site is not located in an Alquist-Priolo Earthquake Fault Zone.

Although there are no active faults within the project area, an earthquake produced within the Foothills Fault System could result in ground movement at the project site, and there is potential for moderate to severe shaking to occur. Thus, development of the proposed project would potentially expose people and property to ground shaking associated with earthquake activity.

All new structures constructed on the project site are required to conform to building standards specified by the CBC, including specifications for seismic force resistance and structural integrity. Adherence to these standards would ensure that buildings on the site would be constructed to withstand seismic ground accelerations that may occur at the project site. This would reduce the risk that seismic events could result in personal injury or property damage.

Compliance with IBC/CBC standards would ensure that impacts related to seismic events with potential to occur on the project site would remain **less than significant**.

As discussed previously, the project site has very limited potential for seismic effects such as liquefaction, lurch cracking, and lateral spreading. The alluvial soils within the 100-year floodplain of the on-site unnamed drainage to Secret Ravine in the central portion of the project site have a moderate to low potential for liquefaction, lurch cracking or lateral spreading, but the proposed project would leave most areas within the 100-year floodplain in open space. There are 14 proposed residential lots along the eastern side of the 100-year floodplain that would encroach into the existing 100-year floodplain. Project construction would alter the boundaries of the 100-year floodplain such that none of the proposed residential home sites would be located within the post-development 100-year floodplain after the site is graded; however, development that encroaches into the existing 100-year floodplain may be placed in areas with potential for liquefaction, lurch cracking or lateral spreading. To ensure that any seismic risks associated with development in an area of alluvial soils, **Mitigation Measure 4.10a** requires that a geotechnical investigation of development areas within the existing 100-year floodplain be completed and that recommendations of that focused geotechnical investigation be implemented during project construction. This focused geotechnical investigation would identify the existing soil conditions in the area, evaluate the capability of the soil to support the proposed development, and identify specific design and construction measures that would ensure soil stability post-development. These measures may include recommendations regarding excavation of soil and replacement with engineered soil, maximum cut and fill bank slopes, and use of retaining walls.

Because construction on the alluvial soils would be limited and a geotechnical analysis of the soils underlying the 14 lots that would encroach into the floodplain would be prepared, as provided for under Section 12.04 of the Municipal Code and required by **Mitigation Measure 4.10a**, the risk of personal injury or property damage associated with liquefaction, lurch cracking, and lateral spreading would remain less than significant. Additionally, the risk of subsidence is low throughout the Town, and risks associated with this effect remain less than significant.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would reduce the number of lots that would encroach into the pre-development floodplain from 14 to 5. With the implementation of **Mitigation Measure 4.10a,** the impact associated with the proposed project would remain **less than significant.**

Modified Transportation Alternative

The Modified Transportation Alternative would construct the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. This alternative would not change the potential for people and structures within the site to be exposed to seismic risks. With implementation of **Mitigation Measure 4.10a,** this alternative would comply with IBC/CBC standards which would ensure that impacts related to seismic events with potential to occur on the project site would remain **less than significant**.

IMPACT 4.10-2:	The project site could be located on an unstable geologic unit or soil, which could expose people to hazardous conditions.
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 4.10a
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

As discussed previously, there are three soil types within the project site: Xerorthents, Andregg, and Caperton-Andregg. The Xerorthents soil type is associated with soils within the 100-year floodplain, and the majority of the floodplain on site is proposed to remain in open space. There are 14 residential lots that would encroach into the eastern portion of the floodplain (as designated by the Federal Emergency Management Agency (FEMA 1998)), in the area of the Xerorthents soil type. The soils of this type are varied in their constituents and exhibit variable permeability, runoff, and erosion hazards. Limitations to development on this soil type include slopes, flooding, and saturation. Project construction would alter the boundaries of the floodplain such that none of the proposed homes would be located within the post-development floodplain and the site would be graded. Therefore, the limitation of slopes, flooding, and saturation that could occur within the Xerorthents soil type would be avoided.

The majority of the proposed development would occur on the Andregg and Caperton-Andregg soil types. The primary limitation to development associated with this soil is steep slopes; however, no steep slopes occur on the project site. The project site is generally flat and is therefore not subject to landslides. Soils on the site are capable of supporting the proposed residential and commercial structures if site preparation is carried out in accordance with general engineering practices. Successful development of surrounding areas underlain by the same or similar soils and with similar topographical relief supports this conclusion.

Section 14.20.040 of the Municipal Code requires that a site-specific preliminary geotechnical investigation be prepared prior to approval of any subdivision of five or more parcels, and additional lot-specific geotechnical reports are required if the preliminary geotechnical investigation identifies the presence of soils or geologic conditions that would lead to structural defects in future buildings. Additionally, Municipal Code, Section 12.04.310, requires preparation of a geotechnical investigation for any grading within areas of known or suspected geologic hazards, within areas suspected to have highly expansive soils, or when the proposed grading includes cuts and fills greater than 10 feet in depth (Town of Loomis 2015). None of these conditions are known or expected to occur on site. Specifically, there are no known or suspected geologic hazards in the vicinity, the project's cuts and fills would generally be approximately 3 feet in depth, and the soil types on site do not exhibit expansive characteristics, as discussed previously. With the exception of development areas that would encroach into the existing 100-year floodplain, where alluvial soils may be present, the geologic units and soils on site are stable and appropriate to support development.

As discussed in Impact 4.10-1 and required in **Mitigation Measure 4.10a**, a geotechnical investigation must be prepared for any development areas that would encroach into the existing 100-year floodplain to ensure the stability of those soils. This focused geotechnical investigation would identify the existing soil conditions in the area, evaluate the capability of the soil to support the proposed development, and identify specific design and construction measures that would ensure soil stability post-development. These measures may include recommendations regarding excavation of soil and replacement with engineered soil, maximum cut and fill bank slopes, and use of retaining walls. With preparation of a focused geotechnical investigation and implementation of the recommended design and construction measures, the project is expected to have **less than significant** impacts related to unstable geologic units or soils.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would reduce changes in the pre-development floodplain because only 5 lots would encroach into the floodplain. Implementation of the measures to reduce impacts to biological resources would not change the geologic conditions within the project site or the potential to expose people and structures within the site to risks associated with geologic and soil stability. Therefore, the impact would remain **less than significant** with implementation of **Mitigation Measure 4.10a.**

Modified Transportation Alternative

The Modified Transportation Alternative proposes the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. The Modified Transportation Alternative would occur in the same project site and thus be exposed to the same geological

conditions as described above. Therefore, the impact would remain **less than significant** with implementation of **Mitigation Measure 4.10a.**

IMPACT 4.10-3:	Project construction could result in substantial soil erosion or the loss of topsoil.
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 4.10b
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

Construction Impacts

Grading and excavation activities associated with project construction would disrupt normal soil conditions and remove vegetative cover. The alteration of site soils and topography is an unavoidable result of site development. Chapter 12.04, Grading, Erosion, and Sediment Control, of the Town's Municipal Code requires that a grading permit be issued for each individual development project within the project site (Town of Loomis 2015). It is anticipated that the full site would be mass graded during the initial 2 months of project construction, with minor additional grading completed as each development phase proceeds. Preliminary grading analysis indicates that there would be approximately 130,000 cubic yards of grading for the entire project, including the construction of Doc Barnes Drive. Across most of the site the average cut/fill depth/height would be 3 feet (this does not include the open space area, where no grading would occur). As demonstrated in the preliminary grading plan prepared by the project engineer and submitted to the Town, it is expected that final grading would balance on site so no soil would be imported to or exported from the project site. Due to the volume of material that would be moved within the site (130,000 cubic yards), there is potential for soil erosion to occur, which could lead to sedimentation of on-site and nearby waterways, as well as deposition of soil on neighboring properties and public rights-of-way. This would be a **significant** impact during construction of the proposed project.

Chapter 12.04, Grading, Erosion, and Sediment Control, of the Municipal Code provides that grading permits issued by the Town include conditions of approval requiring incorporation of measures necessary to ensure that soil erosion is minimized during and following construction (Town of Loomis 2015). Consistent with these requirements, **Mitigation Measure 4.10c** requires that the grading permit application for the project site include an erosion and sediment control plan that stipulates implementation of BMPs to control erosion during grading. Erosion

and sediment control plans must comply with the Town's Stormwater Management Plan, the California Stormwater Quality Association BMP Handbook, and requirements of other responsible agencies. BMPs in the erosion and sediment control plan shall include use of soil stabilizers on exposed soils, covering of soil and gravel stockpiles, revegetation of exposed soil areas, and use of fiber rolls or hay bales to prevent eroded soil from entering waterways or leaving the project site. Implementation of **Mitigation Measure 4.10c** would ensure that the impacts associated with soil erosion during construction would be reduced to a **less than significant** level.

Operational Impacts

After construction, the project site would support impervious surfaces. The rate and volume of stormwater runoff would increase as water passes over these impervious surfaces. Soils adjacent to the impervious surfaces may be subject to increased erosion as a result of the increased rate and volume of runoff. The potential for soil erosion to lead to water quality impacts is evaluated in detail in Section 4.11, Hydrology and Water Quality. As discussed in Section 4.11, the project would be required to comply with the requirements and conditions of the National Pollutant Discharge Elimination System permit issued by the Regional Water Quality Control Board, and would be required to prepare a stormwater pollution prevention plan that must be implemented during construction of the proposed project. The stormwater pollution prevention plan would include permanent BMPs to control soil erosion, including revegetation of disturbed areas, use of vegetated swales to filter runoff to detention basins, detached downspouts and landscape strips to promote infiltration of stormwater. The project would also preserve approximately 10 acres in its natural state to aid in controlling stormwater pollution. These project features would ensure that the project does not result in substantial soil erosion or associated sedimentation throughout project operation and this impact would remain **less than significant**.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. During construction, the proposed project would require significant grading and excavation activities; however, with the implementation of **Mitigation Measure 4.10c.** During operation, the proposed project would still support impervious surfaces, require a NPDES permit, deploy BMPs, and retain the 10 acre natural state aid in controlling stormwater pollution; therefore the proposed project would remain **less than significant.**

Modified Transportation Alternative

The Modified Transportation Alternative proposes the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. The Modified Transportation

Alternative would occur in the same project site and would be required to comply with all the same Town ordinances, permits, and BMPs as the proposed project. During construction, the Modified Transportation Alternative would require approximately 118,000 cubic yards of grading for the entire project, including the construction of Doc Barnes Drive. This is slightly less grading that required for the proposed project and would result in the same **less than significant** impact with implementation of **Mitigation Measure 4.10c** as the proposed project. During operation, the Modified Transportation Alternative would still support impervious surfaces, implement BMPs in accordance with the project's NPDES permit, and retain the 10 acre natural state aid in controlling stormwater pollution. Thus the Modified Transportation Alternative would result in the same **less than significant** impact as the proposed project.

IMPACT 4.10-4:	Project construction could result in substantial alterations to existing landforms.
SIGNIFICANCE:	Less Than Significant
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

Topographical features characterizing the site include gently rolling terrain and a riparian corridor that bisects the site north to south. In addition, the project site contains more than 51 rock outcroppings. Among the rock outcroppings, there are two larger rock formations that exceed 10 feet in height or have a base diameter greater than 50 feet. These are proposed to be preserved on site. The first rock formation that would be preserved by the proposed project is located approximately 600 feet east of the end of Library Drive and approximately 100 feet south of that point. This site includes a large rock outcropping 50 feet wide by 100 feet long. The second rock formation that would be preserved by the proposed project is located in the eastern portion of the project site and is approximately 50 feet in diameter and more than 10 feet tall. The proposed project would require substantial grading and site preparation to provide for construction of proposed improvements, which consist of wet and dry underground utilities, including the South Placer Municipal Utility District Loomis Diversion Line through the project site and under Interstate 80, paved roadways, building pads, and drainage infrastructure. Figures 4.10-3, 4.10-4, and 4.10-5 provide a reduced-scale representation of the grading plan, which shows where substantial cuts and fills would occur for the proposed project. The full-scale grading plan is available for review during normal business hours at the Town of Loomis Planning Department, 3665 Taylor Road, Loomis, California 95650.

Alterations to topography and retaining wall construction associated with the proposed project include the following changes in each portion of the project site:

Western Portion: The ground elevations of the residential lots adjacent to the proposed park at the westernmost edge of the project site would be decreased by approximately 5 feet compared to the existing elevation. Ground level within an area less than 1 acre on the western edge of the riparian corridor would be increased by approximately 5 feet. Finished ground elevations would be generally the same as existing conditions throughout the remainder of the western portion of the site. The riparian corridor and the adjacent open space would remain ungraded. As shown in Figure 4.10-3, eight retaining walls constructed with block, rockery or similar material are proposed for the western portion of the project site. Five would run along the lot lines of lots 135–139. These retaining walls would be 56, 56, 59, 64, and 74 feet long with heights of 0 to 3 feet, 0.9 feet, 0.9 feet, 1 foot, and 2.1 feet, respectively. A 157-foot-long retaining wall would be constructed adjacent to the pedestrian mews in the northwest corner of the project site, and would vary in height from 3.6 to 5.9 feet. Two retaining walls would be built along the southern edge of Doc Barnes Drive in the western portion of the site. These walls would be 175 and 818 feet long along the California Department of Transportation (Caltrans) right-of-way and vary in height from up to 2 feet and up to 8.3 feet.

Central Portion: In the southwestern corner of the central portion of the project site, the finished ground elevation would be increased by ±5 to 10 feet from the existing elevation. As shown in Figure 4.10-4, a hill in the northwest corner of the central portion of the project site, adjacent to existing residences at the southern end of Day Avenue, would be removed, with finished ground elevations as much as 13 feet lower than the existing elevation. Grading in the remainder of the central portion of the project site would generally maintain existing elevations. Five retaining walls would be constructed in this portion of the project site. Two retaining walls would be installed along the eastern edge of the riparian corridor. These walls would be 243 and 563 feet long and would vary in height from 9 to 14 feet and 10 to 12 feet, respectively. One 70-foot-long, 2-foot-high retaining wall would be constructed along the lot line of lots 183 and 215. In the center of the proposed residential cluster between Blue Goose Drive and Red Ravine Drive, a 523-foot-long retaining wall of 1.8 to 3.5 feet in height would be installed. One retaining wall would be built along the southern edge of Doc Barnes Drive in the central portion of the site. This wall would be 350 feet long and would vary in height up to 4 feet.

Eastern Portion: As shown in Figure 4.10-5, the finished ground elevations of the western edge of this portion of the project site would be approximately 5 to 8 feet lower than existing elevations. The remainder of the finished elevations would be generally the same as the existing elevations in this portion of the project site. The southwestern and northeastern corners of this portion of the project site would contain two stormwater detention basins. The northeastern corner contains a delineated wetland that would be preserved in ungraded open space. A

delineated wetland is also present in the southeastern corner of this portion of the project site. A portion of this wetland would be graded as part of the proposed extension of Doc Barnes Drive. A large rock outcropping would be preserved within the proposed Monument Rock Court roadway. One retaining wall would be constructed in the eastern portion of the project site. This wall would run along the southern edge of Doc Barnes Drive (along the Caltrans right of way) for a length of 1,193 feet and ranging from 0 to 10.7 feet high.

Many of the existing rock outcroppings present throughout the project site would be removed during grading, although two prominent rock outcroppings would be preserved, as would those found in the proposed open space adjacent to the western boundary of the riparian corridor.

The conceptual grading plans demonstrate that the project would minimize alterations of the natural rolling topography, consistent with Section 12.04.511 of the Municipal Code. This section requires that, to the extent practicable, grading of rolling terrain should occur in a manner to maintain the effect of the rolling terrain close to what existed prior to grading. Section 12.04.580 of the Town's Municipal Code also requires that the limits of grading be clearly defined and that natural features be preserved to the extent possible (Town of Loomis 2015). Compliance with these and other provisions of Chapter 12.04 of the Town's Municipal Code (Grading Ordinance) would be required as a condition of the issuance of grading permits for the project. Town staff will review final grading plans to ensure consistency with these requirements prior to issuance of a grading permit. Compliance with the provisions of the Town's grading ordinance would ensure that the project would have a **less than significant** impact associated with alteration of existing landforms.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would not alter the extent of grading necessary to construct the project. The project would still be required to comply with Section 12.04.511 and Section 12.04.580 of the Town's Municipal Code. With this compliance and the retention of two rock outcroppings and the center riparian corridor, the proposed project would still have a **less than significant** impact.

Modified Transportation Alternative

The Modified Transportation Alternative proposes the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. The Modified Transportation Alternative would occur in the same project site with the same geological features. The Modified Transportation Alternative would still be required to comply with Section 12.04.511 and Section 12.04.580 of the Town's Municipal Code. The grading under the Modified Transportation Alternative would be slightly altered from that of the proposed project in the western and central

portions as described below. The grading in the eastern portion of the site would be the same as under the proposed project.

Western Portion: The finished ground elevations of lots in this area of the project site would generally conform to the existing very gently sloping natural topography. As shown on Figure 4.10-6, three retaining walls constructed with block, rockery, or similar material are proposed for this portion of the project site. One would run along the pedestrian mew side of lots 2, 3, and 4, with a height of approximately 6 feet. Two retaining walls would be built along the southern edge of Doc Barnes Drive in the western portion of the site. These walls would be 175 feet long along a portion of the boundary with the Raley's shopping center and 818 feet in length along a portion of the California Department of Transportation (Caltrans) right-of-way. The 175-foot-long wall would have a maximum height of 2 feet. The 818-foot-long wall would have a maximum height of 8 feet.

Central Portion: In the southwestern corner of the central portion of the project site (i.e., the area of lots 228–230), the finished ground elevation would be increased by approximately 5 to 10 feet from the existing elevation. As shown on Figure 4.10-7, a hill in the northwestern corner of the central portion of the project site, adjacent to existing residences at the southern end of Day Avenue, would be removed, with finished ground elevations as much as 13 feet lower than existing elevation but equal to existing residences at this end of Day Avenue. Grading in the remainder of the central portion of the project site would generally maintain existing elevations.

Four retaining walls would be constructed in this portion of the project site. Two retaining walls would be installed along the eastern edge of the riparian corridor. These walls would be 292 and 50 feet long, respectively, and vary in height from 10 to 12 feet. Another wall would be constructed along the rear of lots 171–182, with a length of approximately 523 feet and varying in height from 1.8 to 3.5 feet. Another wall would be built along the southern edge of Doc Barnes Drive along the Caltrans right-of-way. This would be approximately 350 feet long and with a maximum height of 4 feet.

Eastern Portion: Grading in the eastern portion of the site would be the same as in the proposed project and as shown in Figure 4.10-8.

With compliance with Section 12.04.511 and Section 12.04.580 of the Town's Municipal Code and the retention of two rock outcroppings and the center riparian corridor, the Modified Transportation Alternative would have the same impact as the proposed project: **less than significant**.

IMPACT 4.10-5:	Project construction could directly or indirectly affect unknown paleontological resources.
SIGNIFICANCE:	No Impact
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	No Impact

Proposed Project

The soils underlying the project site are derived from plutonic rock (Penryn Pluton), or Quartz Diorite to be exact (Olmsted 1971). Plutonic rocks are formed by cooling magma prior to reaching the surface of the earth, and therefore, the bedrock has no potential to contain fossils. This means the soils derived from it also have no potential to contain fossils. The stream in the center of the site may have very narrow zones of sediment deposition (i.e., Pleistocene- or Holocene-age alluvium) that can bury organisms—zones that are likely to be too narrow to be shown at the scale of the geologic map. However, no development is proposed within or adjacent to the stream, except for the Doc Barnes Drive crossing of this feature along the southern project site boundary. Based on this information, there is a very low potential for paleontological resources to occur on site, and proposed activities would have **no impact** with respect to such resources.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. The proposed project would occur on the same project site with the same paleontological conditions; thus, the impact would remain the same: **no impact.**

Modified Transportation Alternative

The Modified Transportation Alternative proposes the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. The Modified Transportation Alternative would occur in the same project site with the same paleontological conditions. Thus the Modified Transportation Alternative would continue to have **no impact** related to the potential to affect paleontological resources.

IMPACT 4.10-6:	Project construction could make a considerable contribution to cumulative soil erosion impacts.
SIGNIFICANCE:	Less Than Significant
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

A cumulatively considerable contribution to soil erosion impacts would result if the proposed project contributed an incremental increase in soil erosion that, when taken into account with concurrent projects contributing to soil erosion, results in a significant net effect. With respect to cumulative soil erosion impacts, the geographic range for this analysis is the Town, which represents the larger project vicinity and the area where substantial soil erosion could lead to sedimentation of waterways in the vicinity, impaired air quality that would adversely affect Town residents, and soil deposition on neighboring properties and public rights-of-way. Other past, present, and reasonably foreseeable development in the area is described in Section 4.1, Land Use. It includes development of approximately 430 acres within the Town, which could contribute to soil erosion effects. However, all projects within the Town are required to comply with the Municipal Code, which requires that grading occur subject to an erosion and sediment control plan and implementation of BMPs. Specifically, Chapter 12.04, Grading, Erosion, and Sediment Control, of the Municipal Code provides that grading permits issued by the Town include conditions of approval requiring incorporation of measures necessary to ensure that soil erosion is minimized during and following construction (Town of Loomis 2015). These requirements of the Municipal Code would apply to all other development projects within the Town, ensuring that each project controls erosion and sedimentation and that the cumulative impact related to erosion would be **less than significant** and, therefore, there is no cumulative impact to which the project could contribute.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. The removal of these eight dwelling units would not have a substantial effect on the project's contribution to cumulative erosion or alter the manner in which the Town applies its Municipal Code; therefore, the proposed project would continue to have a **less than significant** cumulative impact.

Modified Transportation Alternative

The Modified Transportation Alternative proposes the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. The Modified Transportation Alternative would contribute to a cumulative erosion impact in the same manner as the proposed project; therefore, the Modified Transportation Alternative would have the same cumulative impact: **less than significant.**

4.10.4 Mitigation Measures

4.10a The applicant shall retain a qualified geotechnical engineer to prepare a geotechnical investigation in compliance with Section 14.20.040 and Section 12.04.310 of the Municipal Code. The geotechnical investigation shall address any area within the existing 100-year floodplain and that is proposed for development. The report shall detail the geologic conditions of the project site, and identify any potential hazards related to geology, seismic conditions, or soil conditions that could lead to structural defects in future buildings or pose a risk to the health or safety of future occupants. A grading permit shall not be issued prior to approval of the final site grading plan by the Town Engineer and the qualified geotechnical engineer. Specifically, the final grading plan shall incorporate all recommendations by the geotechnical engineer necessary to ensure that the proposed project does not locate facilities on areas vulnerable to landslide, lateral spreading, excessive expansion, subsidence, liquefaction, or collapse, as provided in the geotechnical report. Recommendations provided by the geotechnical engineer shall include one or more of the following: best management practices, mitigation, design parameters, performance standards, or siting requirements to ensure that the proposed project does not expose people or property to significant risk related to unstable geologic conditions or soil.

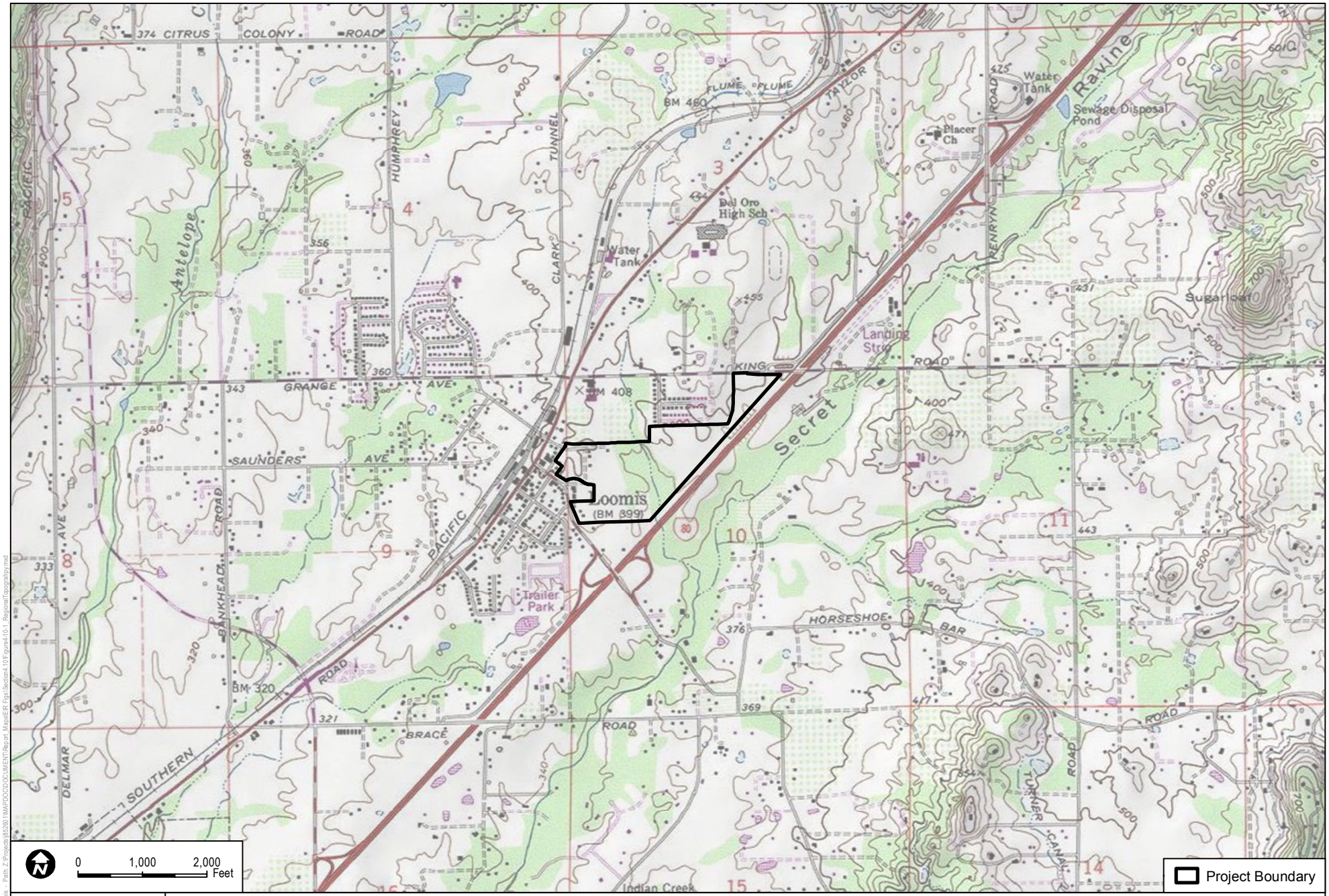
4.10b All proposed grading shall conform to the Town of Loomis (Town) Grading, Erosion, and Sediment Control Ordinance (Municipal Code, Chapter 12.04). No grading, clearing, or tree disturbance shall occur until a Grading Permit has been issued, unless the Town permits otherwise (i.e., clearing and grubbing or tree removal prior to issuance of a grading permit). All cut/fill slopes shall be at a maximum slope of 2:1 (horizontal:vertical) unless a soils report supports a steeper slope and the Public Works Department concurs with said recommendation. A grading erosion and sediment control plan shall be submitted with each grading permit application. The erosion and sediment control plan shall comply with the Town's Stormwater Management Plan, the California Stormwater Quality Association Best Management Practice (BMP) Handbook, and requirements of

other responsible agencies. BMPs in the erosion and sediment control plan shall include use of soil stabilizers on exposed soils, covering of soil and gravel stockpiles, revegetation of exposed soil areas, and use of fiber rolls or hay bales to prevent eroded soil from entering waterways or leaving the project site.

The applicant shall revegetate all disturbed areas in accordance with the improvement plans. Revegetation undertaken from April 1 to October 1 shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project grading plans. It is the applicant's responsibility to ensure proper installation and maintenance of erosion control/winterization during project construction. Where soil stockpiling or borrow areas are to remain for more than one construction season, proper erosion control measures shall be applied as specified in the grading plans.

The applicant shall submit to the Town a letter of credit or cash deposit in the amount of 110% of an approved engineer's estimate for winterization and permanent erosion control work prior to issuance of grading permits to guarantee protection against erosion and improper grading practices. Upon the Town's acceptance of improvements and satisfactory completion of a 1-year maintenance period, unused portions of said deposit shall be refunded to the project applicant or authorized agent.

Town personnel shall conduct periodic site visits during construction to review field conditions. Field reviews shall be conducted a minimum of once every 6 weeks. If, at any time during construction, a field review by Town personnel indicates a significant deviation from the proposed grading shown on the grading plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations (a significant deviation would occur if field conditions show greater than 5% difference from grading plans where applicable, or if any components of temporary construction BMPs or avoidance measures have not been implemented in accordance with the performance criteria identified in the Mitigation Monitoring and Reporting Program), the plans shall be reviewed by the Town for a determination of substantial conformance to the project approvals (demonstrating that environmental effects are no greater than those evaluated in this environmental impact report) prior to any further work proceeding. If the Town cannot make a determination of substantial conformance, this may serve as grounds for the revocation/modification of project approval by the Town Planning Commission or Town Council.



SOURCE: ESRI 2016

FIGURE 4.10-1

Project Site Topography

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The Village at Loomis Draft EIR

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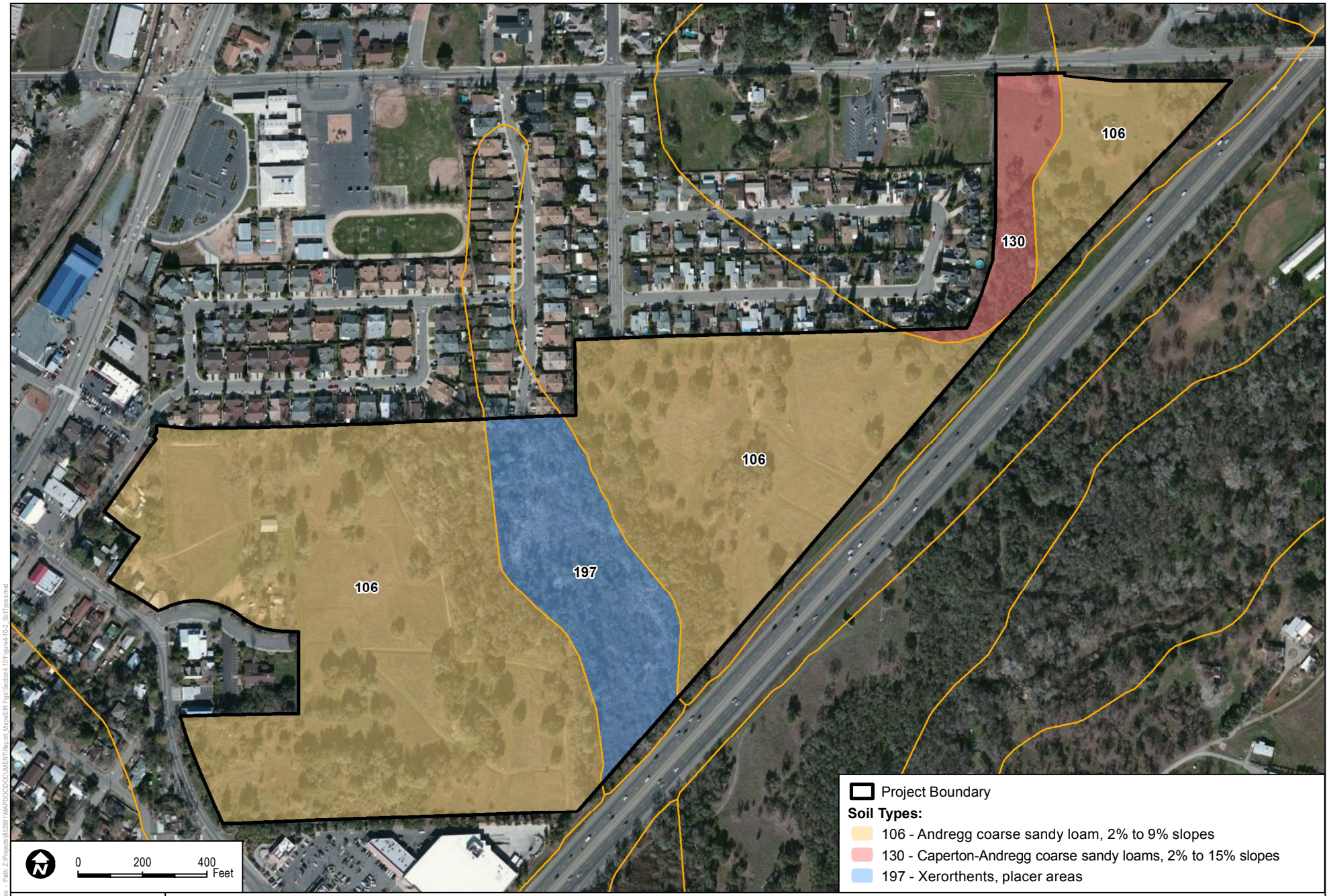

SOURCE: USDA SSURGO Soils; Bing Maps 2016

FIGURE 4.10-2
Soil Types

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The Village at Loomis Draft EIR

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LEGEND

EXISTING	PROPOSED	DESCRIPTION
		DRAIN MANHOLE
		SEWER MANHOLE
		STORM WATER TREATMENT FACILITY
		MANHOLE – WATER TRANSMISSION MAIN
		DRAIN INLET
		DRAIN CLEAN OUT
		SEWER CLEAN OUT
		SEWER SERVICE
		SEWER LINE AND SIZE
		DRAIN LINE AND SIZE
		WATER LINE AND SIZE
		FIRE HYDRANT (RESTRAINED)
		STREET LIGHT
		ELECTRIC VAULT OR PAD
		UTILITY VAULT – TYPE NOT SPECIFIED
		SLOPE BANK
		RETAINING WALL
		RETAINING WALL NUMBER (SEE RETAINING WALL SCHEDULE THIS SHEET)
		SPOT ELEVATION
		CONTOUR LINE
		FENCE
		GAS, ELEC., TELE. OR JOINT TRENCH
		PROPERTY LINE
		MONUMENT WELL
		DETAIL DESIGNATION/ SHEET REFERENCE
		GRADE BREAK LINE
		SWALE
		SLOPE
		CONSTRUCTION FENCE, SEE DETAIL
		PROPOSED ELEVATION
		PROPOSED MEW
		PROPOSED ALLEY ACCESS
		BUILDING ENVELOPE
		PROPERTY LINE
		LOT NUMBER

RETAINING WALL SCHEULE

WALL No.	LENGTH	CASE No.	HEIGHT
1	56 LF	N/A	VARIES 0 to 3 FT
2	56 LF	N/A	0.9 FT
3	59 LF	N/A	0.9 FT
4	64 LF	N/A	1 FT
5	74 LF	N/A	2.1 FT
6	157 LF	N/A	VARIES 3.6 to 5.9 FT
7	175 LF	CASE 1*	VARIES 0 to 2 FT
8	818 LF	CASE 1*	VARIES 0 to 8.3 FT

* SEE SHEET 8 FOR CASE 1 AND 2 CONFIGURATIONS

SOURCE: TLA Engineering & Planning 2016

DUDEK

FIGURE 4.10-3
Grading Plan - Phase A

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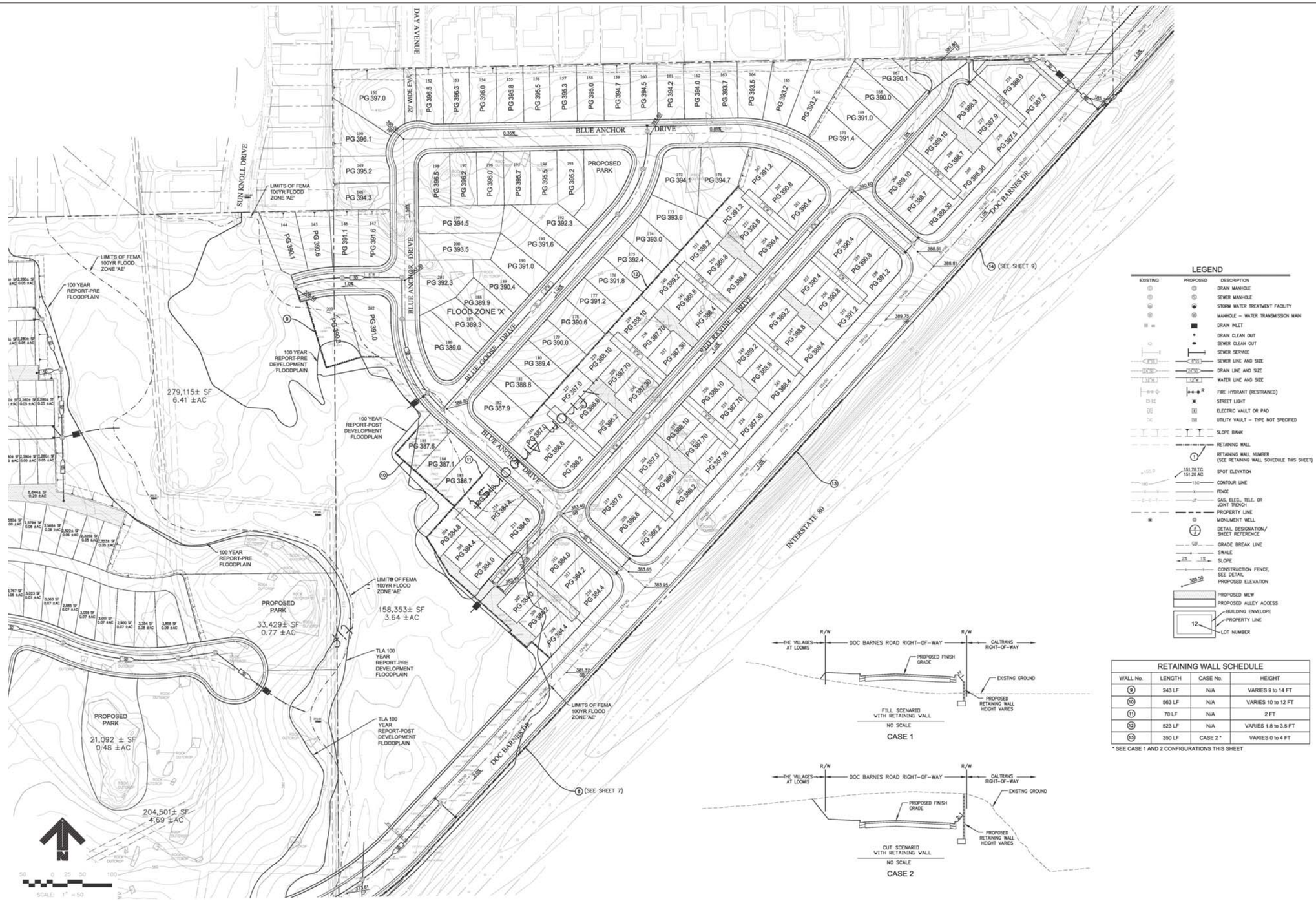

RETAINING WALL SCHEDULE			
WALL No.	LENGTH	CASE No.	HEIGHT
9	243 LF	N/A	VARIES 9 to 14 FT
10	563 LF	N/A	VARIES 10 to 12 FT
11	70 LF	N/A	2 FT
12	523 LF	N/A	VARIES 1.8 to 3.5 FT
13	350 LF	CASE 2 *	VARIES 0 to 4 FT

* SEE CASE 1 AND 2 CONFIGURATIONS THIS SHEET

SOURCE: TLA Engineering & Planning 2016

DUDEK

FIGURE 4.10-4
Grading Plan - Phases B and C

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LEGEND

EXISTING	PROPOSED	DESCRIPTION
		DRAIN MANHOLE
		SEWER MANHOLE
		STORM WATER TREATMENT FACILITY
		MANHOLE – WATER TRANSMISSION MAIN
		DRAIN INLET
		DRAIN CLEAN OUT
		SEWER CLEAN OUT
		SEWER SERVICE
8"SS	8"SS	SEWER LINE AND SIZE
24"SD	24"SD	DRAIN LINE AND SIZE
12"W	12"W	WATER LINE AND SIZE
	R	FIRE HYDRANT (RESTRAINED)
		STREET LIGHT
E	E	ELECTRIC VAULT OR PAD
		UTILITY VAULT – TYPE NOT SPECIFIED
		SLOPE BANK
		RETAINING WALL
	1	RETAINING WALL NUMBER (SEE RETAINING WALL SCHEDULE THIS SHEET)
x155.0	151.76 TC 151.26 AC	SPOT ELEVATION
160	150	CONTOUR LINE
X X	X	FENCE
G E T	JT	GAS, ELEC., TELE. OR JOINT TRENCH
		PROPERTY LINE
		MONUMENT WELL
		DETAIL DESIGNATION/ SHEET REFERENCE
GB	GB	GRADE BREAK LINE
SW	SW	SWALE
2% 1%	2% 1%	SLOPE
		CONSTRUCTION FENCE, SEE DETAIL
385.50	385.50	PROPOSED ELEVATION
		PROPOSED MEW
		PROPOSED ALLEY ACCESS
		BUILDING ENVELOPE
12	12	PROPERTY LINE / LOT NUMBER

RETAINING WALL SCHEDULE			
WALL No.	LENGTH	CASE No.	HEIGHT
14	1193 LF	CASE 1*	VARIES 0 to 10.7 FT

* SEE SHEET 8 FOR CASE 1 AND 2 CONFIGURATIONS

SOURCE: TLA Engineering & Planning 2016

DUDEK

FIGURE 4.10-5
Grading Plan - Phase D

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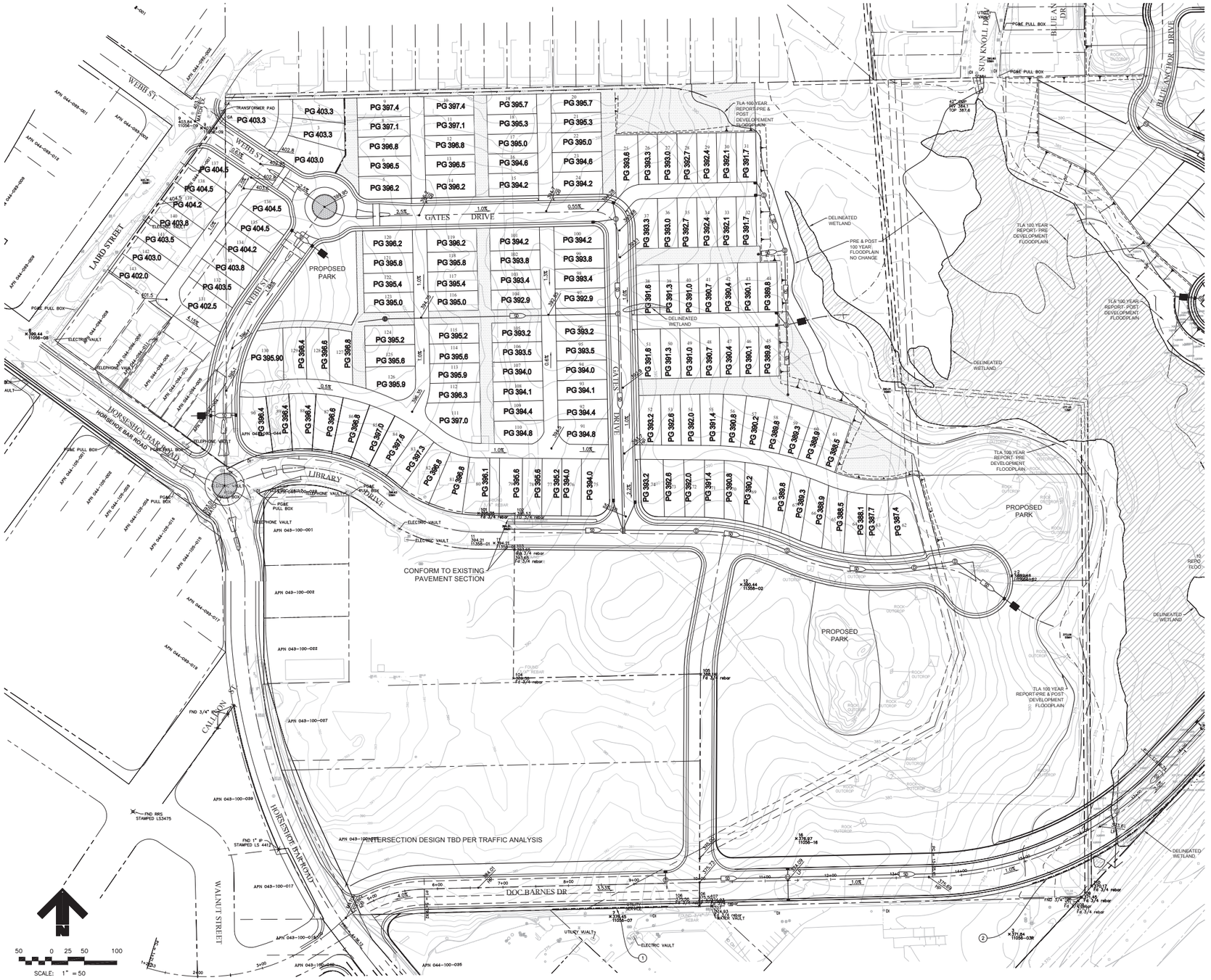

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		DRAIN MANHOLE
		SEWER MANHOLE
		STORM WATER TREATMENT FACILITY
		MANHOLE – WATER TRANSMISSION MAIN
		DRAIN INLET
		DRAIN CLEAN OUT
		SEWER CLEAN OUT
		SEWER SERVICE
8"SS	8"SS	SEWER LINE AND SIZE
24"SD	24"SD	DRAIN LINE AND SIZE
12"W	12"W	WATER LINE AND SIZE
	R	FIRE HYDRANT (RESTRAINED)
		STREET LIGHT
E	E	ELECTRIC VAULT OR PAD
U	U	UTILITY VAULT – TYPE NOT SPECIFIED
		SLOPE BANK
		RETAINING WALL
	1	RETAINING WALL NUMBER (SEE RETAINING WALL SCHEDULE THIS SHEET)
x155.0	151.76 TC 151.26 AC	SPOT ELEVATION
160	150	CONTOUR LINE
X X	X	FENCE
G E T	JT	GAS, ELEC., TELE. OR JOINT TRENCH
		PROPERTY LINE
		MONUMENT WELL
		DETAIL DESIGNATION/ SHEET REFERENCE
	GB	GRADE BREAK LINE
		SWALE
	2% 1%	SLOPE
S S	S S	CONSTRUCTION FENCE, SEE DETAIL
	385.50	PROPOSED ELEVATION
		PROPOSED MEW
		PROPOSED ALLEY ACCESS
	12	BUILDING ENVELOPE PROPERTY LINE LOT NUMBER

RETAINING WALL SCHEULE			
WALL No.	LENGTH	CASE No.	HEIGHT
1	175 LF	CASE 1*	VARIES 0 to 2 FT
2	818 LF	CASE 1*	VARIES 0 to 8.3 FT

* SEE SHEET 8 FOR CASE 1 AND 2 CONFIGURATIONS

SOURCE: TLA Engineering & Planning 2017

DUDEK

FIGURE 4.10-6
Grading Plan - Phase A

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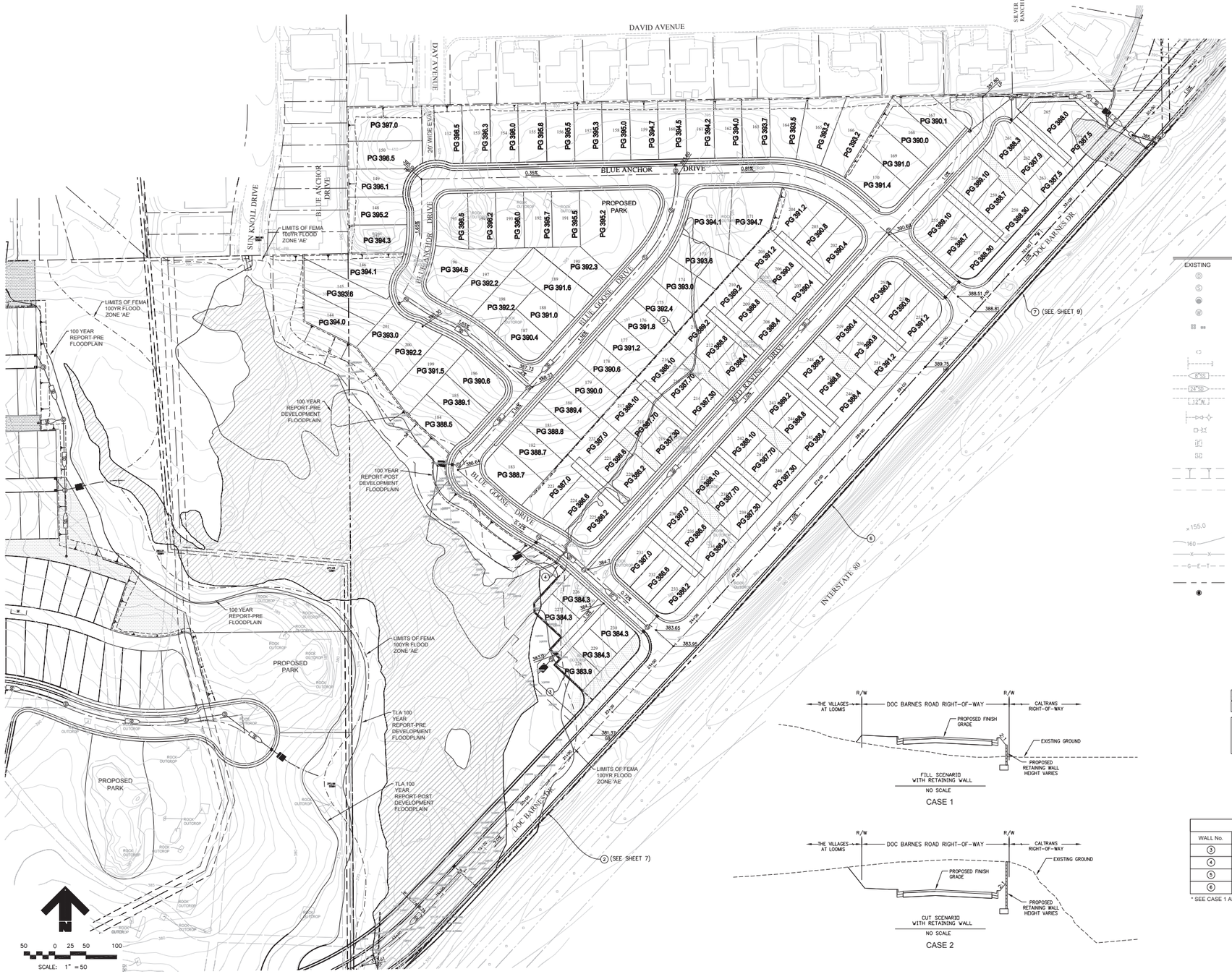

LEGEND

EXISTING	PROPOSED	DESCRIPTION
	Ⓓ	DRAIN MANHOLE
	Ⓢ	SEWER MANHOLE
		STORM WATER TREATMENT FACILITY
	Ⓦ	MANHOLE – WATER TRANSMISSION MAIN
		DRAIN INLET
		DRAIN CLEAN OUT
		SEWER CLEAN OUT
		SEWER SERVICE
8"SS	8"SS	SEWER LINE AND SIZE
24"SD	24"SD	DRAIN LINE AND SIZE
12"W	12"W	WATER LINE AND SIZE
	R	FIRE HYDRANT (RESTRAINED)
		STREET LIGHT
E	E	ELECTRIC VAULT OR PAD
U	U	UTILITY VAULT – TYPE NOT SPECIFIED
		SLOPE BANK
		RETAINING WALL
	1	RETAINING WALL NUMBER (SEE RETAINING WALL SCHEDULE THIS SHEET)
155.0	151.76 TC 151.26 AC	SPOT ELEVATION
160	150	CONTOUR LINE
X X	X	FENCE
G E T	JT	GAS, ELEC., TELE. OR JOINT TRENCH
		PROPERTY LINE
		MONUMENT WELL
		DETAIL DESIGNATION/ SHEET REFERENCE
	GB	GRADE BREAK LINE
		SWALE
	2% 1%	SLOPE
S S	S S	CONSTRUCTION FENCE, SEE DETAIL
	385.50	PROPOSED ELEVATION
		PROPOSED MEW
		PROPOSED ALLEY ACCESS
		BUILDING ENVELOPE
	12	PROPERTY LINE LOT NUMBER

CASE 1

CASE 2

RETAINING WALL SCHEDULE			
WALL No.	LENGTH	CASE No.	HEIGHT
3	292 LF	N/A	VARIES 10 to 12 FT
4	50 LF	N/A	VARIES 10 to 12 FT
5	523 LF	N/A	VARIES 1.8 to 3.5 FT
6	350 LF	CASE 2 *	VARIES 0 to 4 FT

* SEE CASE 1 AND 2 CONFIGURATIONS THIS SHEET

DUDEK

SOURCE: TLA Engineering & Planning 2017

FIGURE 4.10-7
Grading Plan - Phases B and C

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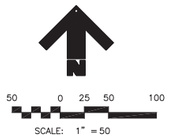

LEGEND

EXISTING	PROPOSED	DESCRIPTION
Ⓓ	Ⓓ	DRAIN MANHOLE
Ⓢ	Ⓢ	SEWER MANHOLE
		STORM WATER TREATMENT FACILITY
Ⓦ	Ⓦ	MANHOLE – WATER TRANSMISSION MAIN
		DRAIN INLET
		DRAIN CLEAN OUT
		SEWER CLEAN OUT
		SEWER SERVICE
8"SS	8"SS	SEWER LINE AND SIZE
24"SD	24"SD	DRAIN LINE AND SIZE
12"W	12"W	WATER LINE AND SIZE
	R	FIRE HYDRANT (RESTRAINED)
		STREET LIGHT
E	E	ELECTRIC VAULT OR PAD
U	U	UTILITY VAULT – TYPE NOT SPECIFIED
		SLOPE BANK
		RETAINING WALL
	1	RETAINING WALL NUMBER (SEE RETAINING WALL SCHEDULE THIS SHEET)
x155.0	151.76 TC 151.26 AC	SPOT ELEVATION
160	150	CONTOUR LINE
X X	X	FENCE
G E T	JT	GAS, ELEC., TELE. OR JOINT TRENCH
		PROPERTY LINE
		MONUMENT WELL
	#	DETAIL DESIGNATION/ SHEET REFERENCE
	GB	GRADE BREAK LINE
		SWALE
	2% 1%	SLOPE
S S	S S	CONSTRUCTION FENCE, SEE DETAIL
	385.50	PROPOSED ELEVATION
		PROPOSED MEW
		PROPOSED ALLEY ACCESS
	12	BUILDING ENVELOPE PROPERTY LINE LOT NUMBER

RETAINING WALL SCHEDULE			
WALL No.	LENGTH	CASE No.	HEIGHT
7	1193 LF	CASE 1*	VARIES 0 to 10.7 FT

* SEE SHEET 8 FOR CASE 1 AND 2 CONFIGURATIONS

SOURCE: TLA Engineering & Planning 2017

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FIGURE 4.10-8
Grading Plan - Phase D

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4.11 HYDROLOGY AND WATER QUALITY

This section evaluates impacts of The Village at Loomis (proposed project) in relation to drainage and water quality. The proposed project includes 418 dwelling units, 56,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space. The project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units that were evaluated in the Draft EIR, and omitting the southern portion of the trail along the eastern side of the open space. The reduction in dwelling units and shortening of the trail increases the amount of open space in the center of the project from the 9.55 acres evaluated in the Draft EIR. The applicant also proposes to implement measures to reduce project impacts under the Transportation Alternative that was evaluated in the Draft EIR. The Modified Transportation Alternative includes 418 total dwelling units, 49,000 square feet of commercial space, 25,000 square feet of office space, 0.59 acres of active parkland, 1.25 acres of passive parkland, 0.49 acres of parcourse trails, 0.74 acres of multi-use trail, and 9.97 acres of open space. The existing hydrology, water quality, and drainage of the project site are described, and associated regulatory requirements are identified and potential impacts evaluated. Mitigation measures related to implementation of the proposed project are included, if necessary. The potential for both localized and regional flooding to occur and emergency evac~~l~~uation in the event of a regional flood event are also evaluated.

The analysis in this section is based on the following documents:

- General Plan Update Draft Environmental Impact Report (Town of Loomis 2000)
- Loomis Town Center Master Plan Environmental Impact Report (Town of Loomis 1992)
- Loomis Town Center Specific Plan Preliminary Drainage Report (TLA 2006)
- The Village at Loomis Preliminary Drainage Report (TLA 2014, Appendix H)
- Dry Creek Watershed Coordinated Resource Management Plan (Placer and Sacramento Counties 2003)
- California's Groundwater Bulletin 118, Chapter 7 (DWR 2003)

In response to the Notice of Preparation, comments were received from the Central Valley Regional Water Quality Control Board (RWQCB) with general information on required permits. The City of Rocklin also requested that impacts associated with downstream flooding and storm drainage water quality associated with the project be evaluated in the environmental impact report (EIR).

The Notice of Preparation and comment letters received in response to the Notice of Preparation are included in Appendix A. The Village at Loomis Preliminary Drainage Report is provided in Appendix H to this EIR.

4.11.1 Environmental Setting

The project site is located north of Interstate 80 (I-80) and Horseshoe Bar Road and south of King Road. Adjacent uses include residential development north and east of the site and the Raley's supermarket and commercial land uses west and south of the site. The site is within the Dry Creek watershed, and is bisected by an unnamed perennial drainage that flows from north to south through the center of the project site to join Secret Ravine Creek. The approximately 66-acre project site generally slopes downhill from north to south, with elevations ranging from approximately 410 feet at the northern boundary to approximately 390 feet at the southern boundary.

The site lies within the Secret Ravine drainage basin. Drainage within the project site flows from an existing culvert pipe under Sun Knoll Drive to the unnamed perennial drainage in the central portion of the site, flows to the south, enters a steel culvert that passes under I-80, and joins Secret Ravine. Secret Ravine flows toward the southwest and is part of the Dry Creek watershed.

Groundwater

Regional Groundwater

The Dry Creek watershed lies above the Sacramento Valley Groundwater Basin North American subbasin. This watershed encompasses approximately 101 square miles from the lower western Sierra Nevada foothills, near the Town of Newcastle, to the Natomas East Main Drainage Canal in Sacramento County. Depth to groundwater in the upper watershed is approximately 161 feet below ground surface, while depth to groundwater in the lower watershed is approximately 13 feet. The thickness of the aquifer area that is saturated with fresh water is approximately 500 to 1,500 feet (Placer and Sacramento Counties 2003). Depths of domestic wells in this region generally range between 50 and 1,750 feet, and municipal/irrigation well depths generally range between 77 and 1,025 feet. Within the Town of Loomis (Town), domestic well depths typically range from 50 to 150 feet below the surface (Town of Loomis 2000). Wells within alluvial deposits tend to have unreliable yields and lower quality water, while deeper wells drawing from granitic rock sources exhibit more consistent yields and are higher in quality. Average production for individual domestic wells drawing from fractured granitic material is 4 to 9 gallons per minute (Town of Loomis 2000).

Groundwater Quality

Most of the Sacramento Valley Groundwater Basin has good water quality; however, localized portions may have marginal water quality due to natural variability in the aquifer and/or potential contamination from spills (DWR 2003). There are three major groundwater types within this region: magnesium calcium bicarbonate or calcium magnesium bicarbonate, magnesium sodium bicarbonate or sodium magnesium bicarbonate, and sodium calcium bicarbonate or calcium sodium bicarbonate. These groundwater types may have elevated levels of total dissolved solids, chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron, manganese, and arsenic in some locations. In the Dry Creek watershed, the groundwater is likely to be free from these elevated constituent levels, and saline contamination from irrigation water is not a problem as it is elsewhere in the groundwater basin (Placer and Sacramento Counties 2003). The nearest area of known groundwater contamination in the Dry Creek watershed is a plume associated with the United Pacific Roseville Rail Yard in Roseville, which does not affect the project site.

Project Site Groundwater

Groundwater elevations and gradients vary considerably in the project vicinity, due to the highly fractured nature of the underlying rock. Groundwater elevations in the vicinity range from 10 feet to greater than 100 feet below the ground surface (WKA 2006). Groundwater elevations fluctuate rapidly within alluvial deposits along creek beds, sometimes reaching the surface during storm events (Placer County 1994). Although no hydrogeologic studies have been conducted on the project site, high groundwater would be anticipated to occur along the drainage way on site.

Surface Water

Regional Surface Hydrology

As stated previously, the project site is in the Dry Creek watershed, which is part of the Sacramento Hydrologic Basin Planning Area. The Dry Creek watershed extends generally from the lower Sierra Nevada foothills to northern Sacramento County. Elevations range from approximately 1,200 feet to approximately 30 feet (Placer and Sacramento Counties 2003). The upper reaches of the watershed above Roseville are relatively steep in comparison to the lower reaches below Roseville. Soils within portions of this watershed are formed on top of granitic bedrock and volcanic rock, resulting in high runoff potential due to their shallow and impermeable nature.

As shown in Figure 4.11-1, Regional Hydrology, major streams within the Dry Creek watershed include Dry Creek, Cirby Creek, Linda Creek, Strap Ravine, Miners Ravine, Secret Ravine, Antelope Creek, and Clover Valley Creek. The main stem of the Dry Creek watershed begins at the confluence of Secret Ravine and Miners Ravine, and flows southwest toward the Natomas

East Main Drainage Canal in Sacramento County. Numerous canals, aqueducts, siphons, reservoirs, ponds, dams, pipelines, and other natural and non-natural water features within this watershed also influence local hydrology.

According to the Dry Creek Watershed Coordinated Resource Management Plan, alluvial deposits throughout the Dry Creek watershed were excavated and sluiced for gold in the 1840s and 1850s. These operations released large volumes of nutrient-poor sand, which was deposited on productive native alluvial soils. Currently, many of the primary stream channels within the Dry Creek watershed, including Secret Ravine and Miners Ravine, have incised through these deposits, leaving a deeper channel. Dense new stands of riparian vegetation have colonized areas along streams where the old alluvial soils have been exposed after the placer deposits were stripped away by recent floods. The Xerorthents soil type found associated with the drainage on the project site is the result of such placer mining activities.

Ongoing development and use of land near surface water bodies has led to additional alterations in the natural hydrology. In many areas, channels have been deepened, straightened, and/or relocated to accommodate roads, to create agricultural land, to create sewage treatment ponds, to convey flows, and for other developments. This channelization and reconfiguration has resulted in reduced area for overbank flow and reduced channel meandering, which has lowered the shallow groundwater table, particularly in the upper tributary reaches. Additionally, stream form diversity has been reduced, having been replaced by more uniform stream corridors (Placer and Sacramento Counties 2003). Regional development has resulted in increased impervious area and loss of both native riparian habitat and overall riparian vegetation. This leads to increased runoff into surface waters in the region. The Dry Creek Watershed Flood Control Plan was prepared as a joint effort by Placer County (County) and Sacramento County in 1992 to address flooding issues, primarily along the main stem of Dry Creek. The purpose of the plan is to provide Placer and Sacramento Counties with the information and policies necessary to manage flood waters within the Dry Creek watershed. The plan evaluates existing flooding problems and identifies flood management options, and evaluates a funding mechanism to achieve plan recommendations. An update to the plan is currently being prepared by Placer County and Civil Engineering Solutions. The Dry Creek Watershed Coordinated Resource Management Plan for Placer and Sacramento Counties (Placer and Sacramento Counties 2003) also addresses water quality, riparian habitat, and fisheries management.

Project Site Surface Hydrology

The project site is currently undeveloped. The site was historically used for agricultural activities—an orchard was planted on the eastern portion of the site (removed in the early 1950s), while the western portion was use for cattle grazing. An unnamed perennial drainage to Secret Ravine bisects the project site, referenced as the upper fork of Secret Ravine (Appendix H). The drainage flows out of a pipe from a subdivision northwest of the property and flows

north to south across the central portion of the project site. Once off site, the stream flows into a steel culvert and runs for approximately 225 feet under I-80 to a confluence with Secret Ravine approximately one-third of a mile south of the project site. Secret Ravine drains into Miners Ravine, which connects with Dry Creek in Sacramento County. Dry Creek drains into Steelhead Creek (formerly known as the Natomas East Main Drain), which ultimately drains into the Sacramento River.

A 100-year floodplain surrounds the on-site drainage, extending from the north edge of the parcel to the south edge and terminating in the steel culvert under I-80 to the south. Other hydrologic features on the project site include two wetland swales and a drainage ditch on the eastern portion of the site, three riparian wetlands (part of the perennial stream complex), two seasonal wetlands, and one seep in the western portion of the site, as shown on Figure 4.3-2, Wetland Delineation Map, in Section 4.3, Biological Resources.

The 2014 preliminary drainage report prepared for the proposed project (Appendix H) indicates that the approximately 66-acre project site accepts runoff from a total area of approximately 679 acres, including adjacent residential and commercial uses and undeveloped areas (TLA 2006). Using HEC-HMS1 modeling, this report calculated the peak flows expected from the project site for the 2-, 10-, and 100-year storm events using inputs for soil types, saturation characteristics, storm event intensity, and existing developed conditions for on-site and off-site areas contributing runoff. Peak flow rates modeled for the project site in the existing condition for the 2-, 10-, and 100-year storm events are provided in Table 4.11-1 in cubic feet per second for each point of discharge (POD) location. POD represents distinct locations where drainage leaves the project site to off-site areas. POD A corresponds to the existing 66-inch culvert at I-80 where on-site drainage discharges from the property and receives the greatest volume of stormwater runoff, as shown in Table 4.11-1. The peak flow rates for each POD are shown in Figure 4.11-2, Stormwater Runoff Summary.

Table 4.11-1
Existing Stormwater Runoff Peak Flow Rates

Point of Discharge	2-Year Event (cfs)	10-Year Event (cfs)	100-Year Event (cfs)
A	128.1	290.5	549.1
B	32.5	80	162.7
C	10.2	22.6	44.3
D	0.7	2.8	7
E	1.5	3.5	7
F	1.2	3.2	6.8
Total	**174.2**	**402.6**	**776.9**

Source: Appendix H.
cfs = cubic feet per second

Local Flooding

Based on review of flood elevations and published Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps showing the base elevation of the 100-year floodplain, the existing 66-inch culvert downstream of the project site that flows under I-80 is undersized to carry the modeled 100-year stormwater flows under existing conditions (POD A). Runoff exceeding storm drain capacity becomes surface flow and appears to migrate downgradient into the adjacent property, covering a relatively large area creating surface ponding/storage (Appendix H). The 100-year floodplain for the site and its surroundings, as mapped by FEMA, is shown on Figure 4.11-3, Pre-Project 100-Year Floodplain. The FEMA floodplain delineates the boundaries of areas that would be inundated with floodwaters in the event of a 100-year storm event (a storm modeled to have a 1% chance of occurring in any given year). FEMA most recently reviewed and updated the floodplain boundaries for the Loomis area in 1998 (Town of Loomis 2000).

Regional Surface Water Quality

The Central Valley RWQCB establishes water quality objectives to protect the recognized beneficial uses of this watershed. The beneficial uses of Dry Creek include municipal and domestic water supply; agricultural and industrial water supply; recreation; groundwater recharge; aesthetic enjoyment; fresh water replenishment; and preservation and enhancement of fish, wildlife, and other aquatic resources. Stormwater runoff from rural and urban areas may contain excessive levels of pollutants (e.g., pesticides, herbicides, hydrocarbons), adversely affecting fish populations and other aquatic life in streams and possibly negatively affecting municipal, domestic, agricultural, recreational, and other beneficial uses of the water.

Water quality degradation from non-point source pollutants is primarily the result of stormwater runoff carrying pollutants from the land surface to the receiving waters. The types of pollutants that may be transported to the receiving waters depend on the land uses and associated activities. Within the Town, urban/commercial uses may contribute to non-point source pollution as a result of stormwater runoff containing hydrocarbons and other pollutants resulting from automotive use (brake lining dust, tire particles, coolant), sediment from erosion of exposed soils, chemicals (pesticides, fertilizers, herbicides, paints, paint thinners, solvents), heavy metals, and coliform bacteria and nitrates (pet waste, septic contamination) (Town of Loomis 2000).

Stormwater runoff from the project site drains to Secret Ravine and Miners Ravine before being delivered to Dry Creek. Dry Creek is tributary to the Sacramento River, a primary source of water for the City of Sacramento, and for the Sacramento–San Joaquin Delta. Key beneficial uses of the receiving waters are designated as municipal, domestic, agricultural supply,

recreation, and freshwater habitat. Limited data on streamflow and water quality is available for the on-site drainage and streams within the Dry Creek watershed.

According to the Dry Creek Watershed Coordinated Resource Management Plan, the Central Valley RWQCB conducted 15 monthly sampling events at 8 locations in the Dry Creek watershed between autumn 2000 and winter 2002 to monitor selected water quality characteristics. Three of the study sites were on Dry Creek, one was on Miners Ravine, and one was on Secret Ravine; the rest were on other tributaries to Dry Creek. The test site on Secret Ravine was approximately 1 mile northeast of the project site at Loomis Park. The test site on Miners Ravine was approximately 5 miles south of the project site. The Dry Creek Watershed Coordinated Resource Management Plan also reported results of water quality testing conducted in 2000 and 2001 by the Dry Creek Conservancy Monitoring Group, a citizen group trained to collect water quality data in the Dry Creek watershed. Testing sites monitored by the Dry Creek Conservancy Monitoring Group included several in the upper Dry Creek watershed that would be expected to reflect water quality conditions in the vicinity of the project site and indicate water quality concerns for the upper watershed.

Although the Dry Creek Watershed Coordinated Resource Management Plan identified the need for longer-term sampling of the watershed, results of sampling conducted by the Central Valley RWQCB and the Dry Creek Conservancy Monitoring Group indicate the following water quality impairment issues:

- **Temperature:** Some reaches of the watershed exceeded temperature limits for support of cold-water fish populations during the summer months. High in-stream temperatures typically result from loss of riparian vegetation that shades waterways from direct sunlight.
- **Toxicity:** Although additional studies are necessary to determine the extent and level of impairment, pesticide and heavy metals toxicity has been observed in samples from Dry Creek and Secret Ravine. Pesticides and heavy metals toxicity can result from runoff from agricultural operations and roadways, among other sources.
- **Turbidity:** Sampling found that turbidity in the watershed is generally above the U.S. Environmental Protection Agency-recommended criteria. Turbidity is a measure of the cloudiness or haziness of water caused by particles suspended in the water, and typically results from suspended sediment resulting from soil erosion. Turbidity is typically higher during precipitation events when runoff carries sediment to streams.
- **Fecal coliforms:** During the dry season, fecal coliform levels exceeded water quality criteria in portions of the watershed. Fecal coliform bacteria can be a result of failing septic systems and animal waste (pet, livestock, or wildlife).

Water quality sampling efforts found that dissolved oxygen, dissolved solids, pH, ammonia, most metals, and most pesticides were within the applicable standards (Placer and Sacramento Counties 2003).

4.11.2 Regulatory Setting

Federal and State Regulations

Clean Water Act

The Clean Water Act is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which establishes the basic structure for regulating discharges of pollutants to waters of the United States. Section 303 of the Clean Water Act requires states to adopt water quality standards discussed in the following text as part of the National Pollutant Discharge Elimination System (NPDES).

The U.S. Army Corps of Engineers regulates the placement of fill or dredged materials that affect waters of the United States, which include stream courses and jurisdictional wetlands. The U.S. Army Corps of Engineers regulates these activities under the authority of Section 404 of the Clean Water Act. The U.S. Army Corps of Engineers would regulate any development within the project site that affects jurisdictional wetlands.

In the State of California, the State Water Resources Control Board (SWRCB) and RWQCBs also regulate activities in waters of the United States through Section 401 of the Clean Water Act. A 401 certification is necessary to obtain a 404 permit for construction of wetlands/habitat where waters of the United States are impacted.

NPDES Stormwater Discharge Permits

Surface water quality is regulated by NPDES, which was developed by the U.S. Environmental Protection Agency in accordance with Section 303 of the Clean Water Act. In the State of California, the SWRCB administers the NPDES program, with implementation and enforcement by each RWQCB. The NPDES program, designed to protect surface water quality, is applicable to all discharges to waters of the United States, including stormwater discharges associated with municipal drainage systems, construction activities, industrial operations, and "point sources" (such as wastewater treatment plant discharges and other direct discharges to water bodies). In April 2003, the SWRCB adopted an NPDES Phase II General Permit for the Discharge of Storm Water from small municipal separate storm sewer systems (MS4s) to provide NPDES permit coverage to municipalities that were not covered under the NPDES Phase I Rule for municipalities serving more than 100,000 people. The Town is a regulated Small MS4 under the State's NPDES permit, and is subject to the provisions of the NPDES Phase II General Permit.

Under this permit, stormwater discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule, or the applicable RWQCB basin plan. For the Town, the applicable basin plan is the Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins (Central Valley RWQCB 1998). The basin plan establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the basin, in compliance with the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act (discussed further in the following text).

The Central Valley RWQCB issues NPDES permits for construction activities involving disturbance of 1 acre or more. The conditions of the state's General Permit for stormwater discharges associated with construction activities, Order Number 99-28-DWQ, require development and implementation of a stormwater pollution prevention plan (SWPPP) that must address the following:

- Plans for implementation of structural and operational best management practices (BMPs) to prevent and control impacts to surface water during construction
- Inspection and maintenance of BMPs throughout all phases of construction
- Monitoring of runoff quality during all phases of construction
- A plan for preventing and controlling post-construction impacts to runoff quality

The Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act (Porter-Cologne) is the principal law governing water quality regulation in California. This statute established the SWRCB and the nine RWQCBs, which are charged with implementing its provisions. Porter-Cologne establishes a comprehensive program for the protection of water quality and the beneficial uses of water. It applies to surface waters, wetlands, and groundwater and to both point and non-point sources. Porter-Cologne is found in California Water Code, Section 13000. In addition, California Code of Regulations, Title 23, contains administrative and regulatory elements of water quality and quantity management in California.

The SWRCB allocates rights to the use of surface water and, with the nine RWQCBs, protects water quality in all waters of the state. The SWRCB provides program guidance and oversight, allocates funds, and reviews RWQCB decisions. The RWQCBs are responsible for individual permitting, inspection, and enforcement actions within the nine hydrologic regions. The project site is located within Region 5, the Central Valley River Basin RWQCB.

Porter-Cologne also incorporates many provisions of the federal Clean Water Act, such as delegation to the SWRCB and RWQCBs of the NPDES permitting program.

Flood Protection

FEMA is responsible for determining flood elevations based on available studies pursuant to the National Flood Insurance Program Final Rule (44 CFR 59, 61). FEMA is also responsible for developing the Flood Insurance Rate Maps, which are used in the National Flood Insurance Program. Participation in the National Flood Insurance Program provides an opportunity for property owners in the community to purchase flood insurance, provided that the community complies with FEMA requirements for maintaining flood protection and managing development in the floodplain.

Groundwater

The SWRCB regulates activities that could result in adverse impacts to groundwater quality. Policies and regulations promulgated by the SWRCB (either under its Clean Water Act authority or state-derived authority) are implemented and enforced in the project area by the Central Valley RWQCB. In general, SWRCB policy prohibits degradation of groundwater quality, and in cases where impacts occur, the Central Valley RWQCB typically requires restoration of impacted aquifers such that residual concentrations do not exceed the U.S. Environmental Protection Agency's Maximum Concentration Limits for drinking water. In cases where the aquifer is hydraulically connected to a surface water body, fresh water aquatic habitat water quality criteria may be imposed as cleanup levels.

Streambed Alteration Program

The California Department of Fish and Wildlife's (CDFW) Lake and Streambed Alteration Program (California Fish and Game Code, Section 1600 et seq.) requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, or who will use materials from a streambed to apply for and obtain a Streambed Alteration Agreement from CDFW before beginning the project. Notification is generally required for any project that will take place in or in the vicinity of a river, stream, lake, or its tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel, with banks that support fish or other aquatic life, and watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

Local Regulations

Town of Loomis General Plan

The Town of Loomis General Plan (2001) contains goals and policies governing development within the Town. The goals and policies listed in the following text summarize the priorities of the General Plan related to hydrology and water quality. Appendix B of this EIR provides an evaluation of the project's consistency with applicable General Plan policies.

Land Use Goals

1. To protect groundwater and surface water quality.

Natural Resources and Open Space Goals

2. To help protect groundwater and air quality within the Sacramento region.

Natural Resources and Open Space Policies

3. **Grading.** The Town shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian areas.
    a. Prior to approval of discretionary development permits involving parcels near significant ecological resource areas, project applicants shall demonstrate that upland grading activities will not contribute to the direct cumulative degradation of stream quality.
    b. The Town will limit development on slopes with a gradient in excess of 30 percent or in areas of sensitive or highly utilized habitat, through appropriate zoning standards and individual development project review.
6. **Stream corridor protection.** The streams of Loomis are among the most significant and valuable of the Town's natural resources. Development adjacent to streams shall be designed, constructed, and maintained to avoid adverse impacts on riparian vegetation, stream bank stability, and stream water quality to the maximum extent feasible. These policies shall apply to all watercourses shown as blue lines on the most recent United States Geological Survey (USGS) 7.5-minute topographic quadrangle maps applicable to the Town. See also the policies for wetland protection below.
    a. Proposed structures and grading shall be set back the greater of: 100 feet from the outermost extent of riparian vegetation as defined in the Zoning Ordinance, or outside of the 100-year flood plain. Lesser setbacks may be approved where site-specific studies of biology and hydrology, prepared by qualified professionals approved by the Town, demonstrate that a lesser setback will provide equal protection for stream resources. Development shall be set back from ephemeral or intermittent streams a

minimum of 50 feet, to the extent of riparian vegetation, or to the 100-year floodplain, whichever is greatest.

b. Land uses and development within the setback areas required by this policy shall be limited to: the grazing of livestock at half or less of the animal densities allowed by the Zoning Ordinance; open wire fencing to confine livestock; bridges; public utilities and infrastructure; and other uses allowed by the applicable zoning district as permitted or conditional uses, with conditional use permit approval.

c. The following activities are prohibited within stream corridor setbacks: filling or dumping; the disposal of agricultural wastes; channelization or dams; the use of pesticides that may be carried into stream waters; grading, or the removal of natural vegetation within the required setback area, except with grading permit approval. This is not intended to prevent the reasonable maintenance of natural vegetation to improve plant health and habitat value.

d. The Town shall require that development projects proposing to encroach into a creek corridor or creek/wetland setback to do one or more of the following, in descending order of desirability:

- Avoid the disturbance of riparian vegetation;
- Replace riparian vegetation (on-site, in-kind);
- Restore another section of creek (in-kind); and/or
- Pay a mitigation fee for restoration elsewhere (e.g., wetland mitigation banking program).

e. The Town shall require that newly-created parcels include adequate space outside of wetland and riparian setback areas to ensure that property owners will not place improvements within areas that require protection.

f. Proposed development shall include surface water drainage facilities that are designed, constructed, and maintained to ensure that the increased runoff caused by development does not contribute to the erosion of stream banks, or introduce pollutants into watercourses.

g. The Town shall encourage the use of natural stormwater drainage systems to preserve and enhance existing natural features. The Town shall promote flood control efforts that maintain natural conditions within riparian areas.

h. Where creek or wetland protection is required or proposed, the Town shall require public and private development to:

- Preserve creek corridors and setbacks through easements or dedications. Parcel lines or easements shall be located to optimize resource protection;

- Designate easement or dedication areas as open space;
- Protect creek corridors and their habitat value by: (1) providing adequate setbacks; (2) maintaining creek corridors in their natural state; (3) employing restoration techniques, where necessary and appropriate; (4) using riparian vegetation within creek corridors; (5) prohibit the planting of invasive, non-native plants within creek setbacks; and (6) avoiding tree removal within creek corridors.
- Use techniques that ensure development will not cause or worsen natural hazards near creeks, and will include erosion and sediment control practices such as: (1) turbidity screens (to minimize erosion and siltation); and (2) temporary vegetation sufficient to stabilize disturbed areas.

7. **Water quality.** The Town will contribute toward the maintenance of high quality in the local surface and groundwater resources through the following, and other feasible measures.
   a. Proposed development shall incorporate measures to minimize soil erosion, and stream and drainage way sedimentation during construction, and over the life of each project.
   b. The Town will periodically review its ordinances requiring erosion and sediment control, and will update them when necessary to ensure their continuing effectiveness.
   c. Proposed development shall be designed, constructed, and maintained to prevent the discharge of untreated effluent into local streams to the maximum extent feasible, including the introduction of contaminants such as pesticides, fertilizers, and petroleum products and other contaminants carried by urban runoff.

Public Health and Safety Goals

1. To reduce risks associated with natural and man-made hazards through compliance with State and Federal safety programs.
3. To reduce the potential for and damage resulting from storm flooding hazards within the community.

Public Health and Safety Policies

4. No new structures or additions to existing structures shall be permitted in areas identified by the federal Flood Insurance Rate Maps (FIRMs) or the Town Engineer as being subject to inundation in a 100-year or more frequent flood event. Exceptions may be granted for public facilities and utilities. New development shall also be prohibited in the future 100-year flood zone, based on buildout conditions as determined by FEMA and FIRM maps. Development will be required to adhere to Placer County Flood Control District policies and the Dry Creek Watershed Control Plan.

5. New development near stream channels shall be designed so that reduced stream capacity, stream bank erosion, or adverse impacts on habitat values are avoided.
6. Further channelization and/or banking of creeks or streams within the planning area shall be discouraged, unless no other alternative is available to minimize flood risk. Setbacks from flood sources shall be the preferred method of avoiding impacts.
7. Site-specific recommendations of the Town's Drainage Master Plan, upon completion, shall be applied to individual development projects as appropriate.

General Plan Natural Resources and Open Space Policy 6(a) requires a setback from waterways defined by the greater of 100 feet from the outermost extent of riparian vegetation or outside the 100-year floodplain. This policy states that a smaller setback may be approved if site-specific studies indicated the lesser setback would provide equal protection of the waterway. The policy further states that setbacks from ephemeral or intermittent streams shall be a minimum of 50 feet or outside the limit of the 100-year floodplain.

Town of Loomis Grading Ordinance

The Town's grading ordinance, codified in Chapter 12.04 of the Town of Loomis Municipal Code, establishes requirements for grading, erosion, and sediment control and stormwater management (Town of Loomis 2015). Development projects must comply with these requirements during grading and construction. The primary goals of the ordinance include protecting against unwarranted or unsafe drainage work, avoiding pollution of watercourses, and maintaining proper functioning of drainage infrastructure. Except in the case of certain exemptions specified in Section 12.04.050 of the Municipal Code, a grading permit issued by the director of public works is required for all grading activities within the Town.

Grading permit requirements and design standards are detailed in Chapter 12.04, Articles VI and VII, of the Municipal Code (Town of Loomis 2015). These conditions include requirements for control of dust, erosion, and sedimentation. When issuing a grading permit, the Town may impose any condition necessary to protect waterways. The grading ordinance also specifies that grading projects cannot be allowed to violate the NPDES or to interfere with the flow of stormwater. Each future development project within the project site would be required to comply with the conditions and standards of the grading permit issued for the project.

4.11.3 Impacts

Methods of Analysis

A preliminary drainage study was prepared for the project site by TLA in 2014 (see Appendix H) to estimate existing runoff and proposed project runoff, and to identify drainage facilities that

would be needed to meet the current Town standards. This impact analysis incorporates the results of that study to identify potential proposed project impacts associated with drainage and post-construction water quality.

The geographic context for the analysis of cumulative hydrology and water quality impacts is made up of the Dry Creek watershed. For analysis of flooding impacts, the geographic context for localized flooding impacts is the local drainage shed, and for regional flooding impacts, it is the entire Dry Creek watershed. The Dry Creek watershed extends from Newcastle in the east to the Natomas East Main Drainage Canal in Sacramento County in the west. This cumulative impact analyses relies on the summary of projections methodology under Section 15130(b)(1)(B) of the CEQA Guidelines, reflecting buildout of the portions of the Placer County General Plan that govern land within the Dry Creek watershed, buildout of the Town of Loomis General Plan and those of the cities of Rocklin and Roseville, and buildout of the portions of the Sacramento County General Plan that govern land within the Dry Creek watershed. This section identifies and discusses the environmental impacts resulting from the proposed project.

Significance Criteria

Based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), potentially significant impacts associated with hydrology and water quality from implementation of the proposed project, including construction and operation phases, have been evaluated with respect to the following significance criteria. Would the project:

- Substantially degrade surface or groundwater quality (i.e., during construction or operation)?
- Cause a substantial increase in rate or volume of runoff leaving the site that would exceed the capacity of existing or planned stormwater drainage systems and result in flooding?
- Expose people or structures, on- or off-site, to a significant hazard of flooding as a result of placing development within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- Substantially decrease groundwater recharge, resulting in depressed groundwater levels in the local and/or regional area?

Impact Discussion

IMPACT 4.11-1:	Project construction or operation could contribute to a substantial degradation of surface or groundwater quality.
SIGNIFICANCE:	Less Than Significant
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

Project Construction Effects on Surface Water Quality

Without implementation of appropriate control measures, grading involved in preparing the project site for construction would decrease vegetative cover and potentially increase the rate and quantity of stormwater runoff. This would result in accelerated soil erosion and sediment delivery to the on-site waterway and off-site areas. This could increase the amount of suspended solids in local waterways and contribute to elevated turbidity in portions of the Dry Creek watershed downstream of the project site. Additionally, leaks or upset of fuel or hydraulic fluid used in construction equipment and outdoor storage of construction materials or spills of paints, solvents, or other potentially hazardous materials commonly used in construction could degrade stormwater runoff quality during construction. Small leaks from construction equipment and building materials would not be expected to result in contamination of groundwater, as they would be likely to break down or dilute in the shallow soil layer and be conveyed to surface water runoff. Large quantities of hazardous materials would be required to be stored in compliance with applicable regulations to prevent or contain any spills. Section 4.13, Hazards and Hazardous Materials, provides further discussion regarding hazardous materials use and storage and the potential for accidental release of hazardous materials.

Pursuant to the requirements of the Town's Grading Ordinance (Municipal Code, Chapter 12.04), prior to obtaining grading permits, the applicant would be required to prepare an erosion and sediment control plan that complies with the Town's stormwater management plan and the California Stormwater Quality Association Stormwater Best Management Practice Handbook. The Town's Grading Ordinance specifies that the erosion and sediment control plan shall prevent discharge through all stages of project development and shall include measures to ensure permanent site stabilization. The Grading Ordinance also requires that all construction equipment and maintenance and construction materials storage areas would be located within designated

areas protected with a berm to contain any loose materials, and all disturbed areas would be protected through revegetation or a protective cover (Town of Loomis 2015).

Additionally, prior to issuance of a grading permit, the applicant would be required to demonstrate coverage for project activities under the SWRCB's NPDES General Permit for Storm Water Discharges Associated with Construction Activities. To obtain coverage under the permit, the project applicant would submit a Notice of Intent with the required permit fee and prepare a SWPPP for review by the Central Valley RWQCB. The SWPPP would include the following four major elements:

1. Identify pollutant sources, including sources of sediment, which may affect the quality of stormwater discharges from the construction site.
2. Identify non-stormwater discharges.
3. Identify, construct, implement in accordance with a time schedule, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction.
4. Identify, construct, implement in accordance with a time schedule, and assign maintenance responsibilities for post-construction BMPs to be installed during construction that are intended to reduce or eliminate pollutants after construction is completed.

In addition, dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary

Typical BMPs that would be appropriate to implement at the project site may include scheduling or limiting activities to certain times of year, implementing dust control procedures throughout the project area, stabilizing cut and fill slopes as soon as possible, controlling erosion through a variety of means such as mulch and compost blankets, riprap, and installation of sediment retention structures (such as a sediment retention basin), sediment control with the use of measures such as storm drain inlet protection, vegetated buffers, fiber rolls and berms, sediment fencing, and straw or hay bales.

Other temporary BMPs would ensure "good housekeeping" at the project site during construction. These would include cleaning construction equipment and preventing the leakage of fluids, storing materials away from surface water, protecting sensitive areas with sediment barriers or other containment methods, controlling laying of concrete and washing of related equipment, and collecting debris and gravel associated with paving operations. Adequate temporary storm drainage controls would be provided, including on-site drainage containment,

the placement of silt fences around construction areas, and constructing temporary sediment basins (as necessary).

Compliance with the Town's Grading Ordinance and implementation of the provisions contained in the SWPPP approved by the RWQCB would reduce potential impacts to water quality due to construction activities to **less than significant** by ensuring that all appropriate and necessary BMPs are implemented to avoid or minimize the discharge of pollutants and sediment to surface water.

Project Operation Effects on Surface Water Quality

The proposed project would construct approximately 426 residential units and approximately 80,000 square feet of office and commercial space. According to the preliminary drainage report prepared by TLA (2014), the overall amount of impervious land cover would increase up to approximately 50%. This increase in the overall area of impervious surface on the site would increase both the volume and rate of runoff from the site, as less water would infiltrate the soil. Human activities on site would also generate typical urban pollutants (automobile pollutants, chemicals from landscape and structural maintenance, soil erosion, and solid waste). These pollutants accumulate on impervious surfaces during dry weather and are then transported by surface flows into drainageways during storm events. Stormwater runoff from streets and driveways would be expected to contain oils, grease, sediment, and other urban debris and to have potential to result in degradation of surface water quality in area drainage ways.

The project includes a combination of Low-Impact Development (LID) and BMPs to minimize pollutants entering the drainage system and being discharged from the site. This would be accomplished through a combination of "good housekeeping" practices and mechanical and biological treatment facilities. The project would preserve approximately 10 acres in its natural state to aid in controlling stormwater pollution. The project also incorporates grassy swales, detention basins, detached downspouts, and landscape strips all to promote infiltration of stormwater and to reduce the volume of runoff reaching the drainage system. Proper signage and inlet makings would also be incorporated to inform residents and visitors that all drains flow to the creeks and dumping, or disposal of waste in the drains is not allowed. In addition, treatment BMPs would be installed to ensure that all new impervious area would have some form of water quality treatment prior to discharge. These include bioretention basins, vegetative swales, flow-through planters, and hydrodynamic separators. The BMPs would be sized in accordance with the current local and state guidelines, including the California Stormwater Quality Association manual. Specifically, BMPs must be sized to ensure that post-development stormwater runoff is reduced to 90% of the pre-development runoff volume, consistent with the Placer County Stormwater Management Manual.

The BMP plan would be consistent with the NPDES requirements as discussed in Section 4.11.2, Regulatory Setting. To comply with the NPDES requirements, the project must implement a BMP plan that ensures the project would not cause or contribute to an exceedance of water quality standards contained in any Statewide Water Quality Control Plan, the California Toxics Rule, or the Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins.

Examples of BMPs that would be evaluated during design are provided in the California Stormwater Quality Association's Best Management Practices Handbook for New Development and Redevelopment, and include LID technologies, such as vegetative swales, disconnected roof drains, and interceptor trees. Other measures that may be used include stormwater filtration systems. With compliance with the NPDES requirements, the project's impacts related to degradation of surface water quality would be **less than significant.**

Project Effects on Groundwater Quality

Construction for the proposed project would proceed according to the Construction SWPPP required under the statewide construction general permit. The SWPPP would require construction to adhere to BMPs as listed previously that would minimize potential impacts to groundwater quality from construction. The greatest potential for impacts to groundwater quality to occur during project operation would be due to specific land uses that may store or transport hazardous materials. Project operation is not anticipated to result in the use or transport of substantial quantities of hazardous materials with the potential to result in groundwater contamination. Further discussion of potential impacts associated with use or transport of hazardous materials is provided in Section 4.13, Hazards and Hazardous Materials, of this EIR. The proposed project would tie into the sewer system, and would therefore result in no impacts to groundwater as a result of septic tank failure or high groundwater septic system interaction. The project's LID techniques and BMPs would ensure that surface water quality is maintained, and would reduce the potential for impacts to groundwater to occur as a result of pollutants delivered in stormwater runoff. Some groundwater recharge may occur when stormwater runoff is captured in the proposed detention basins. With pre-treatment of runoff prior to entering the detention basis, such as by being routed through a vegetated swale or a sand-oil separator, and the natural filtration of water that occurs as it percolates through the soil, the water within the detention basin that may reach the groundwater basin would not impair the groundwater quality. Thus, impacts to surface and groundwater quality would be **less than significant**.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would result in slightly fewer homes that require construction and slightly fewer residents at full buildout.

However, the proposed project after measure implementation would still have the same effects on surface and groundwater quality; therefore, the impact would remain **less than significant**.

Modified Transportation Alternative

The Modified Transportation Alternative proposes to construct 418 residential units and approximately 74,000 square feet of office and commercial space, which is the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. Functionally, the Modified Transportation Alternative would have a similar impact as the proposed project; therefore, the impact would be **less than significant**.

IMPACT 4.11-2:	Project implementation could result in flooding as a result of increased stormwater runoff volumes or rates that would exceed the capacity of existing or planned stormwater infrastructure.
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 4.11a
RESIDUAL SIGNIFICANCE	Less Than Significant

Proposed Project

Development of roads, buildings, and other paved and impermeable surfaces would reduce the amount of stormwater that currently infiltrates into the ground and could increase the volume and rate of runoff leaving the project site, as discussed under Impact 4.11-1, if appropriate measures are not implemented to control peak flows. A significant impact would occur if post-development stormwater runoff rates are not reduced to levels below the pre-development runoff rates.

The 2014 preliminary drainage report prepared by TLA provides a detailed overview of changes in drainage conditions that would result from implementation of the proposed project. The purpose of the study was to determine the post-project peak flows to determine if the proposed project could comply with provisions of the Placer County Stormwater Management Manual, which require that stormwater runoff in the post-project condition be reduced to between 90% and 100% of the pre-project condition for the 2-, 10-, and 100-year design storm events.

The 2014 preliminary drainage report finds that in the post-development condition, the project:

- Would not adversely change off-site floodplain limits or water surface elevations for 2-, 10-, and 100-year storm events;

- Would decrease downstream water surface elevations approximately 0.2 feet for 100-year storm events;
- Would slightly increase the water surface elevation on the upstream side of the proposed Doc Barnes Drive at the major drainage area (due to the construction of the new road), but that increase in elevation is dissipated within 800 feet upstream of Doc Barnes Drive;
- Would not increase the water surface elevations in the Sun Knoll subdivision; and
- Would decrease stormwater flow to I-80 (the California Department of Transportation (Caltrans) culvert, POD A) by between 10% and 35%.

As discussed in Section 4.11.1, Environmental Setting, the preliminary drainage report (TLA 2014) modeled peak flows for stormwater runoff at six POD locations (as shown in Figure 4.11-2) where runoff from the project site would occur. Modeled peak flow rates for the post-project condition are provided in the following text. The proposed project would construct stormwater detention basins to store and meter discharge of stormwater runoff from the site and thereby reduce peak flow rates, as shown in Figure 4.11-4. These detention facilities would be equipped with oil/sediment separators to maintain discharge water quality.

Post-project values represent peak flow rates when the flow rate attenuation facilities recommended in the preliminary drainage report are used, as shown in Table 4.11-2. The net reduction in flows is also indicated. As shown in the table, post-development PODs D and E would be redirected into the Doc Barnes Drive storm drain system part of POD A. Table 4.11-2 identifies the post-development stormwater runoff rates and the percent that runoff is reduced compared to the pre-project rates.

Table 4.11-2
Stormwater Runoff Peak Flow Rates Post-Project Conditions

Point of Discharge	Stormwater Runoff by Storm Interval (cfs)		
	2-Year Event	*10-Year Event*	*100-Year Event*
A	83.6 35% reduction	240.5 17% reduction	492.7 10% reduction
B	32.5 0% reduction	79.8 .002% reduction	162.3 .003% reduction
C	7 31% reduction	19.4 14% reduction	39.9 10 % reduction
D	0 100% reduction	0 100% reduction	0 100% reduction
E	0 100% reduction	0 100% reduction	0 100% reduction
F	1.0 17% reduction	2.8 13% reduction	6.1 10% reduction

Source: Appendix H.

The preliminary drainage report indicates that, with implementation of measures to control peak flows, post-project peak flow rates would be less than or the same as existing conditions for all events. The drainage analysis demonstrates that PODs B, C, and F would have substantial increases in site runoff and require stormwater detention to reduce the post-development peak flow below predevelopment levels to meet the requirements of the Placer County Stormwater Management Manual. Detention is proposed to be provided in the form of open detention basins, as shown in the grading plans in Figures 4.10-3, 4.10-4, and 4.10-5 in Section 4.10, Geology, Soils, Seismicity, and Paleontology.

The preliminary drainage report demonstrates that the proposed project would be consistent with the Placer County Stormwater Management Manual requirements to reduce peak flow rates from the undeveloped condition for the 2-year, 10-year, and 100-year storm events.

A supplemental final design drainage report would be required by the Town prior to issuance of a grading permit. The final design drainage report must incorporate measures to attenuate peak flows, consistent with the recommendations contained in the preliminary drainage report and the Placer County Stormwater Management Manual. Specifically, the project design must ensure that post-development stormwater runoff is reduced to 90% of the pre-development runoff rate for the 100-year storm. To ensure that the final drainage report provides sufficient stormwater management to achieve this reduction, **Mitigation Measure 4.11a** requires preparation of the final drainage report and that the final drainage report demonstrate that stormwater runoff for the 2-year, 10-year, and 100-year storms is reduced to 90% of the pre-development runoff rates. Compliance with **Mitigation Measure 4.11a**, consistent with the recommendations of the preliminary drainage report, would ensure that the project would not increase the rate of stormwater runoff and increases in stormwater runoff volume would not result in on-site or downstream flooding as a result of the project. With implementation of **Mitigation Measure 4.11a**, the impact would be reduced to **less than significant.**

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would result in slightly reduced development footprint, which would slightly reduce potential for increased stormwater runoff. The impact would remain **less than significant** after implementation of **Mitigation Measure 4.11a**.

Modified Transportation Alternative

The Modified Transportation Alternative proposes to construct the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. This alternative

would result in slightly reduced increases in stormwater runoff than the proposed project, as shown in Table 4.11-3. Implementation of **Mitigation Measure 4.11a**, consistent with the recommendations of the preliminary drainage report, would ensure that this alternative would not increase the rate of stormwater runoff and increases in stormwater runoff volume would not result in on-site or downstream flooding as a result of the project. With implementation of **Mitigation Measure 4.11a**, the impact would be reduced to **less than significant.**

Table 4.11-3
Stormwater Runoff Peak Flow Rates Post-Project Conditions

Point of Discharge	Stormwater Runoff by Storm Interval (cfs)		
	2-Year Event	*10-Year Event*	*100-Year Event*
A	83.6 35% reduction	240.5 17% reduction	492.7 10% reduction
B	32.5 0% reduction	79.8 .002% reduction	162.3 .003% reduction
C	6.6 35% reduction	16.9 25% reduction	38.3 16% reduction
D (Drainage redirected to POD A)	0 100% reduction	0 100% reduction	0 100% reduction
E (Drainage redirected to POD A)	0 100% reduction	0 100% reduction	0 100% reduction
F	1.0 17% reduction	2.8 13% reduction	6.1 10% reduction

Source: Appendix H.

IMPACT 4.11-3:	Placement of fill or structures in the 100-year floodplain could result in on- or off-site flooding hazards.
SIGNIFICANCE:	Potentially Significant
MITIGATION:	Mitigation Measure 4.11b
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

Natural Resources and Open Space Policy 6(a) of the Town of Loomis General Plan state that all proposed structures and grading should be placed outside the 100-year floodplain or 100 feet from the outermost extent of riparian vegetation. However, this policy also provides for exceptions to this requirement provided that adverse effects to creeks and property are avoided or compensation for such effects is provided. Additionally, Public Health and Safety Policy 4

provides that new development is prohibited in the future 100-year flood zone, based on buildout conditions as determined by FEMA and FIRM maps.

The FEMA-designated 100-year floodplain occurs through the central portion of the project site, surrounding the unnamed drainage in this area. The FEMA-designated floodplains were mapped based on regional topography and drainage data and do not reflect site-specific conditions. The project engineers have completed a detailed floodplain analysis for the project site to map the site-specific 100-year pre-development floodplain for the site. The FEMA-designated floodplain and the mapped floodplain are shown on the grading plans provided in Figures 4.10-2 through 4.10-4 in Section 4.10. In general, the mapped 100-year pre-development floodplain is wider than the FEMA-designated floodplain on the western side of the unnamed drainage and narrower than the FEMA-designated floodplain on the eastern side.

The proposed development would encroach on both the FEMA-designated floodplain and the mapped floodplain in several locations:

- In the northern portion of the site west of the drainage channel, proposed lot 40 would abut the mapped 100-year floodplain and grading for this lot would occur within the floodplain.
- In the central portion of the site west of the drainage channel, proposed lot 70 would abut the mapped 100-year floodplain and grading for this lot would occur within the floodplain.
- In the central portion of the site west of the drainage channel, the northeast and southeast corners of the proposed park site (Parcel F) would encroach within the mapped 100-year floodplain. No grading is indicated for the park site on the grading plans. While some grading would be expected within this parcel, the park would be designed to avoid grading within the floodplain.
- In the southern portion of the site west of the drainage channel, the eastern edge of the proposed multi-family site (Parcel C) is located within the mapped 100-year floodplain. The portion of the floodplain within this parcel ranges from approximately 25 to 150 feet wide.
- In the northern portion of the site east of the drainage channel, the majority of proposed lot 203 would be located within the FEMA-designated 100-year floodplain and a smaller portion of the lot would be located within the mapped 100-year floodplain. A portion of proposed lot 202 would also be located within the FEMA-designated 100-year floodplain but outside of the mapped 100-year floodplain. The project would construct a retaining wall that would range from 9 to 14 feet tall around the west and south ends of lot 203 and the south end of lot 202. The post-development floodplain would be located approximately 15 feet south of the retaining wall.
- In the southern portion of the site east of the drainage channel, a small portion of proposed Blue Anchor Drive and Red Ravine Drive, portions of proposed lots 184, 183,

208, 209, 212, 214, and 215, and all (or nearly all) of proposed lots 185, 204, 205, 206, 207, and 213 would be within the FEMA-designated 100-year floodplain. In addition, most of lot 207, portions of lots 185, 208, and 209, and a portion of Red Ravine Drive are located within the mapped 100-year floodplain. A retaining wall would be constructed along the western boundary of the westernmost lots in this area, which would result in the post-development floodplain being located a minimum of 5 feet from the retaining wall.

- In the southern portion of the site, Doc Barnes Drive would be constructed through the FEMA-designated and the mapped 100-year floodplain. The roadway would be constructed above the base flood elevation. Box culverts are proposed for Doc Barnes Drive to permit stormwater flows to pass with minimal water surface impacts (Appendix H).

Recognizing that the FEMA-designated floodplain may not be accurate, FEMA provides property owners with a process to have the FEMA floodplain maps revised based on site-specific data. In this process, prior to finalizing the project improvement plans, the project applicant would support the Town in preparing and submitting an application for a Conditional Letter of Map Revision (CLOMR). The application would include improvement plans, a topographic map and a hydrology and hydraulic study depicting the pre-project and post-project 100-year floodplain on site. The study would also document conditions of the project site and upstream and downstream properties to demonstrate whether the project would have any effect on those areas. FEMA would review the information and if it is found to be acceptable, FEMA may issue a CLOMR to the Town stating that if the project is constructed as shown on the improvement plans, a revision to the FIRM would be warranted. Following construction, the project engineer would provide as-built plans for the Town to submit to FEMA. If the work is not in compliance with the CLOMR application, a revised hydrology and hydraulic study would be prepared. If the work is in compliance with the CLOMR application, FEMA would conditionally approve the LOMR and notify the Town to publish a notice in a local newspaper advising that the Town intends to revise the floodplain map. If no requests for data or objections based on scientific or technical data are received, FEMA would issue a LOMR, which would revise the floodplain mapping. **Mitigation Measure 4.11b** requires the project applicant to obtain a CLOMR prior to improvement plan approval to ensure that modification to the floodplain designation would not result in adverse effects related to flooding on site or off site.

While the proposed project would place grading and structures within the mapped 100-year pre-development floodplain, the site would be engineered, through grading and construction of retaining walls, to ensure that no development would be located within the post-development floodplain. This would ensure that the project is consistent with General Plan requirements to preclude development within the post-development floodplain.

However, the project would result in direct impacts to riparian vegetation and would disturb land within 100 feet of riparian vegetation. General Plan Natural Resource and Open Space Policy 6

establishes protection for streams and creeks by requiring that "development adjacent to streams shall be designed, constructed, and maintained to avoid adverse impacts on riparian vegetation, stream bank stability, and stream water quality to the maximum extent feasible." This policy initially requires that development be located outside of the 100-year floodplain or 100 feet from the edge of riparian vegetation, whichever is greater, but provides for exceptions to this requirement, allowing that:

- Lesser setbacks may be approved where site-specific studies of biology and hydrology, prepared by qualified professionals approved by the Town, demonstrate that a lesser setback will provide equal protection for stream resources;
- Uses allowed by the applicable zoning district as permitted or conditional uses may be permitted within the floodplain or within 100 feet of riparian vegetation subject to issuance of a conditional use permit;
- Development projects proposing to encroach into a creek corridor or creek/wetland setback that cannot avoid disturbance of riparian vegetation may replace riparian vegetation (on site or off site) or pay a mitigation fee for restoration elsewhere (e.g., wetland mitigation banking program);
- Newly-created parcels may include wetland and riparian setback areas as long as sufficient room is provided outside these setback areas to ensure that property owners will not place improvements within areas that require protection.

As discussed in Impact 4.11-2, the proposed project would reduce peak flows during the 100-year event, and would therefore not contribute additional volume of stormwater runoff that could result in flooding on site or off site. The proposed placement of limited fill and roadway structures within the pre-development 100-year floodplain would not result in any on-site or off-site flooding hazards because no development would be located within the post-development floodplain and because the proposed stormwater BMPs and detention basins would ensure that the post-development stormwater runoff rates and volumes would be reduced to 90% of the pre-development levels.

This conclusion applies to all POD from the project site, including POD A, where drainage flows to the existing 66-inch culvert running under I-80, which is undersized to carry modeled 100-year storm flows. As shown in Table 4.11-2, the upstream 100-year storm flow reaching the I-80 culvert would be reduced by approximately 56 cubic feet per second, with the construction of Doc Barnes Drive and on-site detention (Appendix H). With implementation of **Mitigation Measure 4.11b** to ensure that the FEMA-designated floodplain is revised consistent with the proposed development, there would be no structures placed within the post-development 100-year floodplain and the project would not contribute

to on-site and/or off-site flooding. After implementation of **Mitigation Measure 4.11b**, this impact would be reduced to **less than significant**.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. Some of the dwelling units proposed for omission are within the floodplain discussed above; therefore, the impact would be slightly reduced. Thus, the impact would remain **less than significant** after implementation of **Mitigation Measure 4.11b.**

Modified Transportation Alternative

The Modified Transportation Alternative proposes to construct the same number of dwelling units as and 7,000 fewer commercial square feet than the proposed project. This alternative would have a similar encroachment into the pre-development floodplain as the proposed project, specifically:

- In the northern portion of the site west of the drainage channel, proposed lot 40 would abut the mapped 100-year floodplain and grading for this lot would occur within the floodplain.
- In the central portion of the site west of the drainage channel, proposed lot 70 would abut the mapped 100-year floodplain and grading for this lot would occur within the floodplain.
- In the central portion of the site west of the drainage channel, the northeast and southeast corners of the proposed park site (Parcel F) would encroach within the mapped 100-year floodplain. No grading is indicated for the park site on the grading plans. While some grading would be expected within this parcel, the park would be designed to avoid grading within the floodplain.
- In the southern portion of the site west of the drainage channel, the eastern edge of the proposed multi-family site (Parcel C) is located within the mapped 100-year floodplain. The portion of the floodplain within this parcel ranges from approximately 25 to 150 feet wide.
- In the southern portion of the site east of the drainage channel, a small portion of proposed Blue Goose Drive, portions of proposed lots 184 and 227 and all (or nearly all) of proposed lots 227, 228, and 229 would be within the FEMA-designated 100-year floodplain. In addition, small portions of lots 228 and 229 are located within the mapped 100-year floodplain. A retaining wall would be constructed along the western boundary of lots 227, 228, and 229, which would result in the post-development floodplain being located outside of the lots.
- In the southern portion of the site, Doc Barnes Drive would be constructed through the FEMA-designated and the mapped 100-year floodplain. The roadway would be constructed

above the base flood elevation. Box culverts are proposed for Doc Barnes Drive to permit stormwater flows to pass with minimal water surface impacts (Appendix H).

The Modified Transportation Alternative would require the same process as the proposed project to apply for a CLOMR and receive a LOMR from FEMA as described in **Mitigation Measure 4.11b.** The impact of the Modified Transportation Alternative to on- or off-site flooding hazards due to placement of fill or structures in the 100-year floodplain would be **less than significant** after implementation of **Mitigation Measure 4.11b**.

IMPACT 4.11-4:	Project implementation could deplete groundwater supply.
SIGNIFICANCE:	No Impact
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	No Impact

Proposed Project

Domestic water service to the project site and surrounding residential development is provided by the Placer County Water Agency from existing contracts. The proposed project includes no on-site groundwater extraction to supply water demands of the project. Provision of water supplies is evaluated in further detail in Section 4.12, Public Services and Utilities.

The proposed project would increase the amount of impervious surfaces by developing roads, driveways, buildings, and hardscape landscaping. This increase in the overall area of impervious surface on the site would reduce the amount of infiltration of surface water to the near surface soils. According to the California Department of Water Resources, the project site is east of the North American subbasin of the Sacramento Valley Groundwater Basin, which covers 351,000 acres (548 square miles between the Bear River in the north, the Feather River in the west, and the Sacramento River in the south). The eastern boundary is a north/south line extending from the Bear River south to Folsom Lake, which passes approximately 2 miles east of the town of Lincoln from Sacramento to the northern boundary of California. In the project vicinity, the groundwater basin extends approximately 1 mile east of the I-80/State Route 65 interchange and extends northerly toward the Clover Valley area in the City of Rocklin (PCWA 2007). The project site is approximately 2 miles east of the groundwater basin. Thus, no recharge of the groundwater basin occurs directly from the project site. However, drainage that leaves the project site and enters Secret Ravine contributes to groundwater recharge once it travels into the groundwater basin area.

The proposed project would have no effect on infiltration patterns within the groundwater basin. As discussed in Impact 4.11-2, the proposed project would implement BMPs and stormwater detention to ensure that post-development stormwater flows are reduced to 90% or less of pre-development flow rates; however, the total volume of stormwater discharge from the site would not be reduced. Therefore, the project would have **no impact** to groundwater supply or recharge.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would slightly reduce the amount of impervious surfaces constructed at the site. However as the site is not a source of groundwater recharge, implementation of the measures proposed by the applicant to reduce impacts to biological resources would not change how the proposed project would affect groundwater supply. Thus, the impact would remain **no impact.**

Modified Transportation Alternative

Just like the proposed project, the Modified Transportation Alternative does not include on-site groundwater extraction, will increase the amount of impervious surfaces by developing roads, driveways, buildings, and hardscape landscaping, will have no effect on infiltration patterns within the groundwater basin, and will implement BMPs and stormwater detention. The Modified Transportation Alternative would have **no impact** to groundwater supply or recharge.

IMPACT 4.11-5:	Project construction and operation could contribute to cumulative violations of water quality standards and/or waste discharge requirements.
SIGNIFICANCE:	Less Than Significant
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

The geographic area for consideration of cumulative water quality impacts is the Town of Loomis, and the cumulative development scenario includes buildout of the Town of Loomis General Plan and the list of approved and proposed projects within the Town, as summarized in Section 4.1, Land Use. Future development within the Town could result in development of undeveloped land that could lead to potential increases in polluted runoff to local surface waters. However, future development, similar to the proposed project, would be subject to the NPDES

MS4 permit and would be required to comply with BMPs in the Placer County Stormwater Management Manual; LID measures to reduce pollutants; the Town's Grading Ordinance; General Plan policies related to hydrology and water quality; and the General Construction NPDES permit. New development and redevelopment projects would require implementation of plans that identify and implement a variety of BMPs to reduce the potential for erosion or sedimentation. Compliance with these regulations would ensure that each development in the cumulative scenario would not cause an increase in stormwater runoff rates or volumes and would not introduce new sources of surface water and groundwater pollution. Therefore, the cumulative impacts to water quality would be **less than significant**, and there would be no significant cumulative impact to which the project could contribute.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would not alter the potential for cumulative impacts associated with water quality. The cumulative impacts would remain **less than significant** and there would be no significant cumulative impact to which the project could contribute.

Modified Transportation Alternative

The Modified Transportation Alternative would slightly reduce the amount of development within the project site compared to the proposed project but would not alter the project's potential to contribute to cumulative impacts to water quality. The cumulative impacts would remain **less than significant** and there would be no significant cumulative impact to which this alternative could contribute.

IMPACT 4.11-6:	Project construction and operation could result in increased numbers of residents and structures exposed to a regional 100-year flood event in the cumulative scenario.
SIGNIFICANCE:	Less Than Significant
MITIGATION:	None
RESIDUAL SIGNIFICANCE:	Less Than Significant

Proposed Project

The geographic area for consideration of cumulative flooding hazards is the Town of Loomis, and the cumulative development scenario includes buildout of the Town of Loomis General Plan,

and the list of approved and proposed projects within the Town, as summarized in Section 4.1, Land Use. Future development would result in an increase in impervious areas, which could potentially result in increases in stormwater runoff and the exposure of residents and structures to a 100-year flood event. However, Natural Resources and Open Space Policy 6(a) of the Town of Loomis General Plan requires that all proposed structures and grading be constructed outside the post-development 100-year floodplain and the Placer County Stormwater Management Manual requires that development projects implement stormwater management sufficient to ensure that post-development stormwater discharge rates are reduced to 90% of the pre-project condition.

As discussed under Impact 4.11-3, the proposed project would reduce peak flows during the 2-year, 10-year, and 100-year storm events and would have a less-than-significant impact on flooding. Similar to the proposed project, other projects that would increase impervious area and the potential for runoff would be required to construct detention basins and/or implement BMPs on site in accordance with the reductions in peak flows off site required by the Placer County Stormwater Management Manual. Other projects in the region would implement similar BMPs and LIDs as the proposed project and would not cause an increase in flood elevations or the extent of the 100-year floodplain. Therefore, under the cumulative scenario, there would not be an increase in 100-year flood events or flood elevations and the cumulative impact would be **less than significant.** There would be no significant cumulative impact to which the project could contribute.

As stated above, the project applicant proposes to implement measures to increase avoidance of impacts to sensitive biological resources by removing 8 dwelling units from the project, thus reducing the unit count from the 426 dwelling units evaluated in the Draft EIR. This would result in slightly less increases in stormwater runoff from the project site and a slight reduction in the potential for the project to contribute to flooding in the region. Under the cumulative scenario, there would not be an increase in 100-year flood events or flood elevations and the cumulative impact would be **less than significant.** There would be no significant cumulative impact to which the project could contribute.

Modified Transportation Alternative

The Modified Transportation Alternative would slightly reduce the amount of development within the project site compared to the proposed project but would not alter the project's potential to contribute to cumulative impacts associated with flooding. Under the cumulative scenario, there would not be an increase in 100-year flood events or flood elevations and the cumulative impact would be **less than significant.** There would be no significant cumulative impact to which the project could contribute.

4.11.4 Mitigation Measures

4.11a Prior to issuance of a grading permit, the project applicant shall submit a final drainage report for approval to the Town of Loomis (Town) that includes the necessary design parameters for each proposed detention basin to ensure that the post-development stormwater runoff rate at each point of discharge from the project site is reduced to 90% or less of the pre-development runoff rate and that relies upon the peak flow factors specified in the 2011 Dry Creek Watershed Flood Control Plan. The project applicant shall also submit the Conditional Letter of Map Revision application.

4.11b Prior to issuance of a grading permit, the project applicant shall submit to the Town of Loomis a completed application to the Federal Emergency Management Agency (FEMA) requesting a Conditional Letter of Map Revision. The hydrology and hydraulic modeling included with the Conditional Letter of Map Revision application shall be based on the 2011 Dry Creek Watershed Flood Control Plan peak flow factors. At completion of construction of the components of the project within the existing FEMA-designated 100-year floodplain, the project applicant shall submit to the Town of Loomis as-built engineering plans for the project site. The Letter of Map Revision shall be issued by FEMA prior to issuance of a certificate of occupancy for any lot within the FEMA-designated 100-year floodplain.