Memorandum

Date: August 19, 2021

To: Mr. Robin Miller, Director of Development, Trumark

From: Richard Grassetti, Grassetti Environmental Consulting

Subject: Determination of Consistency of the Dutton Meadows Project with the Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation Project Environmental Impact Report

Introduction

The California Environmental Quality Act (CEQA) includes several exemptions and streamlining provisions that are intended to reduce the amount of duplicative environmental analysis required for projects that are consistent with the level of development anticipated and fully analyzed in a previously certified environmental document. Government Code Section 65457(a) states that CEQA does not apply to any residential development project (including any subdivision) or any zoning change that is undertaken to implement, and is consistent with, a Specific Plan for which an Environmental Impact Report (EIR) was certified after January 1, 1980. Government Code Section 65457 is implemented by CEQA in Article 12: Special Situations Sections 15182(a) and 15183. Notwithstanding the exceptions found in CEQA Guidelines Section 15162, if the project is consistent with a specific plan for which an EIR has been certified, it ordinarily is statutorily exempt from further CEQA review.

This memorandum summarizes the analysis and conclusions of a series of technical studies that were conducted to analyze the potential impacts of the Dutton Meadows Project (project). The parcels that comprise the project site were previously analyzed within the Roseland Area/ Sebastopol Road Specific Plan and Roseland Area Annexation Project EIR (2016 Specific Plan EIR), which was certified by the City in 2016[1]. The 2016 Specific Plan EIR was written and specifically intended to be used by the City of Santa Rosa as the environmental document for subsequent projects (Specific Plan EIR, page 1.0-2). The project site is also addressed in the City's General Plan 2035 and the certified EIR for the General Plan (General Plan EIR).

The following technical studies were prepared to assist in determining whether the proposed project is consistent with the development anticipated and analyzed within the 2016 Specific Plan EIR and the General Plan EIR:

[1] City of Santa Rosa. 2016. Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation Projects Environmental Impact Report. August. Website: https://www.srcity.org/2437/Roseland-Area-Projects-Environmental-Imp. Accessed February 20, 2021.

- Air Quality and Greenhouse Gas Analysis Technical Report
- Noise Technical Report
- Cultural Resources Assessment
- Biological Resources Analysis
- Arborist Report
- Phase 1 Environmental Site Assessment
- Traffic Impact Study

Based on the supporting technical analyses contained in this memorandum, the proposed Dutton Meadows Project is found to be consistent with the development anticipated and analyzed in the 2016 Specific Plan EIR, and also meets the criteria for a finding of consistency under Government Code 65457, as implemented, in accordance with CEQA Guidelines Sections 15182(a) and 15183.

Prior CEQA Review and Approvals

Residential development of the proposed project area was envisioned and evaluated in the 2000 Southwest Santa Rosa Redevelopment Projects EIR and, for topics not addressed in that document, the 2005 Dutton Meadows Project Final Subsequent Environmental Impact Report (2005 SEIR). The Southwest Santa Rosa Projects EIR implemented the Southwest Santa Rosa Area Plan, which formed the Specific Plan for this area, consistent with the Santa Rosa 2020 General Plan. The Southwest Santa Rosa Area Plan area, including the project site, was part of the larger area addressed in the 2016 Roseland Area/ Sebastopol Road Specific Plan and Roseland Area Annexation Project EIR.

Project Site Location

The proposed project site is located east of Dutton Meadow (road) and south of Hearn Avenue School in the Southwest Santa Rosa Neighborhood in the City of Santa Rosa. The proposed site is on about 18.7 acres comprised of five parcels, APN numbers: 043-071-023, 043-071-022, 043-071-007, 043-191-016, and 043-191-024.

The project site is immediately east of Dutton Meadow and Dutton Meadow Elementary School. The project site is bordered to the south by a recently constructed residential development and an undeveloped parcel. Hearn Avenue and single-family residences occur on the northern project site boundary. Several additional undeveloped parcels containing fallow fields occur to the east of the project site. The project is located entirely within the City of Santa Rosa's Roseland Area/Sebastopol Road Specific Plan area[2], which was approved by the City in 2016 pursuant to the 2016 Specific Plan EIR.

Project Description

The Dutton Meadows Project proposes to construct 137 single-family detached units on the site, resulting in a density of approximately 7.4 dwelling units/acre. There is no commercial or industrial component.

[2] City of Santa Rosa. 2016. Roseland Area/Sebastopol Road Specific Plan. Website: https://srcity.org/DocumentCenter/View/18332/Roseland-AreaSebastopol-Road-Specific-Plan?bidId=. Accessed February 22, 2021

General Plan Land Use and Density Consistency

The Santa Rosa General Plan 2035 ("GP")[3], completed in November 2009, envisioned development of this Property as a "mixed use center" and specifically as a "community shopping center". These designations allow for a complex of retail services and enterprises in addition to residential development at a density not specified in the GP. At that time, the parcels making up the project property were zoned as "PD" for planned development.

The Roseland Area/Sebastopol Road Specific Plan (SP), completed in November 2016, was the basis for re-zoning the majority of the property (western portion) to "Medium-Low Residential" (M-LR) and a small portion of the property (less than 4.5 acres) to "Low Residential" ("LR"). The SP describes these areas as permitting the following: attached and detached single-family and detached multi-family development in the M-LR area; and detached single-family development in the LR area. With respect to the western majority portion of the project site, the SP land use map shows a change in the land use designation from Medium Density/Retail and Business Services to M-LR.

The density/intensity for the M-LR designation is noted in the SP as 8 to 13 dwelling units/gross acre, and 2 to 8 dwelling units/gross acre in the LR area. However, it is our understanding that, for the purposes of analysis of the potential impacts of development in this area in the SP, 10 dwelling units/acre with 85% of the units being single family and 15% as multifamily were used for the M-LR area analysis, and 5 dwelling units/acre at 100% single family were used for the LR area.

It appears that approximately 14.5 acres of the five parcels that make up the Project area are in the M--LR zoning area, while a remaining approximately four acres are in the LR area. Therefore, the SP envisioned approximately 145 single family and 22 multi-family units across the approximately 18.5-acre project area for a total of 167 units envisioned in the SP for the project area. The unit calculations are summarized by parcel in the table below.

APN	Acreage	Land Use Designation	Units/Acre	Units	Multiple Family	Single Family
043-071-007	8	M-L	10	80	12	68
043-071-022	3.55	M-L	10	35.5	5.32	30.17
043-071-023	0.52	M-L	10	5.17	0.78	4.39
043-191-016	1.93	M-L	10	19.3	2.9	16.40
043-191-024	4.68	Mixed M-L, L	10 (M-L), 5 (L)	5.96 (M-L), 20.42 (L)	0.89 (M-L)	5.07 (M-L), 20.42
Total Units (rounded)					**22**	**145**

The project proposes 137 single-family detached units across the approximately 18.5 acres of the Project property, resulting in a density of approximately 7.4 dwelling units/acre. The low-density portion of the site is approximately 3.6 acres with approximately 30 units with a density at this portion of the site resulting in approximately 7.69 units/acre.

[3] Santa Rosa General Plan 2035, https://srcity.org/392/General-Plan accessed February 21, 2021

This total unit count is well below the 167 units contemplated in the SP, and results in a density level well within or below the ranges set forth in the SP for both the M-LR and LR zones. Therefore both the land use type and density of the proposed project is consistent with General Plan land use designations.

Specific Plan Policy Consistency

The project's conformity with applicable policies from the Roseland Area/Sebastopol Road Specific Plan are addressed in Table 1 below. The project would be generally consistent with these policies.

TABLE 1: PROJECT SPECIFIC PLAN POLICY CONFORMANCE

Goal/Policy	**Project Conformance**
Policy R-1.1 Include a variety of housing types near workplaces, schools, parks, stores, and amenities.	Project would add housing types to the area.
Policy R-1.2 Utilize the Santa Rosa Design Guidelines to ensure that new higher-density development along Hearn Avenue, near the Southside Bus Transfer Center, is attractive and compatible with the surrounding neighborhood.	The project as proposed is designed with single-family detached homes, which are typical along Hearn Ave. Lots fronting on Hearn Ave. are typically 34 feet wide by 99 feet deep or 3,366 SF each, which are smaller than many of the other lots throughout the subdivision.
Policy R-1.4 Encourage community pride by promoting beautiful and safe neighborhoods and quality of life.	The project would be a modern, landscaped community, and includes community open space.
Policy AH-1.1 Promote inclusion of second dwelling units in new and existing single-family neighborhoods to provide a smaller, more affordable housing option.	The applicant supports future residents to pursue ADU's where appropriate in the future subdivision.
Policy AH-1.2 Encourage new residential development to include a mix of housing types, such as single-family residences with duplexes and triplexes, townhomes, and apartment units, for all income levels.	The project has been designed to provide a variety of traditional 2-story homes at price-points attainable by young families and first-time home buyers. These smaller family-oriented homes range in size from 1,680 to 2,181 square feet with either 3 or 4 bedrooms. 79 lots of the 137 lots are proposed in smaller-lot, alley-loaded layouts. The remaining 58 lots are traditional front-loaded homes ranging in size between 1,692 to 2,181 square feet, on lot widths varying between 40 to 45' in minimum width.

	These smaller single-family homes types are reflective of the surrounding neighborhood and mindful of the current traffic constraints associated with neighbors located adjacent to Hearn Ave.
Policy AH-1.3 Encourage the development of quality, well-built, attractive market-rate and below- market-rate housing units that contribute to neighborhood character and quality of life.	The project would include well-built, quality homes for market rate contributing to the neighborhood.
Policy AH-1.4 Encourage the integration of market-rate housing with affordable units at the project level as well as at the neighborhood level to encourage housing for all income levels within the plan area.	Due to the site constraints and the necessity to fulfil the City's Traffic Circulation Plan for North Point Parkway and Dutton Meadows (which takes up approximately 3 acres of the 19-acre site) the applicant will utilize the City's in lieu fee to help fund future affordable housing projects.
Policy AH-1.5 Encourage residential development that meets the special needs of population groups including seniors, large and small families, low- and middle-income households, and people of all abilities.	Most of the proposed homes have been designed to accommodate families and empty nesters with the bedrooms at the second floor. One of the proposed floor plans has been designed with bedrooms at the ground floor to accommodate aging in place.
Policy RN-1.1 Improve connections by creating new streets or extensions of existing streets, as identified in Figure 4-1 and Table 4-1.	Proposed project circulation system conforms to Figure 4-1 and table 4-1.
Policy RN-1.2 Require dedication of right-of-way and related street improvements or new streets as identified in the Circulation Plan when properties develop.	The proposed project meets street classifications shown the specific plan Roadway Network on F 4-1. Adequate right-of-way will be dedicated to accommodate those proposed street improvements.
Policy RN-1.3 Enhance existing intersections along major arterials to improve traffic flow through use of coordinated or adaptive signal timing and/or dedicated turn pockets, as identified in Table 4-2.	This policy requires action by the City to implement timing for multiple signals along the arterials. The TIS indicates that, with existing timing, the signals will continue to operate acceptably upon adding project-generated traffic to both existing and future volumes. No action on the project's part is needed. The new intersection at Dutton Meadow and the Northpoint Parkway extension part of the project supports RN-1.3 as it enhances flow on a major arterial.

Policy RN-1.4 Implement coordinated or adaptive signal timing along arterials to improve traffic flow, using intelligent transportation systems (ITS) strategies rather than roadway widening to maximize roadway efficiency, minimize congestion, and reduce greenhouse gas emissions.	This policy also requires action on the part of the City to implement coordinated timing that uses the most current technology in lieu of roadway widening. The project proposes a new intersection and roadway width as part of the Specific Plan Circulation element to improve traffic flow.
Policy RN-3.1 Prioritize and secure funding for the planned widening of the Hearn Avenue overcrossing and associated interchange improvements to relieve existing congestion and improve multimodal connectivity.	The project will be required to pay their development impact fees.
Policy RN-3.3 Ensure convenient pedestrian and bicycle connections to and from the bus transfer center with new linked bike lanes and paths, as shown on the Pedestrian and Bicycle Network map (Figure 4-3).	The project proposes bike lanes along the improved Dutton Meadow and Northpoint Parkway street improvements as shown on the Pedestrian and Bicycle Network Map.
Policy RN-5.1 Ensure all paths, streets, and crossings are designed to be safely accessed by all users, in accordance with the Americans with Disabilities Act (ADA).	All project sidewalks, paths, and streets will be designed to meet ADA accessibility standards.
Policy PBN-1.5 Require dedication of right-of-way for improvements and/or expansion of pedestrian and bicycle facilities where insufficient right-of-way currently exists.	The project proposes right of way dedication and pedestrian and bicycle facilities along the existing Dutton Meadow project frontage to meet specific plan street classifications.
Policy PBN-4.2 Provide crosswalk enhancements near schools, parks, and high-volume pedestrian areas.	Crosswalks and a signaled intersection are proposed at the intersection of Dutton Meadow and North Point Parkway and the school to allow for safe routes to and from the school.
Policy PF-1.7 Encourage new housing developments to provide privately maintained recreational and community activity spaces.	To meet the City's zoning density requirements and the City's traffic circulation plans, the majority of the recreational and community activity spaces are planned to be in the future four-acre park property adjacent to the project site.

Policy U-1.2 Provide utility upgrades to ensure water and wastewater services support new development in the area.	Utilities shall be upgraded as needed to support the new development.
Policy U-1.5 Underground overhead utilities to enhance visibility for motorists and residents and to minimize risks associated with electrically charged aboveground facilities.	Overhead utilities on Dutton Ave. would be undergrounded.

Dutton Meadows Project Consistency with Specific Plan EIR

Table 2, below, provides a comparative summary of the potential impacts of the Dutton Meadows Project impacts with the impacts identified in the Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation Project EIR. The applicability and effectiveness of each Specific Plan mitigation measure to the Dutton Meadows project's potential impacts are indicated on the table.

TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
3.1 Aesthetics				
Impact 3.1.1 The proposed project would result in development on previously undeveloped parcels in the project area that could block views of scenic vistas from surrounding properties.	LTS	Project construction would not obstruct any scenic views.	None required	LTS
Impact 3.1.2 The proposed project would not substantially damage scenic resources within a state scenic highway.	NI	Project is not within the viewshed of a State Scenic Highway	None required	LTS
Impact 3.1.3 The proposed project could change the existing visual character of the project area by allowing new development on currently vacant and underutilized parcels.	LTS	Project change to site's visual character would not be substantially adverse.	None required	LTS
Impact 3.1.4 The proposed project would introduce new sources of light or glare.	LTS	Project street lighting would be shielded and similar to lighting in nearby residential development.	None required	LTS
Impact 3.1.15: The proposed project, in combination with other planned and recently approved projects in the project area, would result in a less than cumulatively considerable impact on the visual character of the city.	LCC	While the project would contribute to the urbanizing character of southwest Santa Rosa, the aesthetic	None required	LTS

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		impact of this urbanization would not be substantially adverse.		
3.2 Agricultural Resources				
Impact 3.2.1 The Specific Plan area and the Annexation Areas do not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, the proposed project would not convert any important farmland.	NI	No change from SP EIR	None required	NI
Impact 3.2.2 The proposed project would not contribute to cumulative impacts on agricultural resources.	LTS	No change from SP EIR	None required	NI
Air Quality				
Impact 3.3.1 Subsequent land use activities associated with implementation of the proposed project would not conflict with the Bay Area 2010 Clean Air Plan.	LTS	The project would not conflict with or obstruct implementation of the applicable air quality plan.	None required	LTS
Impact 3.3.2 Subsequent land use activities associated with implementation of the proposed project would not conflict with the Bay	LTS	The project would not violate air quality standards or contribute	None required	LTS

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Area 2010 Clean Air Plan or result in vehicle miles traveled increases greater than the projected population increases over the project's planning period.		substantially to an existing or projected air quality violation.		
Impact 3.3.3 The proposed project could result in short-term construction emissions that could violate or substantially contribute to a violation of federal and state standards.	PS/LTS	The project could result in short-term construction emissions that could violate or substantially contribute to a violation of federal and state standards, but this impact would be reduced to less than significant with implementation of Mitigation Measure 3.3.3 of the 2016 Specific Plan EIR.	MM 3.3.3 Where projects in the project area are subject to subsequent CEQA review, the City of Santa Rosa must ensure that in addition to the BAAQMD basic construction mitigation measures from Table 8-1 of the BAAQMD CEQA Air Quality Guidelines (or subsequent updates), BAAQMD additional mitigation measures from Table 8-2 of the BAAQMD CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents and implemented. These measures include the following: 1. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.	LTS

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			2. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. 3. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity. 4. Vegetative ground cover (e.g., fast- germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. 5. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall	

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			be phased to reduce the amount of disturbed surfaces at any one time. 6. All trucks and equipment, including their tires, shall be washed off prior to leaving the site. 7. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12-inch compacted layer of wood chips, mulch, or gravel. 8. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent. 9. Minimizing the idling time of diesel-powered construction equipment to two minutes. 10. The project shall develop a plan demonstrating that the off-road equipment (more than 50	

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			horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent CARB fleet average. 11. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings). 12. Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM. 13. Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road	

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			heavy- duty diesel engines.	
Impact 3.3.4 The proposed project would not contribute to localized concentrations of mobile-source carbon monoxide (CO) that would exceed applicable ambient air quality standards.	LTS	The project would not expose sensitive receptors to substantial pollutant concentrations.	None required	LTS
Impact 3.3.5 The proposed project could result in increased exposure of existing or planned sensitive land uses to construction-source toxic air contaminant (TAC) emissions.	PS/LTS	The project could result in increased exposure of sensitive land uses to construction-source TAC emissions, but this impact would be reduced to less than significant with implementation of Mitigation Measure 3.3.5 of the 2016 Specific Plan EIR.	MM 3.3.5 Projects within the project area that have a construction area greater than 5 acres and which are scheduled to last more than two years shall be required to prepare a site-specific construction pollutant mitigation plan in consultation with Bay Area Air Quality Management District (BAAQMD) staff prior to the issuance of grading permits. A project-specific construction-related dispersion model acceptable to the BAAQMD shall be used to identify potential toxic air contaminant impacts, including diesel particulate matter. If BAAQMD risk thresholds (i.e., probability of contracting cancer is	

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			greater than 10 in one million) would be exceeded, mitigation measures shall be identified in the construction pollutant mitigation plan to address potential impacts and shall be based on site-specific information, such as the distance to the nearest sensitive receptors, project site plan details, and construction schedule. The City shall ensure construction contracts include all identified measures. Construction pollutant mitigation plan measures shall include but not be limited to limiting the amount of acreage to be graded in a single day, requiring the use of advanced particulate filters on construction equipment, and requiring the use of alternative fuels, such as biodiesel, to power construction equipment.	
Impact 3.3.6 The proposed project could result in the development of housing units (sensitive land uses) near stationary or mobile-source TACs.	PS/LTS	The project would not expose sensitive receptors to substantial pollutant concentrations.	MM 3.3.6 The following measures shall be utilized in site planning and building designs to reduce TAC and PM2.5 exposure where new receptors are located within 1,000 feet of emissions sources:	LTS

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			• Future development in the project area that includes sensitive receptors (such as residences, schools, hospitals, daycare centers, or retirement homes) located within 1,000 feet of US 101 and/or stationary sources shall require site-specific analysis to determine the level of health risk. This analysis shall be conducted following procedures outlined by the BAAQMD. If the site-specific analysis reveals significant exposures from all sources (i.e., health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a hazard Index greater than 10, or annual PM2.5 exposures greater than 0.8 µg/m3), measures shall be	

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			employed to reduce the risk to below the threshold (e.g., electrostatic filtering systems or equivalent systems and location of vents away from TAC sources).	
Impact 3.3.7 Future development within the project area would not result in exposure of sensitive receptors to substantial odorous emissions.	LTS	The project would not expose sensitive receptors to substantial odorous emissions.	None required	LTS
Impact 3.3.8 The proposed project, in combination with cumulative development in the SFBAAB, could result in a significantly cumulative increase of criteria air pollutants for which the air basin is designated nonattainment.	CC	Same as described in SPEIR	Implement mitigation measure MM 3.3.3	LCC
3.4 Biological Resources				
Impact 3.4.1 Implementation of the proposed project could result in adverse effects, either directly or indirectly, on species listed as endangered, threatened, rare, proposed, and candidate plant and wildlife species as	PS/LTS	No change from SP EIR. Potential impact to rare plants, nesting birds and bats, and California tiger salamanders.	*MM 3.4.1a:* Implement General Plan Mitigation Measure 4.F- 5: The City of Santa Rosa shall incorporate the avoidance and mitigation measures described in the Santa Rosa Plain Conservation Strategy and the USFWS	LTS

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well as plant species identified by the CNPS with a rating of List 1A or 1B.			Programmatic Biological Opinion, as conditions of approval for development in or near areas with suitable habitat for California tiger salamander, Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and many flowered navarretia. However, in accordance with the USFWS Programmatic Biological Opinion, projects within the Southwest Santa Rosa Preserve System will be evaluated individually and mitigation may not necessarily adhere to the ratios described in the Conservation Strategy. *MM 3.4.1b:* If there is the potential for destruction of a nest or substantial disturbance to nesting birds or bats due to construction activities, a plan to monitor nesting birds or bats during construction shall be prepared and submitted to the USFWS and CDFG for review and approval. The City shall comply with all USFWS or CDFG guidance for protection of nesting birds. If	

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			vegetation, buildings, or bridges that potentially provide nesting sites must be removed, a qualified wildlife biologist shall conduct pre-construction surveys. If an active bird nest is found, the bird shall be identified as to species and the approximate distance from the closest work site to the nest estimated. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non- special-status bird species. Disturbance of active nests shall be avoided to the extent possible until it is determined that nesting is complete and the young have fledged. Bats shall be absent or flushed from roost locations prior to demolition of buildings. If flushing of bats from buildings is necessary, it shall be done by a qualified biologist during the non-breeding season from October 1 to March 31. When flushing bats, structures shall be moved carefully	

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			to avoid harming individuals, and torpid bats given time to completely arouse and fly away. During the maternity season from April 1 to September 30, prior to building demolition or construction, a qualified biologist shall determine if a bat nursery is present at any sites identified as potentially housing bats. If an active nursery is present, disturbance of bats shall be avoided until the biologist determines that breeding is complete and young are reared.	
Impact 3.4.2 Implementation of the proposed project could result in direct and indirect loss of habitat and individuals of animal and plant species of concern and other non-listed special- status species.	PS/LTS	No change from SP EIR.	Implement S.P. Mitigation Measures MM 3.4.1a. and MM 3.4.1b	
Impact 3.4.3 Implementation of the proposed project could result in disturbance and degradation of riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	LTS	No change from SP EIR.	None required	

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TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
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Impact 3.4.4 Implementation of the project would result in the loss or degradation of protected wetlands or vernal pools.	PS/LTS	Biological Resources Analysis (Appendix D to this memo) found no vernal pools, wetlands, or other agency-regulated waters onsite.	*MM 3.4.2a*: Implement Mitigation Measure 3.4.1a *MM 3.4.2b:* A formal wetland delineation shall be conducted for areas that will be permanently or temporarily impacted by the project. If jurisdictional waters cannot be avoided, the City shall apply for a CWA Section 404 permit from the USACE and a Section 401 permit from the RWQCB. These permits shall be obtained prior to issuance of grading permits and implementation of the proposed project. The City shall ensure that the project will result in no net loss of waters of the U.S. by providing mitigation through impact avoidance, impact minimization, and/or compensatory mitigation for the impact, as determined in the CWA Section 404/401 permits. Compensatory mitigation may consist of (a) obtaining credits from a mitigation bank; (b) making	N/A. No vernal pools or wetlands onsite.

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			a payment to an in-lieu fee program that will conduct wetland, stream, or other aquatic resource restoration, creation, enhancement, or preservation activities (these programs are generally administered by government agencies or nonprofit organizations that have established an agreement with the regulatory agencies to use in-lieu fee payments collected from permit applicants); and/or (c) providing compensatory mitigation through an aquatic resource restoration, establishment, enhancement, and/or preservation activity. This last type of compensatory mitigation may be provided at or adjacent to the impact site (i.e., on-site mitigation) or at another location, usually within the same watershed as the permitted impact (i.e., off-site mitigation). The project proponent/ permit applicant retains responsibility for the	

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			implementation and success of the mitigation project. Evidence of compliance with this mitigation measure shall be provided prior to construction and grading activities for the proposed project.	
Impact 3.4.5 Implementation of the project could interfere with movement of native resident or migratory fish or wildlife species or establish migratory corridor.	LTS	No change from SP EIR.	None required	N/A
Impact 3.4.6 Implementation of the project will not result in a conflict with a local policy or ordinance protecting biological resources.	NI	No change from SP EIR	None required	NI
Impact 3.4.7 Development in the project area would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved Conservation Plan.	NI	No change from SP EIR	None required	N/A
Impact 3.4.8 Development in the project area, when considered together with other past, existing, planned future projects, would	LCC	No change from SP EIR	None required	LCC with all project mitigation measures incorporated

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result in a significant cumulative impact to biological resources in the region.				
3.5 Cultural Resources				
Impact 3.5.1 Redevelopment within the project area could affect historic properties through modification of historic character and though construction activities.	LTS	Same as SP EIR	None required	LTS
Impact 3.5.2 If future projects constructed in the project area involve ground disturbance, implementation of the proposed project could result in the disturbance of known and undiscovered archaeological resources or cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074.	PS/LTS	Same as SP EIR	*MM 3.5.2a:* Phase 1 Archaeological Resource Study. When specific projects are proposed within the project area that involve ground-disturbing activity, a site-specific Phase I archaeological resource study shall be performed by a qualified archaeologist or equivalent cultural resources professional that will include an updated records search, pedestrian survey of the project area, development of a historic context, sensitivity assessment for buried prehistoric deposits, and preparation of a technical report that meets federal and state requirements. If significant or unique resources are identified and cannot be avoided,	LTS

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			treatment plans will be developed in consultation with the City and appropriate Native American representatives to mitigate potential impacts to less than significant based on the provisions of Public Resources Code Section 21083.2. *MM 3.5.2b:* Should any archaeological artifacts be discovered during construction of any project allowed under the Specific Plan, all construction activities shall be halted immediately within 50 feet of the discovery, the City shall be notified, and a professional archaeologist that meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in archaeology and/or history shall be retained to determine the significance of the discovery. The professional archaeologist shall prepare a plan to identify, record, report, evaluate, and recover the resources as necessary, which	

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			shall be implemented by the developer. Construction within the area of the discovery shall not recommence until impacts on the archaeological resource are mitigated as described in Mitigation Measure MM 3.5.2a. Additionally, Public Resources Code Section 5097.993 stipulates that a project sponsor must inform project personnel that collection of any Native American artifacts is prohibited by law.	
Impact 3.5.3 If future projects constructed under the Specific Plan involve ground disturbance, implementation of the proposed project could result in the disturbance of human remains.	PS/LTS	Same as SP EIR	*MM 3.5.3a:* Implement Mitigation Measure MM 3.5.2a (Phase 1 Archaeological Resource Study). *MM 3.5.3b:* Should human remains be discovered during construction of any project allowed under the Specific Plan, all construction activities shall be halted immediately within 50 feet of the discovery, the City shall be notified, and the Sonoma County Coroner shall be notified, according to Section 5097.98 of the State Public Resources Code	LTS

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			and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed.	
Impact 3.5.4 Implementation of the proposed project, along with any foreseeable development in the project vicinity, could contribute to cumulative impacts to cultural resources.	LCC	Same as SP EIR	None required	LTS
3.6 Geology and Soils				
Impact 3.6.1 Subsequent projects developed as a result of implementation of the proposed project could be at risk from seismic hazards.	LTS	Same as SP EIR	None required	LTS
Impact 3.6.2 Construction of subsequent projects developed as a result of implementation of the proposed project could result in temporary erosion impacts.	LTS	Same as SP EIR	None required	LTS

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Impact 3.6.3 Subsequent projects developed as a result of implementation of the proposed project could be constructed on soils that are expansive or have other physical characteristics that could result in unstable conditions.	LTS	Same as SP EIR	None required	LTS
Impact 3.6.4 Subsequent projects developed as a result of implementation of the proposed project, in addition to other proposed and approved projects in the vicinity, would not cumulatively create any new or exacerbate any identified geological or soils impacts.	LCC	Same as SP EIR	None required	LCC
3.7 Greenhouse Gas Emissions				
Impact 3.7.1 The project would not conflict with an applicable plan adopted for the purpose of reducing GHG emissions.	LCC	Same as SP EIR; See AQ/GHG Assessment (Appendix A to this memo).	None required	LCC
3.8 Hazards and Hazardous Materials				
Impact 3.8.1 Implementation of the proposed project would result in the use, storage, and transport of hazardous materials. Accidental release of these materials could	LTS	Minimal project use, storage, and transport of hazardous materials	None required	LTS

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constitute a hazard to the public or the environment.		– mostly during construction.		
Impact 3.8.2 New development in the project area would lead to an associated increase in use of hazardous materials. The proposed project therefore has potential to result in an increased risk of accidental release of hazardous materials.	LTS	Same as SP EIR	None required	LTS
Impact 3.8.3 Several schools are located within and in the vicinity of the project area. Hazardous materials or substances may be handled in the vicinity of these schools.	LTS	Nearby school would not be significantly affected due to minimal use and storage of hazardous materials.	None required	LTS
Impact 3.8.4 Review of environmental hazards databases conducted in association with the proposed project identified hazardous materials sites in the project area.	PS/LTS	Site-specific Phase I assessment identified some features of concern. and identified measures to reduce the potential hazards to a less-than-significant	*MM 3.8.4a:* Phase I Environmental Site Assessment. Developers shall be required to complete a Phase I environmental site assessment for each property to be developed or redeveloped. If a Recognized Environmental Condition (REC) is identified in a Phase I environmental site	LTS

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			assessment, a Phase II environmental site assessment shall be prepared to determine whether conditions are present that require remediation or other controls to minimize the potential for hazardous materials contamination to adversely affect public health and the environment. If remediation is required, developers shall complete site remediation in accordance with OSHA standards and Santa Rosa Fire Department, Sonoma County Environmental Health Department, and State Water Resources Control Board guidelines. The Department of Toxic Substances Control (DTSC) may become involved wherever toxic levels of contaminants are found that pose an immediate hazard. Remediation shall reduce human exposure risk and environmental hazards, both during and after construction. The remediation plan shall be prepared in accordance with the environmental consultant's	

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			recommendations and established procedures for safe remediation. Specific mitigation measures designed to protect human health and the environment will be provided in the plan. Requirements shall include but not be limited to the following: 1. Documentation of the extent of previous environmental investigation and remediation at the site, including closure reports for underground storage tanks (USTs) and contaminant concentrations. 2. A site-specific health and safety plan to be prepared by all contractors at the project site, where applicable. This includes a plan for all demolition, grading, and excavation on the site, as well as for future subsurface maintenance	

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			work. The plan shall include appropriate training, any required personal protective equipment, and monitoring of contaminants to determine exposure. The Health and Safety Plan shall be reviewed and approved by a certified industrial hygienist. 3. Description of protocols for the investigation and evaluation of previously unidentified hazardous materials that could be encountered during project development, including engineering controls that may be required to reduce exposure to construction workers and future users of the site. 4. Requirements for site-specific construction techniques that would minimize exposure to any	

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			subsurface contamination, where applicable, which shall include treatment and disposal measures for any contaminated groundwater removed from excavations, trenches, and dewatering systems in accordance with local and Regional Water Quality Control Board guidelines. 5. Sampling and testing plan for excavated soils to determine suitability for reuse or acceptability for disposal at a state-licensed landfill facility. 6. Restrictions limiting future excavation or development of the subsurface by residents and visitors to the proposed development, and prohibition of groundwater development should it be determined from test	

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			results that contamination is present. The restrictions would be developed based on site-specific conditions and would reflect the requirements of the RWQCB and/or DTSC, depending on which agency is responsible for oversight of the particular site. 7. Restrictions, which are sometimes also referred to as land use covenants, shall be recorded with the parcel(s), shall run with the land. The developer or land owner successor(s)-in-interest shall be responsible for ensuring development complies with the restrictions. Compliance with the restrictions must be demonstrated to the satisfaction of the City before a grading permit is issued.	

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			8. Completion of an approved remediation plan should land use restrictions be insufficient to allow development to proceed safely. Remediation measures may include excavation and replacement of contaminated soil with clean fill, pumping and treatment of groundwater, thermal treatment, etc. *MM 3.8.4b:* In the event previously unknown contaminated soil, groundwater, or subsurface features are encountered or have the potential be present during ground-disturbing activities at any site, work shall cease immediately, and the developer's contractor shall notify the City of Santa Rosa Fire Department for further instruction. The City shall ensure any grading or improvement plan or building permit includes a statement specifying that if	

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			hazardous materials contamination is discovered or suspected during construction activities, all work shall stop immediately until the City of Santa Rosa Fire Department has determined an appropriate course of action. Such actions may include, but would not be limited to, site investigation, human health and environmental risk assessment, implementation of a health and safety plan, and remediation and/or site management controls. The City of Santa Rosa Fire Department shall be responsible for notifying the appropriate regulatory agencies and providing evidence to the City Planning and Economic Development Department that potential risks have been mitigated to the extent required by regulatory agencies. Work shall not recommence on an impacted site until the applicable regulatory agency has determined further work would not pose an unacceptable human health or	

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			environmental risk. Deed restrictions may be required as provided under mitigation measure MM 3.8.4a.	
Impact 3.8.5 The proposed project could have an impact on area roadways used to respond to hazardous materials incidents and/or for emergency evacuations.	LTS	Project would not adversely affect emergency access and evacuations.	None required	LTS
Impact 3.8.6 Implementation of the proposed project, in combination with other existing and reasonably foreseeable future projects, may result in cumulative hazards and hazardous materials impacts.	LCC	Project would not contribute in a cumulatively considerable manner to any cumulative increase in hazards/health risk.	None required	LCC
3.9 Hydrology and Water Quality				
Impact 3.9.1 Construction and operation of subsequent projects in the project area could generate stormwater runoff containing pollutants from construction sites and new impervious surfaces, which could affect water quality.	LTS	Same as SP EIR – project includes SWPPP and detention facilities.	None required	LTS
Impact 3.9.2	LTS	Same as SP EIR	None required	LTS

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Future development in the project area would not significantly deplete groundwater supplies or alter the area available for recharge of the groundwater aquifer.				
Impact 3.9.3 Future development in the project area could increase impervious surfaces and, as a result, alter drainage patterns and increase drainage rates over existing conditions.	LTS	Same as SP EIR – project stormwater plan would reduce impact to LTS.	None required	LTS
Impact 3.9.4 Future development in the project area may result in increased runoff and flows to the municipal storm drain system.	LTS	Project would be required to limit peak flows to existing levels, therefore stormwater facility impact would be LTS.	None required	LTS
Impact 3.9.5 Future development in the project area may occur in areas subject to flooding hazards.	LTS	LTS – no flood hazards on the site.	None required	LTS
Impact 3.9.6 The proposed project, in combination with existing, approved, proposed, and reasonably foreseeable development in the Laguna de Santa Rosa watershed, would	LCC	Same as SP EIR	None required	LTS

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alter drainage conditions, rates, volumes, and water quality, which could result in potential flooding and stormwater quality impacts in the overall watershed.				
3.10 Land Use and Planning				
Impact 3.10.1 The proposed project would not divide an established community.	LTS	Project is infill in existing community.	None required	LTS
Impact 3.10.2 The proposed conflict with applicable land use plans.	LTS	Project density and land use are consistent with SP and Zoning.	None required	LTS
Impact 3.10.3 Implementation of the proposed project would not significantly contribute to adverse cumulative impacts related to land use including conflicts with applicable land use plans.	LCC	Same as SP EIR	None required	LTS
3.11 Noise				
Impact 3.11.1 The proposed project would not expose residents to traffic noise or stationary sources of noise in excess of established standards.	LTS	The project would not result in noise levels in excess of established standards. (See	None required	LTS

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		Appendix B, Noise Technical Report.) The residential project would not contribute to amplified noise and would be subject to the City's Noise Ordinance.		
Impact 3.11.2 Project operation would generate increased local traffic volumes that could cause a substantial permanent increase in ambient noise levels in the project vicinity.	LTS	The project would not generate a substantial permanent increase in ambient noise levels. (See Appendix B, Noise Technical Report.)	None required	LTS
Impact 3.11.3 Planned development under the proposed project would be required to comply with City noise standards set forth in the City Code.	LTS	The project would comply with applicable City noise ordinance requirements.	None required	LTS
Impact 3.11.4 Construction activities could cause a substantial temporary increase in ambient noise levels at nearby noise- sensitive land	LTS	The project would comply with the City's standard conditions of	None required	LTS

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uses, which may result in increased levels of annoyance, activity interference, and sleep disruption.		approval limiting hours of construction, and therefore would result in a less than significant impact.		
Impact 3.11.5 The proposed project, when considered in combination with other past, existing, planned future projects, would result in increased noise levels.	LCC	The project, when considered in combination with other past, existing, planned future projects, would not result in a significant increase in ambient noise levels. (See Appendix B, Noise Technical Report.)	None required	LCC
3.12 Population and Housing				
Impact 3.12.1 The proposed project would result in population growth in the project area that is consistent with growth projections for the city.	LTS	Project density and land uses are consistent with specific plan densities and growth projections.	None required	NI

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Impact 3.12.2 The proposed project could involve redevelopment activities on currently occupied residential parcels, but there would be no net displacement of people or housing overall.	LTS	No displacement of people would occur from the project.	None required	NI
Impact 3.12.3 The proposed project, along with other approved, proposed, and reasonably foreseeable development, could induce population and housing growth in the City's Urban Growth Boundary.	LCC	Project site is infill within City limits, and would not induce growth in the City's Urban Growth Boundary.	None required	LTS
Impact 3.12.4 The proposed project, along with other approved, proposed, and reasonably foreseeable development, would not result in cumulative loss of housing or displacement of people.	LCC	Project would add housing.	None required	LCC
3.13 Public Services				
Impact 3.13.1.1 Development resulting from implementation of the proposed project could increase demand for fire protection, fire prevention, emergency medical, and law enforcement services resulting in the need for new facilities, the construction of	LTS	Project would include adequate access, lighting, and fire hydrants, and would pay City impact fees. This would assure	None required	LTS

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which could result in physical environmental effects.		impact would be LTS.		
Impact 3.13.1.2 The proposed project, in combination with other reasonably foreseeable development, would increase the City's population and could contribute to the need for expanded fire protection, fire prevention, and emergency medical services that could cause significant physical impacts to the environment.	LTS	No facility expansions would be required beyond those envisioned in the SP EIR.	None required	LTS
Impact 3.13.2.1 The proposed project would result in the development of new residential and non-residential uses in the project area which would increase enrollment at local schools.	LTS	Enrollment increases would be slightly less than assumed for the site in the SP EIR. Because of reduced density.	None required	LTS
Impact 3.13.2.2 The proposed project, in combination with other reasonably foreseeable development in the city, would generate new student enrollments at local area schools.	LTS	See 3.13.2.1, above.	None required	LTS

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Impact 3.13.3.1 Implementation of the proposed project would increase demand for parks and recreational facilities.	LTS	Development would be slightly less than envisioned in with the SP EIR, so park demand would not exceed SP assumptions.	None required	LTS
Impact 3.13.3.2 Implementation of the proposed project, in combination with other reasonably foreseeable development in the city, would increase demand for parks and recreational facilities.	LTS	Development would be slightly less than envisioned in with the SP EIR so park demand would not exceed SP assumptions.	None required	LTS
3.14 Traffic and Transportation				
Impact 3.14.1 Project traffic would not degrade corridor operations to unacceptable levels of service under Existing-plus-Project conditions.	LTS	Because the intersections evaluated would operate acceptably with project traffic added, corridor operation would also remain acceptable. (See Appendix G, Traffic Impact Assessment).	None required	LTS

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Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
Impact 3.14.2 Project traffic would have the potential to degrade mainline freeway operations to unacceptable levels of service under Existing plus Project conditions.	PS/LTS	The proposed project is a residential development consistent with the density allowance designated for the site in the Specific Plan. The impact for the project as currently proposed would be the same or less than that evaluated.	None available	LTS with implementation of traffic report recommend-ations.
Impact 3.14.3 Project traffic would have the potential to degrade freeway ramp operations to an unacceptable level of service at the southbound US 101 freeway off-ramp at Hearn Avenue under Existing plus Project conditions.	PS/LTS	The proposed project is a residential development consistent with the density allowance designated for the site in the Specific Plan. The impact for the project as currently proposed would be the same or less than that evaluated.	None available	LTS

LTS – Less Than Significant *PS - Potentially Significant* *SU – Significant and Unavoidable* *NI – No Impact* LCC – Less Than Cumulatively Considerable
PCC – Potentially Cumulatively Considerable CC – Cumulatively Considerable NA – Not Applicable

TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
Impact 3.14.4 The proposed project includes various roadway improvements that would be designed and constructed according to City-approved design standards to ensure safety.	LTS	It is understood that the proposed project's construction process would be done in accordance with City-approved design standards and the alignment is consistent with that indicated in the Plan.	None required	LTS
Impact 3.14.5 Implementation of the proposed project would not interfere with emergency access within the project area.	LTS	The project would provide connectivity consistent with that shown in the Plan and is not expected to interfere with emergency access in the area.	None required	LTS
Impact 3.14.6 Implementation of the proposed project would not conflict with any alternative transportation policies or plans.	LTS	The project as proposed would construct continuous sidewalks and provide bicycle	None required	LTS

LTS – Less Than Significant PS - Potentially Significant SU – Significant and Unavoidable NI – No Impact LCC – Less Than Cumulatively Considerable
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TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
		lanes in accordance with policies for the area.		
Impact 3.14.7 Implementation of the proposed project would result in improvements to pedestrian and bicycle circulation in the project area that would enhance connectivity and safety.	LTS	The project as proposed includes sidewalks and bicycle lanes along Northpoint Parkway consistent with the Santa Rosa Roseland Area/Sebastopol Road Specific Plan, though striping of the pavement to include a bike lane should be deferred until a more continuous facility can be provided.	None required	LTS
Impact 3.14.8 Implementation of the proposed project would have a beneficial impact on bus transit by concentrating uses in a transit- oriented development pattern and	LTS	There are two bus stops within walking distance of the project that would serve the site. The	None required	LTS

TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
by increasing connectivity to transit facilities.		extension of Northpoint Parkway as planned will ultimately increase connectivity and allow improved transit service.		
Impact 3.14.9 Construction activities associated with project implementation may temporarily affect vehicular, pedestrian, bicycle, and transit circulation.	PS/LTS	The project would comply with Mitigation Measure 3.14.9 which would ensure that construction activities would not affect pedestrian, bicycle, and transit circulation.	MM 3.14.9 Prior to construction activities, applicants seeking to construct projects in the project area shall submit a construction traffic control plan to the City of Santa Rosa for review and approval. The plan shall identify the timing and routing of all major construction-related traffic to avoid congestion and delays on the local street network. Any temporary road or sidewalk closures shall be identified along with detour plans for rerouting pedestrian and bicycle traffic for rerouting pedestrian and bicycle traffic. The plan shall also identify locations where transit service would be temporarily rerouted or transit stops moved, and these changes must be approved by the	LTS

LTS – Less Than Significant *PS - Potentially Significant* *SU – Significant and Unavoidable* *NI – No Impact* LCC – Less Than Cumulatively Considerable
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TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
			Santa Rosa CityBus and Sonoma County Transit before the plan is finalized. If necessary, movement of major construction equipment and materials shall be limited to off-peak hours to avoid conflicts with local traffic circulation.	
Impact 3.14.10 Project traffic, when considered together with other past, present, and future development, would have the potential to degrade corridor operations to unacceptable levels of service (Future plus Project or cumulative condition).	LCC	None required	The analysis indicates that the study intersections would be expected to operate acceptably under future volumes. The traffic study for the proposed project relies on an analysis of intersection operation. Because intersections are the points of the greatest conflict and reflect the highest levels of delay, it is typical for operation of a corridor to be at least as good as, if not better than, the intersection with the greatest delay. (Dalene Whitlock, W-Trans, memo to Robin Miller, Trumark Homes August 19, 2021).	LCC
Impact 3.14.11 Project traffic, when considered together with other past, present, and future development, would have the	PCC	None available	The proposed project is a residential development consistent with the density allowance designated for the site	LTS

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PCC – Potentially Cumulatively Considerable CC – Cumulatively Considerable NA – Not Applicable

TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
potential to degrade mainline freeway operations to unacceptable levels of service (Future plus Project or "cumulative" conditions).			in the Specific Plan. The impact for the project as currently proposed would be the same or less than that evaluated.	
Impact 3.14.12 Project traffic, when considered together with other past, present, and future development, would have the potential to degrade freeway ramp operations to an unacceptable level of service at the westbound SR 12 freeway off-ramp at Dutton Avenue (Future plus Project or cumulative conditions).	PCC	The City is collecting fees from developers to fund this improvement	MM 3.14.12 The City shall widen the Dutton Avenue westbound off-ramp to extend the right turn pocket to a minimum length of 550 feet to alleviate the adverse queuing onto the mainline freeway. The City shall monitor queuing conditions on the ramp through field observations and review of development traffic impact studies and add the widening project to the Capital Improvement Program once it is determined that queues are likely to exceed storage within a five-year time frame. The City shall collaborate with Caltrans in obtaining approvals to complete the widening project.	LTS
3.15 Public Utilities				
Impact 3.15.1.1 The proposed project would exceed	LTS	LTS Project would be slightly reduced density from SP EIR assumed density, so	None required	LTS

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PCC – Potentially Cumulatively Considerable CC – Cumulatively Considerable NA – Not Applicable

TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
the City's projected water demand compared to that identified in the 2010 Urban Water Management Plan.		would have slightly reduced water demand.		
Impact 3.15.1.2 Implementation of the proposed project would not require any new or expanded water treatment facilities.	NI	Project would be slightly reduced density from SP EIR assumed density, so would have slightly reduced wastewater generation.	None required	NI
Impact 3.15.1.3 The proposed project, in combination with other reasonably foreseeable development in the Sonoma County Water Agency service area, would result in less than cumulatively considerable water supply impacts.	LCC	Project would be slightly reduced density from SP EIR assumed density, so would have slightly reduced water demand.	None required	LCC
Impact 3.15.2.1 Wastewater flows generated as a result of the proposed project would not exceed existing capacity at the Laguna Wastewater Treatment Plant or in existing conveyance facilities.	LTS	Project would be slightly reduced density from SP EIR assumed density, so would have slightly reduced wastewater generation.	None required	LTS

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PCC – Potentially Cumulatively Considerable CC – Cumulatively Considerable NA – Not Applicable

TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
Impact 3.15.2.2 Existing, planned, and reasonably foreseeable development in the cumulative setting, when considered together with the proposed project, would result in a cumulative increase in demand for wastewater conveyance and treatment services requiring system improvements.	LCC	Project would be slightly reduced density from SP EIR assumed density, so would have slightly reduced wastewater generation.	None required	LCC
Impact 3.15.3.1 Implementation of the proposed project would require the extension of existing stormwater drainage facilities to serve new development.	LTS	Project would connect to existing stormwater system.	None required	LTS
Impact 3.15.3.2 Cumulative growth in the city would increase the volume of stormwater entering the City's drainage system.	LCC	Project is consistent with development projections included in SP EIR for the site.	None required	LCC
Impact 3.15.4.1 Future development resulting from implementation of the proposed project would increase demand for solid waste collection, recycling, and disposal services.	LTS	Project is slightly below development projections included in SP EIR for the site, so waste generation would be slightly lower.	None required	LTS

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PCC – Potentially Cumulatively Considerable CC – Cumulatively Considerable NA – Not Applicable

TABLE 2: APPLICABILITY OF SPECIFIC PLAN EIR IMPACTS AND MITIGATION MEASURES TO PROPOSED PROJECT				
Evaluation Criteria	**Specific Plan EIR Level of Significance Without/ With Mitigation Measures**	**Project Comparison**	**Mitigation Measure**	**Less than Significant with Specific Plan EIR Mitigation Measure Incorporated?**
Impact 3.15.4.2 Implementation of the proposed project would not be expected to result in conflicts with any federal, state, or local solid waste regulations.	LTS	Project is consistent with SP, and would comply with all applicable regulations and permit requirements.	None required	LTS
Impact 3.15.4.3 The proposed project, when considered in combination with other existing and planned development in the SCWMA service area, would increase cumulative demand for solid waste disposal services.	LCC	Project cumulative waste contribution would be lower than assumed in SP EIR.	None required	LTS

SUMMARY OF ANALYSIS AND CONCLUSIONS OF THE TECHNICAL REPORTS
The following is a summary of the analysis and conclusions of each of the technical studies that were prepared for the Dutton Meadows Project.

Air Quality and Greenhouse Gas Emissions Analysis Report
The analysis and conclusions of the Air Quality and Greenhouse Gas (GHG) Assessment Technical Report prepared for the project by the RCH Group demonstrates that with implementation of mitigation measures, the project would result in less than significant impacts to air quality and GHG emissions. The project would not conflict with or obstruct implementation of the applicable air quality plan. The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard. The project would not expose sensitive receptors to substantial pollutant concentrations. The project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Implementation of Mitigation Measures 3.3.3, 3,3.5, and 3.3.6 from the 2016 Specific Plan EIR, along with BAAQMD-required construction mitigation measures listed in Recommended Conditions of Approval, below, would ensure air quality impacts would be reduced to a less-than-significant level, thus no additional mitigation measures are required.

The proposed project would generate direct and indirect GHG emissions; however, the project would not result in significant environmental impacts because project emissions would be below BAAQMD's GHG efficiency threshold of significance. The project would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce the emissions of GHG into the environment. With implementation of the Mitigation Measures 3.3.3, 3,3.5, and 3.3.6 of the 2016 Specific Plan EIR, the project air quality and GHG emission impacts would be considered less than significant. These findings are consistent with the findings of the 2016 Specific Plan EIR.

Recommended Conditions of Approval

Condition AQ-1. The following BAAQMD-recommended BAAQMD's Basic Construction Measures Recommended for ALL Proposed Projects shall be implemented by the project:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Biological Resources Analysis
The Biological Resources Analysist, dated February 1, 2021, was prepared by Monk and Associates. Below is a summary of the analysis and conclusions of the report.

Special-status Plant Species
As reported in the Dutton Meadows Project Draft Subsequent Environmental Impact Report (January 2005 -SCH #2002092016), protocol-level rare plant surveys were conducted on the project site in 2000, 2001, and 2003, prior to site grading activities. These surveys were appropriately timed to cover the flowering period of all federally and state listed plant species covered by the Santa Rosa Plain Conservation strategy, including Burke's goldfields (*Lasthenia burkei*), Sonoma sunshine (*Blennosperma bakeri*), and Sebastopol meadowfoam (*Limnanthes vinculans*). These protocol surveys for special-status plant species were conducted using methods consistent with the then current CDFG guidelines for assessing the effects of proposed developments on rare and endangered plants and plant communities. The surveys were conducted within the 'window' during which virtually all target species were either in flower or were readily identifiable. Field surveys for special-status plants were conducted by thoroughly searching each wetland and conducting a transect survey of the annual grassland habitats. No state or federally-listed species were observed during any of the surveys conducted on the project site (Stromberg 2003, Olberding 2003).

Regardless, impacts to potential habitat for federally-listed and state-listed plants have been mitigated by the Applicant via the purchase of mitigation credits from the Gobbi Preserve. Pursuant to the CEQA, since mitigation for impacts to Sonoma sunshine, Burke's goldfields, and Sebastopol meadowfoam was satisfied with the purchase of mitigation credits, implementation of the proposed project will not result in significant impacts to federally or state-listed plants.

California Tiger Salamander
The project site is located within the known range of the Sonoma County "Distinct Population Segment" (DPS) of CTS. The Sonoma County DPS is federally-listed as endangered and state-listed as threatened. The closest adult CTS observation to the project site (CNDDB Occurrence No. 1105) is a 2003 record of adult females moving along Hearn Avenue located 440 feet northwest of the project site. There is an additional adult CTS observation from 2006 (CNDDB Occurrence No. 1243) that is located 1,020 feet southwest of the project site in what used to be a grassy field; Google Earth images now show a housing development where this CTS was found. The closest breeding CTS location is 1,100 feet west of the project site at the Southwest Community Park (CNDDB Occurrence No. 483).

Project site surveys for adults and larvae were conducted from 2001 to 2003; no CTS larvae or adults were detected during the surveys, although suitable upland habitat exists on the project site. In compliance with the conditions in the USFWS's Biological Opinion (BO) for the Specific Plan Area, and with CDFG's (now CDFW) Agreement with Gobbi Mitigation Preserve LLC, impacts to CTS were fully

mitigated for this project via the purchase of mitigation credits from the Gobbi Preserve which is located within the Llano Crescent-Stony Point "Core Area."

According to the USFWS' *Programmatic Biological Opinion* (USFWS 2020), a 2:1 mitigation ratio for CTS is required for projects that are greater than 500 feet and within 2,200 feet of a known breeding site, or greater than 2,200 feet from a breeding site but within 500 feet of a non-breeding occurrence. In compliance with the conditions in the USFWS' BO for the proposed project, the Corps' permit and RWQCB Water Quality Certification, on July 7, 2006 Dutton Village Partners LLC, by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 23.92 acres of CTS preservation mitigation credits from Gobbi Mitigation Preserve LLC, providing 2:1 mitigation for impacts to 12.4 acres of suitable CTS habitat on the Bellevue Ranch 8 parcels. Similarly, on July 7, 2006 Dutton Village Partners LLC, by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 12.15 acres of CTS preservation mitigation credits from Gobbi Mitigation Preserve LLC, thus providing 2:1 mitigation for impacts to 6.3 acres of potential CTS habitat on the Minoia Property. Finally, by agreement with Dutton Village Partners LLC, Trumark Companies LLC, DM Associates LLC, and Hearn Avenue LLC, 0.58-acre of CTS mitigation credits were purchased from the Gobbi Mitigation Preserve LLC to compensate for impacts to listed species that will occur when the Minoia Park Land, comprising 0.3-acre, is developed and dedicated to the City of Santa Rosa as a component of the Dutton Meadow Specific Plan development project. Accordingly, all impacts to CTS have been adequately mitigated and no further mitigation is warranted for the proposed project.

White-tailed Kite

The White-tailed Kite (*Elanus leucurus*) is a "Fully Protected" species under the California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time. It is also protected under the Federal Migratory Bird Treaty Act (50 CFR 10.13). The White-tailed Kite is typically found foraging in grassland, marsh, or cultivated fields where there are dense-topped trees or shrubs for nesting and perching. The nearest CNDDB record for this species is a 2003 record located 0.1-mile east of the project site (Occurrence No. 77). At this record location two kites were observed in courtship behavior but no nest was identified. The project site provides suitable hunting grounds for White-tailed Kites and the trees on and immediately adjacent to the project site provide suitable nesting habitat. Accordingly, impacts to White-tailed Kite from site development are regarded as potentially significant pursuant to the CEQA. However, in compliance with the goals and policies of the Specific Plan, implementation of conditions of approval BRA-1, below, would ensure potential impacts are reduced to less than significant.

Recommended Conditions of Approval

Condition BRA-1. The following conditions of approval shall be implemented to avoid impacts to White-tailed Kite, a CDFW "Fully Protected Species," and other nesting birds which are protected by the California Fish and Game Code.

White-tailed Kite and Other Nesting Raptors. To avoid impacts to nesting raptors, a nesting survey shall be conducted 15 days prior to commencing with tree removal or construction work if this work would commence between February 1 and August 31 (the nesting season). The raptor nesting surveys shall be conducted by a biologist with at least two years of demonstrated experience surveying for nesting raptors with detections, and the survey shall include examination of all trees within 200 feet of the entire project site, not just trees slated for removal. A nest survey report shall be prepared upon

completion of the survey and provided to the City of Santa Rosa with any recommendations required for establishment of protective buffers as necessary to protect nesting birds.
If nesting raptors are identified during the surveys, the dripline of the nest tree must be fenced with orange construction fencing (provided the tree is on the project site), and a 200-foot radius around the nest tree must be staked with bright orange lath or other suitable staking (a non-disturbance buffer). If the tree is located off the project site, then the non-disturbance buffer shall be demarcated per above where the buffer occurs on the project site. *The size of the buffer may be altered if a qualified biologist (as described above) conducts behavioral observations and determines the nesting raptors are well acclimated to disturbance.* If this occurs, the qualified biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/harassment to the nesting raptors. If the nesting birds show any sign of distress from project activities, the qualified biologist shall have the authority to cease work on the site until it can be determined what a safe buffer distance is, that buffer shall be established, and then work can resume with periodic monitoring by the biologist. No construction or earth-moving activity shall occur within the established non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by July 15. This date may be later and would have to be determined by a qualified biologist. If a qualified biologist is not hired to watch the nesting raptors, then the buffers shall be maintained in place through the month of August and work within the buffer cannot commence until September 1.

Nesting Passerines. A nesting survey shall be conducted on the project site and within a zone of influence around the project site if project site disturbance associated with the project would commence between February 15 and September 1. The zone of influence includes those areas off the project site where birds could be disturbed by earth-moving vibrations or noise. Accordingly, the nesting survey(s) must cover the project site and an area around the project site boundary. The nesting survey shall be completed 7 days prior to commencing with site work. A nest survey report shall be prepared upon completion of any required survey and provided to the City of Santa Rosa with any recommendations required for establishment of protective buffers as necessary to protect nesting birds.

If passerine birds are identified nesting on or adjacent to the project site, a non-disturbance buffer of 75 feet shall be established. A modified buffer may be prescribed if the nesting attempt is monitored by a qualified biologist and the biologist determines the nesting pair is comfortable with the level of disturbance nearby. If at any time the nesting birds show sign of distress, the qualified biologist monitoring the nest(s) has the authority to cease all project activities near the buffer area and determine an adequate non-disturbance buffer to protect the nesting attempt. The buffer shall be demarcated with painted orange lath or via the installation of orange construction fencing. Disturbance within the buffer shall be postponed until it is determined by a qualified biologist that the young have fledged and have attained sufficient flight skills to leave the area or that the nesting cycle has otherwise completed.

Typically, most passerine birds in the region of the project site are expected to complete nesting by August 1. However, many species can complete nesting by the end of June or in early to mid-July. Regardless, nesting buffers should be maintained until August 1 unless a qualified biologist determines that young have fledged and are independent of their nest at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys should prepare a report that provides details about the nesting outcome and the removal of buffers. This report should be submitted to the City of Santa Rosa prior to the time that nest protection buffers are removed if the date is before August 1.

Protected Trees
A *Tree Preservation and Mitigation Report* was prepared for the Dutton Meadows project site by Horticultural Associates, dated June 5, 2018. A total of 64 trees were evaluated and this includes all trees that are present over 4 inches in trunk diameter, per the Santa Rosa Tree Ordinance. According to the report, native species on the site include 25 valley oaks and 2 box elders. Non-native species on the site include black walnut, pecan, liquidambar, coast redwood, weeping willow, cottonwood, silk tree, olive, English walnut, Grecian laurel, Japanese maple, Lombardy poplar, maple, deodar cedar, Italian cypress, stone Pine, dogwood, eucalyptus, pear, glossy privet, and hawthorn. Currently, all trees are slated for removal due to the density of this project, and the existing location of trees. Thus, it will be impossible to save any of the trees at this site.

Condition of approval BRA-2 shall be implemented for protected tree removal. Note that the tree removal is part of the Tentative Map (TM) and will be a Condition of Approval on the small lot Conditional Use Permit (CUP) and/or TM.

Condition BRA-2. In accordance with Article 4, Section 17-24.050 Permit Category II-Tree Alteration, Removal, or Relocation on Property Proposed for Development, C (1) requires two 15-gallon size trees to be replanted for every 6 inches of trunk diameter removed. Thus, the Applicant will be required to obtain a permit to remove the trees on the project site and plant trees for the ones removed in accordance with this Article.

Hazardous Materials Investigations
Hazardous materials were addressed in Section 3.4 of the 2005 Dutton Meadows SEIR. A subsequent Phase I Environmental Site Assessment (ESA) was prepared in April 2007. (ENGEO, Inc., Phase 1 Environmental Site Assessment, Dutton Meadow Properties, Santa Rosa, California, April 20, 2007). Consistent with SPEIR Mitigation Measure 3.8.4a, an updated Phase 1 ESA was prepared for this project in July 2018 (ENGEO, Inc., Draft Phase 1 Environmental Site Assessment, Dutton Meadows, Santa Rosa, California, July 24, 2018).

ENGEO performed updated phase 1 ESAs for the property in 2007 and 2018. The updated records research did not find documentation of soil or groundwater impairments associated with the current or past use of the Property. A review of regulatory databases maintained by county, state, tribal, and federal agencies found no documentation of hazardous materials violations or discharge on the property and did not identify contaminated facilities within the appropriate American Society for Testing and Materials (ASTM) search distances that would reasonably be expected to impact the property.

A review of the analytical findings associated with the soil samples recovered from the former ranch and orchard areas did not identify pesticide concentrations above respective screening levels. Samples recovered from the former ranch and orchards exhibited metallic analytes (arsenic, lead, and mercury levels) consistent with background concentrations for the State of California. Based on the analytical findings, ENGEO indicated that the Property does not appear to have been significantly impacted from past agricultural practices (ENGEO 2018).

For soil stockpile sampling, TPH-gasoline, OCP, PCB, VOC, and SVOC analytes were not detected above laboratory reporting limits. TPH-diesel and TPH-motor oil concentrations were below screening levels. Metallic analytes were reported within the expected range of background concentrations from the State of California. ENGEO opined that the stockpiled soils on the property appear to be suitable, from an

environmental standpoint, for unrestricted land use, and would not be classified as California hazardous waste based on the analyses performed (ENGEO 2018).

At the time of the of the 2007 environmental site assessment, the earliest historical aerial photograph dated 1953 depicted orchards on the eastern portion of the Property. A review of the recently provided EDR aerial photograph dated 1942 found the orchard had extended over the central portion of the Property. This portion of the Property was not sampled at the time of the 2007 agrichemical assessment.

Based on the findings of the 2018 assessment, no controlled Recognized Environmental Conditions (RECs), or historical RECs were identified for the Property; however, the following REC was identified for the Property:

- A review of historical aerial photographs found the Property and the surrounding area had been historically utilized as agricultural land. Based on the readily available historical aerial photographs at the time of the 2007 assessment, an agrichemical assessment was performed on the eastern portion of the Property. A review of historical aerial photographs from the 1940s found the extent of the former orchard had traversed the central portion of the Property. Based upon the timeframe of agricultural use, pesticides or other agricultural chemicals might have been applied to the portion of the Property not sampled at the time of the 2007 assessment and thus could be present in near-surface soils. These chemicals are persistent in the environment and toxic concentrations may remain many years after application. ENGEO recommends an agrichemical assessment, including the recovery of near-surface soil samples, be performed within the uncharacterized former orchard area prior to site redevelopment activities.

Recommended Conditions of Approval

Condition HM-1. based on a review of records and historical aerial photographs, features of potential environmental concern were identified for the Property. These features were not considered to be RECs, however ENGEO identified recommendations to assure that no significant impacts would occur, consistent with the mitigation measures summarized above (ENGEO 2018). The features and recommended measures are summarized below:

- Based on ENGEO's review of historic aerial photographs, the existing structures situated on the northeastern portion of the Property were constructed no later than the early 1970s. Rural residential structures and associated outbuildings of this age may exhibit actionable concentrations of lead and organochlorine pesticides in near-surface soil at the building perimeters. Prior to site redevelopment, ENGEO recommends a near-surface soil-sampling program be conducted along the perimeter of the buildings to address potential lead and pesticide impact at the Property.
- Given the age of the existing structures, it is conceivable that both lead-based paint and asbestos-containing material are present within the structures. ENGEO recommends retaining a licensed contractor to perform an asbestos and lead-based paint survey prior to demolition.
- The existing stockpiles were characterized in 2007. If additional material has been imported to the Property and/or added to the stockpile subsequent to characterization activities performed in 2007, ENGEO recommends the stockpile be re-characterized prior to site reuse and/or off-haul.

- If a septic system is uncovered during future site grading activities, ENGEO recommends abandoning and disposing of the septic tank under appropriate State and local regulations.
- ENGEO recommends the existing well be properly abandoned/destroyed under appropriated State and local regulations.

Historical Resources
Historic and archaeological resources were previously addressed in Section 3.5 of the 2005 Dutton Meadows Project SEIR. Updated archaeological resources information in this section is based on the Cultural Resources Evaluation of the Properties Located At 2666 and 2684 Dutton Meadows and 1112 and 1200 Hearn Avenue, Santa Rosa (Archaeological Research Service, June 11, 2018). The historic building assessment in this document is based on the Cultural Resources Evaluation of the Minoia Property Located at 1112 And 1200 Hearn Avenue, Santa Rosa, Sonoma County, November 26, 2003.

The 2018 Cultural Resources Evaluation (Archaeological Research Service, June 11, 2018) did not encounter any cultural resources on the project site, consistent with the earlier evaluations. Similarly, the 2003 Cultural Resources Evaluation found no National Register historic resources on the site. Therefore, no new or more significant impacts are anticipated as a result of the currently proposed project.

Mitigation Measures 3.5.2a, 3.5.2b, 3.5.3a, and 3.5.3b, of the 2016 Specific Plan EIR are still applicable to the project and would ensure that historical resource impacts would be reduced to less than significant. These findings are consistent with the findings of the 2016 Specific Plan EIR.

Noise and Vibration
The analysis and conclusions of the Noise Technical Report prepared for the project by the RCH Group demonstrates that with implementation of standard construction measures, the project would result in less than significant impacts to noise. The project would not generate a temporary or permanent noise increase in excess of City standards. The project would not generate excessive groundborne vibration. The project would not expose people residing or working in the project area to excessive noise levels from aircrafts. The Technical Report recommended mitigation measures to be consistent with the Dutton Meadows Project Final SEIR, however this was prior to knowing that the 2016 Specific Plan EIR would apply to the project. The City's standard conditions of approval limiting hours of construction would ensure construction noise impacts would be less than significant, thus no additional mitigation measures are required. Therefore, project-related noise impacts would be considered less than significant, consistent with the findings of the 2016 Specific Plan EIR.

Traffic Impact Study
The Preliminary *Traffic Impact Study for the Dutton Meadow Phase II Project* was completed for the City of Santa Rosa by W-Trans on May 10, 2021, with Addendum on June 22, 2021.

The proposed project is expected to generate an average of 1,274 net new daily vehicle trips, including 100 trips during the weekday AM peak hour and 134 trips during the weekday PM peak hour.

The study intersections of Hearn Avenue with Dutton Meadow and Dutton Avenue are currently operating acceptably at Level of Service (LOS) C or better overall during both peak hours. The study intersections are expected to continue operating acceptably overall during both peak-hours upon the addition of project-related traffic to Existing volumes.

Under Future conditions, improvements are anticipated, include extending Dutton Avenue from its current terminus near Duke Court to a planned roundabout where drivers would turn right to continue to the existing Dutton Avenue/Hearn Avenue intersection, with the new south leg resulting in the planned four-legged intersection. Other improvements at that intersection would be a new westbound left-turn lane, a second eastbound through lane, and reassigning the southbound right-turn lane into a southbound through/right-turn lane. As planned, Northpoint Parkway would begin where Dutton Avenue turns right at the roundabout, continuing north to intersect with Hearn Avenue, replacing part of Dutton Meadow, which would curve northeast beginning near Meadowview Elementary School, extend through the project site, and end at the Dutton Avenue extension south of Hearn Avenue. Per the Specific Plan, the roadway would have three lanes, with one lane in each direction and either a two-way left-turn lane or median. The Plan notes that the City's General Plan indicates that Northpoint Parkway would be a four-lane street but based on the planned decrease in demand, three lanes would be sufficient. Additionally, the Plan suggests adding an eastbound right-turn pocket at Hearn Avenue and Northpoint Parkway, previously Dutton Meadow. Under these Future conditions, the study intersections would be expected to continue operating acceptably overall.

The proposed pedestrian and bicycle facilities along the project frontages and internally to the project site are consistent with the planned improvements to Dutton Meadows and Northpoint Parkway outlined in the *Santa Rosa Roseland Area/Sebastopol Road Specific Plan.*

Site access and circulation is expected to operate acceptably with any landscaping in the median on Northpoint Parkway or in the public space between the sidewalk and the roadway kept at low lying vegetation and maintained to be no more than three feet above the elevation of the roadway. Any trees should have their canopies trimmed to be no less than seven feet above the elevation of the roadway. For the parcels on the south side of Dutton Meadows between the Northpoint Parkway intersection and the first access road to the project site, there should be no vertical obstructions on the parcel between the patio and the roadway.

However, in compliance with the goals and policies of the Specific Plan, implementation of the following recommended conditions of approval would ensure potential impacts would be reduced to less than significant.

Recommended Conditions of Approval

Condition TRAF-1. The project should include installation of full frontage improvements consistent with the Santa Rosa Roseland Area/Sebastopol Road Specific Plan, though striping of the pavement to include a bike lane should be deferred until a more continuous facility can be provided.

CEQA STATUTES SECTION 21166 CONFORMANCE

The project is consistent with the Roseland Area/ Sebastopol Road Specific Plan and Roseland Area Annexation Project EIR (2016 Specific Plan EIR), which was certified by the City in 2016[4]. As detailed in

[4] City of Santa Rosa. 2016. Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation Projects Environmental Impact Report. August. Website: https://www.srcity.org/2437/Roseland-Area-Projects-Environmental-Imp. Accessed February 20, 2021.

the preceding table and summarized below, none of the circumstances warranting further environmental review under Public Resources Code section 21166 have occurred:

a. Substantial changes have not been proposed in the project that will require major revisions of the environmental impact report.

As described in this memo, the project would be consistent with the land use types and densities contemplated in the Specific Plan and EIR. Additionally, no new potentially significant impacts were identified that were not previously evaluated in the Specific Plan EIR. No major revisions of the EIR are required.

b. Substantial changes have not occurred with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report.

As described in this memo, circumstances under which the project would be undertaken are similar to those considered in the Specific Plan EIR. Minor changes in circumstances are addressed in recommended Conditions of Approval, above.

c. New information, which was not known and could not have been known at the time the environmental impact report was certified as complete has not become available.

As described in the table and discussion above, and based on the technical studies included in the appendices to this memo, no substantial new information has been identified that would substantially change the conclusions of significance or required mitigation measures included in the Specific Plan EIR. Additionally, no new, previously unidentified potentially significant impacts have been identified in these studies.

CONCLUSIONS

The Dutton Meadows Project conforms with CEQA's streamlining provisions for projects consistent with specific plans. The density and land uses are consistent with those proscribed in the Specific Plan, and the Specific Plan EIR's mitigation measures, in combination with Conditions of Approval listed above, would assure that project impacts are consistent with those described in that EIR. Furthermore, none of the Public Resources Code Section 21166 circumstances triggering additional CEQA review have been identified for this project. Therefore, the project would be statutorily exempt from further CEQA review

APPENDICES

A. Air Quality and Greenhouse Gas Analysis Technical Report
B. Noise Technical Report
C. Cultural Resources Assessment
D. Biological Resources Analysis
E. Arborist Report
F. Phase 1 Environmental Site Assessment
G. Traffic Impact Study

APPENDIX A: AIR QUALITY AND GREENHOUSE GAS ANALYSIS TECHNICAL REPORT

Dutton Meadows
Air Quality and Greenhouse Gas Assessment
Technical Report

Prepared for:

Trumark Homes
3001 Bishop Drive
Suite 100
San Ramon, CA 94583

Prepared by:

RCH GROUP
planning & environmental consulting

August 2021

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ATTACHMENTS

A - CalEEMod Construction and Operational Emission Calculation Output Files

B - Climate Action Plan New Development Checklist

C - Required Mitigation Measures

1.0 INTRODUCTION

This document presents results of an air quality and greenhouse gas (GHG) analysis associated with the Dutton Meadows Residential Project in Santa Rosa, California. This document provides an overview of the existing air quality conditions at the project site, the air quality regulatory framework, an analysis of potential air quality impacts that would result from implementation of the proposed project, and identification of applicable mitigation measures. The supporting information, methodology, assumptions, and detailed results used in the air quality and GHG analysis are provided in **Attachment A: CalEEMod Output Files**, **Attachment B: Climate Action Plan New Development Checklist**, and **Attachment C: Required Mitigation Measures.**

The proposed project is within the Roseland Area/Sebastopol Road Specific Plan area, thus this analysis implements the mitigation measures from the Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation Final EIR.

2.0 PROJECT OVERVIEW

The proposed project includes 137 single family dwelling units on a mostly undeveloped project site southeast of the intersection of Hearn Avenue and Dutton Meadow in Santa Rosa, CA. The project site is approximately 18.43 acres and consists of seven parcels (APN 043-071-007, -022, and -023, and 043-191-016, -022, -023, and -024). Surrounding land uses are residential, open space, and Meadow View Elementary School to the west.

3.0 ANALYSIS METHODOLGY

Intermittent (short-term construction emissions that occur from activities, such as removal of structures, site-grading, and building construction) and long-term air quality impacts related to the operation of the proposed project were evaluated. The analysis focuses on daily and annual emissions from these construction and operational (mobile, area, stationary, and fugitive sources) activities. This air quality analysis is consistent with the methods described in the Bay Area Air Quality Management District (BAAQMD) *CEQA Air Quality Guidelines* (dated June 2010, updated in May 2011, revised in May 2012, and updated in May 2017).[1] [2] Required mitigation measures

[1] The Air District's June 2010 adopted thresholds of significance were challenged in a lawsuit. Although the BAAQMD's adoption of significance thresholds for air quality analysis has been subject to judicial actions, the lead agency has determined that BAAQMD's Revised Draft Options and Justification Report (October 2009) provide substantial evidence to support the BAAQMD recommended thresholds. Therefore, it has been determined that the BAAQMD recommended thresholds are appropriate for use in this analysis.

[2] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

from the Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation Final EIR are presented to reduce impacts to less than significant.

The air quality analysis includes a review of criteria pollutant[3] emissions such as carbon monoxide (CO)[4], nitrogen oxides (NO_x), sulfur dioxide (SO_2), volatile organic compounds (VOC) as reactive organic gases (ROG)[5], particulate matter less than 10 micrometers (coarse or PM_{10}), particulate matter less than 2.5 micrometers (fine or $PM_{2.5}$).[6]

Regulatory models used to estimate air quality impacts include:

- California Air Resources Board's (CARB) EMFAC2014[7]emissions inventory model. EMFAC2014 is the latest emission inventory model that calculates emission inventories and emission rates for motor vehicles operating on roads in California. This model reflects CARB's current understanding of how vehicles travel and how much they emit. EMFAC2014 can be used to show how California motor vehicle emissions have changed over time and are projected to change in the future.
- CARB OFFROAD[8] emissions inventory model. OFFROAD is the latest emission inventory model that calculates emission inventories and emission rates for off-road equipment such as loaders, excavators, and off-road haul trucks operating in California. This model reflects CARB's current understanding of how equipment operates and how much they emit. OFFROAD can be used to show how California off-road equipment emissions have changed over time and are projected to change in the future.

[3] Criteria air pollutants refer to those air pollutants for which the United States Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) has established National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) under the Federal Clean Air Act (CAA).

[4] CO is a non–reactive pollutant that is a product of incomplete combustion of organic material, and is mostly associated with motor vehicle traffic, and in wintertime, with wood–burning stoves and fireplaces.

[5] VOC means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions and thus, a precursor of ozone formation. ROG are any reactive compounds of carbon, excluding methane, CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and other exempt compounds. The terms VOC and ROG are often used interchangeably.

[6] PM_{10} and $PM_{2.5}$ consists of airborne particles that measure 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs, causing adverse health effects.

[7] California Air Resources Board, EMFAC2014 User's Guide, April 30, 2014, http://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol1-users-guide-052015.pdf

[8] California Air Resources Board, OFFROAD Instructions, http://www.arb.ca.gov/msprog/ordiesel/info_1085/oei_write_up.pdf

- CalEEMod (California Emissions Estimator Model Version 2016.3.2)[9] land use emissions model estimates construction emissions due to demolition and construction activities and operations.

4.0 EXISTING CONDITIONS

The project site is located within the San Francisco Bay Area Air Basin (Air Basin), which encompasses Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin, and Napa Counties, and the southern portions of Solano and Sonoma Counties. The Air Basin is characterized by complex terrain which distorts normal wind flow patterns, consisting of coastal mountain ranges, inland valleys, and bays.

Regional Meteorology

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions, including wind speed, wind direction, stability, and air temperature, in combination with local surface topography (i.e., geographic features such as mountains, valleys, and San Francisco Bay), determine the effect of air pollutant emissions on local air quality.

The climate of the greater San Francisco Bay Area, including Sonoma County, is a Mediterranean-type climate characterized by warm, dry summers and mild, wet winters. The climate is determined largely by a high-pressure system that is often present over the eastern Pacific Ocean. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, air emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates, such as sulfates and nitrates.

The Cotati Valley stretches from Santa Rosa to the San Pablo Bay. To the east, the Cotati Valley is bordered by the Sonoma Mountains, with the San Pablo Bay at the southeast end of the valley. To the immediate west are a series of low hills and further west are the Estero Lowlands, which opens to the Pacific Ocean. The region from the Estero Lowlands to the San Pablo Bay is known as the Petaluma Gap. This low-terrain area is a major transport corridor allowing marine air to pass into the Bay Area.

Wind patterns in the Cotati Valley are strongly influenced by the Petaluma Gap. The predominant wind pattern is for marine air to move eastward through the Petaluma Gap, then to

[9] California Air Resources Board, *California Emissions Estimator Model User's Guide*, November 9, 2017, http://www.caleemod.com/

split into northward and southward paths as it moves into the Cotati Valley. The southward path crosses the San Pablo Bay and moves eastward through the Carquinez Straits. Consequently, although Santa Rosa and Petaluma are only 16 miles apart, their wind patterns are quite different. Santa Rosa's prevailing winds are from the south and southeast, while Petaluma's prevailing winds are out of the northwest. When the ocean breeze is weak, a bay breeze pattern can also occur, resulting in east winds near the bay. Strong winds from the east occur as part of a larger scale pattern and often carry pollutants picked up along the trajectory through the Central Valley and the Carquinez Straits. During these periods, wind flows up the valley can carry the polluted air as far north as Santa Rosa.

The Cotati Valley, being slightly north of the Petaluma Gap experiences lower wind speeds than Petaluma. In Santa Rosa, the annual average wind speed is 5.4 mph. During summer afternoons, the fetch across the Petaluma Gap is sufficiently long so that the marine air is warmed and the fog evaporated before it reaches the Cotati Valley. As the surface heating weakens in the late afternoon, the marine layer becomes less heated with distance, and eventually fog is able to form in these valleys. The fog may then persist until late in the morning the next day.

Summer maximum temperatures are in the low 80's, while winter maximum temperatures are in the high 50s to low 60s. Summer minimum temperatures are about 50 degrees and wintertime minimum temperatures are about 40 degrees. Rainfall averages are 30 inches at Santa Rosa. Santa Rosa's rainfall is higher because the air is lifted and cooled in advance of the Sonoma Mountains, thereby causing condensation of the moisture. Santa Rosa receives approximately 80 percent of its annual rainfall from November through March.

Local Air Quality

The BAAQMD maintains a network of monitoring stations within the Air Basin that monitor air quality and compliance with applicable ambient standards. The monitoring station closest to the project site is in Sebastopol, approximately five miles to the west of the project site; where levels of ozone, $PM_{2.5}$, CO, and nitrogen dioxide (NO_2) are measured. The monitoring station in Napa measures PM_{10}.

Table 1 summarizes the most recent available three years of data (2017 through 2019) from the Sebastopol air monitoring station. The state and national hourly ozone standard was exceed once in 2017. The national 24-hour PM2.5 standard was exceeded four times in 2017 and 13 times in 2018 due to wildfires. No other state or federal air quality standards were exceeded during the three-year period. Nevertheless, the Bay Area is currently designated “nonattainment” for state and national (1-hour and 8-hour) ozone standards, for the state PM_{10} standards, and for state and national (annual average and 24-hour) $PM_{2.5}$ standards. The Bay Area is designated “attainment” or “unclassifiable” with respect to the other ambient air quality standards.

Table 1: Air Quality Data Summary (2017- 2019)

Pollutant	Monitoring Data by Year			
	Standard[a]	2017	2018	2019
Ozone				
Highest 1 Hour Average (ppm)[b]	0.090	0.087	0.070	0.070
Days over State Standard		0	0	0
Highest 8 Hour Average (ppm)[b]	0.070	0.071	0.053	0.059
Days over National Standard		1	0	0
Highest 8 Hour Average (ppm)[b]	0.070	0.071	0.053	0.059
Days over State Standard		1	0	0
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)[b]	0.180/0.100	0.035	0.065	0.032
Days over State Standard		0	0	0
Annual Average (µg/m^3) [b]	0.030/0.053	0.004	0.004	0.003
Particulate Matter ($PM_{2.5}$)				
Highest 24 Hour Average (µg/m^3)[b]	35	81.8	175.3	28.0
Days over National Standard		4	13	0
State Annual Average (µg/m^3)[b]	12	8.1	8.0	--

NOTES: Values in **bold** are in excess of at least one applicable standard.

a. Generally, state standards and national standards are not to be exceeded more than once per year.
b. ppm = parts per million; µg/m^3 = micrograms per cubic meter.
c. PM_{10} is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

Source: Bay Area Air Quality Management District, Annual Air Quality Summaries, http://www.baaqmd.gov/about-air-quality/air-quality-summaries

Community Air Risk Evaluation

The BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor air toxics in the Bay Area. Based on findings of the latest report, DPM was found to account for approximately 85 percent of the cancer risk from airborne toxics. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed four percent of the cancer risk-weighted emissions, and benzene contributed three percent. Collectively, five compounds—diesel PM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). A 75 percent reduction in DPM was predicted between 2005 and 2015 when the inventory accounted for CARB's diesel regulations. Overall,

cancer risk from TAC dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for state diesel regulations and other reductions.[10]

Modeled cancer risks from TAC in 2005 were highest near sources of DPM: near core urban areas, along major roadways and freeways, and near maritime shipping terminals. Peak modeled risks were found to be located east of San Francisco, near West Oakland, and the maritime Port of Oakland. BAAQMD has identified seven impacted communities in the Bay Area:

- Western Contra Costa County and the cities of Richmond and San Pablo.
- Western Alameda County along the Interstate 880 corridor and the cities of Berkeley, Alameda, Oakland, and Hayward.
- San Jose.
- Eastern side of San Francisco.
- Concord.
- Vallejo.
- Pittsburgh and Antioch.

The proposed project is within Santa Rosa, which is not part of the seven CARE program impacted communities in the Bay Area. The health impacts in the Bay Area, as determined both by pollution levels and by existing health vulnerabilities in a community, are approximately 160 cancer risk per million persons. In Santa Rosa, including the project site, the health impact is approximately 96 cancer risk per million persons.[11]

Addressing Sources of Air Pollutants in Community Planning

In May of 2016, the BAAQMD published *Planning Health Places: A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning*.[12] The BAAQMD's primary goal in providing the *Guidebook* is to support and promote infill development; which is important to reducing vehicle miles traveled and the associated air emissions, while minimizing air pollution exposure for

[10] Bay Area Air Quality Management District, *Improving Air Quality & Health in Bay Area Communities, Community Air Risk Program Retrospective & Path Forward (2004 – 2013)*, April 2014, http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CARE%20Program/Documents/CARE_Retrospective_April2014.ashx?la=en

[11] Bay Area Air Quality Management District, *Identifying Areas with Cumulative Impacts from Air Pollution in the San Francisco Bay Area*, March 2014, http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CARE%20Program/Documents/ImpactCommunities_2_Methodology.ashx?la=en

[12] Bay Area Air Quality Management District, *Planning Health Places: A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning*, January 2016, http://www.baaqmd.gov/~/media/files/planning-and-research/planning-healthy-places/draft_planninghealthyplaces_marchworkshop-pdf.pdf?la=en

existing and future residents. The *Guidebook* provides developers and planners with the information and tools needed to create health-protective communities.

The *Guidebook* recommends Best Practices to Reduce Emissions and Reduce Exposure to Local Air Pollution. Implementing as many Best Practices to Reduce Emissions as is feasible will reduce potential health risks to the greatest extent. The *Guidebook* also lists examples of a variety of strategies to reduce exposure to, and emissions of, air pollution, including the adoption of air quality-specific ordinances, standard conditions of approval, and incorporation of policies into general plans and other planning documents. The BAAQMD recommends implementing all best practices to reduce exposure that are feasible and applicable to a project in areas that are likely to experience elevated levels of air pollution. To reduce exposure to pollutants, the *Guidebook* recommends practices like installing indoor air filtration systems, planting dense vegetation, implementing project design which provides a buffer between sensitive receptors and emission source, and developing alternative truck routes.

5.0 IMPACT ANALYSIS AND MITIGATION

The air quality analysis includes a review of pollutant emissions such as CO, NO_x, SO_2, VOC as ROG, PM_{10}, and $PM_{2.5}$. The analysis also addresses the DPM emissions from on-site construction equipment and haul trucks associated with the proposed project and cumulative impacts from nearby emission sources.

Threshold of Significance

The significance of potential impacts was determined based on State CEQA Guidelines, Appendix G, and the BAAQMD *CEQA Air Quality Guidelines*. Using Appendix G evaluation thresholds, the proposed project would be considered to have significant air quality impacts if it were to:

A. Conflict with or obstruct implementation of the applicable air quality plan;

B. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;

C. Expose sensitive receptors to substantial pollutant concentrations; or

D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The thresholds and methodologies from the BAAQMD's *CEQA Air Quality Guidelines* were used to evaluate the potential impacts of construction and operation of the proposed project. The thresholds of significance applied to assess project-level air quality impacts are:

- Average daily construction exhaust emissions of 54 pounds per day of ROG, NO_x, or $PM_{2.5}$ or 82 pounds per day of PM_{10};
- Average daily operation emissions of 54 pounds per day of ROG, NO_x, or $PM_{2.5}$ or 82 pounds per day of PM_{10}; or result in maximum annual emissions of 10 tons per year of ROG, NO_x, or $PM_{2.5}$ or 15 tons per year of PM_{10};
- Exposure of persons by siting a new source or a new sensitive receptor to substantial levels of TAC resulting in (a) a cancer risk level greater than 10 in one million, (b) a noncancerous risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$). For this threshold, sensitive receptors include residential uses, schools, parks, daycare centers, nursing homes, and medical centers; or
- Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people.

Assessment of a significant cumulative impact if it would result in:

- Exposure of persons, by siting a new source or a new sensitive receptor, to substantial levels of TAC during either construction or operation resulting in (a) a cancer risk level greater than 100 in a million, (b) a noncancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average $PM_{2.5}$ of greater than 0.8 $\mu g/m^3$.

The BAAQMD air quality significance thresholds are found in **Table 2**.

The BAAQMD *CEQA Air Quality Guidelines* identify a project-specific threshold of either 1,100 metric tons of carbon dioxide equivalents (CO_2e) per year or 4.6 metric tons of CO_2e per year per service population (i.e., the number of residences associated with a new development), which is also considered a cumulatively considerable contribution to the global GHG burden and, therefore, a significant cumulative impact.

Table 2: BAAQMD Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Daily Operational Thresholds	Annual Operational Thresholds
Criteria Air Pollutants			
ROG	54	54	10
NOx	54	54	10
PM10	82 (exhaust only)	82	15
PM2.5	54 (exhaust only)	54	10
CO	NA	9.0 ppm (8-hour) and 20.0 ppm (1-hour)	

Fugitive Dust	Best Management Practices	NA
Project Health Risk and Hazards		
Excess Cancer Risk	10 per million	10 per million
Chronic Hazard Index	1.0	1.0
Acute Hazard Index	1.0	1.0
Incremental Annual Average PM2.5	0.3 µg/m^3	0.3 µg/m^3
Cumulative Health Risk and Hazards		
Excess Cancer Risk	100 per million	100 per million
Chronic Hazard Index	10.0	10.0
Acute Hazard Index	10.0	10.0
Incremental Annual Average PM2.5	0.8 µg/m^3	0.8 µg/m^3
Greenhouse Gas Emissions		
Annual Emissions	1,100 metric tons or 4.6 metric tons per capita	

SOURCE: BAAQMD Adopted Air Quality CEQA Thresholds of Significance - June 2, 2010, http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Summary_Table_Proposed_BAAQMD_CEQA_Thresholds_May_3_2010.ashx?la=en

5.1 Conflict with or obstruct implementation of the applicable air quality plan – Less-than-Significant Impact with Mitigation

BAAQMD's 2017 Clean Air Plan was adopted in April of 2017.[13] The 2017 Clean Air Plan/Regional Climate Protection Strategy (CAP/RCPS) provides a roadmap for BAAQMD's efforts over the next few years to reduce air pollution and protect public health and the global climate. The CAP/RCPS includes the Bay Area's first-ever comprehensive RCPS, which identifies potential rules, control measures, and strategies that the BAAQMD can pursue to reduce GHG in the Bay Area. Measures of the 2017 Clean Air Plan addressing the transportation sector are in direct support of Plan Bay Area, which includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan. Highlights of the 2017 Clean Air Plan control strategy include:

- Limit Combustion: Develop a region-wide strategy to improve fossil fuel combustion efficiency at industrial facilities, beginning with the three largest sources of industrial emissions: oil refineries, power plants, and cement plants.
- Stop Methane Leaks: Reduce methane emissions from landfills, and oil and natural gas production and distribution.
- Reduce Exposure to Toxics: Reduce emissions of toxic air contaminants by adopting more stringent limits and methods for evaluating toxic risks at existing and new facilities.

[13] Bay Area Air Quality Management District, *Final 2017 Clean Air Plan*, April 19, 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

- Put a Price on Driving: Implement pricing measures to reduce travel demand.
- Advance Electric Vehicles: Accelerate the widespread adoption of electric vehicles.
- Promote Clean Fuels: Promote the use of clean fuels and low or zero carbon technologies in trucks and heavy-duty vehicles.
- Accelerate Low Carbon Buildings: Expand the production of low-carbon, renewable energy by promoting on-site technologies such as rooftop solar and ground-source heat pumps.
- Support More Energy Choices: Support of community choice energy programs throughout the Bay Area.
- Make Buildings More Efficient: Promote energy efficiency in both new and existing buildings.
- Make Space and Water Heating Cleaner: Promote the switch from natural gas to electricity for space and water heating in Bay Area buildings.

When a public agency contemplates approving a project where an air quality plan consistency determination is required, BAAQMD recommends that the agency analyze the project with respect to the following questions: (1) Does the project support the primary goals of the air quality plan; (2) Does the project include applicable control measures from the air quality plan; and (3) Does the project disrupt or hinder implementation of any 2017 Clean Air Plan control measures? If the first two questions are concluded in the affirmative and the third question concluded in the negative, the BAAQMD considers the project consistent with air quality plans prepared for the Bay Area.

Any project that would not support the 2017 Clean Air Plan goals would not be considered consistent with the 2017 Clean Air Plan. The recommended measure for determining project support of these goals is consistency with BAAQMD CEQA thresholds of significance. As presented in the subsequent impact discussions, the proposed project would not exceed the BAAQMD significance thresholds; therefore, the proposed project would support the primary goals of the 2017 Clean Air Plan.

The proposed project with required mitigation measures would support the primary goals of the 2017 Clean Air Plan, it would be consistent with all applicable 2017 Clean Air Plan control measures, and would not disrupt or hinder implementation of any 2017 Clean Air Plan control measures. Therefore, there would be a **less-than-significant impact with mitigation** associated with, conflicting with, or obstructing implementation of the applicable air quality plan.

5.2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard – Less-than-Significant Impact with Mitigation

CONSTRUCTION

Intermittent (short-term construction emissions that occur from activities, such as site-grading, paving, and building construction) and long-term air quality impacts related to the operation of the proposed project were evaluated. The analysis focuses on daily emissions from these construction and operational (mobile, area, stationary, and fugitive sources) activities. The CARB CalEEMod, Version 2016.3.2[14] was used to quantify construction-related pollutant emissions. CalEEMod output worksheets are included in **Attachment A: CalEEMod Output Files**. The emissions generated from these construction activities include:

- Dust (including PM_{10} and $PM_{2.5}$) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) such as material handling and travel on unpaved surfaces;
- Combustion exhaust emissions of criteria air pollutants (ROG, NO_x, CO, PM_{10}, and $PM_{2.5}$) primarily from operation of heavy off-road construction equipment, haul trucks, (primarily diesel-operated), and construction worker automobile trips (primarily gasoline-operated); and
- VOCs from architectural coating.

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. High winds (greater than 10 miles per hour) occur infrequently in the area, less than two percent of the time. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM_{10} concentrations may be adversely affected on a temporary and intermittent basis during construction. In addition, the fugitive dust generated by construction would include not only PM_{10}, but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

Erosion control measures and water programs are typically undertaken to minimize these fugitive dust and particulate emissions. A dust control efficiency of over 50 percent due to daily watering and other measures (e.g., limiting vehicle speed to 15 mph, management of stockpiles, screening process controls, etc.) was estimated. Based on CalEEMod, one water application per

[14] California Air Resources Board, *California Emissions Estimator Model User's Guide*, November 9, 2017, http://www.caleemod.com/

day reduces fugitive dust by 34 percent, two water applications per day reduces fugitive dust by 55 percent, and three water applications per day reduces fugitive dust by 61 percent.

Construction activities are expected to occur from July 2022 through December of 2024. There are existing pavement and buildings (approximately 2,500 square feet) which would be removed and/or demolished, resulting in 11 haul truck trips. **Table 3** provides the estimated construction schedule for each phase: demolition, site preparation, grading, building construction, paving, and architectural coating. Site preparation would consist of land clearing and grading and would not include any import or export of soil materials because the site grading would be balanced.

Table 3: Estimated Construction Schedule

Phase	Description	Start	End	Working Days
1	Demolition	07/05/2022	07/11/2022	5
2	Site Preparation	07/12/2022	07/25/2022	10
3	Grading	07/26/2022	10/10/2022	55
4	Improvements	10/11/2022	12/12/2022	45
5	Building Construction	12/13/2022	09/02/2024	450
6	Paving	09/03/2024	12/16/2024	75
7	Architectural Coating	12/17/2024	01/27/2025	30

SOURCE: CalEEMod Version 2016.3.2.

The estimated construction equipment associated with the proposed project along with the number of pieces of equipment, daily hours of operation, horsepower (hp), and load factor (i.e., percent of full throttle) are shown in **Table 4**.

Table 4: Estimated Construction Equipment Usage

Phase	Equipment	Amount	Daily Hours	HP	Load Factor
Demolition	Concrete/Industrial Saws	1	8	81	0.73
Demolition	Excavators	3	8	158	0.38
Demolition	Rubber Tired Dozers	2	8	247	0.40
Site Preparation	Rubber Tired Dozers	3	8	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8	97	0.37
Grading	Excavators	2	8	158	0.38
Grading	Graders	1	8	187	0.41
Grading	Rubber Tired Dozers	1	8	247	0.40
Grading	Scrapers	2	8	367	0.48
Grading	Tractors/Loaders/Backhoes	2	7	97	0.37
Building Construction	Cranes	1	7	231	0.29
Building Construction	Forklifts	3	8	89	0.20
Building Construction	Generator Sets	1	8	84	0.74

Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37
Building Construction	Welders	1	8	46	0.45
Paving	Pavers	2	8	130	0.42
Paving	Paving Equipment	2	8	132	0.36
Paving	Rollers	2	8	80	0.38
Architectural Coating	Air Compressors	1	6	78	0.48
Improvement	Rubber Tired Dozers	3	8	247	0.40
Improvement	Tractors/Loaders/Backhoes	4	8	97	0.37

SOURCE: CalEEMod Version 2016.3.2.

Table 5 provides the estimated short-term construction emissions that would be associated with the proposed project and compares those emissions to the BAAQMD's significance thresholds for construction exhaust emissions. As the construction phases (i.e., grading, building construction, paving, etc.) are sequential, the average daily construction period emissions (i.e., total construction period emissions divided by the number of construction days) were compared to the BAAQMD significance thresholds. All construction-related emissions would be below the BAAQMD significance thresholds. BAAQMD's project-level significance thresholds consider fugitive dust impacts to be less than significant with implementation of best management practices. Without implementation of best management practices for fugitive dust construction impacts would be potentially significant. **Attachment C: Mitigation Measures** includes mitigation measures required by the Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation EIR and the City of Santa Rosa, which include best management practices for fugitive dust. Therefore, proposed project construction would be **less-than-significant with mitigation**.

Table 5: Estimated Annual Average Daily Construction Emissions (pounds)

Condition	ROG	NOx	PM10	PM2.5	CO
	Unmitigated				
Construction Period	**7.23**	**17.58**	**0.78**	**0.73**	**17.93**
Significance Threshold	54	54	82	54	---
Significant (Yes or No)?	No	No	No	No	No
	Mitigated				
Construction Period	**6.23**	**15.97**	**0.44**	**0.44**	**20.27**
Significance Threshold	54	54	82	54	---
Significant (Yes or No)?	No	No	No	No	No

SOURCE: CalEEMod Version 2016.3.2.

Based on the CalEEMod for proposed project construction and using standard fuel consumption estimates, construction activities would require 100,690 gallons of diesel fuel.[15] This includes all off-road construction equipment, hauling, vendor, and worker trips over the entire construction period. For the finishing phase of construction, some electricity may be used (e.g., for power tools and work lighting). While this electricity usage cannot be quantified at this time, it is anticipated to be relatively minor compared to normal building operations. When not in use, electric equipment would be powered off so as to avoid unnecessary energy consumption. Natural gas would not be used during construction.

OPERATIONS

CalEEMod was also used to estimate emissions that would be associated with motor vehicle use, space and water heating, and landscape maintenance emissions expected to occur after the proposed project construction is complete and operational. The proposed project land use types and size and other project-specific information were input to the model. CalEEMod provides emissions for transportation, areas sources, electricity consumption, natural gas combustion, electricity usage associated with water usage and wastewater discharge, and solid waste land filling and transport. CalEEMod output worksheets are included in **Attachment A: CalEEMod Output Files**.

A daily weekday vehicle trip generation rate of 9.52 per dwelling unit (or 1,304 daily weekday trips) was estimated by CalEEMod. The estimated annual vehicle miles traveled would be 2,467,050 miles, which would result in consumption of approximately 108,000 gallons of gasoline. The default trip lengths and trip types specified by CalEEMod for Sonoma County were used.

Annual electricity and natural gas consumption were calculated using the demand factors provided in CalEEMod. The proposed project's energy consumption was estimated to be approximately 1,061,720 kilowatt-hours of electricity per year and natural gas consumption was estimated to be approximately 2.10 billion British Thermal Units per year.

Estimated daily and annual operational emissions that would be associated with the proposed project are presented in **Tables 6 and 7** and are compared to BAAQMD's thresholds of significance. As indicated in **Tables 6 and 7**, the estimated proposed project operational emissions would be below the BAAQMD's significance thresholds and would be **less than significant**.

[15] Fuel usage is estimated using the CalEEMod output for CO_2, and a $kgCO_2$/gallon conversion factor, as cited in the U.S. Energy Information Administration Voluntary Reporting of Greenhouse Gases Program, https://www.epa.gov/sites/production/files/2015-11/documents/emission-factors_2011.pdf

Table 6: Estimated Daily Operational Emissions (pounds)

Condition	ROG	NOx	PM10	PM2.5	CO
	Summer				
Area	6.75	0.13	0.06	0.06	11.29
Energy	0.06	0.53	0.04	0.04	0.23
Mobile	1.91	8.27	5.57	1.53	17.20
Total Proposed Project	**8.72**	**8.93**	**5.67**	**1.63**	**28.72**
Significance Threshold	54	54	82	54	---
Significant Impact?	No	No	No	No	No
	Winter				
Area	6.75	0.13	0.06	0.06	11.29
Energy	0.06	0.53	0.04	0.04	0.23
Mobile	1.65	8.61	5.57	1.53	17.88
Total Proposed Project	**8.46**	**9.27**	**5.67**	**1.63**	**29.40**
Significance Threshold	54	54	82	54	---
Significant Impact?	No	No	No	No	No

SOURCE: CalEEMod Version 2016.3.2.

Table 7: Estimated Annual Operational Emissions (tons)

Condition	ROG	NOx	PM10	PM2.5	CO
Area	1.20	0.01	0.01	0.01	1.02
Energy	0.01	0.10	0.01	0.01	0.04
Mobile	0.29	1.47	0.92	0.25	2.95
Total Proposed Project	**1.50**	**1.58**	**0.94**	**0.27**	**4.01**
Significance Threshold	10	10	15	10	---
Significant (Yes or No)?	No	No	No	No	No

SOURCE: CalEEMod Version 2016.3.2.

CUMULATIVE IMPACTS

As shown, project-related emissions would be less than the BAAQMD significance thresholds. The BAAQMD *CEQA Air Quality Guidelines* recommend that cumulative air quality effects from criteria air pollutants also be addressed by comparison to the mass daily and annual thresholds. These thresholds were developed to identify a cumulatively considerable contribution to a significant regional air quality impact. Project-related emissions would be below the significance thresholds. Therefore, the proposed project would not be cumulatively considerable and cumulative impacts would be **less than significant**.

5.3 Expose sensitive receptors to substantial pollutant concentrations – Less-than-Significant Impact with Mitigation

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. The CARB has identified the following people as most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and those with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive population groups.

Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses are also considered sensitive, due to the greater exposure to ambient air quality conditions and because the presence of pollution detracts from the recreational experience. According to the BAAQMD, workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupation Safety and Health Administration to ensure the health and well-being of their employees.

The proposed project would constitute a new emission source of DPM and $PM_{2.5}$ due to its construction activities. Studies have demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. BAAQMD considers the relevant zone of influence for an assessment of air quality health risks to be within 1,000 feet of a project site. The adjacent properties within 1,000 feet of the proposed project include single family residences to the north and south and Meadow View Elementary School to the west of the project site.

During construction, onsite activities would result in the emission of exhaust from vehicles and heavy duty equipment as well as the generation of fugitive dust from grading and ground disturbing activities. The project is not expected to result in significant construction-related emissions that could expose sensitive receptors to substantial pollutant concentrations. Nonetheless, implementation of the Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation EIR **Mitigation Measures 3.3.3, 3.3.5, and 3.3.6,** in **Attachment C** would further reduce fugitive dust and combustion exhaust through the application of best management practices during construction and a site-specific construction pollutant mitigation plan in consultation with BAAQMD staff prior to the issuance of grading permits.

Construction activity could occur in areas adjacent to existing or future residences and in close proximity to Meadow View Elementary School. Given the close proximity of sensitive receptors to construction activities, emission levels may be occasionally be elevated. Implementation of the

Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation EIR **Mitigation Measures 3.3.3, 3.3.5, and 3.3.6** in **Attachment C** would be implemented during construction. Therefore, the project's health impacts to nearby sensitive receptors generated by construction activities would be reduced to **less than significant with mitigation**.

At operation, the proposed residential development would not generate substantial air quality emissions that would affect sensitive receptors in the vicinity of the project site. As a residential land use, air quality emissions generated by the proposed project would be minimal and similar in scale to the surrounding existing uses. Secondly, the proposed project would not locate sensitive receptors within 1,000 feet of existing permitted stationary sources or major roadways such as US 101 as well as rail activities.[16] Furthermore, if any stationary sources are permitted within 1,000 feet of the proposed project in the future, prior to development of the proposed project, a site-specific analysis would be required (Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation EIR **Mitigation Measure 3.3.6**). Therefore, the project's health impacts during operations would be **less than significant with mitigation**.

5.4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people– Less-than-Significant Impact

The BAAQMD's significance criteria for odors are subjective and are based on the number of odor complaints generated by a project. Generally, the BAAQMD considers any project with the potential to frequently expose members of the public to objectionable odors to cause a significant impact. Odor impacts could result from siting a new sensitive receptor near an existing odor source. Examples of land uses that have the potential to generate considerable odors include, but are not limited to wastewater treatment plants; landfills; refineries; and chemical plants.

In the BAAQMD *CEQA Air Quality Guidelines*, odor screening distances were recommended by BAAQMD for a variety of land uses. Projects that would site a new receptor farther than the applicable screening distance from an existing odor source would not likely result in a significant odor impact. The odor screening distances are not used as absolute screening criteria, rather as information to consider along with the odor parameters and complaint history. The odor

[16] In June of 2010, the Air District's adopted thresholds of significance were challenged in a lawsuit (California Building Industry Association v Bay Area Air Quality Management District). On December 15, 2015, the California Supreme Court (S213478) concluded that agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. The Supreme Court also indicated that nothing in CEQA prevents local agencies from considering the impact of locating new development in areas subject to existing environmental hazards. However, the Court of Appeal explained CEQA cannot be used by a lead agency to require a developer or other agency to obtain an EIR or implement mitigation measures solely because the occupants or users of a new project would be subjected to the levels of emissions specified, an agency may do so voluntarily on its own project and may use the BAAQMD guidance. Therefore, an analysis of the health impacts from existing sources on the proposed receptors is presented within this document.

screening distances for a sewage treatment plant, refinery, and chemical plant are two miles. The proposed project is not within the odor screening distances for a sewage treatment plant, refinery, or other odor producing sources. Therefore, odor impacts would be **less than significant**.

6.0 GREENHOUSE GAS ANALYSIS

"Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal, with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years.

Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. After 1950, however, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the earth's atmosphere are thought to be the main cause of human-induced climate change. GHG naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space. Some GHG occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Gases that trap heat in the atmosphere are referred to as GHG because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHG has been implicated as the driving force for global climate change. The primary GHG are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), ozone, and water vapor.

While the presence of the primary GHG in the atmosphere are naturally occurring, CO_2, CH_4, and N_2O are also emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills.

Other GHG include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent GHG than CO_2, with GWP of 25 and 310 times that of CO_2, respectively.

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons of CO_2 equivalent (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWP than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO_2e.

Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions (and thus substantial increases in atmospheric concentrations of CO_2). In pre-industrial times (c. 1860), concentrations of atmospheric CO_2 were approximately 280 parts per million (ppm). By February 2018, atmospheric CO_2 concentrations had increased to 408 ppm, by over 46 percent above pre-industrial concentrations.[17] There is international scientific consensus that human-caused increases in GHG have contributed and will continue to contribute to global warming.

There is international scientific consensus that human-caused increases in GHG have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.[18]

Santa Rosa General Plan

The Santa Rosa General Plan 2035 addresses issues related to the physical development and growth of Santa Rosa. It represents a community's aspirations for the future. The General Plan is required by State law, and it has a long range focus, looking 20 years into the future. It guides the City's planning and zoning functions as well as the funding of public improvement projects, such as parks and streets. Santa Rosa's General Plan was adopted by the City Council on November 3,

[17] Earth System Research Laboratory, *Recent Monthly Mean CO_2 at Mauna Lora*, www.esrl.noaa.gov/gmd/ccgg/trends/

[18] California Environmental Protection Agency, *2006 Final Climate Action Team Report to the Governor and Legislature*, March 2006, http://www.climatechange.ca.gov/climate_action_team/reports/2006report/2006-04-03_FINAL_CAT_REPORT.PDF.

2009[19] and contains the goals, policies, and programs related to air quality and climate change: General Plan policies addressing land use patterns, connections between different land uses, use of energy sources, alternative transportation modes, preservation of open spaces, and construction dust abatement all contribute to the reduction of air pollutants within Santa Rosa. The following are policies and programs within the General Plan which are designed to improve air quality within Santa Rosa:

1) Take appropriate actions to help Santa Rosa and the larger Bay Area region achieve and maintain all ambient air quality standards.

2) Review all new construction projects and require dust abatement actions as contained in the BAAQMD *CEQA Air Quality Handbook*.

3) Budget for clean fuels and vehicles in the city's long-range capital expenditure plans, to replace and improve the existing fleet of gasoline and diesel powered vehicles. Initiate a policy to make its fleet among the cleanest in the North Bay by:

   - Purchasing electric vehicles wherever possible, and especially for stop-and-go units such as parking meter readers.
   - Purchasing electric or hybrid electric fleet vehicles for general staff use, especially for building inspectors and other uses primarily within the city.
   - Purchasing alternative fuel vehicles, such as natural gas, as the existing diesel-powered fleet is replaced. Alternatively, purchase diesel vehicles only if they meet or exceed emission specifications for available natural gas fuel vehicles.
   - Purchasing biodiesel fuel for use by the city diesel truck fleet.
   - As possible, use lo-NOx fuel additives, such as Purinox, in all diesel vehicles.

4) Reduce particulate matter emissions from wood burning appliances through implementation of Santa Rosa's Wood Burning Appliance Code.

5) Meet local, regional and state targets for reduction of GHG emissions through implementation of the Climate Action Plan.

Santa Rosa Climate Change Action Plan

The Santa Rosa Climate Action Plan and the General Plan 2035 work in conjunction to facilitate GHG emissions reductions. These plans acknowledges the environmental leadership Santa Rosa has achieved and supports the responsibility of continued GHG emissions reductions. Measures, policies and projects that reduce community-wide GHG are aligned with the goals and policies

[19] City of Santa Rosa, *Santa Rosa General Plan 2035*, November 3, 2009, https://srcity.org/392/General-Plan

in the General Plan. In addition, the General Plan provides the basis for analyzing proposed development to determine consistency with the CAP goals and measures. The measures presented in the Climate Action Plan are referenced generally throughout the General Plan.

The City of Santa Rosa has adopted local regulations to address GHG emissions. On December 4, 2001 the Santa Rosa City Council adopted a resolution to become a member of Cities for Climate Protection, a project of the International Council on Local Environmental Initiatives. On August 2, 2005, the Santa Rosa City Council adopted Council Resolution Number 26341, which established a municipal GHG reduction target of 20 percent from 2000 levels by 2010 and facilitates the community-wide greenhouse gas reduction target of 25 percent from 1990 levels by 2015. In October 2008, the Sonoma County Community Climate Action Plan was released, which formalized countywide GHG reduction goals. On June 5, 2012, the City of Santa Rosa adopted its own Climate Action Plan, which meets the programmatic threshold for a Qualified GHG Reduction Strategy, established by the BAAQMD guidelines.

On August 6, 2013, the City of Santa Rosa adopted the Santa Rosa Climate Action Plan. The Santa Rosa Climate Action Plan is considered a Qualified GHG Reduction Strategy because it contains a baseline inventory of GHG emissions from all sources, sets forth GHG emission reduction targets that are consistent with the goals of AB 32, and identifies enforceable GHG emission reduction strategies and performance measures. Accordingly, the proposed project is analyzed for consistency with the Santa Rosa Climate Action Plan in order to assess level of significance for GHG emissions.[20] **Attachment B Climate Action Plan New Development Checklist** contains the Climate Action Plan New Development Checklist for the proposed project.

California Green Building Standards Code

California Code of Regulations Title 24, Part 6 and Part 11 (California Green Building Standards Code)[21], which relate to energy and green building and commonly referred to as CALGreen, is a comprehensive and uniform regulatory code for all residential, commercial and school buildings. CALGreen contains requirements for construction site selection, storm water control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. CALGreen provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. CALGreen also requires building commissioning, which is a process for verifying that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency. The following provides examples of CALGreen requirements:

[20] City of Santa Rosa. *Climate Action Plan*, June 5, 2012, https://srcity.org/1634/Climate-Action-Planning
[21] California Code of Regulations Title 24, Part 11, http://www.bsc.ca.gov/Home/CALGreen.aspx

- **Designated parking.** Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles.
- **Recycling by Occupants.** Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling.
- **Construction waste.** A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and-75 percent for new homes and 80-percent for commercial projects. All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled.
- **Wastewater reduction.** Each building shall reduce the generation of wastewater by installation of water-conserving fixtures or using nonpotable water systems.
- **Water use savings.** 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35, and 40-percent reductions.
- **Water meters.** Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day.
- **Irrigation efficiency.** Moisture-sensing irrigation systems for larger landscaped areas.
- **Materials pollution control.** Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard.
- **Building commissioning.** Mandatory 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.

Executive Order S-3-05

Governor Schwarzenegger established Executive Order S-3-05 in 2005, in recognition of California's vulnerability to the effects of climate change. Executive Order S-3-05 set forth a series of target dates by which statewide emissions of GHG would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The executive order directed the Secretary of the CalEPA to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary will also submit biannual reports to the governor and California Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation

plans to combat these impacts. To comply with the executive order, the secretary of CalEPA created the California Climate Action Team, made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of California businesses, local governments, and communities and through state incentive and regulatory programs.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Using these criteria to reduce statewide GHG emissions to 1990 levels by 2020 would represent an approximate 25 to 30 percent reduction in current emissions levels. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. Under AB 32, CARB must adopt regulations to achieve reductions in GHG to meet the 1990 emissions cap by 2020.

Climate Change Scoping Plan

AB 32 required CARB to develop a Scoping Plan that describes the approach California will take to reduce GHG to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first approved by CARB in 2008 and must be updated every five years. The initial AB 32 Scoping Plan contains the main strategies California will use to reduce the GHG that cause climate change. The initial Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32

program implementation fee regulation to fund the program. In August 2011, the initial Scoping Plan was approved by CARB.

The 2013 Scoping Plan Update builds upon the initial Scoping Plan with new strategies and recommendations. The 2013 Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The 2013 Update defines CARB climate change priorities for the next five years and sets the groundwork to reach California's long-term climate goals set forth in Executive Orders S-3-05 and B-16-2012. The 2013 Update highlights California progress toward meeting the near-term 2020 GHG emission reduction goals defined in the initial Scoping Plan. In the 2013 Update, nine key focus areas were identified (energy, transportation, agriculture, water, waste management, and natural and working lands), along with short-lived climate pollutants, green buildings, and the cap-and-trade program. On May 22, 2014, the First Update to the Climate Change Scoping Plan was approved by the Board, along with the finalized environmental documents.

Executive Order No. B-30-15

On April 29, 2015, Executive Order No. B-30-15 was issued to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. Executive Order No. B-30-15 sets a new, interim, 2030 reduction goal intended to provide a smooth transition to the existing ultimate 2050 reduction goal set by Executive Order No. S-3-05 (signed by Governor Schwarzenegger in June 2005). It is designed so State agencies do not fall behind the pace of reductions necessary to reach the existing 2050 reduction goal. Executive Order No. B-30-15 orders "All State agencies with jurisdiction over sources of GHG emissions shall implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 targets." The Executive Order also states that "CARB shall update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent." The CARB is currently moving forward with a second update to the Climate Change Scoping Plan to reflect the 2030 reduction target. The updated Scoping Plan will provide a framework for achieving the 2030 target. In September of 2016, the AB 32 was extended to achieve reductions in GHG of 40 percent below 1990 levels by 2030. The new plan, outlined as SB 32, involves increasing renewable energy use, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

Greenhouse Gas Regional Emission Estimates

Worldwide emissions of GHG in 2011 were 45.7 billion tons of CO_2e per year.[22] This value includes ongoing emissions from industrial and agricultural sources, but excludes emissions from land use changes.

In 2014, the United States emitted about 6.87 billion tons of CO_2e per year or about 21.5 tons per person per year. Of the five major sectors nationwide — residential and commercial, industrial, agriculture, transportation, and electricity— electricity accounts for the highest fraction of GHG emissions (approximately 30 percent), closely followed by transportation (approximately 26 percent); these emissions from energy are primarily generated from the combustion of fossil fuels (approximately 82 percent), and emissions from transportation are entirely generated from direct fossil fuel combustion.[23] United States emissions increased by three percent from 2013 to 2014. Recent trends can be attributed to multiple factors including increased emissions from electricity generation, an increase in miles traveled by on-road vehicles, an increase in industrial production and emissions in multiple sectors, and year-to-year changes in the prevailing weather.

In 2015, California emitted approximately 440.4 million tons of CO_2e. This represents approcimately 6.9 percent of total U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. California's gross emissions of GHG decreased by 5.6 percent from 466.3 million metric tons of CO_2e in 2000 to 441.5 million metric tons in 2014, with a maximum of 492.7 million metric tons in 2004.

By contrast, at 11.4 tons per person per year, California has one of the lowest per capita GHG emission rates in the country.[24] This is in part due to the success of the state's energy efficiency and renewable energy programs and commitments that have lowered the GHG emissions rate of growth by more than half of what it would have been otherwise.[25] Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The CARB inventory also reports that the composition of gross climate change pollutant emissions in California (expressed as CO_2e) were as follows:

- CO_2 accounted for 84.0 percent;
- CH_4 accounted for 9.0 percent;

[22] Climate Analysis Indicator Tool, http://cait.wri.org/

[23] United States Environmental Protections Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014*, www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014

[24] California Air Resources Board, *Emissions Trends Report*, June 6, 2017, www.arb.ca.gov/cc/inventory/data/data.htm

[25] California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*, October 2006, http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-D.PDF

- N_2O accounted for 2.7 percent; and
- Fluorinated gases (HFCs, PFC, and SF_6) accounted for 4.3 percent.

Of these gases, CARB found that transportation is the source of approximately 39 percent of the state's GHG emissions, followed by industrial sources at 23 percent and electricity generation (both in-state and out-of-state) at 19 percent. Agriculture is the source of approximately 8 percent, and residential activity is the source of about 6 percent, followed by commercial activities at 5 percent.[26]

In the San Francisco Bay Area, the GHG emissions inventory prepared by the BAAQMD; indicates that the transportation sector and industrial/commercial sector represent the largest sources of GHG emissions, accounting for 39.7 percent and 35.7 percent, respectively, of the Bay Area's 86.6 million tons of CO_2e in 2011. Electricity/co-generation sources account for approximately 14 percent of the Bay Area's GHG emissions, followed by residential fuel usage at approximately 7.7 percent. Off-road equipment sources currently account for approximately 1.5 percent of total Bay Area GHG emissions.[27]

The Santa Rosa community-wide inventory includes GHG emissions from activities such as electricity use, natural gas use, on-road transportation, solid waste disposal, water and wastewater, off-road equipment, agriculture, and stationary sources. The results of the baseline inventory estimate that the City generated 1,349,690 metric tons of CO_2e for the year 2007. Transportation emissions represent the largest sources of community emissions (approximately 51 percent). Building energy is often one of the largest sources of GHG emissions in community inventories and includes energy consumed for heating, cooling, lighting, and cooking in the residential, commercial, and industrial sectors. Building energy from residential units is 19 percent of the total community GHG emissions and building energy from non-residential units is 16 percent of the total community GHG emissions.[28]

Thresholds of Significance

The BAAQMD has established separate thresholds of significance for operational GHG emissions from stationary sources (such as generators, furnaces, and boilers) and non-stationary sources (such as on-road vehicles). As no threshold has been established for construction-related emissions, the operational emissions thresholds apply. The threshold for stationary sources is 10,000 metric tons of CO_2e per year (i.e., emissions above this level may be considered significant). For non-stationary sources, three separate thresholds have been established:

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[26] California Air Resources Board, *Emissions Trends Report*, June 6 2017, www.arb.ca.gov/cc/inventory/data/data.htm
[27] Bay Area Air Quality Management District, *Bay Area Emissions Inventory*, Adopted June 2011, Updated January 2015, http://www.baaqmd.gov/~/media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf
[28] City of Santa Rosa. *Climate Action Plan*, June 5, 2012, https://srcity.org/1634/Climate-Action-Planning

- Compliance with a Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be considered significant); or
- 1,100 metric tons of CO_2e per year; known as a bright line threshold (i.e., emissions above this level may be considered significant); or
- 4.6 metric tons of CO_2e per service population per year; known as an efficiency threshold (i.e., emissions above this level may be considered significant). Service population is the sum of residents/students/employees expected for a development project.

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from a project be estimated, including a project's direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption.

6.1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment – Less-than-Significant Impact

CalEEMod was used to quantify GHG emissions associated with construction activities, as well as long-term operational emissions produced by motor vehicles, natural gas combustion for space and water heating, electricity use, and landscape maintenance equipment. CalEEMod incorporates GHG emission factors for the central electric utility serving the Bay Area and mitigation measures based on the California Air Pollution Control Officer's Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures*[29] and the *California Climate Action Registry General Reporting Protocol*[30].

CalEEMod incorporates GHG emission factors for the central electric utility serving the Bay Area. Default rates for energy consumption were assumed in the model. Emissions rates associated with electricity consumption were adjusted to account for Pacific Gas & Electric utility's projected CO_2 intensity rate. This projected CO_2 intensity rate is based, in part, on the requirement of a renewable energy portfolio standard of 33 percent by the year 2020. CalEEMod uses a default rate of 641 pounds of CO_2 per megawatt of electricity produced. The projected CO_2 intensity rate of

[29] California Air Pollution Control Officer's Association *Quantifying Greenhouse Gas Mitigation Measures*, August 2010, http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

[30] California Climate Action Registry General Reporting Protocol, April 2008, http://www.climateactionreserve.org/wp-content/uploads/videos/GRP_V3_April%202008_FINAL.pdf

290 pounds of CO_2 per megawatt of electricity produced for 2025 (the first year of project operations) was used.[31]

The proposed project's estimated construction and operational GHG emissions are presented in **Table 8**. The estimated construction GHG emissions are 281 metric tons of CO_2e in 2022, 393 metric tons of CO_2e in 2023, and 348 metric tons of CO_2e in 2024. As indicated, 30-year amortized annual construction related GHG emissions would be 34 metric tons of CO_2e. There is no BAAQMD CEQA significance threshold for construction-related GHG emissions. The GHG construction and operational emissions would be 1,286 metric tons per year, which is above the BAAQMD bright line threshold of 1,100 metric tons. The GHG construction and operational emissions would be 3.28 metric tons per service population (approximately 392 residents) per year, which is below the BAAQMD efficiency threshold of 4.6 metric tons per service population. A project is less than significant if the GHG emissions are less than either the bright line threshold or the efficiency threshold. Thus, the proposed project impacts on climate change would be **less than significant**.

Table 8: Estimated Greenhouse Gas Emissions (metric tons)

Source	Annual CO_2e Metric Tons
Construction (30-year amortized)	1,022 (34)
Operations	
Area Sources	1.70
Energy	253.6
Mobile	958.7
Solid Waste	20.7
Water	17.3
Total Construction and Operational Emissions	**1,286**
BAAQMD Bright line Threshold	1,100
Potentially Significant?	Yes
Total Construction and Operational Emissions (Service Population)	3.28
BAAQMD Efficiency Threshold	4.6
Potentially Significant?	No

SOURCE: CalEEMod Version 2016.3.2.

[31] PG&E, *Greenhouse Gas Emission Factors: Guidance for PG&E Customers*, November 2015, http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

6.2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases – Less-than-Significant Impact

California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Using these criteria to reduce statewide GHG emissions to 1990 levels by 2020 would represent an approximate 25 to 30 percent reduction in current emissions levels. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. Under AB 32, CARB must adopt regulations to achieve reductions in GHG to meet the 1990 emissions cap by 2020. In September of 2016, AB 32 was extended to achieve reductions in GHG of 40 percent below 1990 levels by 2030. The new plan, outlined in SB 32, involves increasing renewable energy use, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

The City of Santa Rosa adopted the Climate Action Plan in 2012.[32] The Climate Action Plan is the roadmap for how the City reduces energy consumption and GHG emissions to meet State GHG emissions targets. Statewide plans and regulations such as GHG emissions standards for vehicles and the low carbon fuel standard are being implemented at the statewide level, and compliance at the specific plan or project level is not addressed. The assumption is that Statewide plans and regulations will be successful in reducing GHG emissions and reducing the cumulative GHG

[32] City of Santa Rosa. *Climate Action Plan*, June 5, 2012, https://srcity.org/1634/Climate-Action-Planning

emissions statewide by 2020 and beyond. The State has taken these measures, because no project individually could have a major impact (either positively or negatively) on the global concentration of GHG. The proposed project has been reviewed relative to the City's Climate Action Plan and **Attachment B Climate Action Plan New Development Checklist** contains the Climate Action Plan New Development Checklist for the proposed project. The proposed project would not conflict with the City's Climate Action Plan or statewide plans and regulations for reducing GHG emissions. Therefore, the proposed project would have a **less-than-significant impact.**

Attachment A

Construction and Operational Emissions

CalEEMod Output Files

- Annual
- Summer
- Winter

Dutton Meadows

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	137.00	Dwelling Unit	18.43	253,950.00	392

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Dutton Meadows - Sonoma-San Francisco County, Annual

Project Characteristics - Greenhouse Gas Emission Factors: Guidance for PG&E Customers November 2015

Land Use - 137 homes with an average SF of 1,853,65. Total project site is 18.43 acres

Construction Phase - Draft Construction Schedule provided on Dec 3, 2020

Off-road Equipment -

Demolition -

Grading - 18.43 acres - balanced site.

Woodstoves - no fireplaces or woodstoves

Energy Use -

Construction Off-road Equipment Mitigation - BAAQMD Basic and Enhanced Emission Reduction Measures

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - Compliance with 2019 Building Standards

Water Mitigation -

Waste Mitigation - Assumes California recycling goals for 2025

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
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tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	300.00	450.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	30.00	55.00
tblConstructionPhase	NumDays	20.00	75.00
tblConstructionPhase	NumDays	10.00	45.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	34.25	0.00
tblFireplaces	NumberNoFireplace	10.96	0.00
tblFireplaces	NumberWood	58.91	0.00
tblGrading	AcresOfGrading	137.50	18.43
tblLandUse	LandUseSquareFeet	246,600.00	253,950.00
tblLandUse	LotAcreage	44.48	18.43
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblWoodstoves	NumberCatalytic	5.48	0.00
tblWoodstoves	NumberNoncatalytic	5.48	0.00
tblWoodstoves	WoodstoveDayYear	21.06	0.00
tblWoodstoves	WoodstoveWoodMass	956.80	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2116	2.1677	1.5495	3.1800e-003	0.6854	0.0982	0.7836	0.3686	0.0905	0.4591	0.0000	279.2986	279.2986	0.0850	0.0000	281.4235
2023	0.2330	2.0467	2.3158	4.4600e-003	0.0626	0.0915	0.1542	0.0170	0.0861	0.1031	0.0000	390.7019	390.7019	0.0754	0.0000	392.5868
2024	0.8432	1.6653	2.1219	3.9200e-003	0.0472	0.0723	0.1195	0.0128	0.0676	0.0804	0.0000	343.5305	343.5305	0.0751	0.0000	345.4083
2025	1.1341	0.0111	0.0192	3.0000e-005	7.5000e-004	4.9000e-004	1.2400e-003	2.0000e-004	4.9000e-004	6.9000e-004	0.0000	2.9909	2.9909	1.5000e-004	0.0000	2.9946
Maximum	**1.1341**	**2.1677**	**2.3158**	**4.4600e-003**	**0.6854**	**0.0982**	**0.7836**	**0.3686**	**0.0905**	**0.4591**	**0.0000**	**390.7019**	**390.7019**	**0.0850**	**0.0000**	**392.5868**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0807	1.5102	1.8712	3.1800e-003	0.3150	0.0352	0.3502	0.1676	0.0352	0.2028	0.0000	279.2983	279.2983	0.0850	0.0000	281.4232
2023	0.1161	2.0261	2.5277	4.4600e-003	0.0626	0.0593	0.1219	0.0170	0.0593	0.0762	0.0000	390.7015	390.7015	0.0754	0.0000	392.5865
2024	0.7563	1.8013	2.3723	3.9200e-003	0.0472	0.0518	0.0991	0.0128	0.0518	0.0646	0.0000	343.5302	343.5302	0.0751	0.0000	345.4080
2025	1.1331	0.0131	0.0194	3.0000e-005	7.5000e-004	4.6000e-004	1.2000e-003	2.0000e-004	4.6000e-004	6.5000e-004	0.0000	2.9909	2.9909	1.5000e-004	0.0000	2.9946
Maximum	**1.1331**	**2.0261**	**2.5277**	**4.4600e-003**	**0.3150**	**0.0593**	**0.3502**	**0.1676**	**0.0593**	**0.2028**	**0.0000**	**390.7015**	**390.7015**	**0.0850**	**0.0000**	**392.5865**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**13.86**	**9.17**	**-13.06**	**0.00**	**46.53**	**44.07**	**45.92**	**50.43**	**40.03**	**46.47**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-5-2022**	**10-4-2022**	1.3347	0.9525
2	**10-5-2022**	**1-4-2023**	1.0661	0.6589
3	**1-5-2023**	**4-4-2023**	0.5646	0.5306
4	**4-5-2023**	**7-4-2023**	0.5694	0.5350
5	**7-5-2023**	**10-4-2023**	0.5757	0.5410
6	**10-5-2023**	**1-4-2024**	0.5757	0.5424
7	**1-5-2024**	**4-4-2024**	0.5355	0.5350
8	**4-5-2024**	**7-4-2024**	0.5341	0.5336

9	**7-5-2024**	**10-4-2024**	0.4733	0.4883
10	**10-5-2024**	**1-4-2025**	1.0951	1.1303
11	**1-5-2025**	**4-4-2025**	0.9902	0.9911
		Highest	1.3347	1.1303

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2011	0.0117	1.0163	5.0000e-005		5.6400e-003	5.6400e-003		5.6400e-003	5.6400e-003	0.0000	1.6616	1.6616	1.5900e-003	0.0000	1.7014
Energy	0.0215	0.1835	0.0781	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	358.2923	358.2923	0.0187	6.9100e-003	360.8184
Mobile	0.3087	1.6018	3.3733	0.0124	1.1083	0.0106	1.1189	0.2981	9.9000e-003	0.3080	0.0000	1,143.5391	1,143.5391	0.0437	0.0000	1,144.6308
Waste						0.0000	0.0000		0.0000	0.0000	33.4204	0.0000	33.4204	1.9751	0.0000	82.7977
Water						0.0000	0.0000		0.0000	0.0000	2.8318	8.9442	11.7760	0.2918	7.0500e-003	21.1715
Total	**1.5312**	**1.7970**	**4.4677**	**0.0136**	**1.1083**	**0.0311**	**1.1394**	**0.2981**	**0.0304**	**0.3285**	**36.2523**	**1,512.4371**	**1,548.6894**	**2.3308**	**0.0140**	**1,611.1199**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2011	0.0117	1.0163	5.0000e-005		5.6400e-003	5.6400e-003		5.6400e-003	5.6400e-003	0.0000	1.6616	1.6616	1.5900e-003	0.0000	1.7014
Energy	0.0113	0.0968	0.0412	6.2000e-004		7.8300e-003	7.8300e-003		7.8300e-003	7.8300e-003	0.0000	251.7563	251.7563	0.0161	4.9400e-003	253.6326
Mobile	0.2902	1.4691	2.9479	0.0104	0.9147	8.9800e-003	0.9237	0.2460	8.3800e-003	0.2544	0.0000	957.7434	957.7434	0.0384	0.0000	958.7034
Waste						0.0000	0.0000		0.0000	0.0000	8.3551	0.0000	8.3551	0.4938	0.0000	20.6994
Water						0.0000	0.0000		0.0000	0.0000	2.2655	7.5154	9.7809	0.2334	5.6500e-003	17.3005
Total	**1.5026**	**1.5776**	**4.0054**	**0.0111**	**0.9147**	**0.0225**	**0.9372**	**0.2460**	**0.0219**	**0.2679**	**10.6206**	**1,218.6767**	**1,229.2973**	**0.7833**	**0.0106**	**1,252.0373**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.87**	**12.21**	**10.35**	**18.87**	**17.47**	**27.74**	**17.75**	**17.47**	**28.05**	**18.45**	**70.70**	**19.42**	**20.62**	**66.39**	**24.14**	**22.29**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/5/2022	7/11/2022	5	5	
2	Site Preparation	Site Preparation	7/12/2022	7/25/2022	5	10	
3	Grading	Grading	7/26/2022	10/10/2022	5	55	
4	Improvements	Site Preparation	10/11/2022	12/12/2022	5	45	
5	Building Construction	Building Construction	12/13/2022	9/2/2024	5	450	
6	Paving	Paving	9/3/2024	12/16/2024	5	75	
7	Architectural Coating	Architectural Coating	12/17/2024	1/27/2025	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 18.43

Acres of Paving: 0

Residential Indoor: 514,249; Residential Outdoor: 171,416; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Improvements	Rubber Tired Dozers	3	8.00	247	0.40
Improvements	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	11.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Improvements	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	49.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2300e-003	0.0000	1.2300e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6000e-003	0.0643	0.0515	1.0000e-004		3.1100e-003	3.1100e-003		2.8900e-003	2.8900e-003	0.0000	8.4976	8.4976	2.3900e-003	0.0000	8.5572
Total	**6.6000e-003**	**0.0643**	**0.0515**	**1.0000e-004**	**1.2300e-003**	**3.1100e-003**	**4.3400e-003**	**1.9000e-004**	**2.8900e-003**	**3.0800e-003**	**0.0000**	**8.4976**	**8.4976**	**2.3900e-003**	**0.0000**	**8.5572**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.3700e-003	3.1000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	2.0000e-005	0.0000	3.0000e-005	0.0000	0.4124	0.4124	3.0000e-005	0.0000	0.4131
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.0600e-003	0.0000	2.9000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2522	0.2522	1.0000e-005	0.0000	0.2524
Total	**1.9000e-004**	**1.4700e-003**	**1.3700e-003**	**0.0000**	**3.8000e-004**	**0.0000**	**4.0000e-004**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.6646**	**0.6646**	**4.0000e-005**	**0.0000**	**0.6654**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.5000e-004	0.0000	5.5000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3100e-003	0.0458	0.0617	1.0000e-004		1.0800e-003	1.0800e-003		1.0800e-003	1.0800e-003	0.0000	8.4976	8.4976	2.3900e-003	0.0000	8.5572
Total	**2.3100e-003**	**0.0458**	**0.0617**	**1.0000e-004**	**5.5000e-004**	**1.0800e-003**	**1.6300e-003**	**8.0000e-005**	**1.0800e-003**	**1.1600e-003**	**0.0000**	**8.4976**	**8.4976**	**2.3900e-003**	**0.0000**	**8.5572**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.3700e-003	3.1000e-004	0.0000	9.0000e-005	0.0000	1.0000e-004	2.0000e-005	0.0000	3.0000e-005	0.0000	0.4124	0.4124	3.0000e-005	0.0000	0.4131
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.0000e-004	1.0600e-003	0.0000	2.9000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2522	0.2522	1.0000e-005	0.0000	0.2524
Total	**1.9000e-004**	**1.4700e-003**	**1.3700e-003**	**0.0000**	**3.8000e-004**	**0.0000**	**4.0000e-004**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.6646**	**0.6646**	**4.0000e-005**	**0.0000**	**0.6654**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0903**	**8.0600e-003**	**0.0984**	**0.0497**	**7.4200e-003**	**0.0571**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.5400e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6052	0.6052	2.0000e-005	0.0000	0.6056
Total	**3.7000e-004**	**2.5000e-004**	**2.5400e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6052**	**0.6052**	**2.0000e-005**	**0.0000**	**0.6056**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0953	0.1148	1.9000e-004		2.3700e-003	2.3700e-003		2.3700e-003	2.3700e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**4.6600e-003**	**0.0953**	**0.1148**	**1.9000e-004**	**0.0407**	**2.3700e-003**	**0.0430**	**0.0223**	**2.3700e-003**	**0.0247**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.5400e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6052	0.6052	2.0000e-005	0.0000	0.6056
Total	**3.7000e-004**	**2.5000e-004**	**2.5400e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6052**	**0.6052**	**2.0000e-005**	**0.0000**	**0.6056**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1754	0.0000	0.1754	0.0921	0.0000	0.0921	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0997	1.0682	0.7986	1.7100e-003		0.0450	0.0450		0.0414	0.0414	0.0000	149.9702	149.9702	0.0485	0.0000	151.1827
Total	**0.0997**	**1.0682**	**0.7986**	**1.7100e-003**	**0.1754**	**0.0450**	**0.2203**	**0.0921**	**0.0414**	**0.1335**	**0.0000**	**149.9702**	**149.9702**	**0.0485**	**0.0000**	**151.1827**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2500e-003	1.5100e-003	0.0155	4.0000e-005	4.3200e-003	3.0000e-005	4.3500e-003	1.1500e-003	3.0000e-005	1.1800e-003	0.0000	3.6983	3.6983	1.1000e-004	0.0000	3.7011
Total	**2.2500e-003**	**1.5100e-003**	**0.0155**	**4.0000e-005**	**4.3200e-003**	**3.0000e-005**	**4.3500e-003**	**1.1500e-003**	**3.0000e-005**	**1.1800e-003**	**0.0000**	**3.6983**	**3.6983**	**1.1000e-004**	**0.0000**	**3.7011**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0789	0.0000	0.0789	0.0414	0.0000	0.0414	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0419	0.8244	1.0099	1.7100e-003		0.0179	0.0179		0.0179	0.0179	0.0000	149.9700	149.9700	0.0485	0.0000	151.1826
Total	**0.0419**	**0.8244**	**1.0099**	**1.7100e-003**	**0.0789**	**0.0179**	**0.0968**	**0.0414**	**0.0179**	**0.0593**	**0.0000**	**149.9700**	**149.9700**	**0.0485**	**0.0000**	**151.1826**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2500e-003	1.5100e-003	0.0155	4.0000e-005	4.3200e-003	3.0000e-005	4.3500e-003	1.1500e-003	3.0000e-005	1.1800e-003	0.0000	3.6983	3.6983	1.1000e-004	0.0000	3.7011
Total	**2.2500e-003**	**1.5100e-003**	**0.0155**	**4.0000e-005**	**4.3200e-003**	**3.0000e-005**	**4.3500e-003**	**1.1500e-003**	**3.0000e-005**	**1.1800e-003**	**0.0000**	**3.6983**	**3.6983**	**1.1000e-004**	**0.0000**	**3.7011**

3.5 Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4065	0.0000	0.4065	0.2234	0.0000	0.2234	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0713	0.7444	0.4432	8.6000e-004		0.0363	0.0363		0.0334	0.0334	0.0000	75.2386	75.2386	0.0243	0.0000	75.8470
Total	**0.0713**	**0.7444**	**0.4432**	**8.6000e-004**	**0.4065**	**0.0363**	**0.4428**	**0.2234**	**0.0334**	**0.2568**	**0.0000**	**75.2386**	**75.2386**	**0.0243**	**0.0000**	**75.8470**

3.5 Improvements - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	1.1100e-003	0.0114	3.0000e-005	3.1800e-003	2.0000e-005	3.2000e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.7233	2.7233	8.0000e-005	0.0000	2.7254
Total	**1.6600e-003**	**1.1100e-003**	**0.0114**	**3.0000e-005**	**3.1800e-003**	**2.0000e-005**	**3.2000e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.7233**	**2.7233**	**8.0000e-005**	**0.0000**	**2.7254**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1829	0.0000	0.1829	0.1006	0.0000	0.1006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0210	0.4290	0.5166	8.6000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	75.2385	75.2385	0.0243	0.0000	75.8469
Total	**0.0210**	**0.4290**	**0.5166**	**8.6000e-004**	**0.1829**	**0.0106**	**0.1936**	**0.1006**	**0.0106**	**0.1112**	**0.0000**	**75.2385**	**75.2385**	**0.0243**	**0.0000**	**75.8469**

3.5 Improvements - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	1.1100e-003	0.0114	3.0000e-005	3.1800e-003	2.0000e-005	3.2000e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.7233	2.7233	8.0000e-005	0.0000	2.7254
Total	**1.6600e-003**	**1.1100e-003**	**0.0114**	**3.0000e-005**	**3.1800e-003**	**2.0000e-005**	**3.2000e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.7233**	**2.7233**	**8.0000e-005**	**0.0000**	**2.7254**

3.6 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0119	0.1093	0.1145	1.9000e-004		5.6600e-003	5.6600e-003		5.3300e-003	5.3300e-003	0.0000	16.2208	16.2208	3.8900e-003	0.0000	16.3179
Total	**0.0119**	**0.1093**	**0.1145**	**1.9000e-004**		**5.6600e-003**	**5.6600e-003**		**5.3300e-003**	**5.3300e-003**	**0.0000**	**16.2208**	**16.2208**	**3.8900e-003**	**0.0000**	**16.3179**

3.6 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0109	2.5700e-003	3.0000e-005	6.8000e-004	2.0000e-005	7.1000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	2.6541	2.6541	1.6000e-004	0.0000	2.6580
Worker	1.4000e-003	9.4000e-004	9.6900e-003	3.0000e-005	2.6900e-003	2.0000e-005	2.7100e-003	7.2000e-004	2.0000e-005	7.4000e-004	0.0000	2.3064	2.3064	7.0000e-005	0.0000	2.3082
Total	**1.7100e-003**	**0.0118**	**0.0123**	**6.0000e-005**	**3.3700e-003**	**4.0000e-005**	**3.4200e-003**	**9.2000e-004**	**4.0000e-005**	**9.6000e-004**	**0.0000**	**4.9605**	**4.9605**	**2.3000e-004**	**0.0000**	**4.9662**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.7200e-003	0.0996	0.1251	1.9000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	16.2208	16.2208	3.8900e-003	0.0000	16.3179
Total	**4.7200e-003**	**0.0996**	**0.1251**	**1.9000e-004**		**3.1600e-003**	**3.1600e-003**		**3.1600e-003**	**3.1600e-003**	**0.0000**	**16.2208**	**16.2208**	**3.8900e-003**	**0.0000**	**16.3179**

3.6 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0109	2.5700e-003	3.0000e-005	6.8000e-004	2.0000e-005	7.1000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	2.6541	2.6541	1.6000e-004	0.0000	2.6580
Worker	1.4000e-003	9.4000e-004	9.6900e-003	3.0000e-005	2.6900e-003	2.0000e-005	2.7100e-003	7.2000e-004	2.0000e-005	7.4000e-004	0.0000	2.3064	2.3064	7.0000e-005	0.0000	2.3082
Total	**1.7100e-003**	**0.0118**	**0.0123**	**6.0000e-005**	**3.3700e-003**	**4.0000e-005**	**3.4200e-003**	**9.2000e-004**	**4.0000e-005**	**9.6000e-004**	**0.0000**	**4.9605**	**4.9605**	**2.3000e-004**	**0.0000**	**4.9662**

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

3.6 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.3200e-003	0.1611	0.0422	5.0000e-004	0.0126	2.0000e-004	0.0128	3.6500e-003	1.9000e-004	3.8400e-003	0.0000	48.1713	48.1713	2.5400e-003	0.0000	48.2349
Worker	0.0242	0.0156	0.1618	4.6000e-004	0.0500	3.6000e-004	0.0504	0.0133	3.3000e-004	0.0136	0.0000	41.1845	41.1845	1.1700e-003	0.0000	41.2137
Total	**0.0285**	**0.1767**	**0.2041**	**9.6000e-004**	**0.0626**	**5.6000e-004**	**0.0632**	**0.0170**	**5.2000e-004**	**0.0175**	**0.0000**	**89.3557**	**89.3557**	**3.7100e-003**	**0.0000**	**89.4485**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0876	1.8494	2.3236	3.5000e-003		0.0587	0.0587		0.0587	0.0587	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.0876**	**1.8494**	**2.3236**	**3.5000e-003**		**0.0587**	**0.0587**		**0.0587**	**0.0587**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

3.6 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.3200e-003	0.1611	0.0422	5.0000e-004	0.0126	2.0000e-004	0.0128	3.6500e-003	1.9000e-004	3.8400e-003	0.0000	48.1713	48.1713	2.5400e-003	0.0000	48.2349
Worker	0.0242	0.0156	0.1618	4.6000e-004	0.0500	3.6000e-004	0.0504	0.0133	3.3000e-004	0.0136	0.0000	41.1845	41.1845	1.1700e-003	0.0000	41.2137
Total	**0.0285**	**0.1767**	**0.2041**	**9.6000e-004**	**0.0626**	**5.6000e-004**	**0.0632**	**0.0170**	**5.2000e-004**	**0.0175**	**0.0000**	**89.3557**	**89.3557**	**3.7100e-003**	**0.0000**	**89.4485**

3.6 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1295	1.1831	1.4227	2.3700e-003		0.0540	0.0540		0.0508	0.0508	0.0000	204.0272	204.0272	0.0483	0.0000	205.2334
Total	**0.1295**	**1.1831**	**1.4227**	**2.3700e-003**		**0.0540**	**0.0540**		**0.0508**	**0.0508**	**0.0000**	**204.0272**	**204.0272**	**0.0483**	**0.0000**	**205.2334**

3.6 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-003	0.1076	0.0270	3.3000e-004	8.5500e-003	1.3000e-004	8.6900e-003	2.4700e-003	1.3000e-004	2.6000e-003	0.0000	32.4042	32.4042	1.7000e-003	0.0000	32.4468
Worker	0.0152	9.4000e-003	0.0995	3.0000e-004	0.0338	2.4000e-004	0.0341	9.0100e-003	2.2000e-004	9.2300e-003	0.0000	26.7628	26.7628	7.0000e-004	0.0000	26.7802
Total	**0.0180**	**0.1170**	**0.1265**	**6.3000e-004**	**0.0424**	**3.7000e-004**	**0.0428**	**0.0115**	**3.5000e-004**	**0.0118**	**0.0000**	**59.1669**	**59.1669**	**2.4000e-003**	**0.0000**	**59.2269**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0593	1.2519	1.5729	2.3700e-003		0.0398	0.0398		0.0398	0.0398	0.0000	204.0270	204.0270	0.0483	0.0000	205.2331
Total	**0.0593**	**1.2519**	**1.5729**	**2.3700e-003**		**0.0398**	**0.0398**		**0.0398**	**0.0398**	**0.0000**	**204.0270**	**204.0270**	**0.0483**	**0.0000**	**205.2331**

3.6 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-003	0.1076	0.0270	3.3000e-004	8.5500e-003	1.3000e-004	8.6900e-003	2.4700e-003	1.3000e-004	2.6000e-003	0.0000	32.4042	32.4042	1.7000e-003	0.0000	32.4468
Worker	0.0152	9.4000e-003	0.0995	3.0000e-004	0.0338	2.4000e-004	0.0341	9.0100e-003	2.2000e-004	9.2300e-003	0.0000	26.7628	26.7628	7.0000e-004	0.0000	26.7802
Total	**0.0180**	**0.1170**	**0.1265**	**6.3000e-004**	**0.0424**	**3.7000e-004**	**0.0428**	**0.0115**	**3.5000e-004**	**0.0118**	**0.0000**	**59.1669**	**59.1669**	**2.4000e-003**	**0.0000**	**59.2269**

3.7 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0371	0.3572	0.5485	8.6000e-004		0.0176	0.0176		0.0162	0.0162	0.0000	75.0995	75.0995	0.0243	0.0000	75.7067
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0371**	**0.3572**	**0.5485**	**8.6000e-004**		**0.0176**	**0.0176**		**0.0162**	**0.0162**	**0.0000**	**75.0995**	**75.0995**	**0.0243**	**0.0000**	**75.7067**

3.7 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9800e-003	1.2300e-003	0.0130	4.0000e-005	4.4100e-003	3.0000e-005	4.4500e-003	1.1800e-003	3.0000e-005	1.2000e-003	0.0000	3.4912	3.4912	9.0000e-005	0.0000	3.4935
Total	**1.9800e-003**	**1.2300e-003**	**0.0130**	**4.0000e-005**	**4.4100e-003**	**3.0000e-005**	**4.4500e-003**	**1.1800e-003**	**3.0000e-005**	**1.2000e-003**	**0.0000**	**3.4912**	**3.4912**	**9.0000e-005**	**0.0000**	**3.4935**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0210	0.4236	0.6486	8.6000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	75.0994	75.0994	0.0243	0.0000	75.7066
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0210**	**0.4236**	**0.6486**	**8.6000e-004**		**0.0114**	**0.0114**		**0.0114**	**0.0114**	**0.0000**	**75.0994**	**75.0994**	**0.0243**	**0.0000**	**75.7066**

3.7 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9800e-003	1.2300e-003	0.0130	4.0000e-005	4.4100e-003	3.0000e-005	4.4500e-003	1.1800e-003	3.0000e-005	1.2000e-003	0.0000	3.4912	3.4912	9.0000e-005	0.0000	3.4935
Total	**1.9800e-003**	**1.2300e-003**	**0.0130**	**4.0000e-005**	**4.4100e-003**	**3.0000e-005**	**4.4500e-003**	**1.1800e-003**	**3.0000e-005**	**1.2000e-003**	**0.0000**	**3.4912**	**3.4912**	**9.0000e-005**	**0.0000**	**3.4935**

3.8 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6555					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.9000e-004	6.7000e-003	9.9600e-003	2.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	1.4043	1.4043	8.0000e-005	0.0000	1.4063
Total	**0.6565**	**6.7000e-003**	**9.9600e-003**	**2.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**1.4043**	**1.4043**	**8.0000e-005**	**0.0000**	**1.4063**

3.8 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.2000e-004	1.2700e-003	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.3414	0.3414	1.0000e-005	0.0000	0.3416
Total	**1.9000e-004**	**1.2000e-004**	**1.2700e-003**	**0.0000**	**4.3000e-004**	**0.0000**	**4.3000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3414**	**0.3414**	**1.0000e-005**	**0.0000**	**0.3416**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6555					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	7.4600e-003	0.0101	2.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	1.4043	1.4043	8.0000e-005	0.0000	1.4063
Total	**0.6558**	**7.4600e-003**	**0.0101**	**2.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**1.4043**	**1.4043**	**8.0000e-005**	**0.0000**	**1.4063**

3.8 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.2000e-004	1.2700e-003	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.3414	0.3414	1.0000e-005	0.0000	0.3416
Total	**1.9000e-004**	**1.2000e-004**	**1.2700e-003**	**0.0000**	**4.3000e-004**	**0.0000**	**4.3000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3414**	**0.3414**	**1.0000e-005**	**0.0000**	**0.3416**

3.8 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6200e-003	0.0109	0.0172	3.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	2.4256	2.4256	1.3000e-004	0.0000	2.4289
Total	**1.1338**	**0.0109**	**0.0172**	**3.0000e-005**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**2.4256**	**2.4256**	**1.3000e-004**	**0.0000**	**2.4289**

3.8 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	1.9000e-004	2.0000e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5653	0.5653	1.0000e-005	0.0000	0.5657
Total	**3.1000e-004**	**1.9000e-004**	**2.0000e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5653**	**0.5653**	**1.0000e-005**	**0.0000**	**0.5657**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1322					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6000e-004	0.0129	0.0174	3.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	2.4256	2.4256	1.3000e-004	0.0000	2.4289
Total	**1.1327**	**0.0129**	**0.0174**	**3.0000e-005**		**4.5000e-004**	**4.5000e-004**		**4.5000e-004**	**4.5000e-004**	**0.0000**	**2.4256**	**2.4256**	**1.3000e-004**	**0.0000**	**2.4289**

3.8 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	1.9000e-004	2.0000e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5653	0.5653	1.0000e-005	0.0000	0.5657
Total	**3.1000e-004**	**1.9000e-004**	**2.0000e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5653**	**0.5653**	**1.0000e-005**	**0.0000**	**0.5657**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2902	1.4691	2.9479	0.0104	0.9147	8.9800e-003	0.9237	0.2460	8.3800e-003	0.2544	0.0000	957.7434	957.7434	0.0384	0.0000	958.7034
Unmitigated	0.3087	1.6018	3.3733	0.0124	1.1083	0.0106	1.1189	0.2981	9.9000e-003	0.3080	0.0000	1,143.5391	1,143.5391	0.0437	0.0000	1,144.6308

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,304.24	1,357.67	1180.94	2,989,229	2,467,050
Total	1,304.24	1,357.67	1,180.94	2,989,229	2,467,050

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.606885	0.034232	0.164848	0.096947	0.020588	0.005511	0.031026	0.028765	0.003148	0.001585	0.004727	0.000885	0.000854

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	139.6610	139.6610	0.0140	2.8900e-003	140.8712
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	145.8020	145.8020	0.0146	3.0200e-003	147.0654
NaturalGas Mitigated	0.0113	0.0968	0.0412	6.2000e-004		7.8300e-003	7.8300e-003		7.8300e-003	7.8300e-003	0.0000	112.0953	112.0953	2.1500e-003	2.0600e-003	112.7614
NaturalGas Unmitigated	0.0215	0.1835	0.0781	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	212.4903	212.4903	4.0700e-003	3.9000e-003	213.7530

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.98192e+006	0.0215	0.1835	0.0781	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	212.4903	212.4903	4.0700e-003	3.9000e-003	213.7530
Total		**0.0215**	**0.1835**	**0.0781**	**1.1700e-003**		**0.0148**	**0.0148**		**0.0148**	**0.0148**	**0.0000**	**212.4903**	**212.4903**	**4.0700e-003**	**3.9000e-003**	**213.7530**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.10059e+006	0.0113	0.0968	0.0412	6.2000e-004		7.8300e-003	7.8300e-003		7.8300e-003	7.8300e-003	0.0000	112.0953	112.0953	2.1500e-003	2.0600e-003	112.7614
Total		**0.0113**	**0.0968**	**0.0412**	**6.2000e-004**		**7.8300e-003**	**7.8300e-003**		**7.8300e-003**	**7.8300e-003**	**0.0000**	**112.0953**	**112.0953**	**2.1500e-003**	**2.0600e-003**	**112.7614**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.10841e+006	145.8020	0.0146	3.0200e-003	147.0654
Total		**145.8020**	**0.0146**	**3.0200e-003**	**147.0654**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.06172e+006	139.6610	0.0140	2.8900e-003	140.8712
Total		**139.6610**	**0.0140**	**2.8900e-003**	**140.8712**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.2011	0.0117	1.0163	5.0000e-005		5.6400e-003	5.6400e-003		5.6400e-003	5.6400e-003	0.0000	1.6616	1.6616	1.5900e-003	0.0000	1.7014
Unmitigated	1.2011	0.0117	1.0163	5.0000e-005		5.6400e-003	5.6400e-003		5.6400e-003	5.6400e-003	0.0000	1.6616	1.6616	1.5900e-003	0.0000	1.7014

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1788					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9918					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0305	0.0117	1.0163	5.0000e-005		5.6400e-003	5.6400e-003		5.6400e-003	5.6400e-003	0.0000	1.6616	1.6616	1.5900e-003	0.0000	1.7014
Total	**1.2011**	**0.0117**	**1.0163**	**5.0000e-005**		**5.6400e-003**	**5.6400e-003**		**5.6400e-003**	**5.6400e-003**	**0.0000**	**1.6616**	**1.6616**	**1.5900e-003**	**0.0000**	**1.7014**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1788					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9918					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0305	0.0117	1.0163	5.0000e-005		5.6400e-003	5.6400e-003		5.6400e-003	5.6400e-003	0.0000	1.6616	1.6616	1.5900e-003	0.0000	1.7014
Total	**1.2011**	**0.0117**	**1.0163**	**5.0000e-005**		**5.6400e-003**	**5.6400e-003**		**5.6400e-003**	**5.6400e-003**	**0.0000**	**1.6616**	**1.6616**	**1.5900e-003**	**0.0000**	**1.7014**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.7809	0.2334	5.6500e-003	17.3005
Unmitigated	11.7760	0.2918	7.0500e-003	21.1715

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	8.9261 / 5.62732	11.7760	0.2918	7.0500e-003	21.1715
Total		**11.7760**	**0.2918**	**7.0500e-003**	**21.1715**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.14088 / 5.28406	9.7809	0.2334	5.6500e-003	17.3005
Total		**9.7809**	**0.2334**	**5.6500e-003**	**17.3005**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	8.3551	0.4938	0.0000	20.6994
Unmitigated	33.4204	1.9751	0.0000	82.7977

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	164.64	33.4204	1.9751	0.0000	82.7977
Total		**33.4204**	**1.9751**	**0.0000**	**82.7977**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	41.16	8.3551	0.4938	0.0000	20.6994
Total		**8.3551**	**0.4938**	**0.0000**	**20.6994**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Dutton Meadows

Sonoma-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	137.00	Dwelling Unit	18.43	253,950.00	392

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Dutton Meadows - Sonoma-San Francisco County, Summer

Project Characteristics - Greenhouse Gas Emission Factors: Guidance for PG&E Customers November 2015

Land Use - 137 homes with an average SF of 1,853,65. Total project site is 18.43 acres

Construction Phase - Draft Construction Schedule provided on Dec 3, 2020

Off-road Equipment -

Demolition -

Grading - 18.43 acres - balanced site.

Woodstoves - no fireplaces or woodstoves

Energy Use -

Construction Off-road Equipment Mitigation - BAAQMD Basic and Enhanced Emission Reduction Measures

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - Compliance with 2019 Building Standards

Water Mitigation -

Waste Mitigation - Assumes California recycling goals for 2025

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2

tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

Dutton Meadows - Sonoma-San Francisco County, Summer

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	300.00	450.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	30.00	55.00
tblConstructionPhase	NumDays	20.00	75.00
tblConstructionPhase	NumDays	10.00	45.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	34.25	0.00
tblFireplaces	NumberNoFireplace	10.96	0.00
tblFireplaces	NumberWood	58.91	0.00
tblGrading	AcresOfGrading	137.50	18.43
tblLandUse	LandUseSquareFeet	246,600.00	253,950.00
tblLandUse	LotAcreage	44.48	18.43
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblWoodstoves	NumberCatalytic	5.48	0.00
tblWoodstoves	NumberNoncatalytic	5.48	0.00
tblWoodstoves	WoodstoveDayYear	21.06	0.00
tblWoodstoves	WoodstoveWoodMass	956.80	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7089	38.8925	29.6405	0.0637	18.2141	1.6361	19.8278	9.9699	1.5052	11.4545	0.0000	6,169.1788	6,169.1788	1.9490	0.0000	6,217.9043
2023	1.7962	15.7231	17.8752	0.0345	0.5035	0.7040	1.2075	0.1358	0.6624	0.7982	0.0000	3,339.1336	3,339.1336	0.6392	0.0000	3,355.1122
2024	119.3941	14.7542	17.6633	0.0344	0.5035	0.6175	1.1209	0.1358	0.5808	0.7166	0.0000	3,322.1665	3,322.1665	0.7168	0.0000	3,338.0214
2025	119.3817	1.1630	2.0348	3.6700e-003	0.0822	0.0520	0.1342	0.0218	0.0520	0.0738	0.0000	351.2670	351.2670	0.0170	0.0000	351.6928
Maximum	**119.3941**	**38.8925**	**29.6405**	**0.0637**	**18.2141**	**1.6361**	**19.8278**	**9.9699**	**1.5052**	**11.4545**	**0.0000**	**6,169.1788**	**6,169.1788**	**1.9490**	**0.0000**	**6,217.9043**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	1.6071	30.0272	37.3215	0.0637	8.2777	0.6509	8.7518	4.5080	0.6508	4.9821	0.0000	6,169.1788	6,169.1788	1.9490	0.0000	6,217.9043
2023	0.8974	15.5642	19.5049	0.0345	0.5035	0.4561	0.9595	0.1358	0.4558	0.5916	0.0000	3,339.1336	3,339.1336	0.6392	0.0000	3,355.1122
2024	119.2727	15.5365	19.3703	0.0344	0.5035	0.4559	0.9594	0.1358	0.4556	0.5914	0.0000	3,322.1665	3,322.1665	0.7168	0.0000	3,338.0214
2025	119.2703	1.3745	2.0581	3.6700e-003	0.0822	0.0481	0.1302	0.0218	0.0480	0.0698	0.0000	351.2670	351.2670	0.0170	0.0000	351.6928
Maximum	**119.2727**	**30.0272**	**37.3215**	**0.0637**	**8.2777**	**0.6509**	**8.7518**	**4.5080**	**0.6508**	**4.9821**	**0.0000**	**6,169.1788**	**6,169.1788**	**1.9490**	**0.0000**	**6,217.9043**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.32**	**11.39**	**-16.43**	**0.00**	**51.48**	**46.47**	**51.54**	**53.22**	**42.50**	**52.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389
Energy	0.1177	1.0054	0.4278	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4544	1,283.4544	0.0246	0.0235	1,291.0814
Mobile	2.0189	8.9967	19.9031	0.0748	6.6807	0.0610	6.7417	1.7901	0.0570	1.8470		7,599.5431	7,599.5431	0.2771		7,606.4706
Total	**8.8896**	**10.1321**	**31.6229**	**0.0818**	**6.6807**	**0.2050**	**6.8856**	**1.7901**	**0.2009**	**1.9910**	**0.0000**	**8,903.3492**	**8,903.3492**	**0.3212**	**0.0235**	**8,918.3908**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389
Energy	0.0621	0.5304	0.2257	3.3900e-003		0.0429	0.0429		0.0429	0.0429		677.0623	677.0623	0.0130	0.0124	681.0857
Mobile	1.9107	8.2732	17.1944	0.0626	5.5136	0.0517	5.5653	1.4774	0.0482	1.5256		6,364.2904	6,364.2904	0.2424		6,370.3505
Total	**8.7259**	**8.9337**	**28.7120**	**0.0666**	**5.5136**	**0.1572**	**5.6709**	**1.4774**	**0.1538**	**1.6312**	**0.0000**	**7,061.7043**	**7,061.7043**	**0.2749**	**0.0124**	**7,072.2751**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.84**	**11.83**	**9.20**	**18.59**	**17.47**	**23.30**	**17.64**	**17.47**	**23.46**	**18.07**	**0.00**	**20.68**	**20.68**	**14.42**	**47.26**	**20.70**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/5/2022	7/11/2022	5	5	
2	Site Preparation	Site Preparation	7/12/2022	7/25/2022	5	10	
3	Grading	Grading	7/26/2022	10/10/2022	5	55	
4	Improvements	Site Preparation	10/11/2022	12/12/2022	5	45	
5	Building Construction	Building Construction	12/13/2022	9/2/2024	5	450	
6	Paving	Paving	9/3/2024	12/16/2024	5	75	
7	Architectural Coating	Architectural Coating	12/17/2024	1/27/2025	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 18.43

Acres of Paving: 0

Residential Indoor: 514,249; Residential Outdoor: 171,416; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Dutton Meadows - Sonoma-San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Improvements	Rubber Tired Dozers	3	8.00	247	0.40
Improvements	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	11.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Improvements	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	49.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4922	0.0000	0.4922	0.0745	0.0000	0.0745			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.4922**	**1.2427**	**1.7348**	**0.0745**	**1.1553**	**1.2298**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0154	0.5389	0.1189	1.7000e-003	0.0380	1.7300e-003	0.0397	0.0104	1.6500e-003	0.0120		182.9351	182.9351	0.0110		183.2105
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0630	0.0368	0.4492	1.1900e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		118.3262	118.3262	3.6100e-003		118.4163
Total	**0.0784**	**0.5756**	**0.5681**	**2.8900e-003**	**0.1612**	**2.6100e-003**	**0.1638**	**0.0430**	**2.4600e-003**	**0.0455**		**301.2613**	**301.2613**	**0.0146**		**301.6268**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2215	0.0000	0.2215	0.0335	0.0000	0.0335			0.0000			0.0000
Off-Road	0.9246	18.3130	24.6739	0.0388		0.4314	0.4314		0.4314	0.4314	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**0.9246**	**18.3130**	**24.6739**	**0.0388**	**0.2215**	**0.4314**	**0.6528**	**0.0335**	**0.4314**	**0.4649**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0154	0.5389	0.1189	1.7000e-003	0.0380	1.7300e-003	0.0397	0.0104	1.6500e-003	0.0120		182.9351	182.9351	0.0110		183.2105
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0630	0.0368	0.4492	1.1900e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		118.3262	118.3262	3.6100e-003		118.4163
Total	**0.0784**	**0.5756**	**0.5681**	**2.8900e-003**	**0.1612**	**2.6100e-003**	**0.1638**	**0.0430**	**2.4600e-003**	**0.0455**		**301.2613**	**301.2613**	**0.0146**		**301.6268**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0756	0.0441	0.5391	1.4300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		141.9914	141.9914	4.3300e-003		142.0996
Total	**0.0756**	**0.0441**	**0.5391**	**1.4300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**141.9914**	**141.9914**	**4.3300e-003**		**142.0996**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.4731	0.4731		0.4731	0.4731	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**0.9312**	**19.0656**	**22.9600**	**0.0380**	**8.1298**	**0.4731**	**8.6029**	**4.4688**	**0.4731**	**4.9419**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0756	0.0441	0.5391	1.4300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		141.9914	141.9914	4.3300e-003		142.0996
Total	**0.0756**	**0.0441**	**0.5391**	**1.4300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**141.9914**	**141.9914**	**4.3300e-003**		**142.0996**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3775	0.0000	6.3775	3.3486	0.0000	3.3486			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**6.3775**	**1.6349**	**8.0123**	**3.3486**	**1.5041**	**4.8527**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0840	0.0490	0.5990	1.5800e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		157.7682	157.7682	4.8100e-003		157.8884
Total	**0.0840**	**0.0490**	**0.5990**	**1.5800e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**157.7682**	**157.7682**	**4.8100e-003**		**157.8884**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8699	0.0000	2.8699	1.5069	0.0000	1.5069			0.0000			0.0000
Off-Road	1.5231	29.9782	36.7226	0.0621		0.6497	0.6497		0.6497	0.6497	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**1.5231**	**29.9782**	**36.7226**	**0.0621**	**2.8699**	**0.6497**	**3.5196**	**1.5069**	**0.6497**	**2.1566**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0840	0.0490	0.5990	1.5800e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		157.7682	157.7682	4.8100e-003		157.8884
Total	**0.0840**	**0.0490**	**0.5990**	**1.5800e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**157.7682**	**157.7682**	**4.8100e-003**		**157.8884**

3.5 Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.5 Improvements - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0756	0.0441	0.5391	1.4300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		141.9914	141.9914	4.3300e-003		142.0996
Total	**0.0756**	**0.0441**	**0.5391**	**1.4300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**141.9914**	**141.9914**	**4.3300e-003**		**142.0996**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.4731	0.4731		0.4731	0.4731	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**0.9312**	**19.0656**	**22.9600**	**0.0380**	**8.1298**	**0.4731**	**8.6029**	**4.4688**	**0.4731**	**4.9419**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.5 Improvements - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0756	0.0441	0.5391	1.4300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		141.9914	141.9914	4.3300e-003		142.0996
Total	**0.0756**	**0.0441**	**0.5391**	**1.4300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**141.9914**	**141.9914**	**4.3300e-003**		**142.0996**

3.6 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0431	1.5380	0.3442	3.9600e-003	0.1009	3.4900e-003	0.1044	0.0290	3.3400e-003	0.0324		421.8157	421.8157	0.0236		422.4062
Worker	0.2059	0.1201	1.4674	3.8800e-003	0.4025	2.8900e-003	0.4054	0.1068	2.6600e-003	0.1094		386.5321	386.5321	0.0118		386.8266
Total	**0.2489**	**1.6581**	**1.8116**	**7.8400e-003**	**0.5035**	**6.3800e-003**	**0.5098**	**0.1358**	**6.0000e-003**	**0.1418**		**808.3479**	**808.3479**	**0.0354**		**809.2328**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.4518	0.4518		0.4518	0.4518	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.6739**	**14.2261**	**17.8738**	**0.0269**		**0.4518**	**0.4518**		**0.4518**	**0.4518**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0431	1.5380	0.3442	3.9600e-003	0.1009	3.4900e-003	0.1044	0.0290	3.3400e-003	0.0324		421.8157	421.8157	0.0236		422.4062
Worker	0.2059	0.1201	1.4674	3.8800e-003	0.4025	2.8900e-003	0.4054	0.1068	2.6600e-003	0.1094		386.5321	386.5321	0.0118		386.8266
Total	**0.2489**	**1.6581**	**1.8116**	**7.8400e-003**	**0.5035**	**6.3800e-003**	**0.5098**	**0.1358**	**6.0000e-003**	**0.1418**		**808.3479**	**808.3479**	**0.0354**		**809.2328**

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0324	1.2312	0.3064	3.8600e-003	0.1009	1.5100e-003	0.1024	0.0290	1.4400e-003	0.0305		412.2563	412.2563	0.0209		412.7782
Worker	0.1910	0.1070	1.3247	3.7300e-003	0.4025	2.7900e-003	0.4053	0.1068	2.5700e-003	0.1093		371.6674	371.6674	0.0104		371.9279
Total	**0.2235**	**1.3382**	**1.6312**	**7.5900e-003**	**0.5035**	**4.3000e-003**	**0.5078**	**0.1358**	**4.0100e-003**	**0.1398**		**783.9237**	**783.9237**	**0.0313**		**784.7061**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.4518	0.4518		0.4518	0.4518	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.6739**	**14.2261**	**17.8738**	**0.0269**		**0.4518**	**0.4518**		**0.4518**	**0.4518**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0324	1.2312	0.3064	3.8600e-003	0.1009	1.5100e-003	0.1024	0.0290	1.4400e-003	0.0305		412.2563	412.2563	0.0209		412.7782
Worker	0.1910	0.1070	1.3247	3.7300e-003	0.4025	2.7900e-003	0.4053	0.1068	2.5700e-003	0.1093		371.6674	371.6674	0.0104		371.9279
Total	**0.2235**	**1.3382**	**1.6312**	**7.5900e-003**	**0.5035**	**4.3000e-003**	**0.5078**	**0.1358**	**4.0100e-003**	**0.1398**		**783.9237**	**783.9237**	**0.0313**		**784.7061**

3.6 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.6 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0311	1.2150	0.2900	3.8400e-003	0.1009	1.4600e-003	0.1024	0.0290	1.3900e-003	0.0304		409.6665	409.6665	0.0207		410.1828
Worker	0.1773	0.0955	1.2065	3.5800e-003	0.4025	2.6900e-003	0.4052	0.1068	2.4800e-003	0.1093		356.8012	356.8012	9.1900e-003		357.0310
Total	**0.2083**	**1.3105**	**1.4965**	**7.4200e-003**	**0.5035**	**4.1500e-003**	**0.5076**	**0.1358**	**3.8700e-003**	**0.1397**		**766.4676**	**766.4676**	**0.0298**		**767.2138**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0270		0.4518	0.4518		0.4518	0.4518	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.6739**	**14.2261**	**17.8738**	**0.0270**		**0.4518**	**0.4518**		**0.4518**	**0.4518**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.6 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0311	1.2150	0.2900	3.8400e-003	0.1009	1.4600e-003	0.1024	0.0290	1.3900e-003	0.0304		409.6665	409.6665	0.0207		410.1828
Worker	0.1773	0.0955	1.2065	3.5800e-003	0.4025	2.6900e-003	0.4052	0.1068	2.4800e-003	0.1093		356.8012	356.8012	9.1900e-003		357.0310
Total	**0.2083**	**1.3105**	**1.4965**	**7.4200e-003**	**0.5035**	**4.1500e-003**	**0.5076**	**0.1358**	**3.8700e-003**	**0.1397**		**766.4676**	**766.4676**	**0.0298**		**767.2138**

3.7 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.7 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0543	0.0292	0.3694	1.1000e-003	0.1232	8.2000e-004	0.1240	0.0327	7.6000e-004	0.0334		109.2248	109.2248	2.8100e-003		109.2952
Total	**0.0543**	**0.0292**	**0.3694**	**1.1000e-003**	**0.1232**	**8.2000e-004**	**0.1240**	**0.0327**	**7.6000e-004**	**0.0334**		**109.2248**	**109.2248**	**2.8100e-003**		**109.2952**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5609	11.2952	17.2957	0.0228		0.3047	0.3047		0.3047	0.3047	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5609**	**11.2952**	**17.2957**	**0.0228**		**0.3047**	**0.3047**		**0.3047**	**0.3047**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.7 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0543	0.0292	0.3694	1.1000e-003	0.1232	8.2000e-004	0.1240	0.0327	7.6000e-004	0.0334		109.2248	109.2248	2.8100e-003		109.2952
Total	**0.0543**	**0.0292**	**0.3694**	**1.1000e-003**	**0.1232**	**8.2000e-004**	**0.1240**	**0.0327**	**7.6000e-004**	**0.0334**		**109.2248**	**109.2248**	**2.8100e-003**		**109.2952**

3.8 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**119.3579**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0195	0.2462	7.3000e-004	0.0822	5.5000e-004	0.0827	0.0218	5.1000e-004	0.0223		72.8166	72.8166	1.8800e-003		72.8635
Total	**0.0362**	**0.0195**	**0.2462**	**7.3000e-004**	**0.0822**	**5.5000e-004**	**0.0827**	**0.0218**	**5.1000e-004**	**0.0223**		**72.8166**	**72.8166**	**1.8800e-003**		**72.8635**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0475	0.0475		0.0475	0.0475	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**119.2366**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0475**	**0.0475**		**0.0475**	**0.0475**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0362	0.0195	0.2462	7.3000e-004	0.0822	5.5000e-004	0.0827	0.0218	5.1000e-004	0.0223		72.8166	72.8166	1.8800e-003		72.8635
Total	**0.0362**	**0.0195**	**0.2462**	**7.3000e-004**	**0.0822**	**5.5000e-004**	**0.0827**	**0.0218**	**5.1000e-004**	**0.0223**		**72.8166**	**72.8166**	**1.8800e-003**		**72.8635**

3.8 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**119.3480**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.8 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0337	0.0175	0.2256	7.0000e-004	0.0822	5.4000e-004	0.0827	0.0218	4.9000e-004	0.0223		69.8190	69.8190	1.6800e-003		69.8609
Total	**0.0337**	**0.0175**	**0.2256**	**7.0000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**4.9000e-004**	**0.0223**		**69.8190**	**69.8190**	**1.6800e-003**		**69.8609**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0475	0.0475		0.0475	0.0475	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**119.2366**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0475**	**0.0475**		**0.0475**	**0.0475**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.8 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0337	0.0175	0.2256	7.0000e-004	0.0822	5.4000e-004	0.0827	0.0218	4.9000e-004	0.0223		69.8190	69.8190	1.6800e-003		69.8609
Total	**0.0337**	**0.0175**	**0.2256**	**7.0000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**4.9000e-004**	**0.0223**		**69.8190**	**69.8190**	**1.6800e-003**		**69.8609**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.9107	8.2732	17.1944	0.0626	5.5136	0.0517	5.5653	1.4774	0.0482	1.5256		6,364.2904	6,364.2904	0.2424		6,370.3505
Unmitigated	2.0189	8.9967	19.9031	0.0748	6.6807	0.0610	6.7417	1.7901	0.0570	1.8470		7,599.5431	7,599.5431	0.2771		7,606.4706

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,304.24	1,357.67	1180.94	2,989,229	2,467,050
Total	1,304.24	1,357.67	1,180.94	2,989,229	2,467,050

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.606885	0.034232	0.164848	0.096947	0.020588	0.005511	0.031026	0.028765	0.003148	0.001585	0.004727	0.000885	0.000854

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0621	0.5304	0.2257	3.3900e-003		0.0429	0.0429		0.0429	0.0429		677.0623	677.0623	0.0130	0.0124	681.0857
NaturalGas Unmitigated	0.1177	1.0054	0.4278	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4544	1,283.4544	0.0246	0.0235	1,291.0814

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	10909.4	0.1177	1.0054	0.4278	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4544	1,283.4544	0.0246	0.0235	1,291.0814
Total		**0.1177**	**1.0054**	**0.4278**	**6.4200e-003**		**0.0813**	**0.0813**		**0.0813**	**0.0813**		**1,283.4544**	**1,283.4544**	**0.0246**	**0.0235**	**1,291.0814**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	5.75503	0.0621	0.5304	0.2257	3.3900e-003		0.0429	0.0429		0.0429	0.0429		677.0623	677.0623	0.0130	0.0124	681.0857
Total		**0.0621**	**0.5304**	**0.2257**	**3.3900e-003**		**0.0429**	**0.0429**		**0.0429**	**0.0429**		**677.0623**	**677.0623**	**0.0130**	**0.0124**	**681.0857**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389
Unmitigated	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.4345					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3390	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627		20.3517	20.3517	0.0195		20.8389
Total	**6.7531**	**0.1301**	**11.2920**	**6.0000e-004**		**0.0627**	**0.0627**		**0.0627**	**0.0627**	**0.0000**	**20.3517**	**20.3517**	**0.0195**	**0.0000**	**20.8389**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.4345					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3390	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627		20.3517	20.3517	0.0195		20.8389
Total	**6.7531**	**0.1301**	**11.2920**	**6.0000e-004**		**0.0627**	**0.0627**		**0.0627**	**0.0627**	**0.0000**	**20.3517**	**20.3517**	**0.0195**	**0.0000**	**20.8389**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Dutton Meadows

Sonoma-San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	137.00	Dwelling Unit	18.43	253,950.00	392

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Dutton Meadows - Sonoma-San Francisco County, Winter

Project Characteristics - Greenhouse Gas Emission Factors: Guidance for PG&E Customers November 2015

Land Use - 137 homes with an average SF of 1,853,65. Total project site is 18.43 acres

Construction Phase - Draft Construction Schedule provided on Dec 3, 2020

Off-road Equipment -

Demolition -

Grading - 18.43 acres - balanced site.

Woodstoves - no fireplaces or woodstoves

Energy Use -

Construction Off-road Equipment Mitigation - BAAQMD Basic and Enhanced Emission Reduction Measures

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - Compliance with 2019 Building Standards

Water Mitigation -

Waste Mitigation - Assumes California recycling goals for 2025

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2

tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	300.00	450.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	30.00	55.00
tblConstructionPhase	NumDays	20.00	75.00
tblConstructionPhase	NumDays	10.00	45.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	34.25	0.00
tblFireplaces	NumberNoFireplace	10.96	0.00
tblFireplaces	NumberWood	58.91	0.00
tblGrading	AcresOfGrading	137.50	18.43
tblLandUse	LandUseSquareFeet	246,600.00	253,950.00
tblLandUse	LotAcreage	44.48	18.43
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblWoodstoves	NumberCatalytic	5.48	0.00
tblWoodstoves	NumberNoncatalytic	5.48	0.00
tblWoodstoves	WoodstoveDayYear	21.06	0.00
tblWoodstoves	WoodstoveWoodMass	956.80	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7154	38.9042	29.6217	0.0636	18.2141	1.6361	19.8278	9.9699	1.5052	11.4545	0.0000	6,158.0157	6,158.0157	1.9488	0.0000	6,206.7359
2023	1.8134	15.7550	17.8661	0.0342	0.5035	0.7041	1.2076	0.1358	0.6625	0.7983	0.0000	3,303.7929	3,303.7929	0.6402	0.0000	3,319.7974
2024	119.3970	14.7830	17.6507	0.0340	0.5035	0.6175	1.1210	0.1358	0.5808	0.7166	0.0000	3,287.9491	3,287.9491	0.7166	0.0000	3,303.8295
2025	119.3844	1.1672	2.0249	3.6200e-003	0.0822	0.0520	0.1342	0.0218	0.0520	0.0738	0.0000	346.3229	346.3229	0.0169	0.0000	346.7462
Maximum	**119.3970**	**38.9042**	**29.6217**	**0.0636**	**18.2141**	**1.6361**	**19.8278**	**9.9699**	**1.5052**	**11.4545**	**0.0000**	**6,158.0157**	**6,158.0157**	**1.9488**	**0.0000**	**6,206.7359**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	1.6137	30.0389	37.3028	0.0636	8.2777	0.6509	8.7518	4.5080	0.6508	4.9821	0.0000	6,158.0157	6,158.0157	1.9488	0.0000	6,206.7359
2023	0.9145	15.5961	19.4959	0.0342	0.5035	0.4562	0.9596	0.1358	0.4559	0.5916	0.0000	3,303.7929	3,303.7929	0.6402	0.0000	3,319.7974
2024	119.2757	15.5653	19.3577	0.0340	0.5035	0.4560	0.9594	0.1358	0.4557	0.5915	0.0000	3,287.9491	3,287.9491	0.7166	0.0000	3,303.8295
2025	119.2730	1.3787	2.0482	3.6200e-003	0.0822	0.0481	0.1302	0.0218	0.0480	0.0698	0.0000	346.3229	346.3229	0.0169	0.0000	346.7462
Maximum	**119.2757**	**30.0389**	**37.3028**	**0.0636**	**8.2777**	**0.6509**	**8.7518**	**4.5080**	**0.6508**	**4.9821**	**0.0000**	**6,158.0157**	**6,158.0157**	**1.9488**	**0.0000**	**6,206.7359**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.32**	**11.37**	**-16.44**	**0.00**	**51.48**	**46.47**	**51.54**	**53.22**	**42.50**	**52.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389
Energy	0.1177	1.0054	0.4278	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4544	1,283.4544	0.0246	0.0235	1,291.0814
Mobile	1.7560	9.4125	20.3353	0.0708	6.6807	0.0614	6.7420	1.7901	0.0573	1.8474		7,193.8101	7,193.8101	0.2845		7,200.9225
Total	**8.6268**	**10.5479**	**32.0551**	**0.0778**	**6.6807**	**0.2053**	**6.8860**	**1.7901**	**0.2013**	**1.9913**	**0.0000**	**8,497.6161**	**8,497.6161**	**0.3286**	**0.0235**	**8,512.8427**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389
Energy	0.0621	0.5304	0.2257	3.3900e-003		0.0429	0.0429		0.0429	0.0429		677.0623	677.0623	0.0130	0.0124	681.0857
Mobile	1.6491	8.6140	17.8828	0.0592	5.5136	0.0520	5.5657	1.4774	0.0486	1.5260		6,021.2172	6,021.2172	0.2512		6,027.4959
Total	**8.4642**	**9.2745**	**29.4004**	**0.0632**	**5.5136**	**0.1576**	**5.6712**	**1.4774**	**0.1541**	**1.6315**	**0.0000**	**6,718.6311**	**6,718.6311**	**0.2836**	**0.0124**	**6,729.4205**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.88**	**12.07**	**8.28**	**18.74**	**17.47**	**23.25**	**17.64**	**17.47**	**23.42**	**18.07**	**0.00**	**20.94**	**20.94**	**13.69**	**47.26**	**20.95**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/5/2022	7/11/2022	5	5	
2	Site Preparation	Site Preparation	7/12/2022	7/25/2022	5	10	
3	Grading	Grading	7/26/2022	10/10/2022	5	55	
4	Improvements	Site Preparation	10/11/2022	12/12/2022	5	45	
5	Building Construction	Building Construction	12/13/2022	9/2/2024	5	450	
6	Paving	Paving	9/3/2024	12/16/2024	5	75	
7	Architectural Coating	Architectural Coating	12/17/2024	1/27/2025	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 18.43

Acres of Paving: 0

Residential Indoor: 514,249; Residential Outdoor: 171,416; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Improvements	Rubber Tired Dozers	3	8.00	247	0.40
Improvements	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	11.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Improvements	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	49.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4922	0.0000	0.4922	0.0745	0.0000	0.0745			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.4922**	**1.2427**	**1.7348**	**0.0745**	**1.1553**	**1.2298**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0158	0.5507	0.1268	1.6700e-003	0.0380	1.7700e-003	0.0397	0.0104	1.7000e-003	0.0121		180.3660	180.3660	0.0115		180.6537
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0455	0.4351	1.1000e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		109.9539	109.9539	3.4500e-003		110.0400
Total	**0.0837**	**0.5962**	**0.5620**	**2.7700e-003**	**0.1612**	**2.6500e-003**	**0.1639**	**0.0430**	**2.5100e-003**	**0.0456**		**290.3198**	**290.3198**	**0.0150**		**290.6937**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2215	0.0000	0.2215	0.0335	0.0000	0.0335			0.0000			0.0000
Off-Road	0.9246	18.3130	24.6739	0.0388		0.4314	0.4314		0.4314	0.4314	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**0.9246**	**18.3130**	**24.6739**	**0.0388**	**0.2215**	**0.4314**	**0.6528**	**0.0335**	**0.4314**	**0.4649**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0158	0.5507	0.1268	1.6700e-003	0.0380	1.7700e-003	0.0397	0.0104	1.7000e-003	0.0121		180.3660	180.3660	0.0115		180.6537
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0455	0.4351	1.1000e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		109.9539	109.9539	3.4500e-003		110.0400
Total	**0.0837**	**0.5962**	**0.5620**	**2.7700e-003**	**0.1612**	**2.6500e-003**	**0.1639**	**0.0430**	**2.5100e-003**	**0.0456**		**290.3198**	**290.3198**	**0.0150**		**290.6937**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0546	0.5222	1.3300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		131.9447	131.9447	4.1400e-003		132.0480
Total	**0.0816**	**0.0546**	**0.5222**	**1.3300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**131.9447**	**131.9447**	**4.1400e-003**		**132.0480**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.4731	0.4731		0.4731	0.4731	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**0.9312**	**19.0656**	**22.9600**	**0.0380**	**8.1298**	**0.4731**	**8.6029**	**4.4688**	**0.4731**	**4.9419**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0546	0.5222	1.3300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		131.9447	131.9447	4.1400e-003		132.0480
Total	**0.0816**	**0.0546**	**0.5222**	**1.3300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**131.9447**	**131.9447**	**4.1400e-003**		**132.0480**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3775	0.0000	6.3775	3.3486	0.0000	3.3486			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**6.3775**	**1.6349**	**8.0123**	**3.3486**	**1.5041**	**4.8527**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0906	0.0607	0.5802	1.4700e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		146.6052	146.6052	4.6000e-003		146.7201
Total	**0.0906**	**0.0607**	**0.5802**	**1.4700e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**146.6052**	**146.6052**	**4.6000e-003**		**146.7201**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8699	0.0000	2.8699	1.5069	0.0000	1.5069			0.0000			0.0000
Off-Road	1.5231	29.9782	36.7226	0.0621		0.6497	0.6497		0.6497	0.6497	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**1.5231**	**29.9782**	**36.7226**	**0.0621**	**2.8699**	**0.6497**	**3.5196**	**1.5069**	**0.6497**	**2.1566**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0906	0.0607	0.5802	1.4700e-003	0.1643	1.1800e-003	0.1655	0.0436	1.0900e-003	0.0447		146.6052	146.6052	4.6000e-003		146.7201
Total	**0.0906**	**0.0607**	**0.5802**	**1.4700e-003**	**0.1643**	**1.1800e-003**	**0.1655**	**0.0436**	**1.0900e-003**	**0.0447**		**146.6052**	**146.6052**	**4.6000e-003**		**146.7201**

3.5 Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.5 Improvements - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0546	0.5222	1.3300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		131.9447	131.9447	4.1400e-003		132.0480
Total	**0.0816**	**0.0546**	**0.5222**	**1.3300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**131.9447**	**131.9447**	**4.1400e-003**		**132.0480**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.4731	0.4731		0.4731	0.4731	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**0.9312**	**19.0656**	**22.9600**	**0.0380**	**8.1298**	**0.4731**	**8.6029**	**4.4688**	**0.4731**	**4.9419**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.5 Improvements - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0546	0.5222	1.3300e-003	0.1479	1.0600e-003	0.1489	0.0392	9.8000e-004	0.0402		131.9447	131.9447	4.1400e-003		132.0480
Total	**0.0816**	**0.0546**	**0.5222**	**1.3300e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.8000e-004**	**0.0402**		**131.9447**	**131.9447**	**4.1400e-003**		**132.0480**

3.6 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0456	1.5504	0.3934	3.8700e-003	0.1009	3.6600e-003	0.1046	0.0290	3.5000e-003	0.0325		412.6161	412.6161	0.0255		413.2536
Worker	0.2220	0.1487	1.4215	3.6100e-003	0.4025	2.8900e-003	0.4054	0.1068	2.6600e-003	0.1094		359.1827	359.1827	0.0113		359.4641
Total	**0.2676**	**1.6990**	**1.8148**	**7.4800e-003**	**0.5035**	**6.5500e-003**	**0.5100**	**0.1358**	**6.1600e-003**	**0.1419**		**771.7988**	**771.7988**	**0.0368**		**772.7177**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.4518	0.4518		0.4518	0.4518	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.6739**	**14.2261**	**17.8738**	**0.0269**		**0.4518**	**0.4518**		**0.4518**	**0.4518**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.6 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0456	1.5504	0.3934	3.8700e-003	0.1009	3.6600e-003	0.1046	0.0290	3.5000e-003	0.0325		412.6161	412.6161	0.0255		413.2536
Worker	0.2220	0.1487	1.4215	3.6100e-003	0.4025	2.8900e-003	0.4054	0.1068	2.6600e-003	0.1094		359.1827	359.1827	0.0113		359.4641
Total	**0.2676**	**1.6990**	**1.8148**	**7.4800e-003**	**0.5035**	**6.5500e-003**	**0.5100**	**0.1358**	**6.1600e-003**	**0.1419**		**771.7988**	**771.7988**	**0.0368**		**772.7177**

3.6 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0344	1.2377	0.3460	3.7800e-003	0.1009	1.5900e-003	0.1025	0.0290	1.5200e-003	0.0305		403.2218	403.2218	0.0224		403.7826
Worker	0.2062	0.1323	1.2761	3.4700e-003	0.4025	2.7900e-003	0.4053	0.1068	2.5700e-003	0.1093		345.3611	345.3611	9.9100e-003		345.6088
Total	**0.2406**	**1.3701**	**1.6221**	**7.2500e-003**	**0.5035**	**4.3800e-003**	**0.5078**	**0.1358**	**4.0900e-003**	**0.1399**		**748.5830**	**748.5830**	**0.0323**		**749.3914**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0269		0.4518	0.4518		0.4518	0.4518	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.6739**	**14.2261**	**17.8738**	**0.0269**		**0.4518**	**0.4518**		**0.4518**	**0.4518**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.6 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0344	1.2377	0.3460	3.7800e-003	0.1009	1.5900e-003	0.1025	0.0290	1.5200e-003	0.0305		403.2218	403.2218	0.0224		403.7826
Worker	0.2062	0.1323	1.2761	3.4700e-003	0.4025	2.7900e-003	0.4053	0.1068	2.5700e-003	0.1093		345.3611	345.3611	9.9100e-003		345.6088
Total	**0.2406**	**1.3701**	**1.6221**	**7.2500e-003**	**0.5035**	**4.3800e-003**	**0.5078**	**0.1358**	**4.0900e-003**	**0.1399**		**748.5830**	**748.5830**	**0.0323**		**749.3914**

3.6 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.6 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0329	1.2212	0.3268	3.7500e-003	0.1009	1.5300e-003	0.1025	0.0290	1.4700e-003	0.0305		400.7125	400.7125	0.0222		401.2668
Worker	0.1917	0.1181	1.1571	3.3300e-003	0.4025	2.6900e-003	0.4052	0.1068	2.4800e-003	0.1093		331.5378	331.5378	8.6900e-003		331.7550
Total	**0.2246**	**1.3393**	**1.4839**	**7.0800e-003**	**0.5035**	**4.2200e-003**	**0.5077**	**0.1358**	**3.9500e-003**	**0.1397**		**732.2502**	**732.2502**	**0.0309**		**733.0218**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6739	14.2261	17.8738	0.0270		0.4518	0.4518		0.4518	0.4518	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.6739**	**14.2261**	**17.8738**	**0.0270**		**0.4518**	**0.4518**		**0.4518**	**0.4518**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.6 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0329	1.2212	0.3268	3.7500e-003	0.1009	1.5300e-003	0.1025	0.0290	1.4700e-003	0.0305		400.7125	400.7125	0.0222		401.2668
Worker	0.1917	0.1181	1.1571	3.3300e-003	0.4025	2.6900e-003	0.4052	0.1068	2.4800e-003	0.1093		331.5378	331.5378	8.6900e-003		331.7550
Total	**0.2246**	**1.3393**	**1.4839**	**7.0800e-003**	**0.5035**	**4.2200e-003**	**0.5077**	**0.1358**	**3.9500e-003**	**0.1397**		**732.2502**	**732.2502**	**0.0309**		**733.0218**

3.7 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.7 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0587	0.0362	0.3542	1.0200e-003	0.1232	8.2000e-004	0.1240	0.0327	7.6000e-004	0.0334		101.4912	101.4912	2.6600e-003		101.5577
Total	**0.0587**	**0.0362**	**0.3542**	**1.0200e-003**	**0.1232**	**8.2000e-004**	**0.1240**	**0.0327**	**7.6000e-004**	**0.0334**		**101.4912**	**101.4912**	**2.6600e-003**		**101.5577**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5609	11.2952	17.2957	0.0228		0.3047	0.3047		0.3047	0.3047	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5609**	**11.2952**	**17.2957**	**0.0228**		**0.3047**	**0.3047**		**0.3047**	**0.3047**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

3.7 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0587	0.0362	0.3542	1.0200e-003	0.1232	8.2000e-004	0.1240	0.0327	7.6000e-004	0.0334		101.4912	101.4912	2.6600e-003		101.5577
Total	**0.0587**	**0.0362**	**0.3542**	**1.0200e-003**	**0.1232**	**8.2000e-004**	**0.1240**	**0.0327**	**7.6000e-004**	**0.0334**		**101.4912**	**101.4912**	**2.6600e-003**		**101.5577**

3.8 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**119.3579**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0241	0.2362	6.8000e-004	0.0822	5.5000e-004	0.0827	0.0218	5.1000e-004	0.0223		67.6608	67.6608	1.7700e-003		67.7051
Total	**0.0391**	**0.0241**	**0.2362**	**6.8000e-004**	**0.0822**	**5.5000e-004**	**0.0827**	**0.0218**	**5.1000e-004**	**0.0223**		**67.6608**	**67.6608**	**1.7700e-003**		**67.7051**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0475	0.0475		0.0475	0.0475	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**119.2366**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0475**	**0.0475**		**0.0475**	**0.0475**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0241	0.2362	6.8000e-004	0.0822	5.5000e-004	0.0827	0.0218	5.1000e-004	0.0223		67.6608	67.6608	1.7700e-003		67.7051
Total	**0.0391**	**0.0241**	**0.2362**	**6.8000e-004**	**0.0822**	**5.5000e-004**	**0.0827**	**0.0218**	**5.1000e-004**	**0.0223**		**67.6608**	**67.6608**	**1.7700e-003**		**67.7051**

3.8 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**119.3480**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.8 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0365	0.0217	0.2158	6.5000e-004	0.0822	5.4000e-004	0.0827	0.0218	4.9000e-004	0.0223		64.8749	64.8749	1.5800e-003		64.9144
Total	**0.0365**	**0.0217**	**0.2158**	**6.5000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**4.9000e-004**	**0.0223**		**64.8749**	**64.8749**	**1.5800e-003**		**64.9144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	119.1771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0475	0.0475		0.0475	0.0475	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**119.2366**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0475**	**0.0475**		**0.0475**	**0.0475**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.8 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0365	0.0217	0.2158	6.5000e-004	0.0822	5.4000e-004	0.0827	0.0218	4.9000e-004	0.0223		64.8749	64.8749	1.5800e-003		64.9144
Total	**0.0365**	**0.0217**	**0.2158**	**6.5000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**4.9000e-004**	**0.0223**		**64.8749**	**64.8749**	**1.5800e-003**		**64.9144**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.6491	8.6140	17.8828	0.0592	5.5136	0.0520	5.5657	1.4774	0.0486	1.5260		6,021.2172	6,021.2172	0.2512		6,027.4959
Unmitigated	1.7560	9.4125	20.3353	0.0708	6.6807	0.0614	6.7420	1.7901	0.0573	1.8474		7,193.8101	7,193.8101	0.2845		7,200.9225

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,304.24	1,357.67	1180.94	2,989,229	2,467,050
Total	1,304.24	1,357.67	1,180.94	2,989,229	2,467,050

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.606885	0.034232	0.164848	0.096947	0.020588	0.005511	0.031026	0.028765	0.003148	0.001585	0.004727	0.000885	0.000854

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0621	0.5304	0.2257	3.3900e-003		0.0429	0.0429		0.0429	0.0429		677.0623	677.0623	0.0130	0.0124	681.0857
NaturalGas Unmitigated	0.1177	1.0054	0.4278	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4544	1,283.4544	0.0246	0.0235	1,291.0814

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	10909.4	0.1177	1.0054	0.4278	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4544	1,283.4544	0.0246	0.0235	1,291.0814
Total		**0.1177**	**1.0054**	**0.4278**	**6.4200e-003**		**0.0813**	**0.0813**		**0.0813**	**0.0813**		**1,283.4544**	**1,283.4544**	**0.0246**	**0.0235**	**1,291.0814**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	5.75503	0.0621	0.5304	0.2257	3.3900e-003		0.0429	0.0429		0.0429	0.0429		677.0623	677.0623	0.0130	0.0124	681.0857
Total		**0.0621**	**0.5304**	**0.2257**	**3.3900e-003**		**0.0429**	**0.0429**		**0.0429**	**0.0429**		**677.0623**	**677.0623**	**0.0130**	**0.0124**	**681.0857**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389
Unmitigated	6.7531	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627	0.0000	20.3517	20.3517	0.0195	0.0000	20.8389

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.4345					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3390	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627		20.3517	20.3517	0.0195		20.8389
Total	**6.7531**	**0.1301**	**11.2920**	**6.0000e-004**		**0.0627**	**0.0627**		**0.0627**	**0.0627**	**0.0000**	**20.3517**	**20.3517**	**0.0195**	**0.0000**	**20.8389**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9795					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.4345					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3390	0.1301	11.2920	6.0000e-004		0.0627	0.0627		0.0627	0.0627		20.3517	20.3517	0.0195		20.8389
Total	**6.7531**	**0.1301**	**11.2920**	**6.0000e-004**		**0.0627**	**0.0627**		**0.0627**	**0.0627**	**0.0000**	**20.3517**	**20.3517**	**0.0195**	**0.0000**	**20.8389**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment B

Climate Action Plan New Development Checklist

To ensure new development projects are compliant with Santa Rosa's Climate Action Plan, the following checklist has been developed. This checklist is required to be filled out for each new project, subject to discretionary review, to allow new development to find a less than significant impact for greenhouse gas emissions in the environmental review process.

Policy #	Description	Complies	Does Not Apply
1.1.1	Comply with CALGreen Tier 1 standards*	√	
1.1.3	After 2020, all new development will utilize zero net electricity*	√	
1.3.1	Install real-time energy monitors to track energy use*	√	
1.4.2	Comply with the City's tree preservation ordinance*	√	
1.4.3	Provide public & private trees in compliance with the Zoning Code*	√	
1.5	Install new sidewalks and paving with high solar reflectivity materials*	√	
2.1.3	Pre-wire and pre-plumb for solar thermal or PV systems	√	
3.1.2	Support implementation of station plans and corridor plans	√	
3.2.1	Provide on-site services such as ATMs or dry cleaning to site users		√
3.2.2	Improve non-vehicular network to promote walking, biking	√	
3.2.3	Support mixed-use, higher-density development near services	√	
3.3.1	Provide affordable housing near transit	√	
3.5.1	Unbundle parking from property cost		√
3.6.1	Install calming features to improve pedestrian/bike experience	√	
4.1.1	Implement the Bicycle and Pedestrian Master Plan	√	
4.1.2	Install bicycle parking consistent with regulations*	√	
4.1.3	Provide bicycle safety training to residents, employees, motorists		√
4.2.2	Provide safe spaces to wait for bus arrival	√	

Policy #	Description	Complies	Does Not Comply
4.3.2	Work with large employers to provide rideshare programs		√
4.3.3	Consider expanding employee programs promoting transit use		√
4.3.4	Provide awards for employee use of alternative commute options		√
4.3.5	Encourage new employers of 50+ to provide subsidized transit passes*		√
4.3.7	Provide space for additional park-and-ride lots		√
4.5.1	Include facilities for employees that promote telecommuting		√
5.1.2	Install electric vehicle charging equipment		√
5.2.1	Provide alternative fuels at new refueling stations*		√
6.1.3	Increase diversion of construction waste*	√	
7.1.1	Reduce potable water use for outdoor landscaping*	√	
7.1.3	Use water meters which track real-time water use*	√	
7.3.2	Meet on-site meter separation requirements in locations with current or future recycled water capabilities*		√
8.1.3	Establish community gardens and urban farms		√
9.1.2	Provide outdoor electrical outlets for charging lawn equipment	√	
9.1.3	Install low water use landscapes*	√	
9.2.1	Minimize construction equipment idling time to five minutes or less*	√	
9.2.2	Maintain construction equipment per manufacturer's specs*	√	
9.2.3	Limit GHG construction equipment emissions by using electrified equipment or alternative fuels*	√	

**To be in compliance with the Climate Action Plan, all measures denoted with an asterisk are required in all new development projects unless otherwise specified. If a project cannot meet one or more of the mandatory requirements, substitutions may be made from other measures listed at the discretion of the Community Development Director.*

As proposed the project is consistent with the Santa Rosa's Climate Action Plan in that it has incorporated the following policy items from the Climate Action Plan New Development Checklist:

Policy 1.1.1 Comply with Cal Green Tier 1 Standards: The project complies with Cal Green Tier 1 standards and will be conditioned accordingly through site development, building design and landscaping.

- 2019 Building Energy Efficiency Standards became effective January 1, 2020. Meet or exceed the guidelines for the California ENERGY STAR® Homes Program. Buildings shall be designed to minimize the need for mechanical heating, cooling and ventilation. Single family homes built to the 2019 standards will use about 53 percent less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2016 standards (due to Solar Panels). Note, the proposed project would likely be required to be built in accordance to the 2022 Building Energy Efficiency Standards, which will become effective on January 1, 2023 and will be more energy efficient.
- Only energy efficient appliances shall be installed in residential units, including Energy Star refrigerators, clothes washers, dishwashers, and ceiling fans. Energy efficient appliances (cloth dryer with 30 percent reduction, dishwasher with 15 percent reduction, fan with 50 percent reduction, and refrigerator with 15 percent reduction).
- All public street, area, and residential lighting (including all rooms in residences) installed on the project site shall be considered high efficiency lighting.
- Only low-flow bathroom and kitchen faucets, toilets, and showers shall be installed. Install low flow bathroom faucet (32 percent reduction), low flow kitchen faucet (18 percent reduction), low flow toilet (20 percent reduction), and low flow shower (20 percent reduction).
- The use of water efficient landscape irrigation systems (75 percent reduction in water usage) shall be installed.

Policy 1.1.2 After 2020, all new development will utilize zero net electricity: The project is required by the State to meet this policy.

Policy 1.3.1 Install real-time energy monitors to track energy use: Sustainable design elements proposed for the project include the installation of an energy monitor to track on-site energy use (i.e. use of nest thermostats).

Policy 1.4.2 Comply with the City's Tree Preservation Ordinance: To comply with the City's Tree Preservation Ordinance, replacement trees of the same genus and species as

any removed trees will be planted. The ratio of removal to replacement will be as stipulated in the Santa Rosa Tree Ordinance. (City Code section 17-24.050 City's tree ordinance).

Policy 1.4.3 Provide public & private trees in compliance with the zoning code: The project would provide new public and private trees. As such, a landscaping plan will demonstrate consistency with the requirements set forth for the provision of public and private trees for new development.

Policy 1.5 Install new sidewalks and paving with high solar reflectivity materials: New sidewalks and other paved surfaces would contain materials exhibiting high solar reflectivity. The existing unpaved portions of the project site are to be surfaced in accordance with the City's Construction Specification Standards for sidewalks, crosswalks and parking lots.

Policy 2.1.3 Pre-wire and pre-plumb for solar thermal or PV system: The proposed project units will include PV systems.

Policy 3.1.2 Supports implementation of station plans and corridor plans: The project is not within a Station Area Plan or within a Corridor Plan. The project does support alternative modes of transit by sidewalks which encourage a walkable community and is located within walking distance (adjacent to the project site along Dutton Meadows and Hearn Avenue) of public transit.

Policy 3.2.1 Provide on-site services such as ATMs or dry cleaning to site users: The project has no on-site commercial facilities to house ATMs or dry cleaning services and is not zoned for such uses, therefore, the policy does not apply.

Policy 3.2.2 Improve non-vehicular network to promote walking and biking: The project includes installation of sidewalks and bike lanes onsite that will provide connectivity internally and with the surrounding community.

Policy 3.2.3 Support mixed use, higher density development near services: The project is a small lot subdivision with a diversity of housing styles (including second dwelling units) located within walking distance of the Meadow Views Elementary School and shopping along US 101.

Policy 3.3.1 Provide affordable housing near transit: The project is a small lot subdivision located within 2.5 miles of the Downtown Santa Rosa Station for SMART and adjacent to bus transit along Dutton Meadows and Hearn Avenue.

Policy 3.5.1 Unbundle parking from property cost: The property has only private parking and on-site street parking, therefore, the policy does not apply.

Policy 3.6.1 Install calming features to improve the pedestrian and bicycle experience: The project includes meandering sidewalks, bulb outs, medians, pavement marking and other features that provide traffic calming on new internal roadways.

Policy 4.1.1 Implement the Bicycle & Pedestrian Master Plan: The project includes construction of sidewalks along its frontage thereby supporting the City's Bicycle & Pedestrian Plan.

Policy 4.1.2 Install bicycle parking consistent with regulation: Section 20-36.040 of the Santa Rosa municipal code sets forth the number of bicycle parking stalls required. For the project, the municipal code requires one bicycle space for every four units if units do not have a private garage or private storage space for bike storage. As proposed, each of the residential dwelling units will have a storage area located within each carport structure.

Policy 4.1.3 Provide bicycle safety training to residents and employees: The project will sell individual homes, therefore, the policy does not apply.

Policy 4.2.2 Provide safe spaces to wait for bus arrival: There are bus stops within 1/3 of a mile of the project site with sidewalks to serve waiting transit patrons adjacent to the project site along Dutton Meadows and Hearn Avenue.

Policy 4.3.2 Work with large employers to provide rideshare programs: This policy does not apply to single family residential subdivisions as there are no large employers at the project.

Policy 4.3.3 Consider expanding employee programs promoting transit use: This policy does not apply to single family residential subdivisions as there are no large employers at the project.

Policy 4.3.4 Provide awards for employee use of alternative commute options: This policy does not apply to single family residential subdivisions as there are no large employers at the project.

Policy 4.3.5 Encourage new employers of 50+ to provide subsidized transit passes: The project does not include the introduction of any employees to the site, as it is a residential housing project. Thus, this policy is not applicable.

Policy 4.3.7 Provide space for additional Park-and-Ride lots: The project is a walkable single family residential subdivision. All of the units are within walking distance from each other and to public transit.

Policy 4.5.1 Install facilities for residents that promote telecommuting: All houses will be wired for internet.

Policy 5.1.2 Install Electric Vehicle Charging Equipment: The proposed project will include pre-wiring and pre-plumbing for the future installation of electric vehicle charging stations within garages for the single-family residences.

Policy 5.2.1 Provide alternative fuels at new refueling stations: The project does not consist of new public refueling stations. Thus, this item is not applicable.

Policy 6.1.3 Increase diversion of construction waste: The developer will prepare and implement a Construction Waste Management Plan outlining proposed efforts to minimize construction waste and maximize recycling prior to the commencement of project construction.

Policy 7.1.1 Reduce potable water use for outdoor landscaping: The planting of primarily low water use plants, with some moderate water use trees will limit the water demand generated by the proposed outdoor landscaping. All landscaping will be equipped with smart controllers for irrigation. A landscaping plan will be consistent with the City of Santa Rosa Water Efficiency Landscape Ordinance.

Policy 7.1.3 Use water meters which track real time water use: A dedicated or common water meter is proposed to supply water to the irrigation system. Irrigation system design and real time metering will be shown on final landscaping and irrigation plans. The City provides the water meters. The City of Santa Rosa has data logging equipment that can collect real time data from City-issued water meters.

Policy 7.3.2 Meet on-site meter separation requirements in locations with current or future recycled water capabilities: The project site is not located proximate to current or future recycled water capabilities. Thus, this item is not applicable. Compliance with Policies 7.1.1, 7.1.3 and 9.1.3 will substitute for this policy.

Policy 8.1.3 Establish community gardens and urban farms: The project is a single family residential development. Each home site has a back yard area that can be used for a garden.

Policy 9.1.2 Provide outdoor electrical outlets for charging lawn equipment: Exterior outlets will be provided for the single-family residences proximate to where the majority of landscaping is proposed.

Policy 9.1.3 Install low water use landscapes: Low water use native plants will be used to landscape the site. Plant materials and locations are shown on the project landscape plans. The project will be compliant with the City of Santa Rosa's Water Efficient Landscape Ordinance.

Policy 9.2.1 Minimize construction equipment idling time to five minutes or less: Provisions in contractor agreements will require that construction equipment idling time be limited to five minutes or less during all stages of construction.

Policy 9.2.2 Maintain construction equipment per manufacturer's specs: Provisions in contractor agreements will require that all construction equipment be maintained per specifications established by the manufacturer.

Policy 9.2.3 Limit greenhouse gas construction equipment emissions by using electrified equipment or alternative fuels: The use of electric equipment and/or equipment using alternative fuels shall be required in all contractor agreements and provisions therein.

Attachment C

Required Mitigation Measures

ROSELAND AREA/SEBASTOPOL ROAD SPECIFIC PLAN AND ROSELAND AREA ANNEXATION EIR MITIGATION MEASURES

The Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation EIR identified three mitigation measure to reduce identified air quality impacts. **Mitigation Measures 3.3.3, 3.3.5, and 3.3.6** would continue to apply to the proposed project.

Mitigation Measure 3.3.3: Where projects in the project area are subject to subsequent CEQA review, the City of Santa Rosa must ensure that in addition to the BAAQMD basic construction mitigation measures from Table 8-1 of the BAAQMD CEQA Air Quality Guidelines (or subsequent updates), BAAQMD additional mitigation measures from Table 8-2 of the BAAQMD CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents and implemented. These measures include the following:

1. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
2. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
3. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
4. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
5. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
6. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
7. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
8. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
9. Minimizing the idling time of diesel powered construction equipment to two minutes.
10. The project shall develop a plan demonstrating that the offroad equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent CARB fleet average.

11. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
12. Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.
13. Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines.

Mitigation Measure 3.3.5: Projects within the project area that have a construction area greater than 5 acres and which are scheduled to last more than two years shall be required to prepare a site-specific construction pollutant mitigation plan in consultation with Bay Area Air Quality Management District (BAAQMD) staff prior to the issuance of grading permits. A project-specific construction related dispersion model acceptable to the BAAQMD shall be used to identify potential toxic air contaminant impacts, including diesel particulate matter. If BAAQMD risk thresholds (i.e., probability of contracting cancer is greater than 10 in one million) would be exceeded, mitigation measures shall be identified in the construction pollutant mitigation plan to address potential impacts and shall be based on site-specific information, such as the distance to the nearest sensitive receptors, project site plan details, and construction schedule. The City shall ensure construction contracts include all identified measures. Construction pollutant mitigation plan measures shall include but not be limited to limiting the amount of acreage to be graded in a single day, requiring the use of advanced particulate filters on construction equipment, and requiring the use of alternative fuels, such as biodiesel, to power construction equipment.

Mitigation Measure 3.3.6: The following measures shall be utilized in site planning and building designs to reduce TAC and PM2.5 exposure where new receptors are located within 1,000 feet of emissions sources:

• Future development in the project area that includes sensitive receptors (such as residences, schools, hospitals, daycare centers, or retirement homes) located within 1,000 feet of US 101 and/or stationary sources shall require site-specific analysis to determine the level of health risk. This analysis shall be conducted following procedures outlined by the BAAQMD. If the site-specific analysis reveals significant exposures from all sources (i.e., health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a hazard Index greater than 10, or annual PM2.5 exposures greater than 0.8 µg/m3), measures shall be employed to reduce the risk to below the threshold (e.g., electrostatic filtering systems or equivalent systems and location of vents away from TAC sources).

• Future nonresidential developments projected to generate more than 100 heavy-duty truck trips daily and/or include the need for a BAAQMD permit to operate a stationary source shall include measures to protect public health to ensure they do not cause a significant health risk in terms of excess cancer risk greater than 10 in one million, acute or chronic hazards with a Hazard Index greater than 1.0, or annual PM2.5 exposures greater than 0.3 µg/m3.

ADDITONAL REQUIRED MEASURES

As noted in **Mitigation Measure 3.3.3** from the Roseland Area/Sebastopol Road Specific Plan and Roseland Area Annexation EIR**,** the **BAAQMD's Basic Construction Mitigation Measures Recommended for ALL Proposed Projects** are required in addition to **Mitigation Measure 3.3.3**. BAAQMD's *Basic Construction Measures* are the following:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

APPENDIX B: NOISE TECHNICAL REPORT

NOISE TECHNICAL REPORT

Dutton Meadows
Santa Rosa, California

Prepared For:

Trumark Homes LLC
3001 Bishop Drive, Suite 100
San Ramon, CA 94583

Prepared By:

RCH Group
11060 White Rock Road, Suite 150-A
Rancho Cordova, CA 95670

December 2020

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Summary

RCH Group (RCH) has conducted this noise analysis for the Dutton Meadows project. The project consists of construction and operation of 137 single-family residences on a mostly undeveloped project site southeast of the intersection of Hearn Avenue and Dutton Meadow in Santa Rosa, CA.

The project site is approximately 18.43 acres and consists of seven parcels (APN 043-071-007, -022, and -023, and 043-191-016, -022, -023, and -024). Surrounding land uses are residential, open space, and Meadow View Elementary School to the west.

This report analyzes the noise impacts from the project and is prepared in a format to answer the noise issues identified in the Initial Study Environmental Checklist Form in Appendix G of the CEQA Guidelines (revised in 2019). This report provides an overview of existing noise levels measured at the project site, local noise regulatory framework, and an analysis of potential noise and vibration impacts that would result from construction and operation of the project.

Construction activities would result in increases in ambient noise levels in the project vicinity. However, these increases would be temporary and within the standard City conditions hours of construction, and the impact of exposure of people to excessive noise levels would be less than significant.

In general, the project site is a quiet location. The dominant sources of noise during the measurements were traffic from Hearn Avenue and Dutton Meadow. Long-term 24-hour noise levels (CNELs) were 51-52 dB near the center of the site (Site 1) and were 53-56 dB in the northeast area of the site (Site 2).

The analysis reviewed the CEQA Initial Study Checklist noise items and determined that with mitigation the project would not result in any significant noise or vibration impacts.

Comparison to Master EIR and Other CEQA analyses

Information in this section (prepared by RCH Group, Inc., in 2020) provides an overview of the existing noise conditions at the proposed project site, the noise regulatory framework, and an analysis of potential noise impacts (including assumptions and methodology) that would result from implementation of the proposed project.

As described in Section 1.2 of the *Dutton Meadows Project Draft SEIR*, the *Dutton Meadows Project SEIR* tiers from the *Southwest Area Projects EIR*. Therefore, as described in Section 3.1, the Lead Agency is responsible for implementing all appropriate and feasible mitigation measures for impacts evaluated in the *Southwest Area Projects EIR*. The *Southwest Area Projects Initial Study* concluded that there were no significant effects on noise that were not previously evaluated in the Master, Redevelopment, or General Plan EIRs. The Southwest Santa Rosa Area Plan and Master EIR (State Clearinghouse Number 92083076) were certified on June 21, 1994. Along with the Area Plan, the 35 project proposals are evaluated in the Master EIR. One noise impact was identified as a significant, unavoidable adverse impacts from buildout of the Area Plan identified by the Master EIR.

> Impact 3.2.5-3: Development of the Area Plan and its infrastructure improvements, in conjunction with cumulative traffic, could result in increased traffic noise impacts on existing Area Plan land uses.

Impact 3.2.5-3 was addressed in the Statement of Overriding Considerations for the *Southwest Area Projects Subsequent EIR* (SCH #2004062031). No feasible mitigation measures exist to eliminate this significant and unavoidable impact.

The Master EIR included the following impacts that would need to be implemented for the revised Dutton Meadows project. These mitigation measures were identified in the Dutton Meadows Project Final Subsequent EIR:

> **Mitigation Measure 3.2.5-1 (a)** To minimize construction noise impacts of nearby residents, limit construction hours to between 7:00 a.m. and 7:00 p.m. on weekdays and between 9:00 a.m. and 6:00 p.m. on weekends for projects within 1,600 feet of inhabited dwelling units(s). Any work outside of these hours shall require a special permit from the City of Santa Rosa. There shall be compelling reasons for permitting construction outside of the designated hours.
>
> **Mitigation Measure 3.2.5-1 (b)** Construction equipment shall be properly outfitted and maintained with noise reduction devices to minimize construction-generated noise.
>
> **Mitigation Measure 3.2.5-1 (c)** Contractor shall locate stationary noise sources away from residents and developed areas, and require use of acoustic shielding with such equipment when feasible and appropriate.
>
> **Mitigation Measure 3.2.5-2** Project developers shall propose noise mitigation consistent with General Plan Noise and Area Plan Community Design Policies to reduce year 2010 exterior noise levels on proposed residential and school land uses to 60 Ldn or below, on proposed playgrounds and neighborhood park land uses to 70 Ldn or below, and on proposed office buildings and commercial areas to 65 Ldn or below.
>
> **Mitigation Measure 3.2.5-3 (a)** Retrofit existing residential land uses with acoustical attenuation materials, or relocate residences, to reduce interior noise levels for the year 2010 to below 45 Ldn.
>
> **Mitigation Measure 3.2.5-3 (b)** Construct sound walls with movable sound attenuating gates, or berms to reduce exterior noise levels of existing residential land uses for the year 2010 to 60 Ldn or below.
>
> **Mitigation Measure 3.2.5-3 (c)** Construct soundwalls or berms at playgrounds and neighborhood parks to reduce noise levels for the year 2010 to 70 Ldn or below.
>
> **Mitigation Measure 3.2.5-3 (d)** Construct soundwalls or berms at office buildings and commercial areas to reduce noise levels for the year 2010 to 65 Ldn or below.
>
> **Note: As identified above, Impact 3.2.5-3 was determined to be significant and unavoidable, as the Mitigation Measures 3.2.5-3 (a-d) were not determined to be feasible. This 2020 project would not have off-site impacts greater than 1 dB, Ldn, so Mitigation Measures 3.2.5-3 (a) thru (d) would not be required even if the measures were feasible.**

The following mitigation measure was also included in the 2005 *Dutton Meadows Project Initial Study* to further reduce potential noise impacts.

> **Mitigation 5-1 from Initial Study**. Future Indoor Noise Environment. To maintain a habitable interior noise environment, units exposed to noise levels greater than 60 dBA Ldn shall be provided with forced-air mechanical ventilation to adequately ventilate the interior spaces of the units.

Additional Mitigation Measures

The 2020 noise analysis has not identified any additional impacts or required mitigation measures as a result of the modified project or any circumstances.

NOISE -- Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Background

Noise Descriptors

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[1]; average day–night 24-hour average sound level (Ldn)[2] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[3], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Table 1 identifies decibel levels for common sounds heard in the environment.

---

[1]The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

[2]Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

[3]CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

Table 1: Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas lawn mower at 3 feet, jet flyover at 1,000 feet	Rock Band
80–90	Diesel truck at 50 feet	Loud television at 3 feet
70–80	Gas lawn mower at 100 feet, noisy urban area	Garbage disposal at 3 feet, vacuum cleaner at 10 feet
60–70	Commercial area	Normal speech at 3 feet
40–60	Quiet urban daytime, traffic at 300 feet	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: (modified from Caltrans Technical Noise Supplement, 1998)

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

Regulatory Framework

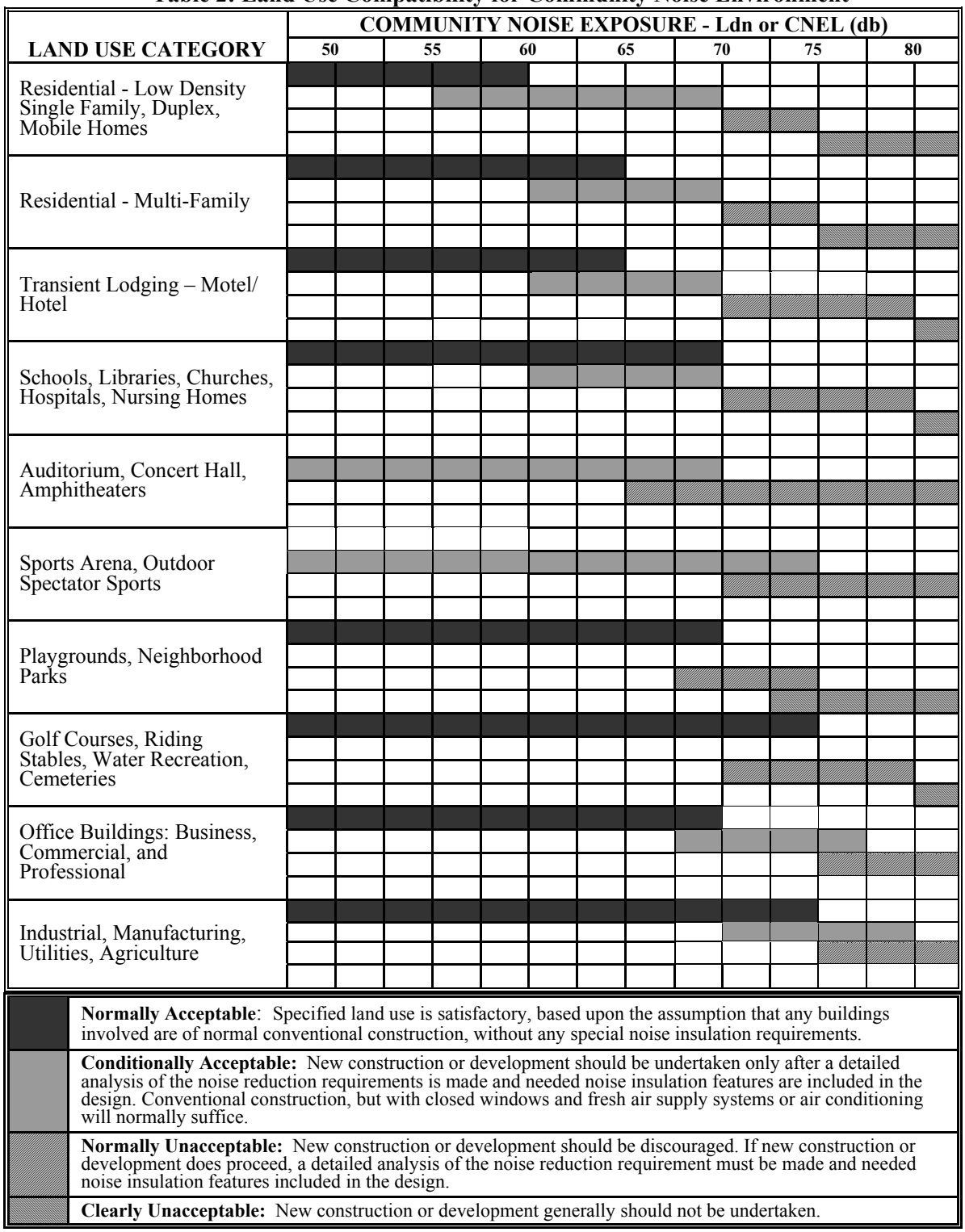
State Guidelines

State Land Use Compatibility Standards for Community Noise are provided in the State of California General Plan Guidelines (**Table 2**). The guidelines indicate that a Community Noise Exposure up to 60 dB (Ldn or CNEL) is Normally Acceptable for Single Family Residential, and a Community Noise Exposure up to 70 dB (Ldn or CNEL) is Conditionally Acceptable (OPR, 2003).

Santa Rosa General Plan

The Noise and Safety Element of the Santa Rosa General Plan states that the noise standards used by the City of Santa Rosa include: the Land Use Compatibility Standards for Community Noise environment (which are consistent with the State Guidelines, above), State of California Noise Insulation Standards (which the project will be required to comply with), and applicable standards in the City of Santa Rosa Noise Ordinance (see below).

Table 2: Land Use Compatibility for Community Noise Environment



Source: OPR, 2003

Santa Rosa Noise Ordinance

Santa Rosa Municipal Code Section 17-16.120 states that "it is unlawful for any person to operate any machinery, equipment, pump, fan, air-conditioning apparatus or similar mechanical device in any manner so as to create any noise, which would cause the noise level at the property line of any property to exceed the ambient base noise level by more than five decibels."

Section 17-16.030 establishes ambient base noise level criteria for various land uses. For single-family residential zones, the following criteria are used as a base from which noise levels can be compared: 55 dB for 7:00 a.m. to 7:00 p.m., 50 dB for 7:00 p.m. to 10:00 p.m., and 45 dB for 10:00 p.m. to 7:00 a.m.

South Santa Rosa Area Plan

The Area Plan states that development shall comply with the standards and policies of the General Plan Noise Element (see Santa Rosa General Plan, above). Standard City conditions of project approval limit the hours of construction to 7:00 a.m. to 7:00 p.m., Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturdays. No construction is permitted on Sundays and holidays.

Significance Criteria

Temporary construction noise impacts would be significant if construction occurred outside the hours of construction limited by the standard City conditions of project approval and noise levels from this construction exceeded the Santa Rosa Noise Ordinance standard of 60 dB between 7:00 a.m. and 7:00 p.m., 55 dB between 7:00 p.m. and 10:00 p.m., and 50 dB between 10:00 p.m. and 7:00 a.m.

Operational noise impacts of the project would be significant if they result in exceedance of noise standards contained in the Santa Rosa Noise Ordinance, or exceedance of vibration thresholds recommended by the Federal Transit Administration (FTA, 2006), at nearby residential land uses.

Operation of the development would also result in a significant impact if it would result in a significant increase in cumulative noise exposure (generally from increased traffic noise). Increases in cumulative noise exposure (in CNEL/Ldn) of 5 dBA are generally considered significant in areas where the ambient noise environment is less than 60 dBA. In areas where the ambient noise environment is between 60 and 65 dBA, increases of 3.0 dBA, or greater, would be considered significant. In areas where the ambient noise environment exceeds 65 dBA, a predicted increase of 1.5 dBA, or greater, would be considered significant[4].

Existing Noise Sources and Levels

To quantify existing ambient noise levels in the immediate project vicinity, RCH conducted short-term (10-minute) measurements at five locations and long-term (72-hour) measurements at two locations at the project site. Noise measurements were made using Metrosonics db308 Sound Level Meters calibrated before and after the measurements.

The noise measurements are summarized in **Table 3** below. The Noise Appendix includes noise plots of the long-term data and a figure showing noise measurement locations. Noise measurement locations were selected to measure existing noise levels at nearby receptors that would be affected by future noise from the project, and to capture existing noise levels that would affect the proposed residences.

[4] These thresholds were initially recommended by the Federal Interagency Committee on Noise (FICON) for assessing changes in ambient noise levels resulting from aircraft operations (FICON 1992), and are based on noise levels at which people typically become highly annoyed. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these criteria have since been recognized by various federal, state, and local agencies for the analysis of transportation noise impacts.

The dominant sources of noise during the measurements were traffic from Hearn Avenue and Dutton Meadow. The 24-hour noise levels (CNELs) were 51-52 dB near the center of the site (Site 1) and were 53-56 dB in the northeast area of the site (Site 2).

Table 3: Existing Noise Measurements

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1. Near the center of the site, approximately 750 feet from the centerline of Hearn Avenue and 950 feet from the centerline of Dutton Meadow	Wednesday March 7, 2018 11:37-11:47 a.m.	5-minute Leq's: 50, 49	Siren was 55 dB. Airplane was 53 dB. Wind was 52 dB. Traffic was up to 50 dB. Back-up beep was 50 dB. Background noise was 47 dB. Quieter sounds included birds.
Site 1. Near the center of the site, approximately 750 feet from the centerline of Hearn Avenue and 950 feet from the centerline of Dutton Meadow	Thursday March 8, 12:00 a.m. through Saturday March 10, 11:59 p.m., 2018 48-hour measurement	Hourly Leq's ranged from: 42-51 CNELs: 52, 52, 51	Unattended noise measurements do not specifically identify noise sources.
Site 1. Near the center of the site, approximately 750 feet from the centerline of Hearn Avenue and 950 feet from the centerline of Dutton Meadow	Monday March 12, 2018 10:42-10:52 a.m.	5-minute Leq's: 42, 42	Garbage truck was 44 dB. Traffic was up to 43 dB. Birds were up to 43 dB. Car horn was 42 dB. Background noise was <41.5 dB.
Site 2. Northeast area of the site, approximately 190 feet from the centerline of Hearn Avenue	Wednesday March 7, 2018 12:08-12:18 p.m.	5-minute Leq's: 51, 53	Traffic on Hearn Ave was up to 60 dB. Motorcycle on Hearn Ave was 56 dB. Airplane was 56 dB. Dog barking was 52 dB. Background noise was 47 dB. Quieter noises included birds, wind, and voices.
Site 2. Northeast area of the site, approximately 190 feet from the centerline of Hearn Avenue	Thursday March 8, 12:00 a.m. through Saturday March 10, 11:59 p.m., 2018 48-hour measurement	Hourly Leq's ranged from: 43-53 CNELs: 55, 56, 53	Unattended noise measurements do not specifically identify noise sources.
Site 2. Northeast area of the site, approximately 190 feet from the centerline of Hearn Avenue	Monday March 12, 2018 11:09-11:19 a.m.	5-minute Leq's: 49, 48	Cement truck on Hearn Ave was 57 dB. Birds were up to 56 dB. Trucks on Hearn Ave were 51-55 dB. Traffic on Hearn Ave was 46-51 dB. Background noise was <41.5 dB. Quieter noises included voices of neighbors.
Site 3. End of Sally Ann Street, approximately 230 feet from the centerline of Hearn Avenue	Wednesday March 7, 2018 1:02-1:12 p.m.	5-minute Leq's: 52, 51	Traffic on Hearn Ave was up to 62 dB. Bus was 58 dB. Background noise was 42 dB. Quieter noises included pedestrians, wind chimes,

			airplanes, and a car on Sally Ann St.
Site 3. End of Sally Ann Street, approximately 230 feet from the centerline of Hearn Avenue	Monday March 12, 2018 11:39-11:49 a.m.	5-minute Leq's: 52, 51	Loud car on Hearn Ave was 61 dB. Car on Sally Ann St was 61 dB. Traffic on Hearn was 47-60 dB. Airplane was 44 dB. Yard equipment was 42 dB. Background noise was <41.5 dB. Quieter noises included birds, voices, and a car idling.
Site 4. East end of Aloise Avenue, approximately 250 feet from the centerline of Hearn Avenue	Wednesday March 7, 2018 1:20-1:30 p.m.	5-minute Leq's: 46, 47	Motorcycle on Hearn Ave was 54 dB. Car door slam on Aloise Ave was 54 dB. Cars on Aloise Ave were up to 52 dB. Garage door opening was 51 dB. Honking was 51 dB. Voices were 49 dB. Traffic on Hearn Ave was up to 45 dB. Background noise was <41.5 dB. Quieter noises included back-up beeps, wind chimes, distant traffic, and birds.
Site 4. East end of Aloise Avenue, approximately 250 feet from the centerline of Hearn Avenue	Monday March 12, 2018 11:56 a.m.-12:06 p.m.	5-minute Leq's: 52, 51	Airplane was up to 62 dB. Dog barking was 60 dB. Loud car on Hearn Ave was 55 dB. Lawn mower was 51 dB. Traffic was up to 46 dB. Background noise was 43 dB. Quieter noises included wind chimes, back-up beeps, voices, and birds.
Site 5. West side of site, approximately 70 feet from the centerline of Dutton Meadow	Wednesday March 7, 2018 1:49-1:59 p.m.	5-minute Leq's: 56, 56	Traffic on Dutton Meadow was 54-69 dB. Truck was 69 dB. Bus was 63 dB. Whistle at school was 59 dB. Children were 48 dB. Background noise was 43 dB. Quieter noises included doves, wind, and an airplane.
Site 5. West side of site, approximately 70 feet from the centerline of Dutton Meadow	Monday March 12, 2018 1:38-1:48 p.m.	5-minute Leq's: 54, 52	Traffic on Dutton Meadow was 53-60 dB. Truck on Dutton Meadow was 60 dB. Car horn was 53 dB. Background noise was 45 dB. Quieter noises included distant traffic, birds, and children at the school.

Source: RCH Group, 2018

Existing Sensitive Receptors

According to the Santa Rosa General Plan, sensitive land uses include residences, schools, playgrounds, child care centers, hospitals, retirement homes, and convalescent homes. The nearest sensitive receptors to the project site include: residences on Aloise Avenue (directly adjacent to the project site, on the northern side), Meadow View Elementary School (to the west, with classrooms as close as 90 feet from project construction areas), residences on Hearn Avenue (on the north side of the street, as close as 80 feet from project construction areas), and residences on Pebblecreek Drive (to the southwest of the site, as close as 100 feet from project construction areas).

Impact Analysis

a) *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?* **Less-than-Significant Impact with Mitigation Incorporated**

Master EIR and other previous CEQA Mitigation Measures

The Master EIR mitigation measures 3.2.5-1 (a) thru (c) would reduce noise impacts from construction to less than significant.

The project would include residential backyards, but given the 2018 measurements, noise levels at these outdoor activity areas would not exceed the State Guidelines standard of 60 dB for residential areas. This would be in compliance with Master EIR mitigation measure 3.2.5-2.

Cumulative noise from the 2020 project would not be substantially greater than identified in the Master EIR. The mitigation measures for that impact were determined to be infeasible and the impact of cumulative traffic noise on existing land uses was determined to be significant and unavoidable.

The 2020 project would implement Mitigation 5-1 from 2004 Dutton Meadows Initial Study.
Future Indoor Noise Environment. To maintain a habitable interior noise environment, units exposed to noise levels greater than 60 dBA Ldn shall be provided with forced-air mechanical ventilation to adequately ventilate the interior spaces of the units.

2020 Noise Assessment Update

Noise effects of the 2020 project would be associated with noise from construction of the residences, the effect of existing traffic noise on future residents, or long-term operational noise generated by the residences.

Construction Noise

The project includes the construction of 137 single-family residential units. Construction activities would require the use of numerous pieces of noise-generating equipment, such as excavating machinery (e.g., backhoes, bulldozers, excavators, front loaders, etc.) and other construction equipment (e.g., compactors, scrapers, graders, etc.). Construction worker traffic and construction-related haul trips would raise ambient noise levels along local haul routes, depending on the number of haul trips made and types of vehicles used. However, the project would result in a minimal number of haul trips since the project site grading would be balanced. Construction activities and associated traffic would occur primarily during the daytime.

The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction. As shown in **Table 4**, maximum noise levels generated by various types of construction equipment can range from 76 to 89 dB at 50 feet. **Table 5** gives average noise levels associated with construction activities at a distance of 50 feet, and shows that the highest levels typically occur during ground excavation and finishing (88 dB Leq).

Table 4: Typical Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Dump Truck	76
Air Compressor	78
Concrete Mixer (Truck)	79
Jackhammers	89
Scraper	84
Dozer	82
Paver	77
Generator	81
Auger Drill Rig	84
Front End Loader	79
Grader	85
Backhoe	78

Source: Federal Highway Administration, Roadway Construction Noise Model User's Guide, 2006

Table 5: Typical Construction Activities Noise Levels

Construction Phase	Noise Level (dB Leq at 50 feet)
Ground Clearing	83
Excavation	88
Foundations	81
Erection	81
Finishing	88

Notes: Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.
Leq = equivalent sound level
Source: U.S. Environmental Protection Agency, Legal Compilation, 1973

The closest noise-sensitive land uses are less than 50 feet from the proposed project construction area, and could result in even higher noise levels. However, this noise would be intermittent and temporary. Implementation of **Mitigation Measures 3.2.5-1 (a) thru (c)** would reduce impacts of construction noise to less than significant.

Traffic Noise

Based on observations, existing environmental noise (primarily from traffic) is minimal. The project would include residential backyards, but given the measurements discussed above, noise levels at these outdoor activity areas would not exceed the State Guidelines standard of 60 dB for residential areas. Therefore, traffic noise impacts would be less than significant.

Operational Noise

Operational noise includes any long-term noise generated by the residences that would impact surrounding land uses. In general, residences are one of the quietest land uses (other than open space), and noise from the residences would be considered compatible with the surrounding residences. Any permanent increase in ambient noise levels in the project vicinity would not be substantially greater than existing levels without the project and would result in a less-than-significant noise increase.

The primary source of operational noise from the project would be new vehicle trips from project residents. Project-generated traffic noise would not increase noise levels by more than 1 dB along roadway segments in the project area. Persons would not be exposed to noise levels in excess of applicable standards. Therefore, operational noise impacts would be less than significant.

b) *Would the project result in generation of excessive groundborne vibration or groundborne noise levels?* **Less-than-Significant Impact**

Master EIR and other previous CEQA Mitigation Measures

No previous impacts from groundborne vibration were identified. None are recommended for the 2020 Dutton Meadows project.

2020 Noise Assessment Update

Construction operations have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. The ground vibration levels associated with various types of construction equipment are summarized in **Table 6**. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels.

Table 6: Representative Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity at 25 Feet (in/sec)
Pile Driver (impact)	upper range	1.518
	typical	0.644
Pile Driver (sonic)	upper range	0.734
	typical	0.170
Vibratory Roller		0.210
Large Bulldozer		0.089
Loaded Trucks		0.076
Jackhammer		0.035
Small Bulldozer		0.003

Source: Federal Transit Administration, 2006

At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. For most structures, a peak particle velocity (ppv) threshold of 0.5 inch per second or less is sufficient to avoid structural damage. The Federal Transit Administration recommends a threshold of 0.5 ppv for residential and commercial structures, 0.25 ppv for historic buildings and archaeological sites, and 0.2 ppv for non-engineered timber and masonry buildings (FTA 2006).

The project would not involve the use of any equipment or processes that would result in potentially significant levels of ground vibration (i.e., pile drivers that could be above 0.5 ppv). The closest structures to the project site are as close as 25 feet from the proposed construction area. As shown in **Table 6**, the predicted vibration levels from vibratory rollers, bulldozers, loaded trucks, and jackhammers at a distance of 25 feet would not exceed the 0.5 ppv threshold for residential and commercial structures. It is assumed that pile drives would not be used for construction of the project. Therefore, vibration impacts from the project would be less than significant.

c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?* **No Impact**

Master EIR and other previous CEQA Mitigation Measures

The Master EIR did not identify any impacts related to airport land use plans or private air strips.

2020 Noise Assessment Update

The project site is not located within an area covered by an airport land use plan or within two miles of a public or public use airport. There are no private airstrips located near the project site. Development on the site would not expose people working or residing at the project site to excessive airport noise levels. Therefore, no impact would occur.

References

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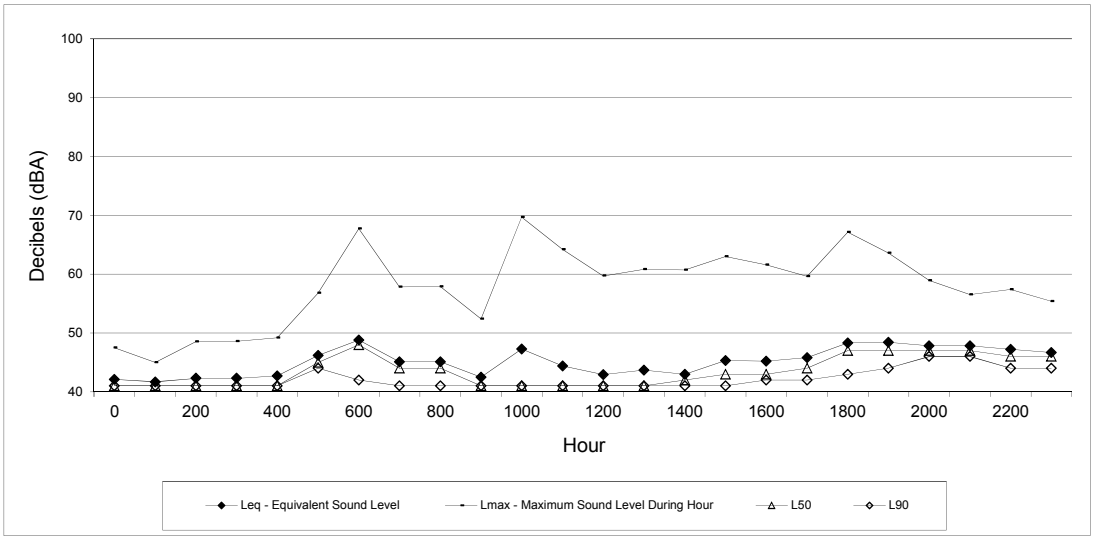
Dutton Meadows

Noise Appendix

Site 1 – 24-Hour Noise Plots (3 pages)

Site 2 – 24-Hour Noise Plots (3 pages)

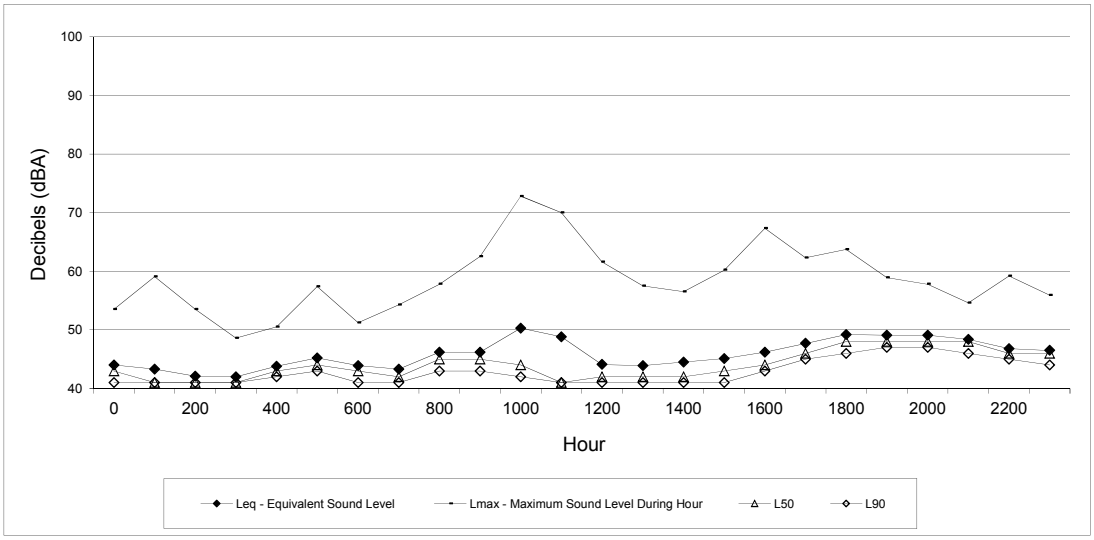
Noise Measurement Locations Figure



Site 1: Near the center of the site
Thursday March 8, 2018

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L50	L90
0	42	48	41	41
100	42	45	41	41
200	42	49	41	41
300	42	49	41	41
400	43	49	41	41
500	46	57	45	44
600	49	68	48	42
700	45	58	44	41
800	45	58	44	41
900	43	52	41	41
1000	47	70	41	41
1100	44	64	41	41
1200	43	60	41	41
1300	44	61	41	41
1400	43	61	42	41
1500	45	63	43	41
1600	45	62	43	42
1700	46	60	44	42
1800	48	67	47	43
1900	48	64	47	44
2000	48	59	47	46
2100	48	57	47	46
2200	47	57	46	44
2300	47	55	46	44

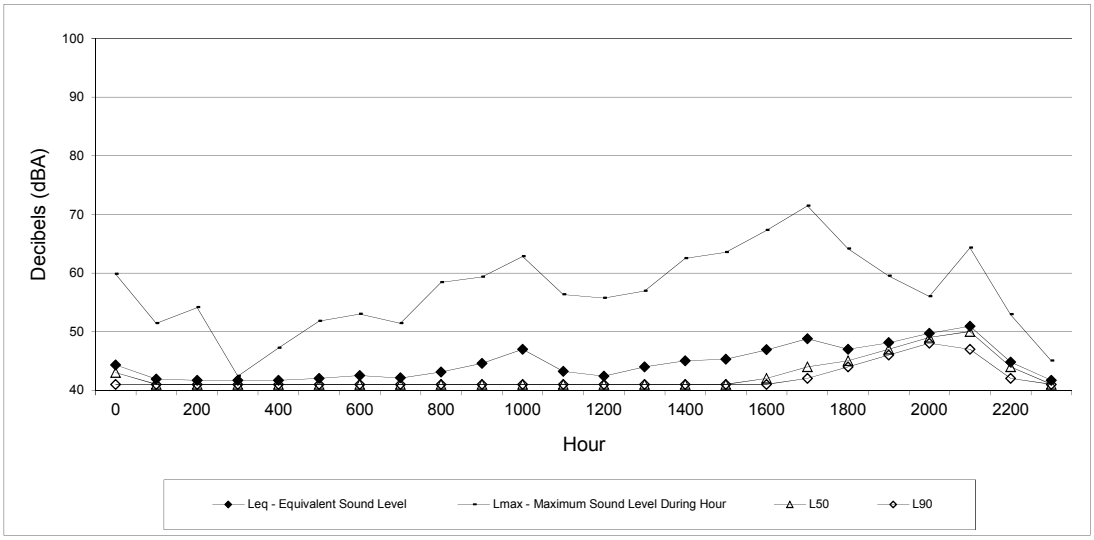
CNEL 52



Site 1: Near the center of the site
Friday March 9, 2018

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L50	L90
0	44	54	43	41
100	43	59	41	41
200	42	54	41	41
300	42	49	41	41
400	44	51	43	42
500	45	57	44	43
600	44	51	43	41
700	43	54	42	41
800	46	58	45	43
900	46	63	45	43
1000	50	73	44	42
1100	49	70	41	41
1200	44	62	42	41
1300	44	58	42	41
1400	45	57	42	41
1500	45	60	43	41
1600	46	67	44	43
1700	48	62	46	45
1800	49	64	48	46
1900	49	59	48	47
2000	49	58	48	47
2100	48	55	48	46
2200	47	59	46	45
2300	47	56	46	44

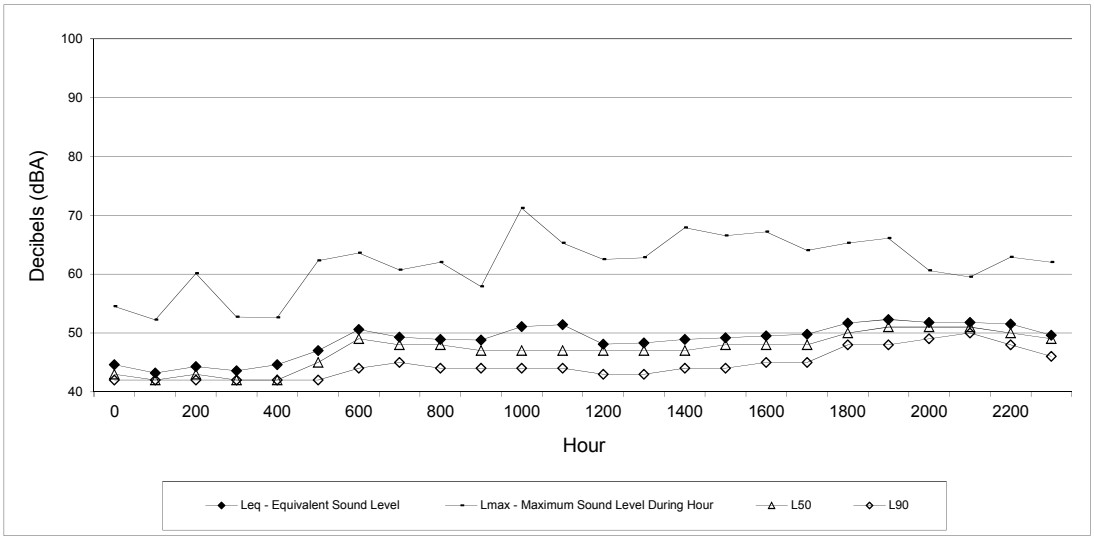
CNEL: 52



Site 1: Near the center of the site
Saturday March 10, 2018

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L50	L90
0	44	60	43	41
100	42	51	41	41
200	42	54	41	41
300	42	42	41	41
400	42	47	41	41
500	42	52	41	41
600	43	53	41	41
700	42	51	41	41
800	43	58	41	41
900	45	59	41	41
1000	47	63	41	41
1100	43	56	41	41
1200	42	56	41	41
1300	44	57	41	41
1400	45	63	41	41
1500	45	64	41	41
1600	47	67	42	41
1700	49	71	44	42
1800	47	64	45	44
1900	48	60	47	46
2000	50	56	49	48
2100	51	64	50	47
2200	45	53	44	42
2300	42	45	41	41

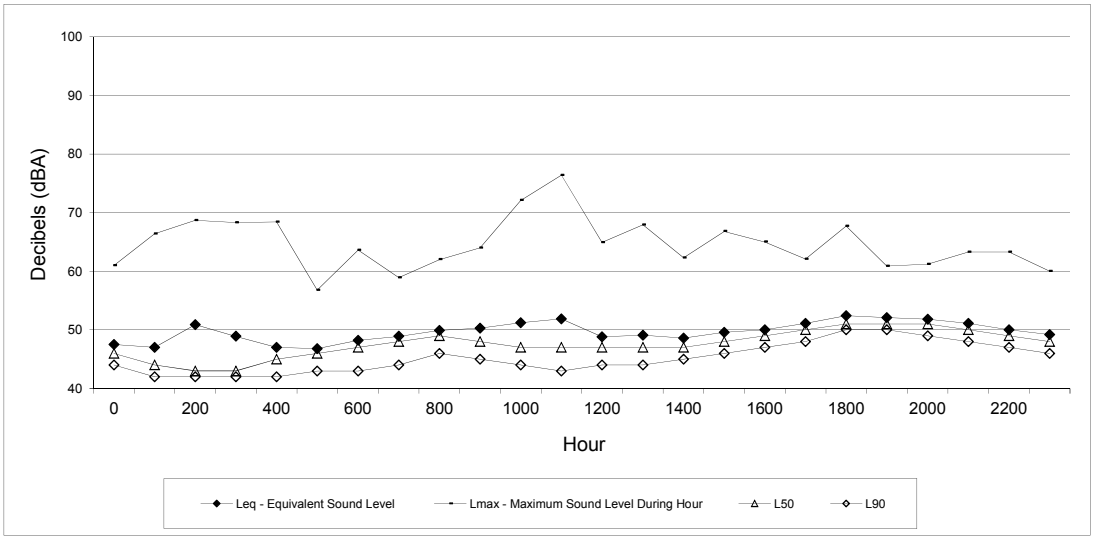
CNEL: 51



Site 2: NE area of the site
Thursday March 8, 2018

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L50	L90
0	45	55	43	42
100	43	52	42	42
200	44	60	43	42
300	44	53	42	42
400	45	53	42	42
500	47	62	45	42
600	51	64	49	44
700	49	61	48	45
800	49	62	48	44
900	49	58	47	44
1000	51	71	47	44
1100	51	65	47	44
1200	48	63	47	43
1300	48	63	47	43
1400	49	68	47	44
1500	49	67	48	44
1600	50	67	48	45
1700	50	64	48	45
1800	52	65	50	48
1900	52	66	51	48
2000	52	61	51	49
2100	52	60	51	50
2200	52	63	50	48
2300	50	62	49	46

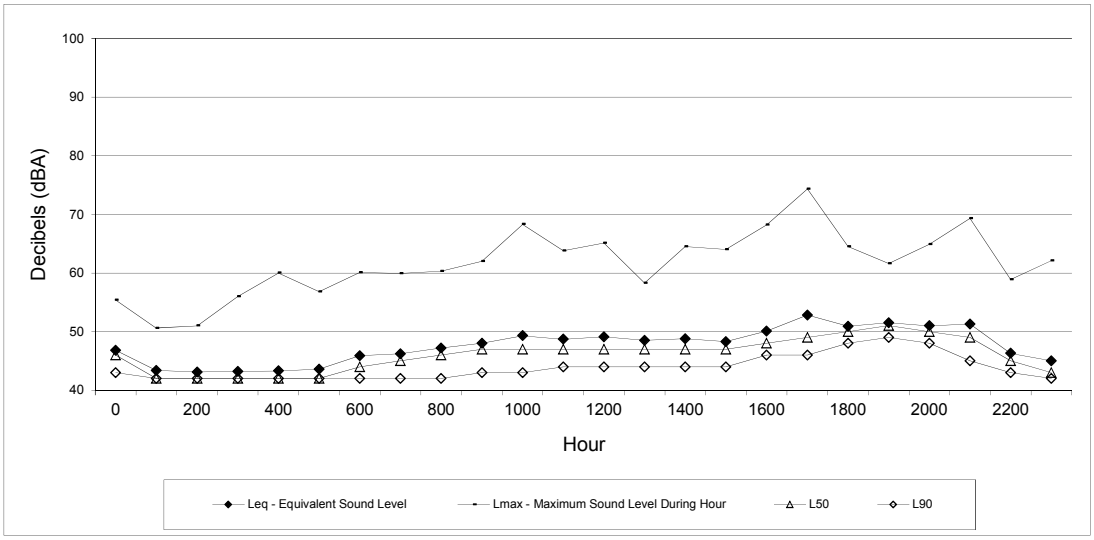
CNEL 55



Site 2: NE area of the site
Friday March 9, 2018

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L50	L90
0	48	61	46	44
100	47	66	44	42
200	51	69	43	42
300	49	68	43	42
400	47	68	45	42
500	47	57	46	43
600	48	64	47	43
700	49	59	48	44
800	50	62	49	46
900	50	64	48	45
1000	51	72	47	44
1100	52	76	47	43
1200	49	65	47	44
1300	49	68	47	44
1400	49	62	47	45
1500	50	67	48	46
1600	50	65	49	47
1700	51	62	50	48
1800	52	68	51	50
1900	52	61	51	50
2000	52	61	51	49
2100	51	63	50	48
2200	50	63	49	47
2300	49	60	48	46

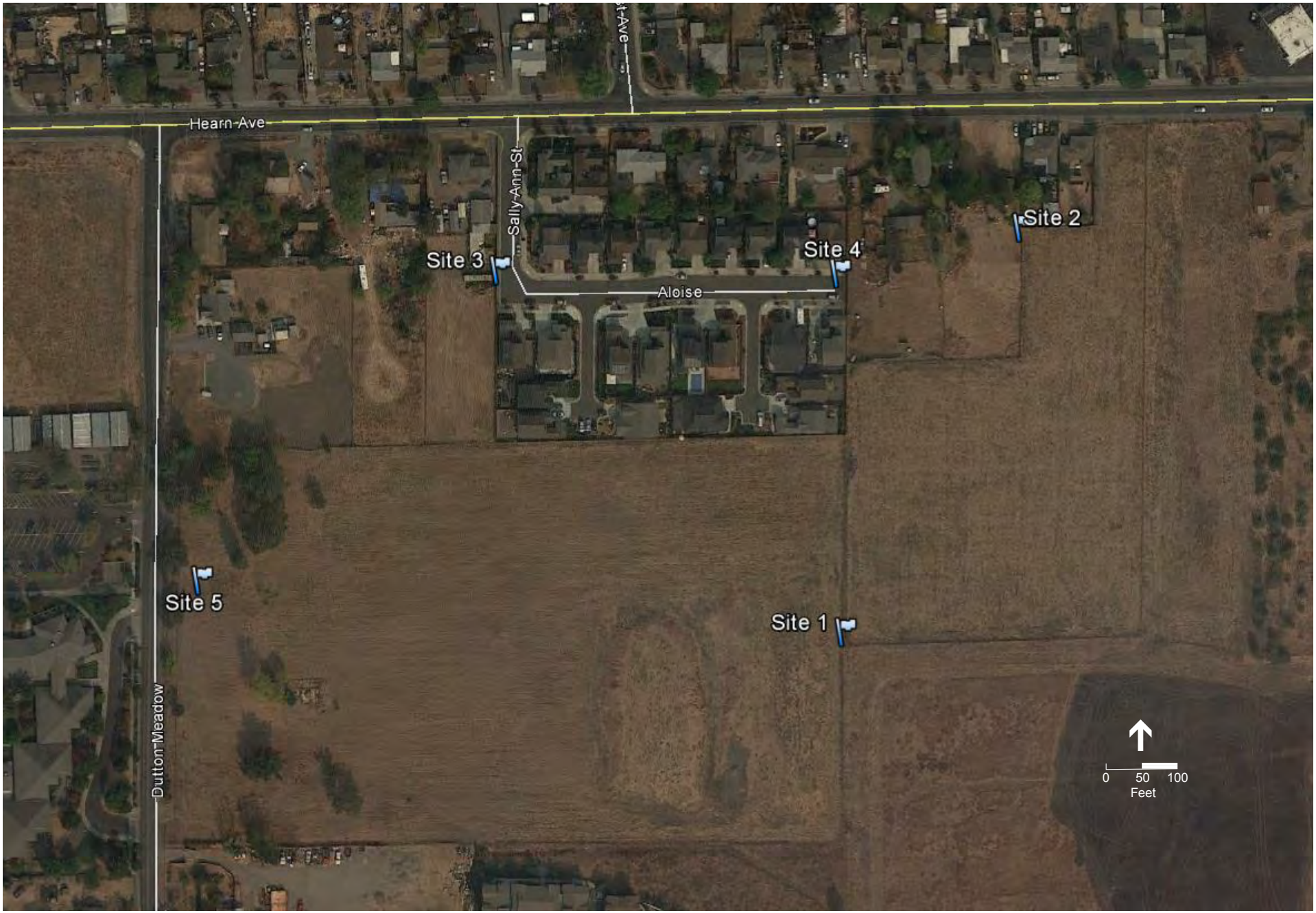
CNEL: 56



Site 2: NE area of the site
Saturday March 10, 2018

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L50	L90
0	47	55	46	43
100	43	51	42	42
200	43	51	42	42
300	43	56	42	42
400	43	60	42	42
500	44	57	42	42
600	46	60	44	42
700	46	60	45	42
800	47	60	46	42
900	48	62	47	43
1000	49	68	47	43
1100	49	64	47	44
1200	49	65	47	44
1300	49	58	47	44
1400	49	65	47	44
1500	48	64	47	44
1600	50	68	48	46
1700	53	74	49	46
1800	51	65	50	48
1900	52	62	51	49
2000	51	65	50	48
2100	51	69	49	45
2200	46	59	45	43
2300	45	62	43	42

CNEL: 53



SOURCE: Google Earth and RCH Group 2018

Dutton Meadows Project

Noise Measurement Locations

APPENDIX C: CULTURAL RESOURCES ASSESSMENT

A CULTURAL RESOURCES EVALUATION OF THE PROPERTIES LOCATED AT 2666 AND 2684 DUTTON MEADOWS AND 1112 AND 1200 HEARN AVENUE, SANTA ROSA, CA

SUBMITTED BY

Andrew Von Pinnon, ARCHAEOLOGICAL RESOURCE SERVICE

SUBMITTED FOR

TRUMARK COMPANIES

June 11, 2018 **A.R.S. Project 18-019**

INTRODUCTION

As requested and authorized, Archaeological Resource Service has conducted an archaeological evaluation of the parcel described below. The following basic tasks were accomplished as part of this project:

1. A check of the information on file with our office and the Regional Office of the California Historical Resources Information System, to determine the presence or absence of previously recorded historic or prehistoric cultural resources,
2. A check of appropriate historic references to determine the potential for historic era archaeological deposits, and;
3. Contact with the Native American Heritage Commission to determine the presence or absence of listed Sacred Lands within the project area;
4. Contact with all appropriate Native American organizations or individuals designated by the Native American Heritage Commission as interested parties for the project area;
5. A surface reconnaissance of all accessible parts of the project area to locate any visible signs of potentially significant historic or prehistoric cultural deposits.
6. Preparation of a report describing the work accomplished, the results of the research, and making appropriate recommendations for further action, if warranted.

PROJECT DESCRIPTION

The applicant proposes to create a major subdivision of the property that consists of several single-family homes. The archaeological project involved a reconnaissance of the proposed project area to determine the presence of absence of potentially significant archaeological resources.

PROJECT LOCATION

The project area consists of four parcels located at 2666 and 2684 Dutton Meadow and 1112 and 1200 Hearn Avenue, Santa Rosa, Sonoma, California. The parcel at 1200 Hearn Avenue (APN 043-191-016) contains an A-frame barn with an attached chicken house that lies perpendicular to the barn and runs in a north-south direction. An older residence is located north of the barn within the same parcel. The parcels at 1112 Hearn Avenue (APN 043-191-024) and 2666 and 2684 Dutton Meadow largely consist of open land. Together, the parcels consist of a

total of 17.14 acres. The properties are bounded by Dutton Meadows (formerly known as South Dutton Avenue) to the west, Hearn Avenue and single-family homes to the north, open grassland to the east, and open grasslands and single-family homes and apartment complexes to the south.

The project area lies in the Mexican era grant of *Llano de Santa Rosa* within unsectioned land of Township 7 North, Range 8 West, Mt. Diablo Base and Meridian as shown on the USGS 7.5' Santa Rosa Quadrangle Map (1954 (photorevised 1980)). The Universal Transverse Mercator Grid coordinates to the approximate center of the project area, as determined by measurement from Google Earth are:

4251590 Meters North,

523910 Meters East,

Zone 10

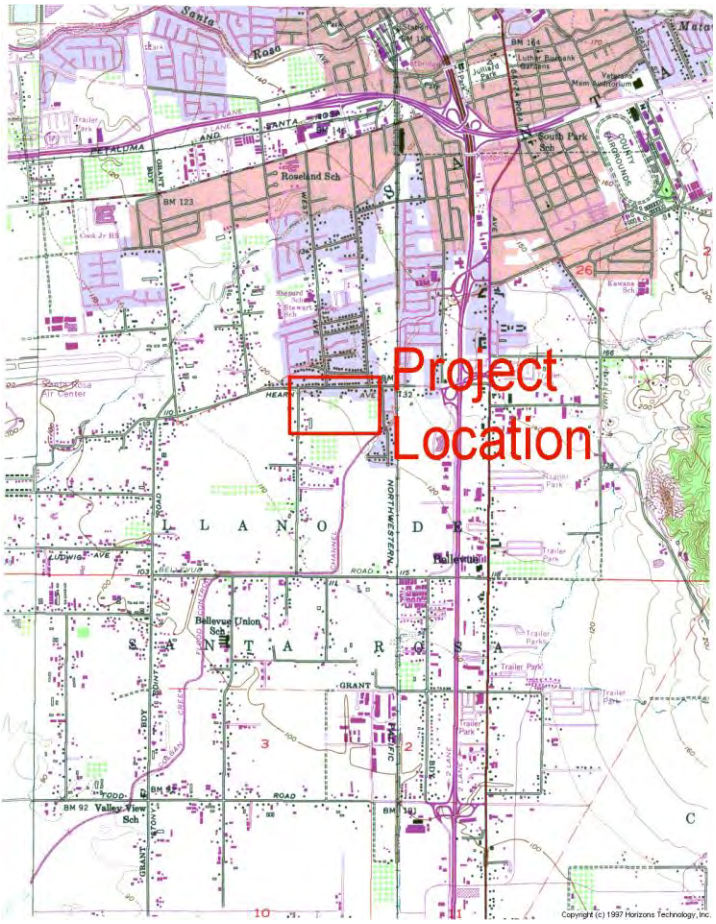


FIGURE 1 -- PROJECT LOCATION

REGULATORY SETTING

There are no previously recorded prehistoric or historic resources located within the project area. Archaeological resources, once identified, are evaluated using criteria established in the California Environmental Quality Act (CEQA) (14 CCR 15064.5 and PRC 21084.1). Significant historical resources need to be addressed before environmental mitigation guidelines are developed and approved. A "significant historical resource" (including both a prehistoric and historic resource) is one that is found eligible for listing in the California Register of Historical Resources. As per Title 14, California Code of Regulations Section 15064.5, historical resources are those that are:

- Listed in, or eligible for listing in, the California Register of Historic Resources (Public Resources Code 5024.1, Title 14 CCR, Section 4850 et. seq.);
- Listed in, or eligible for listing in, the National Register of Historic Places (CRHR);
- Included in a local register of historical resources, as defined in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resource Code; or
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

Additionally, historical resources and historic districts designated or listed as city or county landmarks or historic properties or districts pursuant to any city or county ordinance can also be

listed in the California Register, if the criteria for listing under the ordinance have been determined by the Office of Historic Preservation to be consistent with California Register criteria adopted by the commission (pursuant to Section 5024.1(e) of the PRC).

A resource may be listed as an historical resource in the California Register if it has integrity and meets any of the following National Register of Historic Places criteria:

1) Is associated with events that have made a significant contribution to the broad patterns of our history; or
2) Is associated with the lives of persons important in our past; or
3) Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
4) Has yielded, or may be likely to yield, information important in prehistory or history.

FIGURE 2 -- PROJECT AREA SHOWING THE PROPOSED DEVELOPMENT PLAN

CEQA (PRC 21083.2) also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource as above, and "unique archaeological resources." A "unique archaeological resource" has been defined in CEQA as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstratable public interest in that information,
2) Has a special and particular quality such as being the oldest of its type or the best available example of its type, or

3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Buildings, sites, structures, objects, and districts representative of California and United States history, architecture, archaeology, engineering, and culture convey significance when they also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A resource has integrity if it retains the characteristics that were present during the resource's period of significance. Enough of these characteristics must remain to convey the reasons for its significance.

As of July 2015, two new classes of resources have been defined. Tribal cultural resources and Tribal cultural landscapes can be any of a variety of cultural sites as defined by the individual tribe. These resources, once identified, are treated as significant resources under CEQA.

The fact that a resource is not listed in, or determined to be eligible for listing in the CRHR, or included in a local register of historical resources (pursuant to Section 5020.1(k) of the PRC), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the PRC) does not preclude a lead agency from determining that the resource may be an historical resources as defined in PRC sections 5020.1(j) or 5024.1.

SACRED LANDS INVENTORY / NATIVE AMERICAN CONSULTATION

The California Native American Heritage Commission (NAHC) works to identify, catalogue, and protect places of special religious or social significance, graves, and cemeteries of Native Americans per the authority given the Commission in Public Resources Code 5097.9. A check with the NAHC was done to determine if there are sites listed in the Sacred Lands file located within or near to the current project area. However, the NAHC did not respond so it is recommended that the lead agency contact any tribes that have requested consultation.

RESULTS OF LITERATURE CHECK

Prior to undertaking the field survey, archaeological base maps, reports and historical documents were consulted, including material on file at the Northwest Information Center of the California Historic Resources Information System (CHRIS), as well as at Archaeological Resource Service (ARS). Information was consulted regarding all previously recorded archaeological sites, historic properties and previously evaluated properties within a one-mile radius of the current

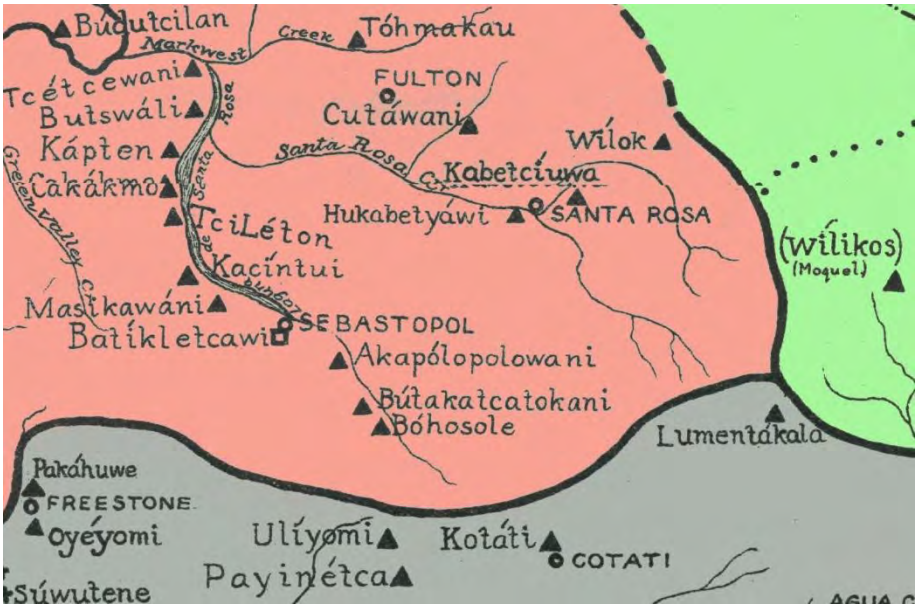


FIGURE 3 -- ETHNOGRAPHIC TERRITORIES

Barretts 1908 map of ethnographic territories shows the project area to lie in Pomo (pink) territory, bordered by Coast Miwok (gray) and Wappo (green).

project area. This research was used to assess the project area's archaeological sensitivity and determine if any known cultural resource might be impacted by the proposed project.

PREHISTORIC SETTING

The current project area lies within the territory of the ethnohistoric *Bitakomtara* tribelet of the Southern Pomo linguistic affiliation (Stewart 1943). According to the ethnographer Omer Stewart (1943:53), the area of the *Bitakomtara*, covering about 200 square miles, is bounded on the north by Mark West Creek; on the east by Sonoma Canyon, Bear Creek, the summit of the Mayacama Mountains, and the peak of Sonoma Mountain north of Cotati to the south end of Laguna de Santa Rosa Creek; and on the west by Laguna de Santa Rosa. The old village site of *Hukabetca'wi*, was noted by the ethnographer S.A. Barrett as located "on the south bank of the Santa Rosa creek at a short distance from the depot of the California Northwestern railway in Santa Rosa" (Barrett 1909:222). This would be the closest recorded ethnographic village to the current project, yet it is at a significant distance and will not be negatively affected by the current project (Barrett 1908; McLendon and Oswalt 1979). Most of the ethnographic and prehistoric sites of the greater Santa Rosa area tend to be located along watercourses or around wetlands, such as those in the Laguna area. The current project area is located on the eastern side of the former Laguna within the floodplain.

The former marsh known as the *Llano de Santa Rosa, Llano* being Spanish for "plain" or "delta," was seasonally flooded with the overflow from Colgan and Santa Rosa creeks and their tributaries, which have since been channelized. Prehistoric populations are known to have exploited the plant and animal resources at the freshwater lakes and marshes that were seasonally present in the *Llano de Santa Rosa*. Because of the diverse natural resources contained within the lake and its surrounding marshes and seasonal wetland areas, Native subsistence activities were spread over the entire area.

Prehistoric sites throughout Sonoma County are often marked by midden soil, a result of the build up of decomposed organic matter, or by concentrations of obsidian and chert debitage, shellfish remains, obsidian tools (such as projectile points, knives and scrapers), various kinds of ground stone, and midden soil with charcoal, fire-affected rock, and other constituents. However most of the prehistoric sites encountered in the Laguna area are short-term campsites and activities areas associated with the exploitation of the seasonal wetlands. Habitation sites in this area would need to be seasonally vacated due to flooding, and would not be expected to sustain long term occupancy due to the periods of inundation.

Evidence of prehistoric activity may be found between the open areas where basic subsistence activities occurred and the more upland position of sites that reflect their more permanently occupied settlements. Hunting implements such as projectile points are often found in these isolated contexts as well as certain types of implements used to procure and/or process various kinds of raw material into food, clothing, or other items. Some isolated artifacts may reflect the exploitation of seasonal wetlands, or vernal pools, that tend to develop in the poorly drained areas within the former lake basin (Origer and Fredrickson 1977, 1980; Flynn 1990, 1992).

Small temporary encampments are situated along the banks of intermittent streams, some of these being marked by small mounds and others by concentrations of obsidian and chert flakes in sporadic areas within the grasslands (Flynn 1986). Surface indicators of sites found within the Laguna may include shellfish remains, obsidian tools (such as projectile points, knives, and scrapers), obsidian and chert debitage, various kinds of ground stone, and midden soil with charcoal, fire-affected rock, and other constituents (Praetzellis and Praetzellis 1977; Flynn 1986, 1990; Roop and Flynn 1997). Chipped and ground stone implements and waste flakes in what seem to be apparent isolated finds have also been encountered (Flynn 1990; Bryne 1992,

Morre 1996). These specimens may represent hunting losses or on-spot manufacture or repair of broken projectile points.

HISTORIC SETTING

The project area lies within the boundaries of the Mexican era land grant of Rancho Llano de Santa Rosa, bequeathed to Joaquin Carrillo by the Mexican Government in 1844. The grant consisted of three leagues adjoining his mother's land grant of the Cabeza de Santa Rosa (Munro-Fraser 1880). The grant extended from the Laguna de Santa Rosa on the west and southwest, the base of Sonoma Mountain near Kawana Springs at the east, and Santa Rosa Creek on the north. In the American period this area started out as large farms and by the late 1800s was characterized by small family farms between five and thirty-five acres in size. Scattered houses were characteristic of the area through the 1920s and in the 1950s there had been suburban infill between the older residences. Today houses in tight proximity are located along the main roads, yet there are large grassland areas between these populated streets.

FIGURE 4 -- THE PROJECT VICINITY IN 1866

Hearn and Dutton Meadows are not yet present. The project area appears to be in the blank space above the word "Santa" near the center right of the map.

The property lies in an area commonly called Dutton Meadow named for Warren Dutton. Originally a banker from Tomales, Dutton began cultivation of French prunes on a half acre of his cherry orchards in 1880. In 1881 after realizing the high yield of his prune trees, Dutton purchased 200 acres southwest of Santa Rosa and planted almost 20,000 prune trees that he purchased from Luther Burbank. Several relevant circumstances occurred as a result of Dutton's "experiment." Burbank earned the reputation of "horticultural genius" for being able to provide Dutton with so many prune trees in such a short period of time (Dutton's order for 20,000 trees was placed in March and Burbank delivered that fall), and eventually prunes became the leading crop in the county (LeBaron et al. 1985).

In 1879, the properties at 1112 and 1200 Hearn Avenue were part of 312 acres belonging to J.P. Clark. Clark was originally from Tennessee and came to Santa Rosa in 1852. He ran a Livery stable and stage route and the residence and an orchard on his property were located adjacent to the railroad tracks, away from the current project area (Thompson 1879: 60, 116). By 1897, the Clarke property had been subdivided into many smaller parcels and the current project area became part of 7 acres belonging to Henry Hobbs et al. The general area was characterized by small farms with most parcels between five and thirty-five acres in size (Reynolds and Proctor 1897). The 1916 USGS Santa Rosa 15' quadrangle map shows one house in the northwestern portion of the property where a house stands today on the current project area. By 1954 there were two residential structures and one barn on the western property and one residential structure on the eastern property. By 1980 another barn or shed had been added in the center of the field behind the house at 1112 Hearn Avenue.

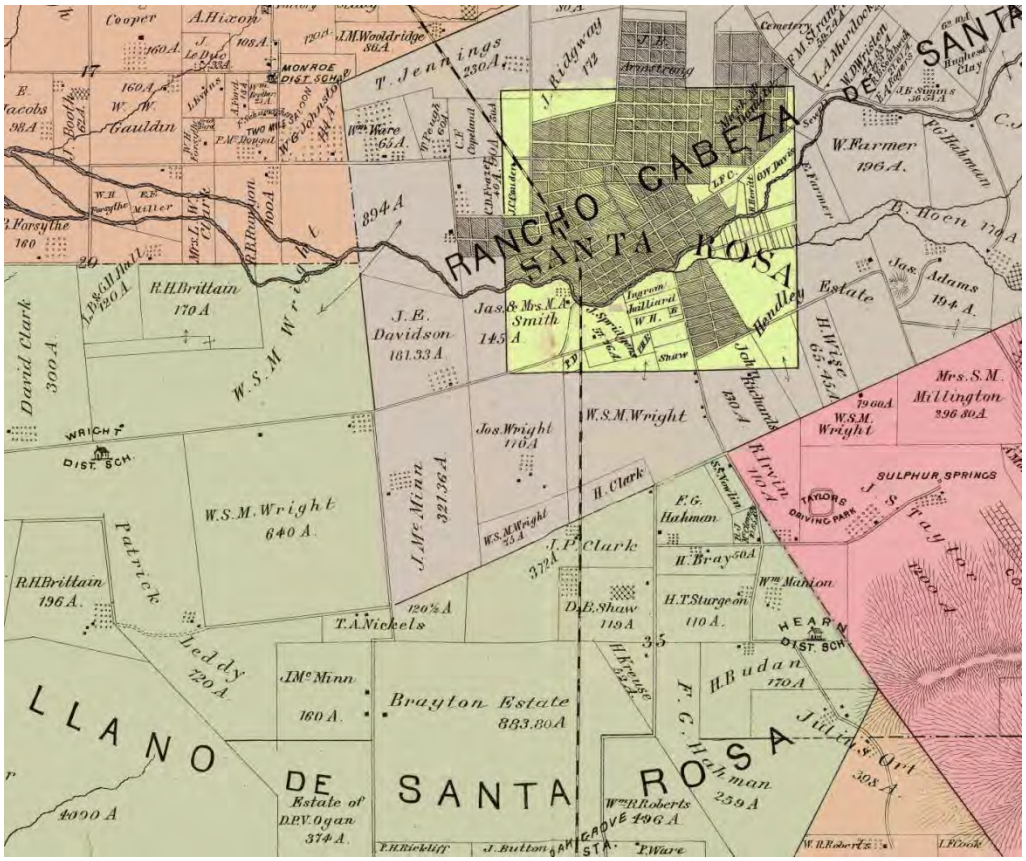


FIGURE 5 -- THE PROJECT VICINITY IN 1878

In 1879, the properties at 2666 and 2684 Dutton Meadows were part of the 883.8 acre Brayton Estate (Thompson 1879). The book Santa Rosa: A Nineteenth Century Town mentions that in May of 1888, "there was a 'Special Excursion and Auction' at the Brayton Ranch, two miles south of Santa Rosa, by the same company which was auctioning lots in the new town of Los Guilicos on the railroad" (LeBaron et al 1985: 110). By 1897, the Brayton property had been subdivided, and the parcel was within the 41.5 acre holdings of Susan J. Cunningham (Reynolds and Proctor 1897). Small farms characterized the general area at this time, with most parcels between five and thirty-five acres in size. The 1916 USGS Santa Rosa 7.5' quadrangle map shows one house in the western portion of 2684 Dutton Meadows.

The Office of Historic Preservation has determined that any structure greater than 45 years of age has the potential to be of historic value and should be evaluated as to whether it is eligible

for the National Register of Historic Places and the California Register of Historic Places if it to be affected by proposed improvements.

PREVIOUS STUDIES

FIGURE 6 -- AN OVERVIEW OF THE PROJECT AREA

The area had been recently disced, which improved surface visibility.

Previous archaeological investigations have been performed within the proposed project area (Cartier 2001; Chattan 2003). In 2001, Robert Cartier conducted a cultural resource evaluation of the properties at 2666 and 2684 Dutton Meadows. On the property to the west there were two houses built around 1910, which were determined not to be historically significant. Cartier did not observe any cultural materials, but recommended a program of spot check monitoring during construction, due to the poor visibility of the soil surface during the surface reconnaissance in conjunction with historic resources previously recorded on the adjacent lot. Two years later, Cassandra Chattan and Sally Evans performed a surface reconnaissance of 1112 and 1200 Hearn Avenue but found no prehistoric or historic artifacts. The majority of other surveys within a mile of the proposed project area have also yielded negative findings (Chavez 1987; Cole 1981; Flynn 1990, 1992; Gerike 1981; King 1973; Hale 1986; Wilber 1986; Origer 1976; and Thompson 1986).

The buildings and structures at 1112 and 1200 Hearn Avenue were previously evaluated as to their potential to be eligible for the National Register of Historic Places. The general area was

evaluated in the “Master Environmental Assessment” performed by L.S.A. in 1991. Susan Clark and Dennis Harris performed the historic evaluation portion of this document. All structures appearing to be of potential historic significance were inventoried. A vernacular structure built in 1949 at 1112 Hearn Avenue was noted as not eligible but in good condition. The bungalow and barn at 1200 Hearn Avenue were listed as constructed prior to 1920, and ineligible for the National Register but still of local interest and in excellent condition (Clark and Harris 1991). A result of the Master Environmental Assessment was that each proposed land use permit must be individually evaluated for historic resources.

FIGURE 7 -- ONE OF THE RAISED MOUNDS

This may be imported material.

The structures were again evaluated in 1996, as part of a DOE (DOE-49-96-0011-0000 and DOE-49-96-0009-0000) and once as part of a FHWA (FHWA951215A). Both the Chris and Clara Christensen House with an address of 1112 Hearn Avenue and built in 1954, and the Maria and Giacomo Bin Farm at 1200 Hearn Avenue, built in 1914, were assigned the National Register code of “6Y2” meaning the structures were “determined ineligible for the National Register by consensus, with no potential for the National Register, and not evaluated for a local listing” (OHP 2002). In the same report prepared by Cassandra Chattan in 2003, the buildings and structures at these properties were again inspected for their potential to be of historic importance, but found that there are no attributes that make this property of historic importance either for the National Register, California Register or a local listing.

RESULTS OF SURFACE EXAMINATION

On June 5, 2018, the author and Ryan Poska went to the properties at 2666 and 2684 Dutton Meadows and 1112 and 1200 Hearn Avenue and performed a surface reconnaissance. The properties were inspected for the presence of both prehistoric and historic artifactual materials and sites. The parcels were walked in transects with the soil surface examined for the presence of prehistoric or historic artifacts, features or culturally modified soils. The fields were heavily plowed and some areas contained high concentrations of annual grasses. Located in the eastern portion of parcel 043-071-007 were two large berms, referred to as Berms 1 and 2.

No prehistoric features or sites were observed on the properties. One abalone shell fragment was found within the bulge of Berm 2. Other historic isolates were found on these properties including whiteware ceramics, some stoneware, window glass, and broken bottles. A concrete pad measuring 22 feet (north-south) by 20 feet (east-west) was found in the western portion of the proposed project area. Associated features include a pile of concrete and metal refuse and portions of a walkway. Located in the southwest corner of the property is an artifact concentration consisting of glazed stoneware pipe, milk glass vessels, and window glass. However, these features did not appear to warrant significance.

Although the property at 1200 Hearn Avenue was only viewed from afar due to wired fencing that prohibited access, the parcel contained an A-frame barn and an attached chicken coop lying perpendicular to the barn in a north-south direction. In addition, a possible historic residence lies north of the barn. Other buildings and structures may still be extant on these properties.

CONCLUSIONS AND RECOMMENDATIONS

It is recommended that an architectural historian evaluate the buildings and structures associated with 1200 Dutton Meadows to determine if these features contain historical importance.

The property does not contain any archaeological resources that warrant a finding of significance. The current project will not have any impact upon the known archaeological resources of the area. Therefore, further archaeological investigation is not warranted at this time. However, there is a chance that buried historic or prehistoric artifacts could be present on the property. If a concentration of artifacts or cultural soils, including deposits over fifty years in age associated with the house, such as outhouse shafts or trash pits, are encountered during earth disturbing activities, work should cease in that area and a qualified archaeologist should be notified and an evaluation performed.

Artifacts that are typically found associated with prehistoric sites include humanly modified stone, shell, bone or other cultural materials such as charcoal, ash and burned rock indicative of food procurement or processing activities. Prehistoric domestic features include hearths, firepits, or house floor depressions whereas typical mortuary features are represented by human skeletal remains. Modified cobbles or boulders of schist also might be found in buried contexts. Historic artifacts potentially include all by-products of human land use greater than 50 years of age.

If human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission should be contacted by the Coroner so that a “Most Likely Descendant” can be designated.

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APPENDIX 1— SIGNIFICANCE IN THE EVALUATION OF CULTURAL RESOURCES AS HISTORIC PROPERTIES

To be significant an archaeological site must qualify for registration as an "historic resource" the following criteria must be met for this listing:

> *An archeological site may be considered an historical resource if it is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California (PRC § 5020.1(j)) or if it meets the criteria for listing on the California Register (14 CCR § 4850). CEQA provides somewhat conflicting direction regarding the evaluation and treatment of archeological sites. The most recent amendments to the CEQA Guidelines try to resolve this ambiguity by directing that lead agencies should first evaluate an archeological site to determine if it meets the criteria for listing in the California Register. If an archeological site is an historical resource (i.e., listed or eligible for listing in the California Register) potential adverse impacts to it must be considered, just as for any other historical resource (PRC § 21084.1 and 21083.2(l)). If an archeological site is not an historical resource, but meets the definition of a "unique archeological resource" as defined in PRC § 21083.2, then it should be treated in accordance with the provisions of that section.*

If an archaeological site does not qualify for listing, the directive is clear. The Public Resources Code states:

> *(4) If an archaeological resource is neither a unique archaeological nor an historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.*

APPENDIX 2 – PROFESSIONAL STANDARDS FOR CONSULTANTS

Secretary of the Interior's Standards

The minimum professional qualifications in archeology are a graduate degree in archeology, anthropology, or closely related field plus:

1. At least one year of full-time professional experience or equivalent specialized training in archeological research, administration or management;

2. At least four months of supervised field and analytic experience in general North American archeology; and

3. Demonstrated ability to carry research to completion.

In addition to these minimum qualifications, a professional in prehistoric archeology shall have at least one year of full-time professional experience at a supervisory level in the study of archeological resources of the prehistoric period. A professional in historic archeology shall have at least one year of full-time professional experience at a supervisory level in the study of archeological resources of the historic period.

A CULTURAL RESOURCES EVALUATION OF THE MINOIA PROPERTY LOCATED AT 1112 AND 1200 HEARN AVENUE, SANTA ROSA, SONOMA COUNTY (APN 043-191-016 & 043-191-024).

SUBMITTED BY

Cassandra Chattan, ARCHAEOLOGICAL RESOURCE SERVICE

SUBMITTED FOR

Garrett Hinds, TRUMARK COMPANIES

November 26, 2003 **A.R.S. Project 03-074**

INTRODUCTION

As requested and authorized, Archaeological Resource Service has conducted an archaeological evaluation of the parcel described below. The evaluation consisted of three separate aspects:

1. A check of the information on file with our office and the Northwest Information Center of the California Historical Resources Information System, to determine the presence or absence of previously recorded historic or prehistoric cultural resources within or adjacent to the project area;
2. A check of appropriate historic references to determine the potential for historic era archaeological deposits, or features, and standing structures greater than 45 years of age, to be located within the project area, and;
3. A surface reconnaissance of all accessible parts of the project area to locate any visible signs of potentially significant historic or prehistoric cultural deposits, features or isolated artifacts that would be adversely impacted by the proposed project.

FIGURE 1. PICTURE OF PROPERTY FROM THE SOUTH END LOOKING NORTH.

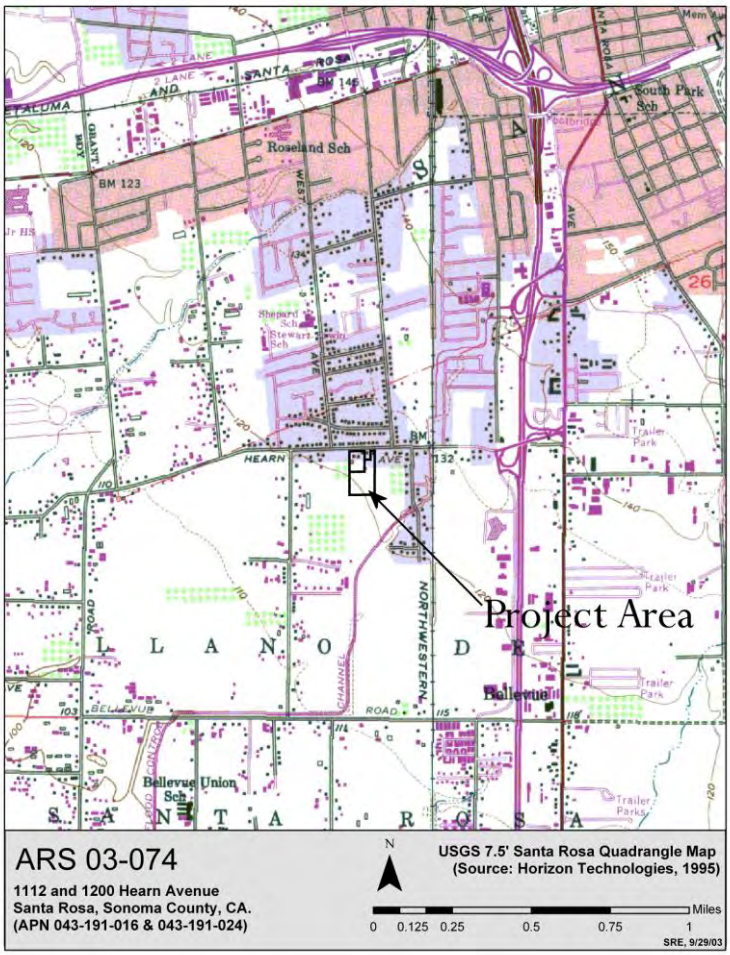
122 American Alley, Suite A
Petaluma, CA 94952-2328
(707) 762-2573 ☎ FAX (707) 762-1791

PROJECT DESCRIPTION

The applicant proposes to create a major subdivision of the property that currently consists of open grassland with two single-family dwellings, three small granny units, and a few barns and sheds.

PROJECT LOCATION

The project consists of two adjacent parcels located at 1112 and 1200 Hearn Avenue in an unincorporated area adjacent to the City of Santa Rosa, Sonoma County. The parcel at 1200 Hearn Avenue (APN 043-191-016) contains a single-family house, three garages, an elongated one-story structure divided into three rental units, and two sheds. The parcel at 1112 Hearn Avenue (043-191-024) contains a single-family house, a detached garage, a barn, and a small pump house. The parcels consist of a total of 6.3 acres that are mostly grassland. The properties are bounded by Hearn Avenue and single-family homes to the north, open grassland to the east, south and west and a single family home to the northwest.



The project area lies in the Mexican era land grant of *Llano de Santa Rosa* within unsectioned land of Township 7 North, Range 8 West, Mt. Diablo Base and Meridian. The Universal Transverse Mercator Grid coordinates to the approximate center of the project area, as determined by measurement from the USGS 7.5' Santa Rosa Quadrangle Map (1954 Photorevised 1980) are:

4251500 Meters North,

524100 Meters East,

Zone 10

RESULTS OF LITERATURE CHECK

Prior to undertaking the field survey, archaeological base maps, reports and historical documents were consulted, including material on file at the Northwest Information Center of the California Historic Resources Information System (CHRIS), as well as at Archaeological Resource Service (ARS). Information was consulted regarding all previously recorded archaeological sites, historic properties and previously evaluated properties within a one-mile radius of the current project area. This research was used to assess the project area's archaeological sensitivity and determine if any known cultural resource might be impacted by the proposed project. We also performed research at the County Assessor's office.

PREHISTORIC SETTING

The current project area lies within the territory of the ethnohistoric *Bitakomtara* tribelet of the Southern Pomo linguistic affiliation (Stewart 1943). According to the ethnographer Omer Stewart (1943:53), the area of the *Bitakomtara*, covering about 200 square miles, is bounded on the north by Mark West Creek; on the east by Sonoma Canyon, Bear Creek, the summit of the Mayacama Mountains, and the peak of Sonoma Mountain north of Cotati to the south end of Laguna de Santa Rosa Creek; and on the west by Laguna de Santa Rosa. The old village site of *Hukabetca'wi*, was noted by the ethnographer S.A. Barrett as located "on the south bank of the Santa Rosa creek at a short distance from the depot of the California Northwestern railway in Santa Rosa" (Barrett 1909:222). This would be the closest recorded ethnographic village to the current project, yet it is at a significant distance and will not be negatively affected by the current project (Barrett 1908; McLendon and Oswalt 1979). Most of the ethnographic and prehistoric sites of the greater Santa Rosa area tend to be located along watercourses or around wetlands, such as those in the Laguna area. The current project area is located on the eastern side of the former Laguna within the floodplain.

The former marsh known as the *Llano de Santa Rosa, Llano* being Spanish for "plain" or "delta," was seasonally flooded with the overflow from Colgan and Santa Rosa creeks and their tributaries, which have since been channelized. Prehistoric populations are known to have exploited the plant and animal resources at the freshwater lakes and marshes that were seasonally present in the *Llano de Santa Rosa*. Because of the diverse natural resources contained within the lake and its surrounding marshes and seasonal wetland areas, Native subsistence activities were spread over the entire area.

Prehistoric sites throughout Sonoma County are often are marked by midden soil, a result of the build up of decomposed organic matter, or by concentrations of obsidian and chert debitage, shellfish remains, obsidian tools (such as projectile points, knives and scrapers), various kinds of ground stone, and midden soil with charcoal, fire-affected rock, and other constituents. However most of the prehistoric sites encountered in the Laguna area are short-term campsites and activities areas associated with the exploitation of the seasonal wetlands. Habitation sites in this area would need to be seasonally vacated due to flooding, and would not be expected to sustain long term occupancy due to the periods of inundation.

Evidence of prehistoric activity may be found between the open areas where basic subsistence activities occurred and the more upland position of sites that reflect their more permanently occupied settlements. Hunting implements such as projectile points are often found in these isolated contexts as well as certain types of implements used to procure and/or process various kinds of raw material into food, clothing, or other items. Some isolated artifacts may reflect the exploitation of seasonal wetlands, or vernal pools, that tend to develop in the poorly drained areas within the former lake basin (Origer and Fredrickson 1977, 1980; Flynn 1990, 1992).

Small temporary encampments are situated along the banks of intermittent streams, some of these being marked by small mounds and others by concentrations of obsidian and chert flakes in sporadic areas within the grasslands (Flynn 1986). Surface indicators of sites found within the Laguna may include shellfish remains, obsidian tools (such as projectile points, knives, and scrapers), obsidian and chert debitage, various kinds of ground stone, and midden soil with charcoal, fire-affected rock, and other constituents (Praetzellis and Praetzellis 1977; Flynn 1986, 1990; Roop and Flynn 1997). Chipped and ground stone implements and waste flakes in what seem to be apparent isolated finds have also been encountered (Flynn 1990; Bryne 1992, Morre 1996). These specimens may represent hunting losses or on-spot manufacture or repair of broken projectile points.

HISTORIC SETTING

The project area lies within the boundaries of the Mexican era land grant of Rancho Llano de Santa Rosa, bequeathed to Joaquin Carrillo by the Mexican Government in 1844. The grant consisted of three leagues adjoining his mother's land grant of the Cabeza de Santa Rosa (Munro-Fraser 1880). The grant extended from the Laguna de Santa Rosa on the west and southwest, the base of Sonoma Mountain near Kawana Springs at the east, and Santa Rosa Creek on the north. In the American period this area started out as large farms and by the late 1800s was characterized by small family farms between five and thirty-five acres in size. Scattered houses were characteristic of the area through the 1920s and in the 1950s there

had been suburban infill between the older residences. Today houses in tight proximity are located along the main roads, yet there are large grassland areas between these populated streets.

The property lies in an area commonly called Dutton Meadow named for Warren Dutton. Originally a banker from Tomales, Dutton began cultivation of French prunes on a half acre of his cherry orchards in 1880. In 1881 after realizing the high yield of his prune trees, Dutton purchased 200 acres southwest of Santa Rosa and planted almost 20,000 prune trees that he purchased from Luther Burbank. Several relevant circumstances occurred as a result of Dutton's "experiment." Burbank earned the reputation of "horticultural genius" for being able to provide Dutton with so many prune trees in such a short period of time (Dutton's order for 20,000 trees was placed in March and Burbank delivered that fall), and eventually prunes became the leading crop in the county (LeBaron et al. 1985).

In 1879 the property was part of 312 acres belonging to J.P. Clark. Clark was originally from Tennessee and came to Santa Rosa in 1852. He ran a Livery stable and stage route and the residence and an orchard on his property were located adjacent to the railroad tracks, away from the current project area (Thompson 1879: 60, 116). By 1897, the Clarke property had been subdivided into many smaller parcels and the current project area became part of 7 acres belonging to Henry Hobbs et al. The general area was characterized by small farms with most parcels between five and thirty-five acres in size (Reynolds and Proctor 1897). The 1914 USGS Santa Rosa 15' quadrangle map shows one house in the northwestern portion of the property where a house stands today on the current project area. By 1954 there were two residential structures and one barn on the western property and one residential structure on the eastern property. By 1980 another barn or shed had been added in the center of the field behind the house at 1112 Hearn Avenue. The project area currently contains eleven buildings; at least one of them is greater than 45 years of age.

The Office of Historic Preservation has determined that any structure greater than 45 years of age has the potential to be of historic value and should be evaluated as to whether it is eligible for the National Register of Historic Places and the California Register of Historic Places if it to be affected by proposed improvements.

PREVIOUS STUDIES

It was determined that while the property has not been previously evaluated for archaeological deposits, two of the standing structures on the project area were previously evaluated as to their potential to be eligible for the National Register of Historic Places. The general area was evaluated in the "Master Environmental Assessment" performed by L.S.A. in 1991. Susan Clark and Dennis Harris performed the historic evaluation portion of this document. All structures appearing to be of potential historic significance were inventoried. A vernacular structure built in 1949 at 1112 Hearn Avenue was noted as not eligible but in good condition. The bungalow and barn at 1200 Hearn Avenue were listed as constructed prior to 1920, and ineligible for the National Register but still of local interest and in excellent condition (Clark and Harris 1991). A result of the Master Environmental Assessment was that each proposed land use permit must be individually evaluated for historic resources.

The structures were again evaluated in 1996, as part of a DOE (DOE-49-96-0011-0000 and DOE-49-96-0009-0000) and once as part of a FHWA (FHWA951215A). Both the Chris and Clara Christensen House with an address of 1112 Hearn Avenue and built in 1954, and the Maria and Giacomo Bin Farm at 1200 Hearn Avenue, built in 1914, were assigned the National Register code of "6Y2" meaning the structures were "determined ineligible for the National Register by consensus, with no potential for the National Register, and not evaluated for a local listing" (OHP 2002).

In addition, four houses located directly to the east have also been previously evaluated which resulted in their being assigned Primary Numbers. P-49-001713, P-49-001714, P-49-001715, and P-49-001716 are all residential structures, some with outbuildings built between 1885 and 1954. Clark and Harris rated three of these as in good condition, with two eligible for a local listing as a contributor only (850 and 980 Hearn), and one as a non-contributor (976 Hearn) (Clark and Harris 1991:Appendix B, 8). Later evaluations of 850, 980 and 1004 Hearn as part of a DOE (DOE-49-96-0007-0000, DOE-49-96-0008-0000, and DOE-49-96-0010-0000) and as part of a FHWA (FHWA951215A) found these structures to be

(6Y2) "determined ineligible for the National Register by consensus, with no potential for the National Register, and not evaluated for a local listing" (OHP 2002).

At least thirteen archaeological surveys have been conducted within a mile of the current project and six recorded historic structures are located within a half of a mile of the project area. The closest prehistoric archaeological site is located at a distance of over mile.

Archaeological investigations have been performed on the properties immediately adjacent to the current project on the east, south, and west (Cartier 2000 and 2001). On the property to the west there were two houses built around 1910, which were determined not to be historically significant. Cartier did not observe any cultural materials, but recommended a program of spot check monitoring during construction, due to the poor visibility of the soil surface during the surface reconnaissance in conjunction with historic resources previously recorded on the adjacent lot (2001). On the south and east sides, a thirty-one acre project area consisting of three separate parcels was evaluated. One house built in the early part of the twentieth century was noted on the property but determined not to have any historical significance. Again, surface visibility was poor during the surface reconnaissance and spot check monitoring was recommended although no cultural materials were observed on the project area (Cartier 2000).

The majority of the other surveys within a mile of the current project have had negative findings (Chavez 1987; Cole 1981; Flynn 1990, 1992; Gerike 1981; King 1973; Hale 1986; Wilber 1986; Origer 1976; and Thompson 1986). The closest prehistoric site to the current project area is known to archaeologists as Son-1694 and is located at a distance of 1 mile. The site consists of a "very sparse linear distribution of obsidian flakes (one utilized), and broken obsidian float were disturbed along south" (Tremaine 1988). The material observed was believed to be associated with a buried site.

Additionally there have been a great amount of archaeological studies and prehistoric findings near the course of the *Laguna de Santa Rosa*, approximatelty four miles to the east. In 1977, archaeologists at Sonoma State College evaluated twenty-two hundred acres as part of the proposed Santa Rosa Wastewater system, and sixteen prehistoric sites were recorded as part of the field survey (Origer and Fredrickson 1977). These sites are characterized by scatters of obsidian flakes, or scatters of obsidian and chert flakes, and a midden deposits with shellfish remains and obsidian and chert flakes. All are located between seasonal creeks or on rises next to creeks and the Laguna (Sonoma State 1977a through 1977e). In 1980, as a second phase of the proposed wastewater project, Origer and Fredrickson excavated four sites near the Laguna; CA-Son-977, CA-Son-978, CA-Son-979 and CA-Son-980. All these sites are located at a distance of over two miles from the current project area; however, they are good examples of the types of prehistoric archaeological finds characteristic of the *Laguna* area. In the excavation of these sites, they encountered scatters of obsidian and chalcedony chipping waste, basalt chipping waste, chipped stone tools, ground stone tools, ceremonial items such as charmstones and crystals, midden soils, and food waste such as shell and bone (Origer and Fredrickson 1980). Archaeological monitoring of grading operations at several elevations near wetland areas also recovered significant prehistoric artifactual materials.

RESULTS OF SURFACE EXAMINATION

On November 24, 2003, the author and Sally Evans went to the property on Hearn Avenue and performed a surface reconnaissance. The property was inspected for the presence of both prehistoric and historic artifactual materials and sites. The area is very flat with no drainages or undulations to the terrain. While structures were present on the north edge of the

FIGURE 3. FARM COMPLEX VIEWED FROM THE SOUTH.

project area, approximately eighty percent was covered in high dense grasses, obscuring visibility of the soil surface. Canary grass or hay up to three feet in height made surveying very difficult. Nonetheless, the property was walked in a series of transects in approximately 10 meter intervals and the grasses were persistently pushed aside with a trowel to view the underlying soil. The soil consisted of a moist dark brown-black colored loam with occasional pebbles and dense with grass roots. Paths left by sheep on the property and occasional areas where the grass was flattened allowed for better visibility in these areas. No artifacts historic or prehistoric were observed on the property.

The structures were again inspected for their potential to be of historic importance. The houses have been previously evaluated and were "determined ineligible for the National Register by consensus, with no potential for the National Register, and not evaluated for a local listing" (OHP 2002). The structures were therefore inspected to see if they were potentially of local importance.

FIGURE 4. HOUSE AT 1200 HEARN AVENUE.

The property at 1200 Hearn Avenue was inspected first. In the recent past, this complex has been used as rental dwellings and the pasture has been used for boarding a small flock of sheep. The main house is a single story cottage with a front gabled roof and clad with drop lapped boards. The structure originally had a full front porch, which has been enclosed. There are brackets along the eaves on the front of the house, but other than these there are no decorative elements to the house. There is a small addition to the rear of the structure. The house was built in 1914 but is not an excellent example of this type of architecture. It does not add to a historic feel of the area and there are no people or events associated with the structure that are important to history.

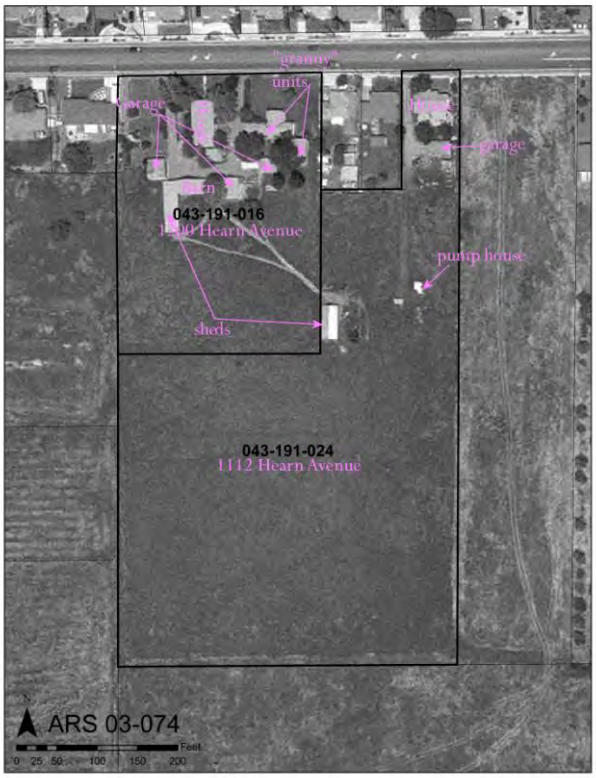


FIGURE 5. AERIAL PHOTO OF PROJECT AREA WITH STRUCTURES IDENTIFIED.

There are two small "granny" units located to the east of the main house, and one of these is composed of two separate units. These structures are clad with horizontal shiplap boards. The southern structure is built on piers and has two additions. One addition is on the west side and has slightly different sized boards, and another is on the north side in the center of the structure and has the same size cladding. The building has exposed rafters and wood double hung windows along the front. A few aluminum sashed windows are on the back side. The southeastern structure is of the same design but is built on a concrete foundation. It is single story rectangular structure without additions. These structures are very simple and are later additions to the property to create rental accommodations.

A front gabled and horizontal wood sided garage is located to the southwest of the rental dwellings, and another garage with horizontal board sides and a shed roof is located to the southeast of the first garage and is attached to a barn. A third garage, freestanding with a side gabled roof and horizontal board

siding is located to the west of the rest of the structures on the property. None of these garages are of historic importance, or add to the character of the property.

A large barn is located directly to the south of the main house. The barn has a garage addition on the east side and another shed addition on the west side. It is two stories high and has a hayloft door under the front gable. The front of the structure is clad with horizontally placed shiplapped clapboards. The rear of the structure is composed of vertically placed boards of various sizes and lengths. The western addition extends beyond the rear of the structure to the south and is clad with vertically placed boards each roughly 10 inches in width, and there are square window openings along the sides that lack panes.

The structures at 1112 Hearn Avenue were inspected next. The house on property is also used as a rental dwelling, and the fields at the rear are attached to the property at 1200 Hearn and have been used for boarding sheep. The house is a small side gabled structure, clad with horizontal shiplaped boards, with a shed roof addition along the rear. The house is very basic, without stylistic elements and was built in 1954. It is similar to the rental dwellings located on the property at 1200 Hearn Avenue. A small detached garage is located to the rear of the house. A small pump house is located in the field several hundred feet to the south of the house, and a barn is located to the west of the pump house along the property line. The barn is used in conjunction with the farm complex to the west. It is open on the east side and has vertical board and battens on the other three sides. There was also a small cement pad between the pump house and the barn.

CONCLUSIONS AND RECOMMENDATIONS

No prehistoric or historic artifacts were observed during the surface examination. Although soil visibility was poor in most areas due to the dense grasses, these were scraped aside often and it is likely that had there been a significant site or deposit on the property, evidence of such would have been observed. While the house on the property at 1200 Hearn Avenue is greater than 45 years of age, none of the structures on the project area appear to be of historic importance. Even as a whole the small farm has been extensively modified and is no longer representative of the small farms that were located in this area in the past. There are no attributes that make this property of historic importance either for the National Register, California Register or a local listing.

The current project will not have any impact upon the known archaeological resources of the area. Further archaeological investigation is not warranted at this time. However, there is a chance that buried historic or prehistoric artifacts could be present on the property. If a concentration of artifacts or cultural soils, including deposits over fifty years in age associated with the house, such as outhouse shafts or trash pits, are encountered during earth disturbing activities, work should cease in that area and a qualified archaeologist should be notified and an evaluation performed.

Artifacts that are typically found associated with prehistoric sites include humanly modified stone, shell, bone or other cultural materials such as charcoal, ash and burned rock indicative of food procurement or processing activities. Prehistoric domestic features include hearths, firepits, or house floor depressions whereas typical mortuary features are represented by human skeletal remains. Modified cobbles or boulders of schist also might be found in buried contexts. Historic artifacts potentially include all by-products of human land use greater than 50 years of age.

If human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission should be contacted by the Coroner so that a “Most Likely Descendant” can be designated.

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1916 Santa Rosa 15’ Quadrangle Map.

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APPENDIX D: BIOLOGICAL RESOURCES ANALYSIS

BIOLOGICAL RESOURCE ANALYSIS
DUTTON MEADOWS TRUMARK HOMES PROJECT
CITY OF SANTA ROSA, CALIFORNIA
APNs: 043-071-007, 022, 023, 043-191-024, 016

February 1, 2021

Prepared for

Trumark Homes, LLC
3001 Bishop Drive, Suite 100
San Ramon, California 94583
Attention: Mr. Robin Miller

Prepared by

Monk & Associates, Inc.
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
Contact: Mr. Geoff Monk

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Table 3. Special-Status Plant Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site.

Table 4. Special-Status Wildlife Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site.

EXHIBITS
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Exhibit A. Project Site APN Map

ATTACHMENTS
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Attachment A. Dutton Meadows Tentative Map (Site Development Plan), October 28, 2020

Attachment B. USFWS Biological Opinion, dated May 24, 2005

Attachment C. Corps Section 7 Request Letter, 2003

Attachment D. RWQCB Water Quality Certification for the Dutton Meadows Phase I Project (WDID No. 1B01099WNSO), May 19, 2006

1. INTRODUCTION

Monk & Associates, Inc. (M&A) has prepared this biological resources analysis for the proposed Dutton Meadows Trumark Homes Project located at 2684 Dutton Meadow in the City of Santa Rosa, California (Figures 1 and 2). The purpose of our analysis is to provide a description of existing biological resources on the project site and to identify significant or potentially significant impacts that could occur to sensitive biological resources from the construction of residential development and associated infrastructure.

Biological resources include common plant and animal species, and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and other resource organizations including the California Native Plant Society (CNPS). Biological resources also include waters of the United States (U.S.) and State, as regulated by the U.S. Army Corps of Engineers (Corps), California Regional Water Quality Control Board (RWQCB), and CDFW.

In this analysis, we present the state, federal, and local regulations that would be relevant to impacts to sensitive biological resources. This *Biological Resources Analysis* also provides mitigation measures for "significant" and "potentially significant" impacts that could occur to biological resources if the project site is developed. Whenever possible, upon implementation, the prescribed mitigation measures would reduce impacts to levels considered less than significant pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code §§ 21000 et seq.; 14 Cal. Code Regs §§ 15000 et seq). Accordingly, this report is suitable for review and inclusion in any review being conducted by the City of Santa Rosa for the proposed project pursuant to the CEQA.

2. PROPERTY SETTING AND PROJECT HISTORY

The project site is located at 2684 Dutton Meadow in the City of Santa Rosa, California (Figures 1 and 2). The project site is immediately east of Dutton Meadow and Dutton Meadow Elementary School. The project site is bordered to the south by a recently constructed residential development and an undeveloped parcel. Hearn Avenue and single-family residences occur on the northern project site boundary. Several additional undeveloped parcels containing fallow fields occur to the east of the project site (Figure 3).

The earliest Google Earth image of the project site in 1993 shows it was entirely devoted to hay production, and was disked between crops. While it is not known how many years before 1993 that the project site was farmed, presumably it has been farmed for many years. Several buildings were also present on the project site at that time; it appears that two or three residences and associated barns/out-buildings existed. One residence was along Hearn Avenue and the other two were along Dutton Meadow. In preparation for development, all buildings were removed in the early 2000s. In 2006, the site was partially leveled removing all wetlands pursuant to permits authorized for the project by the U.S. Army Corps of Engineers (Corps), California Regional Water Quality Control Board (RWQCB), U.S. Fish and Wildlife Service (USFWS), and the (then) California Department of Fish and Game (CDFG) (now California Department of Fish and Wildlife – CDFW). Also, under a grading permit issued for the project site in 2006 by the City of

Santa Rosa, large quantities of fill were placed on the project site, which remain today. Owing to the great recession, development activities ceased in 2007, but as of the writing of this report, the residential housing project is once again moving forward.

Since the project site was partially leveled/filled in 2006, the majority of the project site continued to be disked or was otherwise routinely mowed as necessary to control threat of fire. The site currently supports highly-disturbed anthropogenic habitats. Figure 3 provides an aerial photograph of the project site showing the current land conditions of the project site and surrounding areas.

2.1 Project Site Acreage and APNs

The 18.68-acre project site is composed of five APNs (Exhibit A). Two sets of these APNs have been subject to different resource agency permitting efforts: "Bellevue Ranch 8" and the "Minoia Property."

- Bellevue Ranch 8 (also known as the DM Associates, LLC property) is located at 2684 Dutton Meadow (8.00 acres, APN 043-071-007), 2666 Dutton Meadow Drive (3.55 acres, APN 043-071-022) and 2650 Dutton Meadow Drive (0.52-acre, APN 043-071-023);

- The Minoia Property is located at 1112 Hearn Avenue (4.68 acres, APN 043-191-024) and 1200 Hearn Avenue (1.93 acres, APN 043-191-016).7

3. PROPOSED PROJECT

The applicant is proposing to construct 137 family-oriented homes that range in size from 1,680 to 2,181 square feet with either 3 or 4 bedrooms, 2-car garages, and 400 square foot minimum private yards with associated infrastructure and connector roads, as illustrated on the Dutton Meadows Tentative Map, dated October 28, 2020 (Attachment A).

4. CITY OF SANTA ROSA REGULATORY BACKGROUND FOR DUTTON MEADOWS SPECIFIC PLAN PROJECT – COMPLIANCE WITH CEQA

In September 1993, the City of Santa Rosa published the Southwest Santa Rosa Area Plan, a Draft Environmental Impact Report covering the project site location (EIP 1993). This was revised into a Final Environmental Impact Report in April 1994 (EIP 1994). The Southwest Santa Rosa Area Plan and Master EIR (State Clearinghouse Number 92083076) were certified on June 21, 1994.

The Area Plan ("Specific Plan") was prepared in accordance with the City's General Plan, which directed the City to "prepare area plans for southwest and southeast Santa Rosa, using this General Plan as a guide, to comprehensively address issues unique to each area and refine the land use plan for each area...." As a long-range development program, the Area Plan reflects the Santa Rosa General Plan land use diagram and General Plan development policies relevant to the southwest area. The Specific Plan encompasses approximately 3,800 acres and includes policies, goals and objectives for residential, commercial, institutional, and park/open space to be built in the area.

In accordance with Public Resources Code section 21157.6 and CEQA Guidelines Section 15179, the Master EIR expired in 1999. In order to use the Master EIR for purposes of environmental review for subsequent projects within the Southwest Plan Area, a review of the Master EIR was completed in June 2000. The review determined that the Master EIR was still valid for purposes of CEQA environmental review for new project proposals within the Area Plan boundaries.

The Southwest Santa Rosa Redevelopment Plan and Subsequent EIR was certified by the City of Santa Rosa in 2000 (City of Santa Rosa 2000). The Redevelopment Plan was prepared to provide the City with detailed information about the environmental effects of a comprehensive redevelopment plan for portions of the Area Plan. The Redevelopment EIR also provided an update of the Master EIR.

Finally, in January 2005, the City of Santa Rosa adopted a Draft Supplemental EIR (SEIR) that tiers from the Master EIR, Redevelopment EIR, and General Plan EIR (City of Santa Rosa 2005). The SEIR addressed potential impacts at both the project and programmatic level of review. The SEIR assessed biological impacts from development of the Specific Plan Area including the proposed project under review herein. A Biological Assessment for the Dutton Meadow Development Project was prepared by Olberding Environmental, Inc. and Laurence P. Stromberg, Ph.D. (dated January 7, 2003) as part of a U.S. Army Corps of Engineers (Corps) permit application package and was incorporated into the findings presented in the SEIR.

5. ANALYSIS METHODS

5.1 Site Investigation

M&A have been involved with the project site 2018. On June 15, 2018, M&A biologists Ms. Hope Kingma and Ms. Christy Owens conducted a general survey of the project site to record biological resources and to assess the likelihood of resource agency regulated areas on the project site. Subsequent to M&A's 2018 field study, the project was put on hold. In 2020 M&A was instructed to once again proceed with the project. Thus, on November 20, 2020, M&A biologists Ms. Sarah Lynch and Mr. Kevin Durso conducted a follow-up biological resources survey. These surveys involved searching all habitats on the site, recording all plant and wildlife species observed, and assessing relevant topographical and hydrological features. All plant and wildlife species observed on the project site are compiled in Tables 1 and 2, respectively. M&A cross-referenced the habitats found on the project site against the habitat requirements of local or regionally known special-status species to determine if the proposed project could directly or indirectly impact such species.

5.2 Background Research

Prior to preparing this biological resource analysis report, M&A researched the most recent version of CDFW's Natural Diversity Database (CNDDB 2020) for historic and recent records of special-status plant and animal species (that is, threatened, endangered, rare) known to occur in the region of the project site. M&A also searched the 2020 electronic version of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS

2001) for records of special-status plants known in the region of the project site. M&A examined all known record locations for special-status species to determine if special-status species could occur on the project site or within a zone of influence. All special-status plant and wildlife species records known to occur within 3 miles of the project site are compiled and discussed in Tables 3 and 4.

5.3 Special-Status Plant Surveys

As reported in the Dutton Meadows Project Draft Subsequent Environmental Impact Report (January 2005 -SCH #2002092016), three years of protocol level rare plant surveys were conducted in 2000, 2001, and 2003, prior to site grading activities at the project site. Surveys for special-status plant species were conducted using methods consistent with the then current CDFG guidelines for assessing the effects of proposed developments on rare and endangered plants and plant communities (CDFG 2000). The surveys were conducted within the 'window' during which virtually all target species were either in flower or were readily identifiable (Stromberg 2003, Olberding 2003).

5.4 California Tiger Salamander (CTS) Surveys

During the winter of 2001-02 and during the spring of 2002, CTS surveys were conducted by Dr. Mark R. Jennings, Gretchen E Flohr, and a crew of assistants. The site was surveyed using the protocol methods developed by CDFG (Brode 1997). Surveys for juvenile and adult salamanders were conducted by one or more individuals on rainy or wet nights. Each individual looked for salamanders on the ground surface, or in likely small mammal burrows, with the assistance of headlamps and flashlights, by walking slowly abreast along transects back and forth across the site so the entire site was examined. Additionally, Dr. Jennings also surveyed all paved roads in the vicinity of the site (within one-half mile) at the conclusions of the on-site surveys. Adult and juvenile surveys were conducted on December 22, 2001, and January 8 and 28 and February 20 and 26, 2002. Areas containing standing water were dip-netted during the January and February terrestrial surveys and on April 3 and 18, 2002. A second-year of CTS surveys following the CDFG protocol were not conducted because the USFWS informed the applicant that it would assume that the species is present on the project site and that mitigation would be required.

6. RESULTS OF RESEARCH AND PROJECT SITE ANALYSES

6.1 Topography

The project site is essentially level, having been farmed for decades followed by partial project site grading in the mid-2000s. The only change in topography is a large earthen mound of fill material that was deposited on the western portion of the (formerly known Bellevue Ranch 8) project site. All parcels within the project site have been graded and have been disked and routinely harvested and/or mowed over the years for the production of volunteer hay crops, and as necessary to control fuels.

6.2 Hydrology

Pursuant to permits issued for the project, the site has been graded, leveled, and does not support any topographic depressions or swales for water to pond for any length of time. Just outside the

western project site boundary is a roadside ditch along Dutton Meadow Road that feeds into the municipal storm drain system.

6.3 Plant Communities and Associated Wildlife Habitats

M&A compiled a list of plant species observed on the project site on June 15, 2018 and November 20, 2020 (Table 1). Nomenclature used for plant names follows *The Jepson Manual* Second Edition (Baldwin 2012) and changes made to this manual as published on the Jepson Interchange Project website (http://ucjeps.berkeley.edu/interchange/index.html). Table 2 is a list of wildlife species observed on the project site. Nomenclature for wildlife follows CDFW's *Complete list of amphibian, reptile, bird, and mammal species in California* (2016) and any changes made to species nomenclature as published in scientific journals since the publication of CDFW's list.

The plant communities found on site are primarily ruderal herbaceous habitats, that is, communities that are a result of human influence and disturbance to the natural environment. Also present are areas of landscape vegetation associated with past rural residential development. The project site does not currently support any seasonal wetland habitats. Below we discuss the plant communities found on the project site.

6.3.1 Ruderal Herbaceous habitat

This project site is dominated by ruderal herbaceous habitat. Ruderal (weedy) communities are assemblages of plants that thrive in waste areas, intensively maintained urban and agrarian landscapes and other sites that have been disturbed by human activity. Ruderal herbaceous species often occur where undesirable or competitive vegetation is frequently suppressed by mowing, disking, and/or spraying during the growing season.

Ruderal habitat occurs throughout the project site. Dominant grass and forb species within this habitat include slender wild oat (*Avena barbata*), perennial ryegrass (*Festuca perennis*), ripgut grass (*Bromus diandrus*), bindweed (*Convolvulus arvensis*), Harding grass (*Phalaris aquatica*), bristly ox-tongue (*Helminthotheca echioides*), common vetch (*Vicia sativa*), cheeseweed (*Malva parviflora*), and cut-leaf geranium (*Geranium dissectum*). As noted above, the majority of the project site has been disked and routinely harvested and/or mowed over the years to remove volunteer hay crops, and as necessary to control fuels.

Typically, ruderal communities provide habitat for those animal species adapted to living alongside humans, but these maintained open landscapes may also be used by burrowing rodents, raptors, and grassland-dwelling birds as foraging and breeding habitat. Wildlife species observed on the project site include Northern Flicker (*Colaptes auratus*), Red-tailed Hawk (*Buteo jamaicensis*), Wild Turkey (*Meleagris gallopavo*), Killdeer (*Charadrius vociferus*), Anna's Hummingbird (*Calypte anna*), Nuttall's Woodpecker (*Picoides nuttallii*), Say's Phoebe, (*Sayornis saya*), Mourning Dove (*Zenaida macroura*), American Crow (*Corvus brachyrhynchos*), Bushtit (*Psaltriparus minimus*), Red-winged Blackbird (*Agelaius phoeniceus*), Western Meadowlark (*Sturnella neglecta*), Northern Mockingbird (*Mimus polyglottos*), Western Bluebird (*Sialia mexicana*), White-crowned Sparrow (*Zonotrichia leucophrys*), California Towhee (*Pipilo crissalis*), House Finch (*Haemorhous mexicanus*), American Goldfinch (*Spinus*

tristus), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), Sierran tree frog (*Pseudacris sierra*), and Botta's pocket gopher (*Thomomys bottae*). No California ground squirrels (*Otospermophilus beechyi*) or their burrows were observed onsite which is typical for this region of Santa Rosa.

6.3.2 Landscape Species and Native Trees

Scattered trees are growing on the western and southwestern portions of the project site along Dutton Meadow Road, and in the northeastern portion of the project site along the Hearn Avenue residential lots. Tree species observed on site include Fremont cottonwood (*Populus fremontii*), coast redwood (*Sequoia sempervirens*), valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), weeping willow (*Salix babylonica*), liquidambar (*Liquidambar styraciflua*), English walnut (*Juglans regia*), Lombardy poplar (*Populus nigra* var. *italica*), and more than one non-native pine (*Pinus* sp.). Himalayan blackberry (*Rubus armeniacus*) is also established on the project site along Dutton Meadow and in the southwestern corner of the project site.

Wildlife found in the surrounding ruderal herbaceous habitat would be expected to forage, roost, rest, and nest in the trees onsite.

6.3.3 Roadside Ditch

There is a shallow 2-foot wide roadside ditch along Dutton Meadow. This ditch is highly ephemeral and appears to only convey water during significant storm events. This ditch was excavated in uplands along the road, and is dominated by upland vegetation such as slender wild oat, goose grass (*Galium aparine*), soft chess (*Bromus hordeaceus*), summer cottonweed (*Epilobium brachycarpum*), and bindweed. There are a few scattered wetland plant species growing in the ditch including common velvet grass (*Holcus lanatus*), Himalayan blackberry, and tall flatsedge (*Cyperus eragrostis*); however, hydrophytic vegetation is not dominant, and therefore this ditch is not considered a wetland feature. In addition, as stated in the 2020 Navigable Waters Protection Rule, *ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, constructed in an adjacent wetland or drain wetlands either directly or through another water, into [a traditional navigable water, interstate water, or the territorial seas]*, are not considered waters of the U.S. Therefore, the roadside ditch along Dutton Meadow is not considered a jurisdictional feature.

6.4 Wildlife Corridors

Wildlife corridors are linear and/or regional habitats that provide connectivity to other natural vegetation communities within a landscape fractured by urbanization and other development. Wildlife corridors have several functions: 1) they provide avenues along which wide-ranging animals can travel, migrate, and breed, allowing genetic interchange to occur; 2) populations can move in response to environmental changes and natural disasters; and 3) individuals can recolonize habitats from which populations have been locally extirpated (Beier and Loe 1992). All three of these functions can be met if both regional and local wildlife corridors are accessible to wildlife. Regional wildlife corridors provide foraging, breeding, and retreat areas for migrating, dispersing, immigrating, and emigrating wildlife populations. Local wildlife corridors also provide access routes to food, cover, and water resources within restricted habitats.

The proposed project will not interfere with the movement of native wildlife. It is not within a regionally or locally significant wildlife corridor. As illustrated in Figures 2 and 3, the project site is surrounded by development, thus there is no corridor value to/from or between regionally significant open spaces. Wildlife species not adapted to living in close quarters with humans, would not be found on or using the project site. Finally, the project site has been completely enclosed by a tall chain-link fence for almost a decade making it most unlikely that mammals could use the site as a significant wildlife corridor. ***Thus, M&A concludes that the construction of the proposed project would not result in significant adverse impacts to regionally or locally important wildlife corridors.***

7. SPECIAL-STATUS SPECIES DEFINITION

7.1 Definitions

For purposes of this analysis, special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). Special-status species are defined as:

- plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code §2050 *et seq*.; 14 CCR §670.1 *et seq.*) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);

- plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068);

- plants and animals that meet the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 CCR §15380) that may include species not found on either State or Federal Endangered Species lists;

- plants occurring on Ranks 1A, 1B, 2A, 2B, 3, and 4 of CNPS' electronic *Inventory* (CNPS 2001). The CDFW recognizes that Ranks 1A, 1B, 2A and 2B of the CNPS inventory contain plants that, in most cases, would qualify for State listing, and CDFW requests their inclusion in EIRs. Plants occurring on CNPS Ranks 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS 2001). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information (more on CNPS Rank species below);

- migratory nongame birds of management concern listed by the USFWS (Migratory Nongame Birds of Management Concern in the United States: The list 1995; Office of Migratory Bird Management; Washington D.C.; Sept. 1995);

- animals that are designated as "species of special concern" by CDFW (2020);

- animal species that are "fully protected" in California (Fish and Game Codes 3511, 4700, 5050, and 5515).

- bat Species that are designated on the Western Bat Working Group's (WBWG) Regional Bat Species Priority Matrix as: "RED OR HIGH." This priority is justified by the WBWG as follows: "Based on available information on distribution, status, ecology, and known threats, this designation should result in these bat species being considered the highest priority for funding, planning, and conservation actions. Information about status and threats to most species could result in effective conservation actions being implemented should a commitment to management exist. These species are imperiled or are at high risk of imperilment."

In the paragraphs below, we provide further definitions of legal status as they pertain to the special-status species discussed in this report or in the attached tables.

Federal Endangered or Threatened Species. A species listed as Endangered or Threatened under the FESA is protected from unauthorized "take" (that is, harass, harm, pursue, hunt, shoot, trap) of that species. If it is necessary to take a Federally listed Endangered or Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the USFWS prior to initiating the take.

State Threatened Species. A species listed as Threatened under the state Endangered Species Act (§2050 of California Fish and Game Code) is protected from unauthorized "take" (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to "take" a state listed Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from CDFW prior to initiating the "take."

California Species of Special Concern. These are species in which their California breeding populations are seriously declining and extirpation from all or a portion of their range is possible. This designation affords no legally mandated protection; however, pursuant to the CEQA Guidelines (14 CCR §15380), some species of special concern could be considered "rare." Pursuant to its rarity status, any unmitigated impacts to rare species could be considered a "significant effect on the environment" (§15382). Thus, species of special concern must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency.

CNPS Rank Species. The CNPS maintains an "Inventory" of special status plant species. This inventory has four lists of plants with varying rarity. These lists are: Rank 1, Rank 2, Rank 3, and Rank 4. Although plants on these lists have no formal legal protection (unless they are also state or federal listed species), CDFW requests the inclusion of Rank 1 species in environmental documents. In addition, other state and local agencies may request the inclusion of species on other lists as well. The Rank 1 and 2 species are defined below:

- Rank 1A: Presumed extinct in California;
- Rank 1B: Rare, threatened, or endangered in California and elsewhere;

- Rank 2A: Plants presumed extirpated in California, but more common elsewhere;
- Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere.

All of the plants constituting Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the Fish and Game Code and are eligible for state listing (CNPS 2001). Rank 2 species are rare in California, but more common elsewhere. Ranks 3 and 4 contain species about which there is some concern and are reviewed by CDFW and maintained on "watch lists."

Additionally, in 2006 CNPS updated their lists to include "threat code extensions" for each list. For example, Rank 1B species would now be categorized as Rank 1B.1, Rank 1B.2, or Rank 1B.3. These threat codes are defined as follows:

- .1 is considered "seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)";
- .2 is "fairly endangered in California (20-80% of occurrences threatened)";
- .3 is "not very endangered in California (less than 20% of occurrences threatened or no current threats known)."

Under the CEQA review process only CNPS Rank 1 and 2 species are considered since these are the only CNPS species that meet CEQA's definition of "rare" or "endangered." Impacts to Rank 3 and 4 species are not regarded as significant pursuant to CEQA.

Fully Protected Birds. Fully protected birds, such as the white-tailed kite and golden eagle, are protected under California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time.

7.2 Potential Special-Status Plant Species on the Project Site

Figure 4 provides a graphical illustration of the known records for special-status plant species within 3 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. As reported in the Dutton Meadow Project Draft Subsequent Environmental Impact Report (January 2005 -SCH #2002092016), protocol-level rare plant surveys were conducted on the project site in 2000, 2001, and 2003, prior to site grading activities. Surveys for special-status plant species were conducted using methods consistent with the then current CDFG guidelines for assessing the effects of proposed developments on rare and endangered plants and plant communities. The surveys were conducted within the 'window' during which virtually all target species were either in flower or were readily identifiable. Field surveys for special-status plants were conducted by thoroughly searching each wetland and conducting a transect survey of the annual grassland habitats. No state or federally-listed species were observed during any of the surveys conducted on the project site (Stromberg 2003, Olberding 2003).

The project site falls within a geographic region designated by the USFWS and the Corps as the *Santa Rosa Plain*. The Santa Rosa Plain has a number of state and federally-listed species, and there are region-specific regulatory agency rules that govern how projects must evaluate impacts

to both wetlands and listed species. Due to the sensitivity of federally and state-listed species known from the Santa Rosa Plain, we discuss these species further below.

7.2.1 SONOMA SUNSHINE

Sonoma sunshine (*Blennosperma bakeri*) is a federally and state-listed endangered plant species. It is also a CNPS Rank 1B.1 species. The USFWS' Recovery Plan for the Santa Rosa Plain (USFWS 2016) designates the project site outside the *Blennosperma bakeri* Southern Core Area (Figure 5). This annual member of the sunflower family is found in vernal pools and grassland habitats in the Santa Rosa Plain and from the Sonoma area. Sonoma sunshine flowers from March through May. It is threatened by urbanization, grazing and agriculture.

The closest CNDDB record for Sonoma sunshine is located 1.8 miles southwest of the project site (Occurrence No. 8) (Figure 4). Sonoma sunshine was not detected during appropriately-timed rare plant surveys conducted between 2000 and 2003 prior to authorized site grading. Regardless, impacts to potential habitat for federally-listed and state-listed plants have been mitigated by the applicant via the purchase of mitigation credits from the Gobbi Preserve. ***Pursuant to the CEQA, since mitigation for impacts to Sonoma sunshine was satisfied with the purchase of mitigation credits, implementation of the proposed project will not result in significant impacts to federally or state-listed plants.***

7.2.2 BURKE'S GOLDFIELDS

Burke's goldfields (*Lasthenia burkei*) is a federally and state-listed endangered species protected pursuant to the Federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA), respectively. It is also a CNPS Rank 1B.1 species. The USFWS' Recovery Plan for the Santa Rosa Plain (USFWS 2016) designates the project site outside the *Lasthenia burkei* Southern Core Area (Figure 6). This small, slender annual member of the sunflower family is found in meadows, seeps, and vernal pools. The yellow flowers of the Burke's goldfields bloom from April through June. This species is known only from southern portions of Lake and Mendocino counties, the western portion of Napa County, and from northeastern Sonoma County (the Santa Rosa Plain). Historically, 39 colonies were known from the Santa Rosa Plain, two colonies were known from Lake County, and one colony was known from Mendocino County. The occurrence in Mendocino County is most likely extirpated. From north to south in the Santa Rosa Plain, the species occurs from north of the community of Windsor to east of the city of Sebastopol. It is threatened by agriculture, urbanization, development, grazing, road widening, road maintenance, and ecological competition from non-native plants.

The closest CNDDB record for Burke's goldfields is located 2.2 miles south of the project site (Occurrence No. 43) (Figure 4). Burke's goldfields were not detected during appropriately-timed rare plant surveys conducted between 2000 and 2003 prior to authorized site grading. Regardless, impacts to potential habitat for federally-listed and state listed plants have been mitigated by the applicant via the purchase of mitigation credits from the Gobbi Preserve. ***Pursuant to the CEQA, since mitigation for impacts to Burke's goldfields was satisfied with the purchase of mitigation credits, implementation of the proposed project will not result in significant impacts to federally or state listed plants.***

7.2.3 SEBASTOPOL MEADOWFOAM

Sebastopol meadowfoam (*Limnanthes vinculans*) is a federally and state-listed endangered species. It is also a CNPS Rank 1B.1 species. The USFWS' Recovery Plan for the Santa Rosa Plain (USFWS 2016) designates the project site outside the *Limnanthes vinculans* Southern Core Area (Figure 7). This annual member of the meadowfoam family blooms April through May, and is found in meadows and seeps, seasonally wet grasslands, and vernal pools. Although the first leaves are narrow and undivided, leaves on the mature plant have three to five undivided leaflets along each side of a long stalk (petiole). The shape of the leaves distinguishes Sebastopol meadowfoam from other members of the *Limnanthes* genus. It is threatened by urbanization, agriculture, grazing, non-native plants, and vehicles. The only known natural occurrences of this species have been recorded in Sonoma County.

The closest CNDDB record for Sebastopol meadowfoam is located 1.0 mile west of the project site (Occurrence No. 1) (Figure 4). Sebastopol meadowfoam plants were not detected during appropriately-timed rare plant surveys conducted between 2000 and 2003 prior to authorized site grading. Regardless, impacts to potential habitat for federally-listed and state listed plants have been mitigated by the applicant via the purchase of mitigation credits from the Gobbi Preserve. ***Pursuant to the CEQA, since mitigation for impacts to Sebastopol meadowfoam was satisfied with the purchase of mitigation credits, implementation of the proposed project will not result in significant impacts to federally-listed and state listed plants.***

7.3 Potential Special-Status Wildlife Species on the Project Site

Figure 4 provides a graphical illustration of the known records for special-status wildlife species within 3 miles of the project site and helps readers visually understand the number of sensitive species known to occur near the project site. A search of the CNDDB found six special-status wildlife species occurring within 3 miles of the project site (Table 4). The only species in which the project site provides "suitable habitat" are discussed below.

7.3.1 CALIFORNIA TIGER SALAMANDER

The project site is located within the known range of the Sonoma County "Distinct Population Segment" (DPS) of CTS. Under the FESA, the USFWS emergency listed the Sonoma County DPS as endangered on July 22, 2002. The USFWS formalized the listing of the Sonoma County DPS of CTS as endangered on March 19, 2003 (USFWS 2003). The USFWS determined that this population is significantly and immediately imperiled by a variety of threats including habitat destruction, degradation, and fragmentation due to urban development, road construction, pesticide drift, collection, and inadequate regulatory mechanisms. In addition, it was determined that this population could face extinction because of naturally occurring events (e.g., fires, droughts) due to the small and isolated nature of the remaining breeding sites and low number of individuals in this DPS.

In 2011, the USFWS designated revised critical habitat for the Sonoma County DPS of CTS. In total, approximately 47,383 acres (19,175 hectares) of land were designated as Critical Habitat for the Sonoma County DPS of CTS under the revised Final Rule (USFWS 2011). ***The project site is located within this mapped critical habitat*** (Figure 8). Per the USFWS Recovery Plan for

the Santa Rosa Plain (USFWS 2016), the project site is located within the Llano Crescent-Stony Point "Core Area" (Figure 9).

On March 4, 2010, CTS was also state-listed as a threatened species under the CESA. Proposed projects may not impact CTS without incidental take authority from both the USFWS and the CDFW. Prior to implementing a project that would result in "take" (i.e., to harm, harass, or kill) of CTS, the USFWS must prepare an incidental take permit pursuant to either Section 7 or Section 10 of the FESA. Similarly, projects that could result in take of CTS also require incidental take authority from the CDFW pursuant to the CESA.

CTS occur in grasslands and open oak woodlands that provide suitable over-summering and/or breeding habitats. M&A has worked with populations that are almost at sea level (Catellus Site in the City of Fremont) to almost 2,900 feet above sea level (Kammerer Ranch, East Santa Clara County). CTS spend the majority of their lives underground. They typically only emerge from their subterranean refugia for a few nights each year during the rainy season to migrate to breeding ponds. While 1.3 miles is typically considered the maximum migration distance of CTS to/from their breeding pools to upland over-summering habitat, there is literature suggesting that the CTS could migrate up to 1.5 miles from their breeding pools. This migration distance is reported by the USFWS' Recovery Plan for the Santa Rosa Plain (USFWS 2016) where it states: Based on distances travelled per night, Searcy and Shaffer (2011) estimated that Central CTS are physiologically capable of moving up to 2.4 km (1.5 mi) each breeding season, with an average dispersal distance estimated to be 0.56 km (1,840 ft). Orloff (2007) found that the majority of CTS in the East San Francisco Bay Area dispersed at least 0.5-mile (0.8 km) from the breeding site, with a smaller number of salamanders appearing to move even farther—from 1.2 to 2.2 km (0.75 to 1.3 mi) between breeding ponds and upland habitat. M&A biologists Mr. Geoff Monk and Ms. Sarah Lynch have observed CTS migrating up to 0.6-mile from their underground refugia to breeding ponds (personal data from Livermore, California collected in 1997). As such, unobstructed migration corridors are an important component of CTS habitat.

In Sonoma County, CTS emerge during the first heavy, warm rains of the year, typically in late November and early December. In most instances, larger movements of CTS do not occur unless it has been raining hard and continuously for several hours. Typically, for larger movements of CTS to occur, nighttime temperatures also must be above 48° F (G. Monk and S. Lynch pers. observations). Other factors that encourage larger movements of CTS to their breeding ponds include flooding of refugia (observed by G. Monk in Springtown, east Alameda County in 1997) as occurs after significant rainfall events.

During the spring, summer, and fall months, most known populations of the CTS throughout this species range in California predominately use California ground squirrel (*Otospermophilus beechyi*) burrows as over summering habitat (G. Monk personal observation). However, in Sonoma County where California ground squirrel populations are scarce to non-existent, subterranean refugia likely include Botta's pocket gopher burrows, deep fissures in desiccated clay soils, and debris piles (e.g., downed wood, rock piles).

Stock ponds, seasonal wetlands, and deep vernal pools typically provide most of the breeding habitat used by CTS. In such locations, CTS attach their eggs to rooted, emergent vegetation, and

other stable filamentous objects in the water column. Eggs are gelatinous and are laid singly or occasionally in small clusters. Eggs range in size from about three quarters the diameter of a dime to the full diameter of a dime.

Occasionally CTS are found breeding in slow moving streams or ditches. In 1997, Mr. G. Monk observed CTS breeding in large, still ditches in Fremont, California. Ditches and/or streams that are subject to rapid flows, even if only on occasion, typically will not support or sustain CTS egg attachment through hatching, and thus, are not usually used successfully by CTS for breeding (G. Monk and S. Lynch, pers. observations). Similarly, streams and/or ditches that support predators of CTS or their eggs and larvae such as fish, bullfrogs (*Lithobates catesbeianus*), red swamp crayfish (*Procambarus clarkii*), or signal crayfish (*Pacifastacus leniusculus*), almost never constitute suitable breeding habitat.

In most of the range of CTS, seasonal wetlands that are used for breeding typically must hold water into the month of May to allow enough time for larvae to fully metamorphose. Typically, in Sonoma County pools that are 16 inches or deeper in the peak winter months will remain inundated long enough to provide good breeding conditions for CTS. In dry years, seasonal wetlands, especially shallower pools, may dry too early to allow enough time for CTS larvae to successfully metamorphose. Under such circumstances, desiccated CTS larvae are often found in dried pools. In addition, as pools dry down to very small areas of inundation, CTS larvae become concentrated and are very susceptible to predation.

The closest adult CTS observation to the project site (CNDDB Occurrence No. 1105) is a 2003 record of adult females moving along Hearn Avenue located 440 feet northwest of the project site. There is an additional adult CTS observation from 2006 (CNDDB Occurrence No. 1243) that is located 1,020 feet southwest of the project site in what used to be a grassy field; Google Earth images now show a housing development where this CTS was found. The closest breeding CTS location is 1,100 feet west of the project site at the Southwest Community Park (CNDDB Occurrence No. 483). Project site surveys for adults and larvae were conducted from 2001 to 2003; no CTS larvae or adults were detected during the surveys, although suitable upland habitat exists on the project site. In compliance with the conditions in the USFWS's Biological Opinion (BO) for the Specific Plan Area, and with CDFG's (now CDFW) Agreement with Gobbi Mitigation Preserve LLC, impacts to CTS were fully mitigated for this project via the purchase of mitigation credits from the Gobbi Preserve which is located within the Llano Crescent-Stony Point "Core Area" (also see the USFWS "Applicability" section of this report).

According to the *Programmatic Biological Opinion* (USFWS 2020), a 2:1 mitigation ratio is required for projects that are greater than 500 feet and within 2,200 feet of a known breeding site, or greater than 2,200 feet from a breeding site but within 500 feet of a non-breeding occurrence. In compliance with the conditions in the USFWS' BO for the proposed project, the Corps' permit and RWQCB Water Quality Certification, on July 7, 2006 Dutton Village Partners LLC, by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 23.92 acres of CTS preservation mitigation credits from Gobbi Mitigation Preserve LLC, providing 2:1 mitigation for impacts to 12.4 acres of suitable CTS habitat on the Bellevue Ranch 8 parcels. Similarly, on July 7, 2006 Dutton Village Partners LLC, by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 12.15 acres of CTS preservation mitigation credits from

Gobbi Mitigation Preserve LLC, thus providing 2:1 mitigation for impacts to 6.3 acres of potential CTS habitat on the Minoia Property. Finally, by agreement with Dutton Village Partners LLC, Trumark Companies LLC, DM Associates LLC, and Hearn Avenue LLC, 0.58-acre of CTS mitigation credits were purchased from the Gobbi Mitigation Preserve LLC to compensate for impacts to listed species that will occur when the Minoia Park Land, comprising 0.3-acre, is developed and dedicated to the City of Santa Rosa as a component of the Dutton Meadow Specific Plan development project. ***Accordingly, all impacts to CTS have been adequately mitigated and no further mitigation is warranted for the proposed project.***

7.3.2 WHITE-TAILED KITE

The White-tailed Kite (*Elanus leucurus*) is a "Fully Protected" species under the California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time. It is also protected under the Federal Migratory Bird Treaty Act (50 CFR 10.13). The White-tailed Kite is typically found foraging in grassland, marsh, or cultivated fields where there are dense-topped trees or shrubs for nesting and perching. They nest in a wide variety of trees of moderate height and sometimes in tall bushes, such as coyote bush (*Baccharis pilularis*). Native trees used are live and deciduous oaks (*Quercus* spp.), willows (*Salix* spp.), cottonwoods (*Populus* spp.), sycamores (*Platanus* spp.), maples (*Acer* spp.), toyon (*Heteromeles arbutifolia*), and Monterey cypress (*Cupressus macrocarpa*). Although the surrounding terrain may be semiarid, kites often reside near water sources, where prey is more abundant. The particular characteristics of the nesting site do not appear to be as important as its proximity to a suitable food source (Shuford 1993). Kites primarily hunt small mammals, with California meadow voles (*Microtus californicus*) accounting for between 50-100% of their diet (Shuford 1993).

The nearest CNDDB record for this species is a 2003 record located 0.1-mile east of the project site (Occurrence No. 77). At this record location two kites were observed in courtship behavior but no nest was identified. The project site provides suitable hunting grounds for White-tailed Kites and the trees on and immediately adjacent to the project site provide suitable nesting habitat. ***Accordingly, impacts to White-tailed Kite from site development are regarded as potentially significant pursuant to the CEQA.*** Mitigation could be implemented to reduce this impact to a level regarded as less than significant pursuant to the CEQA. Please see the "Impacts and Mitigation Measures" section of this report for details.

8. REGULATORY FRAMEWORK FOR NATIVE WILDLIFE, FISH, AND PLANTS

This section provides a discussion of those laws and regulations that are in place to protect native wildlife, fish, and plants. Under each law we discuss their pertinence to the proposed development.

8.1 Federal Endangered Species Act

The FESA forms the basis for the federal protection of threatened or endangered plants, insects, fish and wildlife. FESA contains four main elements, they are as follows:

Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.

Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.

Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.

Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the NMFS. The USFWS enforces all other cases. Below, Sections 9, 7, and 10 of FESA are discussed since they are the sections most relevant to the proposed project.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). A December 2001 decision by the 9th Circuit Court of Appeals (Arizona Cattle Growers' Association, Jeff Menges, vs. the USFWS and Bureau of Land Management, and the Southwest Center for Biological Diversity) ruled that the USFWS must show that a threatened or endangered species is present on a project site and that it would be taken by the project activities. According to this ruling, the USFWS can no longer require mitigation based on the probability that the species could use the site. Rather, they must show that it is actually present.

Section 9 applies to any person, corporation, federal agency, or any local or State agency. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need to obtain an incidental take permit either through a Section 7 Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency), or requires preparation of a Habitat Conservation Plan (HCP) pursuant to Section 10 of FESA (for state and local agencies, or individuals, and projects without a federal "nexus").

Section 7(a)(2) of the Act requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. Critical habitat designations mean: (1) specific areas within a geographic region currently occupied by a listed species, on which are found those physical or biological features that are essential to the conservation of a listed species and that may require special management considerations or protection; and (2) specific areas outside the

geographical area occupied by a listed species that are determined essential for the conservation of the species.

The Section 7 consultation process only applies to actions taken by federal agencies that are considering authorizing discretionary projects. Section 7 is by and between the NMFS and/or the USFWS and the federal agency contemplating a discretionary approval (that is, the "federal nexus agency," for example, the Corps or the Federal Highway Administration). Private parties, cities, counties, etc. (i.e., applicants) may participate in the Section 7 consultation *at the discretion of the federal agencies conducting the Section 7 consultation*. The Section 7 consultation process is triggered by a determination of the "action agency" – that is, the federal agency that is carrying out, funding, or approving a project - that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation between the nexus agency and the USFWS/NMFS is required. As part of the formal consultation, the USFWS/NMFS may resolve any issues informally with the nexus agency or may prepare a formal Biological Opinion assessing whether the proposed action would be likely to result in "jeopardy" to a listed species or if it could adversely modify designated critical habitat. If the USFWS/NMFS prepares a Biological Opinion, it will contain either a "jeopardy" or "non-jeopardy" decision. If the USFWS/NMFS concludes that a proposed project would result in adverse modification of critical habitat or would jeopardize the continued existence of a federal listed species (that is, it will issue a jeopardy decision), the nexus federal agency would be most unlikely to authorize its discretionary permit. If the USFWS/NMFS prepares a "non-jeopardy" Biological Opinion, the nexus federal agency may authorize the discretionary permit making all conditions of the Biological Opinion conditions of its discretionary permit. A non-jeopardy Biological Opinion constitutes an "incidental take" permit that allows applicants to "take" federally listed species while otherwise carrying out legally sanctioned projects.

For non-federal entities, for example private parties, cities, counties that are considering a discretionary permit, Section 10 provides the mechanism for obtaining take authorization. Under Section 10 of FESA, for the applicant to obtain an "incidental take permit," the applicant is required to submit a "conservation plan" to the USFWS or NMFS that specifies the impacts that are likely to result to federally listed species, and the measures the applicant will undertake to minimize and mitigate such impacts, and the funding that will be available to implement those steps. Conservation plans under FESA have come to be known as "habitat conservation plans" or "HCPs" for short. The terms incidental take permit, Section 10 permit, and Section 10(a)(1)(B) permit are used interchangeably by the USFWS. Section 10(a)(2)(B) of FESA provides statutory criteria that must be satisfied before an incidental take permit can be issued.

8.1.1 Responsible Agency

FESA gives regulatory authority to the USFWS for federally-listed terrestrial species and non-anadromous fish. The NMFS has regulatory authority over federally-listed marine mammals and anadromous fish.

8.1.2 APPLICABILITY TO THE PROPOSED PROJECT

The project site does not provide fisheries habitat; thus, the project would not result in impacts to federally listed anadromous fish species. As such, consultation with the NMFS for the proposed project is not warranted.

Protocol-level rare plant surveys were conducted on the project site by qualified botanists between 2000 and 2003, per protocol, prior to site grading activities, and no endangered plant species were observed. Regardless, impacts to potential habitat for federally-listed plants have been mitigated by the applicant via the purchase of mitigation credits from the Gobbi Preserve as discussed below.

The *Biological Assessment* for the Dutton Meadow Development Project was prepared by Olberding Environmental, Inc. and Laurence P. Stromberg, Ph.D. (dated June 11, 2003). On August 5, 2003, the Corps initiated Section 7 consultation with USFWS for the Dutton Meadows subdivision. On May 24, 2005, the USFWS issued a Biological Opinion (BO) for the Dutton Meadows Subdivision Phases Two Through Five, Santa Rosa, Sonoma County, California (Corps File No. 263420N). The USFWS BO covered the entire Dutton Meadows Specific Plan Area that includes the Bellevue Ranch 8 and Minoia Properties (the current "project site").

Per the USFWS's BO, to compensate for adverse effects resulting from development of the Dutton Meadows Specific Plan Area (CH2MHill 2005) to 54.43 acres of California tiger salamander upland dispersal, foraging and "aestivation" (over-summering) habitat, and to 4.37 acres of seasonal wetlands and a drainage ditch, the applicant was required to purchase CTS preservation and habitat enhancement credits via the establishment of the 108.88-acre "Gobbi Preserve No. 2" (" Gobbi Preserve"). The Gobbi Preserve was to be permanently protected and dedicated by its sponsor, the Gobbi Mitigation Preserve LLC, to the CDFG (now known as the CDFW).

The Gobbi Preserve is located within the Llano Crescent-Stony Point "Core Area" designated in the Santa Rosa Plain Conservation Strategy (USFWS 2016). The Gobbi Preserve is in proximity to several other mitigation banks and preserves including the Gobbi Ranch Mitigation Site (Gobbi Preserve No. 1), Southwest Santa Rosa Vernal Pool Preservation Bank (aka Engle Bank), Hale Mitigation Bank, and the Carinalli-Todd Road Mitigation Bank. Thus, the dedication and preservation of the Gobbi Preserve that occurred to compensate for impacts to "suitable" special-status species habitats on the project site, provides a regionally-significant contribution to the preservation system being established to both preserve and promote the continued existence of special status species on the Santa Rosa Plain.

To ensure the permanent protection of the Gobbi Preserve, the CDFG and Gobbi Mitigation Preserve LLC entered into an Agreement (Agreement No. 1802-2006-003-03) to formally establish the Gobbi Preserve. This Agreement establishes that the Gobbi Preserve was being created/preserved as compensatory mitigation for impacts to suitable CTS habitat, suitable endangered vernal pool plant species, and for impacts to 4.37 acres of seasonal wetland habitat that would result from development of the 56.88-acre Dutton Meadows Specific Plan Area, which includes the Bellevue Ranch 8 property and the Minoia Property (the project site). Meeting the mitigation compensation goals established for the Gobbi Preserve, in the fall of

2005, Gobbi Preserve LLC constructed approximately 5.66 acres of vernal pools, connecting swales, and other seasonal wetlands in the Gobbi Preserve, creating California tiger salamander breeding and upland habitats, and habitat for listed vernal pool plant species. The Gobbi Preserve now supports a robust CTS population and significant colonies of listed vernal pool plants including Sebastopol meadowfoam, Sonoma sunshine, and Burke's goldfields (G. Monk personal observations circa 2007).

In compliance with the conditions in the USFWS' BO, the Corps' permit and RWQCB Water Quality Certification, on July 7, 2006, Dutton Village Partners LLC, by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 23.92 acres of CTS preservation mitigation credits from Gobbi Mitigation Preserve LLC, providing 2:1 mitigation for impacts to 12.4 acres of suitable CTS habitat on the Bellevue Ranch 8 parcels. Similarly, on July 7, 2006, Dutton Village Partners LLC, by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 12.15 acres of CTS preservation mitigation credits from Gobbi Mitigation Preserve LLC, thus providing 2:1 mitigation for impacts to 6.3 acres of potential CTS habitat on the Minoia Property. Finally, by agreement with Dutton Village Partners LLC, Trumark Companies LLC, DM Associates LLC, and Hearn Avenue LLC, 0.58-acre of CTS mitigation credits were purchased from the Gobbi Mitigation Preserve LLC to compensate for impacts to listed species that will occur when the Minoia Park Land, comprising 0.3-acre, is developed and dedicated to the City of Santa Rosa as a component of the Dutton Meadows Specific Plan development project. ***Therefore, all impacts to suitable habitats for federally-listed species that would be affected by the proposed project have been adequately mitigated pursuant to the compliance requirements set forth in the USFWS' BO prepared for the Dutton Meadows Specific Plan Area.***

Accordingly, potentially significant adverse impacts to federally-listed plants and animals from the development of the project site have mitigated to a level regarded as less than significant pursuant to the CEQA.

8.2 Federal Migratory Bird Treaty Act

The MBTA of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

Executive Order 13186 for conservation of migratory birds (January 11, 2001) requires that any project with federal involvement address impacts of federal actions on migratory birds. The order is designed to assist federal agencies in their efforts to comply with the MBTA and does not constitute any legal authorization to take migratory birds. The order also requires federal agencies to work with the USFWS to develop a memorandum of understanding (MOU). Protocols developed under the MOU must promote the conservation of migratory bird populations through the following means:

- avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
- restore and enhance habitat of migratory birds, as practicable; and prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

8.2.1 Applicability to The Proposed Project

Common songbirds and raptors, such as White-tailed Kite, that could nest in the trees on the site or directly adjacent would be protected pursuant to the MBTA. As long as there is no direct mortality of species protected pursuant to the MBTA caused by development of the site, there should be no constraints to development of the site. Preconstruction surveys will be conducted prior to any grading or tree removal activities. To comply with the MBTA, non-disturbance buffers would have to be established around any active nesting site and would have to be of sufficient size to protect the nesting birds from harm. Upon completion of nesting, the buffers could be removed, and the project could commence as otherwise planned. Please review specific requirements for avoidance of nest sites in the Impacts and Mitigations section below.

8.3 **California Endangered Species Act**

8.3.1 Section 2081 of the California Endangered Species Act

In 1984, the state legislated the CESA (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats. State agencies will not approve private or public projects under their jurisdiction that would impact threatened or endangered species if reasonable and prudent alternatives are available. Because CESA does not have a provision for "harm" (see discussion of FESA, above), CDFW considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

If CDFW determines that a proposed project could impact a State listed threatened or endangered species, CDFW will provide recommendations for "reasonable and prudent" project alternatives. The CEQA lead agency can only approve a project if these alternatives are implemented, unless it finds that the project's benefits clearly outweigh the costs, reasonable mitigation measures are adopted, there has been no "irreversible or irretrievable" commitment of resources made in the interim, and the resulting project would not result in the extinction of the species. In addition, if there would be impacts to threatened or endangered species, the lead agency typically requires project applicants to demonstrate that they have acquired "incidental take" permits from CDFW and/or USFWS (if it is a Federal listed species) prior to allowing/permitting impacts to such species.

If proposed projects would result in impacts to a State listed species, an "incidental take" permit pursuant to §2081 of the Fish and Game Code would be necessary (versus a Federal incidental take permit for Federal listed species). CDFW will issue an incidental take permit only if:

1) The authorized take is incidental to an otherwise lawful activity;
2) the impacts of the authorized take are minimized and fully mitigated;
3) measures required to minimize and fully mitigate the impacts of the authorized take:

a) are roughly proportional in extent to the impact of the taking on the species;
b) maintain the project applicant's objectives to the greatest extent possible; and,
c) capable of successful implementation; and,

4) adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with, and the effectiveness of, the measures.

If an applicant is preparing a HCP as part of the federal 10(a) permit process, the HCP might be incorporated into the §2081 permit if it meets the substantive criteria of §2081(b). To ensure that an HCP meets the mitigation and monitoring standards in Section 2081(b), an applicant should involve CDFW staff in development of the HCP. If a final Biological Opinion (federal action) has been issued for the project pursuant to Section 7 of the federal Endangered Species Act, it might also be incorporated into the §2081 permit if it meets the standards of §2081(b).

No §2081 permit may authorize the take of a species for which the Legislature has imposed strict prohibitions on all forms of "take." These species are listed in several statutes that identify "fully protected" species and "specified birds." *See* Fish and Game Code §§ 3505, 3511, 4700, 5050, 5515, and 5517. If a project is planned in an area where a "fully protected" species or a "specified bird" occurs, an applicant must design the project to avoid all take.

Fish and Game Code §2080.1 allows an applicant who has obtained a "non-jeopardy" federal Biological Opinion pursuant to Section 7 of the FESA, or who has received a federal 10(a) permit (federal incidental take permit) pursuant to the FESA, to submit the federal opinion or permit to CDFW for a determination as to whether the federal document is "consistent" with CESA. If after 30 days CDFW determines that the federal incidental take permit is consistent with state law, and that all state listed species under consideration have been considered in the federal Biological Opinion, then no further permit or consultation is required under CESA for the project. However, if CDFW determines that the federal opinion or permit is not consistent with CESA, or that there are state listed species that were not considered in the federal Biological Opinion, then the applicant must apply for a state CESA permit under Section 2081(b). Section 2081(b) is of no use if an affected species is state-listed, but not federally listed.

State and federal incidental take permits are issued on a discretionary basis and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management endowment fees are usually collected as part of the agreement for the incidental take permit(s). The endowment is used to manage any lands set-aside to protect listed species, and for biological mitigation monitoring of these lands over (typically) a five-year period.

8.3.2 Applicability to The Proposed Project

Several state-listed plant and wildlife species are known to occur in the region of the project site (Tables 3 and 4). No state-listed plant species have been identified on the project site during

protocol surveys conducted by qualified botanists between 2000 and 2003, prior to authorized site grading.

The CDFG (now CDFW) and Gobbi Mitigation Preserve LLC established an Agreement (1802-2006-003-03) to create the Gobbi Preserve ("Preserve") in Sonoma County as compensatory mitigation for impacts to CTS habitat, habitat for Sebastopol meadowfoam, which is a Federal and State endangered species, and impacts to 4.37 acres of seasonal wetland habitat resulting from development at the 56.88-acre Dutton Meadows Specific Plan Area, which includes the Bellevue Ranch 8 property and the Minoia Property (the project site). This agreement specifically states:

> *Agreement between Gobbi Mitigation Preserve, LLC and the California Department of Fish and Game. Ref. No. 1802-2006-003-03*
>
> *This agreement ("Agreement") is made and entered into by and between Gobbi Mitigation Preserve, LLC, a California Limited Liability Company ("Gobbi LLC"), and the California Department of Fish and Game ("DFG"), a department of the State of California. This Agreement is to establish the Gobbi Preserve ("Preserve") site in Sonoma County (described in Exhibits A, Band C) as compensatory mitigation for impacts to habitat for the California tiger salamander (Ambystoma californiense) ("CTS"), which is a Federal endangered species and a State designated Species of Special Concern, and habitat for Sebastopol meadowfoam (Limnanthes vinculans), which is a Federal and State endangered species, and impacts to 4.37 acres of seasonal wetland habitat subject to State and Federal jurisdiction through construction of at least 5.46 acres of new seasonal wetlands (vernal pools and swales) related to development of single and multiple-family housing, parks, and commercial and retail development at the 56.88-acre Dutton Meadows Specific Plan area, which includes the following properties:*
>
> *• Dutton Village Partners, LLC property located at 2732 Dutton Meadow (12.05 acres, APN 043-071-029);*
>
> *• DM Associates, LLC property located at 2684 Dutton Meadow (8.00 acres, APN 043-071-007), 2666 Dutton Meadow Drive (3.55 acres., APN 043-071-022) and 2650 Dutton Meadow Drive (0.52-acre, APN 043-071-023);*
>
> *• Peletz/Denenberg property located at 1130 Hearn A venue (2.49 acres, APN 043-191-02 l) and a 17.0 I-acre parcel (APN 043-200-004) with no street address;*
>
> *• Minoia Property located at 1112 Hearn Avenue (4.68 acres, APN 043-191-024) and 1200 Hearn Avenue (l. 93 acres, APN 043-191-016); and*

> *• Nelson Property located at 976 Hearn Avenue (0.21 -acre, APN 043-191-018), 980 Hearn Avenue (5.65 acres, APN 043-191-019) and 1004 Hearn Avenue (0.23-acre, APN 043- 191 -020).*
>
> *It is acknowledged that the purpose of this Agreement is to set forth the obligations and rights of DFG and Gobbi LLC with respect to the compensatory mitigation of the Project, establishment and management of the Preserve and the significant environmental impacts on CTS and its habitat, habitat for Sebastopol meadowfoam and Sonoma sunshine and seasonal wetland habitat.*

In compliance with the conditions in the CDFG Agreement, Bellevue Ranch 8 (DM Associates, LLC) purchased 23.92 acres of preservation and CTS mitigation credits from the Gobbi Preserve, thus providing 2:1 mitigation for impacts to 12.4 acres of potential habitat on the Bellevue Ranch 8 parcels. Minoia Property purchased 12.15 acres of preservation and CTS mitigation credits from the Gobbi Preserve, thus providing 2:1 mitigation for impacts to 6.3 acres of potential habitat on the Minoia Property. In addition, DM Associates purchased 0.58-acre of preservation and CTS mitigation credits from the Gobbi Preserve for the Minoia Park Land, which comprises 0.3-acre. The Gobbi Preserve now supports a robust CTS population and significant colonies of listed vernal pool plants including Sebastopol meadowfoam, Sonoma sunshine, and Burke's goldfields (G. Monk personal observations circa 2007). ***Therefore, all impacts to state listed species from development of the project site under consideration herein have been adequately mitigated.***

8.4 California Fish and Game Code § 3503, 3503.5, 3511, and 3513

California Fish and Game Code §3503 makes it unlawful to take, possess or "needlessly" destroy the nest or eggs of any bird, although it does not protect the fledged birds themselves. Section 3503.5 (birds of prey), 3511 (fully protected birds), and 3513 (Migratory Bird Treaty Act-listed birds) prohibit the take, possession, and/or destruction of different categories birds, their nests or eggs. Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered "take."

8.4.1 Applicability to the Proposed Project

Raptors that could be impacted by the project include White-tailed Kite. Passerine birds that could be affected include common species such as Mourning Dove (*Zenaida macroura*), California Scrub-Jay (*Aphelocoma californica*), and House Finch (*Haemorhous mexicanus*), among others. Preconstruction nesting surveys would have to be conducted to ensure that there is no direct take of nesting birds including their eggs, nests, or young. Any active nests that were found during preconstruction surveys would have to be avoided by the project. Suitable non-disturbance buffers would have to be established around nest sites until the nesting cycle is complete. Please review specific requirements for avoidance of nest sites for nesting bird species in the Impact and Mitigation section.

8.5 Santa Rosa Plain Conservation Strategy (USFWS 2005)

The Federal listing of CTS resulted in uncertainty for many local jurisdictions, landowners, and developers about its effects on their current and proposed activities. Because of this uncertainty, local private and public interest groups met with the USFWS to discuss a cooperative approach to protecting CTS, while allowing currently planned and future land uses to occur within its range. The result of these discussions was the creation of the *Final Santa Rosa Plain Conservation Strategy* ("*Conservation Strategy*") (USFWS 2005).

The purpose of the *Conservation Strategy* is threefold: (1) to establish a long-term conservation program sufficient to mitigate potential adverse effects of future development on the Santa Rosa Plain, and to conserve and contribute to the recovery of the listed species and the conservation of their sensitive habitat; (2) to accomplish the preceding in a fashion that protects stakeholders' (both public and private) land use interests, and (3) to support issuance of an authorization for incidental take of Sonoma County California tiger salamander and listed plants that may occur in the course of carrying out a broad range of activities on the Santa Rosa Plain. The *Conservation Strategy* establishes interim and long-term mitigation requirements and designates conservation areas where mitigation will occur. It describes how habitat preserves will be established and managed. It also includes guidelines for translocation, management plans, adaptive management and funding.

The *Conservation Strategy* identifies areas within the Santa Rosa Plain that should be conserved to benefit the listed plants and Sonoma County California tiger salamander. Their designation was based upon the following factors: 1) known distribution of the California tiger salamander; 2) the presence of suitable habitat; 3) presence of large blocks of natural or restorable land; 4) proximity to existing Preserves; and 5) known location of the listed plants. The designation of conservation areas also generally attempted to avoid future development areas established by urban growth boundaries and city general plans. The objective of these conservation areas is to ensure that preservation occurs throughout the distribution of the species.

The goal of the *Conservation Strategy* is to preserve a large enough area of suitable habitat to ensure the conservation of CTS and listed plants and contribute to their recovery. In order to do this, areas are identified within the Santa Rosa Plain that currently or potentially support CTS and listed plants, as well as the areas that currently or likely will support development. This information was used to develop appropriate "conservation areas" and requirements as well as mitigation guidelines and requirements, in order to "provide consistency, timeliness and certainty for permitted activities."

Proposed projects within the potential CTS range will fall into one of three categories:

a.) Projects within 1.3 miles of a known CTS breeding site, and likely to impact CTS breeding and/or upland habitat; or
b.) Projects beyond 1.3 miles from a known CTS breeding site, but within the "Potential for Presence of California tiger salamander" or "Potential for Presence of California tiger salamander and Plants"; or
c.) Projects where "Presence of California tiger salamander is Not Likely".

Different mitigation ratios are recommended for each of these categories.

The *Conservation Strategy* recommends that projects filling *potential* listed plant habitat should mitigate these impacts via the preservation of existing occupied habitat at a 1:1 ratio, and projects filling *known* listed plant habitat should mitigate these impacts via the preservation of existing occupied habitat at a 2:1 ratio, as per a Programmatic Biological Opinion (USFWS 1998) in effect at the time of the *Conservation Strategy* was prepared in 2005. The USFWS' 2020 Programmatic Biological Opinion (USFWS 2020) has since superseded the 2007 and 1998 Programmatic Biological Opinions.

The *Conservation Strategy* recommends that projects filling wetlands should mitigate these impacts via the preservation of wetlands at a minimum of a 1:1 replacement ratio, depending on the quality of the filled wetlands, as per a Programmatic Biological Opinion (USFWS 1998) in effect at the time of the *Conservation Strategy* was prepared in 2005. The 1998 Programmatic Biological Opinion was superseded by a Programmatic Biological Opinion prepared by the USFWS for the Corps in 2007 (USFWS 2007) and again in 2020 (USFWS 2020).

8.5.1 Applicability to the Proposed Project

Mitigation credits were purchased in accordance with the USFWS's BO for the Dutton Meadows Subdivision Specific Plan Area, dated May 24, 2005. This mitigation was implemented prior to the USFWS' publication of the *Conservation Strategy* (USFWS 2005). Regardless, mitigation implemented is consistent with the goals and objectives established for listed species in the Santa Rosa Plain in the USFWS's 2005 *Conservation Strategy* (USFWS 2005), the USFWS' Programmatic Biological Opinion (USFWS 2020), and the USFWS' Santa Rosa Plain Recovery Plan (USFWS 2016). ***As such, the project has mitigated all impacts to federally listed species in compliance with the Federal Endangered Species Act to a level regarded as less than significant pursuant to the CEQA.***

8.6 Santa Rosa Plain Programmatic Biological Opinion (USFWS 2020)

The *Programmatic Biological Opinion* (USFWS 2020) is based on the biological framework presented in the *Conservation Strategy*. This *Programmatic Biological Opinion* replaces (supersedes) the July 17, 1998 *Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects that May Affect Four Endangered Plant Species on the Santa Rosa Plain* (USFWS 1998), as well as the revisions made in 2007 (USFWS 2007), which were prepared for listed plant species on the Santa Rosa Plain. Projects that require a Corps permit and that remain consistent with objectives stated in the *Conservation Strategy* can be appended to the *Programmatic Biological Opinion* at the discretion of the USFWS. Projects that are appended to the *Programmatic Biological Opinion* will be provided individual take authorization for impacts to federally listed species.

8.6.1 Impacts to Listed Plant Species

"Suitable habitat" for listed plants is defined as 1) wetlands containing surface water (standing or flowing) during the rainy season in a normal rainfall year for 7 or more consecutive days, 2) wetlands that have an outlet barrier (i.e., are pools) or occur in depressional terrain (i.e., are a

swale or drainage feature), and 3) seasonal wetlands located within a Core or Management Area (USFWS 2020). Seasonal wetlands are considered "occupied habitat" if surveys have been conducted following USFWS protocols and listed species are recorded on the site, or if listed species have been recorded on the site in the past. Projects anticipated to adversely affect occurrences of Burke's goldfields, Sebastopol meadowfoam, or Sonoma sunshine recorded in the CNDDB do not qualify for coverage under the 2020 programmatic biological opinion and will need to have case specific biological analysis and separate biological opinion issued because appropriate conservation for loss or degradation of the sites is case specific. However, projects anticipated to adversely affect suitable habitat of Burke's goldfields, Sebastopol meadowfoam, or Sonoma sunshine are covered in the 2020 programmatic biological opinion. Even if two years of protocol rare plant surveys have been conducted proving absence of federally-listed plants, wetland habitats where a seedbank may be present are still regarded as "suitable" listed plant species habitat. The following mitigation to impacts ratios, expressed as acres to be conserved to acres of impact, are required to adhere to the *Programmatic Biological Opinion* (USFWS 2020):

Burke's Goldfields

- Impacts to Suitable Habitat: 1.5:1 suitable habitat within the same Core Area as impacts; 3:1 suitable habitat in different a Core Area than impacts.

Sonoma Sunshine

- Impacts to Suitable Habitat: 1.5:1 suitable habitat within the same Core Area as impacts; 3:1 suitable habitat in a different Core Area than impacts.

Sebastopol Meadowfoam

- Impacts to Suitable Habitat: 1.5:1 suitable habitat; 3:1 suitable habitat in a different Core Area than impacts.

In addition:

- The *Programmatic Biological Opinion* (USFWS 2020) allows for the purchase of mitigation credits to be used for listed plant species from a USFWS-approved mitigation bank.
- When impacted areas contain suitable habitat for listed plant species, species-specific mitigation will be implemented for the species that occurs nearest the project site based on CNDDB occurrences.
- When impacts occur to suitable habitat on sites that are within the Core Area for more than one listed plant species, mitigation land area must be distributed equally among all affected species (e.g., impacts to 1 total acre of suitable habitat on a site that is within a Core Area for both Burke's goldfields and Sonoma sunshine must then allocate 0.5-acre of restored habitat to each species).
- For impacts to suitable habitat located within a Core Area, mitigation will be prioritized to occur in that same Core Area. Exceptions may be considered on a case-by-case basis, and will require approval from the Corps and the USFWS. For impacts to suitable habitat

located within a Management Area, mitigation may take place either in that same Management Area or in the nearest Core Area.

Impacts to California Tiger Salamander

For projects that may affect CTS, mitigation requirements will apply to the entire project area, including areas of both direct and indirect impact. The following mitigation to impacts ratios, expressed as acres to be conserved to acres of impact, are required by the *Programmatic Biological Opinion* (USFWS 2020) for project sites that affect Corps regulated waters of the U.S.:

Mitigation of 3:1

For projects that are within 500 feet of a known breeding site.

Mitigation of 2:1

For projects that are greater than 500 feet and within 2,200 feet of a known breeding site, and for projects beyond 2,200 feet from a known breeding site, but within 500 feet of a non-breeding occurrence.

Mitigation of 1:1

For projects that are greater than 2,200 feet and within 1.3 miles (6,864 feet) of a known breeding site.

Mitigation of 0.2:1

For projects that are greater than 1.3 miles (6,864 feet) from a known breeding site and greater than 500 feet from a non-breeding occurrence.

In addition:

- The *Programmatic Biological Opinion* (USFWS 2020) allows for the purchase of mitigation credits to be used for the Sonoma County CTS from a USFWS-approved mitigation bank.
- For impacts to Sonoma County CTS located within a Core Area, mitigation will be prioritized to occur in that same Core Area. Exceptions may be considered on a case-by-case basis, and will require approval from the Corps and the USFWS. For impacts to Sonoma County CTS located within a Management Area, mitigation may take place either in that same Management Area or in the nearest Core Area.

8.6.2 APPLICABILITY TO THE PROPOSED PROJECT

Protocol-level rare plant surveys were conducted at the project site by qualified botanists in 2000, 2001, and 2003, prior to authorized site grading activities, and no special-status plant species or endangered plant species were observed (Olberding and Stromberg 2003). Regardless,

impacts to suitable habitat for federally-listed plants have been mitigated by the applicant via the purchase of mitigation credits from the Gobbi Preserve.

On May 24, 2005 the USFWS issued a Biological Opinion (BO) for the Dutton Meadows Subdivision Phases Two Through Five, Santa Rosa, Sonoma County, California (Corps File No. 263420N). The USFWS BO covered the Bellevue Ranch Property and the Minoia Property (the project site discussed herein). In compliance with the conditions in the USFWS BO, Bellevue Ranch 8 (DM Associates, LLC) purchased 23.92 acres of preservation and CTS mitigation credits from the Gobbi Preserve, thus providing 2:1 mitigation for impacts to 12.4 acres of suitable habitat on the Bellevue Ranch 8 parcels. Minoia Property purchased 12.15 acres of preservation and CTS mitigation credits from the Gobbi Preserve, thus providing 2:1 mitigation for impacts to 6.3 acres of suitable habitat on the Minoia Property. In addition, the Minoia Property purchased 0.58-acre of preservation and CTS mitigation credits from the Gobbi Preserve for the Minoia Park Land, which comprises 0.3-acre. All impacts to federally-listed species were mitigated as required by the USFWS.

This mitigation was implemented prior to the USFWS' publication of the revised *Programmatic Biological Opinion* (USFWS 2020). Regardless, mitigation implemented is consistent with the ratios, goals, and objectives established for listed species in the Santa Rosa Plain in the USFWS' revised Programmatic Biological Opinion (USFWS 2020) and the USFWS' Santa Rosa Plain Recovery Plan (USFWS 2016). ***As such, the project has mitigated all impacts to federally listed species in compliance with the Federal Endangered Species Act to a level regarded as less than significant pursuant to the CEQA.***

8.7 USFWS Recovery Plan for the Santa Rosa Plain (USFWS 2016)

In December 2016, the USFWS adopted a formal Recovery Plan for the Santa Rosa Plain (Recovery Plan) addressing recovery efforts necessary to protect and otherwise eventually recover the federally-listed Sonoma County Distinct Population Segment (DPS) of CTS and three vernal pool plants: *Blennosperma bakeri* (Sonoma sunshine)*; Lasthenia burkei* (Burke's goldfields)*; Limnanthes vinculans* (Sebastopol meadowfoam) (USFWS 2016). All four species are confined almost entirely to the Santa Rosa Plain. The Recovery Plan and its objectives are implemented through cooperative CEQA lead agencies and through federal nexus agency consultations (e.g., Corps consultations) with the USFWS via Section 7 of the FESA. Any federal nexus agency that consults with the USFWS pursuant to Section 7 will obtain a letter of no effect or a Biological Opinion that provides or denies "incidental take authority." Any conditions of a Biological Opinion issued to the Corps for a pending project are to become conditions of the Corps' permit authorization.

Pursuant to the FESA, incidental take includes loss of listed species' habitat or harm that could occur to a federal listed species. An Incidental Take Permit allows an otherwise legally-sanctioned activity to proceed even if there could be a collateral impact to a federally-listed species. Similarly, any Section 10 FESA consultation with the USFWS, which is allowed for in the FESA for all non-federal entities, that results in Incidental Take authority granted by the USFWS to the non-federal entity, would otherwise include provisions for compliance with the objectives of the Recovery Plan.

The USFWS has determined that the primary threats to the three listed vernal pool plants and the CTS on the Santa Rosa Plain is the reduction and fragmentation of habitat due to urban development, agricultural land conversion, and habitat degradation that modifies vernal pool hydrology, including the colonization of seasonal wetlands by non-native and/or invasive plants. Consequently, the Recovery Plan focuses on these threats. In order to 'downlist' or delist the four species that are imperiled in the Santa Rosa Plain, the threats to these species' habitat must be reduced or eliminated. The USFWS criteria for downlisting are based upon preservation of extant vernal pools systems and attending uplands that support wetland complexes. The USFWS has segmented the Santa Rosa Plain into "Core" and "Management Areas" (Figures 5-7) where species preservation and habitat enhancement and management must occur for these four listed species to experience recovery. Core areas comprise the heart of the species' historical (and current) range, and represent central blocks of contiguously-occupied habitat that function to allow for dispersal, genetic interchange between populations, and metapopulation dynamics. Management areas are occupied habitat on the periphery of a species' Core areas.

[The following information has been obtained from various personal communications in 2016 and 2017 between Mr. G. Monk and Mr. Vincent Griego and/or Mr. Ryan Olah of the Sacramento Endangered Species Office of the USFWS]. The USFWS is now requiring that projects impacting federally-listed plant species in Core habitats, and/or California tiger salamander Core habitat (Exhibits A and B), mitigate through preservation and enhancement of extant listed species habitats in the same Core Area where the impacts will occur. Mitigation for Core area species always takes precedence over Management area species. The USFWS is also now requiring that impacts to specific federally-listed species' Management Areas be mitigated in either the affected species' Core areas or its Management Areas, as designated in the USFWS' 2016 Santa Rosa Plain Recovery Plan (USFWS 2016) (Ryan Olah pers. comm. with G. Monk, January 18, 2017).

8.7.1 Applicability to the Proposed Project

The project site is located outside the Southern Core area for *Blennosperma bakeri, Lasthenia burkei* and *Limnanthes vinculans*, as identified in the USFWS' 2016 Recovery Plan for the Santa Rosa Plain (see Figures 5-7). Regardless, impacts to suitable habitat for federally-listed plants have been mitigated by the applicant via the purchase of mitigation credits from the Gobbi Preserve.

Per the USFWS' *Recovery Plan for the Santa Rosa Plain* (USFWS 2016), the project site is located within the Llano Crescent-Stony Point "Core Area" (Figure 9). Thus, CTS mitigation credits must be purchased from a bank within that Core Area. The Gobbi Preserve is located within the Llano Crescent-Stony Point "Core Area." In compliance with the conditions in the USFWS BO on July 7, 2006 Dutton Village Partners LLC by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 23.92 acres of CTS preservation mitigation credits from Gobbi Mitigation Preserve LLC, providing 2:1 mitigation for impacts to 12.4 acres of suitable CTS habitat on the Bellevue Ranch 8 parcels. Similarly, on July 7, 2006 Dutton Village Partners LLC by agreement with DM Associates LLC (a Trumark Homes affiliate), purchased 12.15 acres of CTS preservation mitigation credits from Gobbi Mitigation Preserve LLC, thus providing 2:1 mitigation for impacts to 6.3 acres of potential CTS habitat on the Minoia Property. Finally, by agreement with Dutton Village Partners LLC, Trumark Companies LLC,

DM Associates, and Hearn Avenue LLC, purchased 0.58-acre of CTS mitigation credits from the Gobbi Mitigation Preserve LLC for to compensate for impacts to listed species that will occur when the 0.3-acre Minoia Park Land site is developed and dedicated to the City of Santa Rosa as a component of the Dutton Meadows Specific Plan development project.

Mitigation implemented is consistent with the goals and objectives established for listed species in the Santa Rosa Plain in the USFWS' Santa Rosa Plain Recovery Plan (USFWS 2016). ***As such, the project has mitigated all impacts to federally-listed species in compliance with the Federal Endangered Species Act to a level regarded as less than significant pursuant to the CEQA.***

9. CITY OF SANTA ROSA TREE ORDINANCE

The Santa Rosa City Code, Chapter 17.24, has three articles that pertain to the protection of trees within the City of Santa Rosa to discourage the alteration, removal or relocation of trees, including any heritage, protected, or street tree, without a permit.

9.1.1.1 Article III – Prohibitions – Tree alteration, removal, relocation-Permit required.

Article III has provisions that protect trees which are defined as any woody plant with a single trunk diameter of 4 inches or more or a combination of multiple trunks having a total diameter of 8 inches or more. This article also protects the following types of trees:

(a) Heritage tree which includes any of the following trees, whether located on public or private property, at a diameter equal to or greater than those listed below:

Species	**Diameter**
Valley oak (*Quercus lobata*)	6
Coast live oak (*Quercus agrifolia*)	18
Black oak (*Quercus kelloggii*)	18
Oregon oak (*Quercus garryana*)	18
Canyon oak (*Quercus chrysolepis*)	18
Blue oak (*Quercus douglasii*)	6
Interior live oak (*Quercus wislizenii*)	18
Coast redwood (*Sequoia sempervirens*)	24
Bay (*Umbellularia californica*)	24
Madrone (*Arbutus menziesii*)	12
Douglas's fir (*Pseudotsuga menziesii*)	24
Red alder (*Alnus rubra*)	18
White alder (*Alnus rhombifolia*)	18
Big leaf maple (*Acer macrophyllum*)	24

(b) Protected tree which means any tree, including a heritage tree, designated to be preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development.
(c) Street tree which means any tree having a single trunk circumference greater than 6 and one-quarter inches or a diameter greater than 2 inches, a height of more than 6 feet, and

one half or more of its trunk is within a public right of way or within 5 feet of the paved portion of a City street or a public side walk.

The following tree species are exempt from the above provisions (except for those that may exist as street trees): acacia, silver maple, poplar, ailanthus, hawthorn, fruitless mulberry, privet, pyracantha, Monterey pine, Monterey cypress, and fruit and nut trees (except walnut trees). A permit is not required for the removal, relocation or alteration of these tree species.

9.1.1.1 Article IV – Permit Category II – Tree alteration, removal or relocation on property proposed for development-Requirements.

Article IV requires the following:

(a) All development proposals and subdivision applications shall clearly designate all trees and heritage trees on the property by trunk location and accurate outline of the dripline and shall indicate those trees proposed to be altered, removed or relocated. The reasons for the removal of any tree shall be stated in writing. The development plan or tentative subdivision map shall indicate the genus and species, shape, drip-line and trunk circumference of each tree and heritage tree. The owner of the property and person in control of the proposed development shall protect and preserve each tree and heritage tree situated within the site of the proposed development during the period the application for the proposed development is being considered by the City. The proposed development shall be designed so that:

(1) The proposed lots and/or improvements preserve any heritage trees to the greatest possible extent.

(2) The road and lot grades protect heritage trees to the greatest extent possible and the existing grad shall be maintained within each such tree's root zone.

(b) If the proposed project is approved, the recordation of the final map or issuance of a grading permit or building permit for the project shall constitute a permit to alter, remove or relocate any trees designated for alteration, removal or relocation upon the project's approved plans. Any change in the trees to altered, removed or relocated as designated on the approved development plan or tentative map shall only be permitted upon the written approval of the Director or, when the Director determines that the proposed change may be substantial, by the Planning Commission.

(c) A tree replacement program that will require the applicant to replace trees and heritage trees approved for removal as part of the approval of the project in accordance with subdivision 1; each protected tree removed or damaged shall be replaced in accordance with subdivision 2. For each 6 inches or fraction thereof of the diameter of a tree which was approved for removal, two trees of the same genus and species as the removed tree (or another approved species), each of a minimum 15-gallon container size, shall be planted on the project site. For each 6 inches or fraction thereof of the diameter of a tree which was not approved for removal, four trees of the same genus and species as the

removed tree (or another approved species), each of a minimum 15-gallon container size, shall be planted on the project site.

(d) If the development site is inadequate in size to accommodate the replacement trees, the trees shall be planted on public property with the approval of the Director of the City's Recreation and Parks Department. Upon the request of the developer and the approval of the Director, the City may accept an in-lieu payment of $100.00 per 15-gallon replacement tree on the condition that all such payments shall be used for tree-related educational projects and/or planting programs of the City.

(e) The following requirements will apply to any applicant of a property upon which a protected tree is located:

(1) Before the start of any clearing, excavation, construction or other work on the site, every protected tree shall be securely fenced off at the "protected perimeter" which shall either be the root zone or other limit as may be established by the City.

(2) If the proposed development, including any site work for the development, will encroach upon the protected perimeter of a protected tree, special measures shall be utilized, to allow the roots to obtain oxygen, water and nutrients as needed. Any excavation, cutting, filling, or compaction of the existing ground surface within the protected perimeter, if authorized at all by the Director, shall be minimized and subject to such conditions as may be imposed by the Director. No significant change in existing ground level shall be made within the dripline of a protected tree.

(3) No oil, gas, chemicals or other substances that may be harmful to trees shall be stored or dumped within the protected perimeter. All brush, earth and other debris shall be removed in a manner which prevents injury to the protected tree.

(4) Underground trenching for utilities shall avoid major support and absorbing tree roots of protected trees. If avoidance is impractical, tunnels shall be made below the roots. Trenches shall be consolidated to USFWS as many units as possible. Trenching within the drip line of protected trees shall be avoided to the greatest extent possible and shall only be done under the at-site directions of a certified arborist.

(5) No concrete or asphalt paving shall be placed over the root zones of protected trees. No artificial irrigation shall occur within the root zone of oaks.

(6) No compaction of the soil within the root zone of protected trees shall occur.

(7) If the trees proposed to be removed can be economically relocated, the developer shall move the trees to a suitable location on the site shown on the approved plans.

9.1.1.2 Article V – Permit category II – Street trees and plantings on and adjacent to public streets and sidewalks.

Article V pertains to the alteration, removal, and relocation of street trees and entails the following:

(a) As per Section 17-24.075, no tree growing within a planting strip or within any public right-of-way shall be removed or altered by or at the instigation of the abutting property owner or anyone other than a duly authorized officer, agent or employee of the City, except upon issuance of a permit therefore by the Director of Recreation and Parks who may require, as a condition of permitting the removal or alteration of a tree, the posting of security for such work and the planting, at the expense of the permittee, of a tree to replace the one removed from a list approved under Section 17-24.070 of the city code.

As per Section 17-24.080, a permit approved by the Director of Recreation and Parks under the provisions of this article shall be valid for a period of 60 days from its issuance unless a longer term is set forth in the permit. If the work to be done under the permit does not commence prior to the permit's expiration and thereafter expeditiously pursued, the permit shall become null and void.

9.1.2 APPLICABILITY TO THE PROPOSED PROJECT

A *Tree Preservation and Mitigation Report* was prepared for the Dutton Meadows project site by Horticultural Associates, dated June 5, 2018. A total of 64 trees were evaluated and includes all trees that are present on the project site that are over 4 inches in trunk diameter, per the Santa Rosa Tree Ordinance. According to the report, native species on the site include 25 valley oaks and 2 box elders. Non-native species on the site include black walnut, pecan, liquidambar, coast redwood, weeping willow, cottonwood, silk tree, olive, English walnut, Grecian laurel, Japanese maple, Lombardy poplar, maple, deodar cedar, Italian cypress, stone Pine, dogwood, eucalyptus, pear, glossy privet, and hawthorn.

Currently, all trees are slated for removal due to the density of this development project, and the existing location of trees. Thus, it will be impossible to save any of the trees at this site. Article 4, Section 17-24.050 Permit Category II-Tree Alteration, Removal, or Relocation on Property Proposed for Development, C (1) requires two 15-gallon size trees to be replanted for every 6 inches of trunk diameter removed. The applicant will be required to obtain a permit from the City of Santa Rosa to remove the trees on the project site. Impacts to trees are regarded as significant. Mitigation that includes tree replacement per the specifications of the City of Santa Rosa Tree Ordinance will mitigate impacts to trees to a level regarded as less than significant. See the Impacts and Mitigations section for details.

10. REGULATORY REQUIREMENTS PERTAINING TO WATERS OF THE UNITED STATES AND STATE

This section presents an overview of the criteria used by the Corps, the RWQCB, the State Water Resources Control Board (SWRCB), and the CDFW to determine those areas within a project area that would be subject to their regulation.

10.1 U.S. Army Corps of Engineers Jurisdiction and Permitting

10.1.1 SECTION 404 OF THE CLEAN WATER ACT

Congress enacted the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. §1251(a)). Pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), the Corps regulates the disposal of dredged or fill material into "waters of the United States" (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill materials into any water of the United States.

10.1.1.1 Navigable Waters Protection Rule

On April 21, 2020, the U.S. Environmental Protection Agency (EPA) and the Corps (together, ''the agencies'') published the Navigable Waters Protection Rule re-defining the scope of waters subject to federal regulation under the Clean Water Act (CWA or the Act), in light of the U.S. Supreme Court cases in *United States* v. *Riverside Bayview Homes* (*Riverside Bayview*), *Solid Waste Agency of Northern Cook County* v. *United States* (*SWANCC*), and *Rapanos* v. *United States* (*Rapanos*), and consistent with Executive Order 13778, signed on February 28, 2017, entitled ''Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule.'' This Final Rule became effective on June 22, 2020 (Corps 2020).

In this final rule, the agencies interpret the term ''waters of the United States'' to encompass:

1. The territorial seas and traditional navigable waters;
2. perennial and intermittent tributaries that contribute surface water flow to such waters;
3. certain lakes, ponds, and impoundments of jurisdictional waters; and,
4. wetlands adjacent to other jurisdictional waters.

Paragraph (a) of the final rule identifies four categories of waters that are ''waters of the United States.'' These waters are referred to as ''jurisdictional.''

Section 404 jurisdiction in "other waters" such as lakes, ponds, and streams, extends to the upward limit of the ordinary high water mark (OHWM) or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is:

- the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[7]).

10.1.2 CLEAN WATER ACT DEFINED WETLANDS

Wetlands are defined as: "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR Section 328.3 [16]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils

(i.e., soils that are periodically or permanently saturated, inundated or flooded and that exhibit properties that typically include redoximorphic chemical changes to the soil properties indicative of periodic saturation or inundation, and, thus, that meet the hydric soil criterion). All three parameters must be present to be regarded as a Clean Water Act defined wetland. Wetlands may or may not be regulated by the Corps pursuant to the Clean Water Act depending on whether they occur as part of a navigable water or have direct adjacency to a navigable waters, as defined above.

10.1.2.1 Permitting Corps Jurisdictional Areas

To remain in compliance with Section 404 of the CWA, project proponents and property owners (applicants) are required to be permitted by the Corps prior to discharging or otherwise impacting waters of the United States. In many cases, the Corps must visit a proposed project area (to conduct a "jurisdictional determination") to confirm the extent of area falling under their jurisdiction prior to authorizing any permit for that project area. Typically, at the time the jurisdictional determination is conducted, applicants (or their representative) will discuss the appropriate permit application that would be filed with the Corps for permitting the proposed impact(s) to "waters of the United States."

Pursuant to Section 404, the Corps normally provides two alternatives for permitting impacts to waters of the U.S. The first alternative would be to use Nationwide Permit(s) (NWP). The second alternative is to apply to the Corps for an Individual Permit (33 CFR Section 235.5(2)(b)). The application process for Individual Permits is extensive and includes public interest review procedures (i.e., public notice and receipt of public comments) and must contain an "alternatives analysis" that is prepared pursuant to Section 404(b) of the Clean Water Act (33 U.S.C. 1344(b)). The alternatives analysis is also typically reviewed by the federal EPA and thus brings another resource agency into the permitting framework. Both the Corps and EPA take the initial viewpoint that there are practical alternatives to the proposed project if there would be impacts to waters of the U.S., and the proposed permitted action is not a water dependent project (e.g., a pier or a dredging project). Alternative analyses therefore must provide convincing reasons that the proposed permitted impacts are unavoidable. Individual Permits may be available for use in the event that discharges into regulated waters fail to meet conditions of NWP(s).

NWPs are a type of general permit administered by the Corps and issued on a nationwide basis that authorize minor activities that affect Corps regulated waters. Under NWP, if certain conditions are met, the specified activities can take place without the need for an individual or regional permit from the Corps (33 CFR, Section 235.5[c][2]). In order to use NWP(s), a project must meet 27 general nationwide permit conditions, and all specific conditions pertaining to the NWP being used (as presented at 33 CFR Section 330, Appendices A and C). It is also important to note that pursuant to 33 CFR Section 330.4(e), there may be special regional conditions or modifications to NWPs that could have relevance to individual proposed projects. Finally, pursuant to 33 CFR Section 330.6(a), Nationwide permittees may, and in some cases must, request from the Corps confirmation that an activity complies with the terms and conditions of the NWP intended for use (*i.e.,* must receive "verification" from the Corps).

Prior to finalizing design plans, the applicant needs to be aware that the Corps maintains a policy of "no net loss" of wetlands (waters of the U.S.) from project area development. Therefore, it is

incumbent upon applicants that propose to impact Corps regulated areas to submit a mitigation plan that demonstrates that impacted regulated areas would be recreated (*i.e.,* impacts would be mitigated). Typically, the Corps requires mitigation to be "in-kind" (i.e., seasonal wetlands would be filled, mitigation would include seasonal wetland mitigation), and at a minimum of a 1:1 replacement ratio (i.e., one acre or fraction there of recreated for each acre or fraction thereof lost). Often a 2:1 replacement ratio is required if the Permittee is responsible for the mitigation. In some cases, the Corps allows "out-of-kind" mitigation if the compensation site has greater value than the impacted site. Finally, there are many Corps approved wetland mitigation banks where wetland mitigation credits can be purchased by applicants to meet mitigation compensation requirements. Mitigation banks have defined service areas and the Corps may only allow their use when a project would have minimal impacts to wetlands.

10.1.3 APPLICABILITY TO THE PROPOSED PROJECT

On May 8, 2001, the Corps confirmed the extent and location of Corps jurisdiction on the Bellevue Phase 8 Project Site (Corps File No. 24554N). Approximately 0.16-acre of seasonal wetland habitat was mapped on the Bellevue Ranch project site. August 19, 2003, the Corps issued a letter stating that the 0.2-acre of wetlands mapped on the Minoia Property are non-jurisdictional pursuant to the SWANCC decision (Corps File No. 263420N).

The Draft Subsequent EIR (January 2005 – SCH # 2002092016) includes Table 3.6-1 on page 3.6-2 that shows the extent of wetlands on the various parcels comprising the Specific Planning Area. For Bellevue Ranch 8 (DM Associates, LLC) this table indicates that 0.16-acre of Corps jurisdictional wetland were filled and no longer present in 2005. Table 3.6-1 also indicates that 0.2-acre of wetland remained on Minoia. The Corps in its August 5, 2003 letter to USFWS requesting Section 7 consultation for the Specific Plan area states that the Bellevue Ranch 8 wetlands were removed prior to that permitting action (see Attachment C). Similarly, the USFWS in its Biological Opinion discusses that the Bellevue Ranch 8 ("Dutton Meadow") removed its wetlands (USFWS 2005). All other wetlands in the specific plan area were mitigated at the Gobbi Ranch 2 Mitigation Site.

Stromberg 2003 and Olberding & Stromberg 2003 state that all wetlands were removed from the project site. Dr. Lawrence Stromberg also states that Gobbi Mitigation Bank 2 created 5.66 acres of wetlands to compensate for the impacts to wetlands for the Dutton Meadow project (Harvey Rich pers. Comm. with G. Monk 08/07/18). **Therefore, impacts to seasonal wetlands were adequately mitigated.**

The project site currently does not support any seasonal wetlands. Road improvements, such a curb and gutter along Dutton Meadows, and the proposed project's access road off Dutton Meadow would impact a roadside ditch along Dutton Meadow; however, this ditch is not subject to Clean Water Act jurisdiction based on the 2020 Navigable Waters Protection Rule. The Navigable Waters Protection Rule states that "ditches are to be considered tributaries only where they satisfy the flow conditions of the perennial and intermittent tributary definition and either were constructed in or relocate a tributary or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a traditional navigable water in a typical year." (Federal Register Vol. 85, No. 77). The northmost end of the roadside ditch begins along Dutton Meadow immediately adjacent to the northwest corner of the project site. The flows into the

ditch originate from street surfaces and other developed surfaces in the immediate vicinity of the project site. During large storm events surface runoff flows southward through the ditch towards high density development to the south. Since this roadside ditch was excavated in uplands along Dutton Meadow (road), and does not support a dominance of wetland vegetation nor drain any wetlands, a Clean Water Act permit from the Corps would not be required for this project. Since the ditch does not provide suitable habitat for listed plants or CTS, and since this ditch area was addressed and covered by USFWS' Biological Opinion for the Dutton Meadow Specific Plan Area, additional Section 7 consultation should also not be required. No further action for this ditch is warranted.

10.2 California Regional Water Quality Control Board (RWQCB)Section 401 of the Clean Water Act

The SWRCB and RWQCB regulate activities in "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. While the Corps administers a permitting program that authorizes impacts to waters of the U.S., including wetlands and other waters, any Corps permit authorized for a proposed project would be inoperative unless it is a NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project-specific certification of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the CEQA, the CESA, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project-specific RWQCB certification of water quality. Where a project will result in dredge or fill of non-federal waters of the State, the RWQCB will authorize those fills through waste discharge requirements issued under the Porter Cologne Water Quality Control Act.

On April 2, 2019, the SWRCB adopted a State-level definition of "wetlands,' for which the definition is broader than the federal definition in that unvegetated areas may be considered wetlands as waters of the State. As a part of the same policy, the SWRCB adopted permit procedures and standards governing the discharge of dredged or fill material into wetlands and other waters of the State. The policy includes, among other things, requirements for analyses to identify the least environmentally damaging practicable alternative (LEDPA) and compensatory mitigation standards including a minimum 1:1 ratio for wetlands and streams, and full functional replacement of all waters on top of this minimum where applicable. The policy, which will govern both Section 401 certifications and Waste Discharge Requirements (WDRs), is scheduled to become effective nine months following the completion of review by the California Office of Administrative Law.

10.2.1 Applicability to the Proposed Project

The RWQCB Water Quality Certification states: "Approximately 0.16 acres of seasonal wetland habitat was previously filled on the Dutton Meadows Phase I property in accordance with U.S. Army Corps of Engineers (File No. 24554N) and with the Regional Water Board authorization (WDID No. 1B01061WNSO – Bellevue Ranch, Phase 8)." "Mitigation for the Dutton Meadows Projects included the creation of 1.66 acres and the restoration of 4.0 acres of wetland habitat for

a final mitigation ratio of 1.25:1, in addition to the establishment of the 108.88-acre Gobbi Preserve. Construction of the wetlands and establishment of the preserve has already been approved and began in Fall 2005 (WDID No. 1B04163WNSO)" (see Attachment D).

Stromberg 2003 and Olberding & Stromberg 2003 state that all wetlands were removed from the project site. Dr. Lawrence Stromberg also states that Gobbi Mitigation Bank 2 created 5.66 acres of wetlands to compensate for the impacts to wetlands for the Dutton Meadow project (Harvey Rich pers. Comm. with G. Monk 08/07/18). **Therefore, impacts to seasonal wetlands have been adequately mitigated.**

As noted above, the roadside ditch along Dutton Meadow is not subject to Clean Water Act jurisdiction based on the 2020 Navigable Waters Protection Rule. Since this roadside ditch was excavated in uplands along Dutton Meadow (road), does not support a dominance of wetland vegetation nor drain any wetlands, a Clean Water Act permit from the RWQCB would not be required for this project.

10.3 Porter-Cologne Water Quality Control Act

The uncontrolled discharge of pollutants into impaired water bodies is considered particularly detrimental. According to the EPA, **sediment is one of the most widespread pollutants contaminating U.S. rivers and streams**. Sediment runoff from construction sites is 10 to 20 times greater than from agricultural lands and 1,000 to 2,000 times greater than from forest lands (EPA 2005). Consequently, the discharge of stormwater from large construction sites is regulated by the RWQCB under the Clean Water Act and California's Porter-Cologne Water Quality Control Act.

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the Corps' jurisdiction pursuant to the SWANCC decision (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code §13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices Plan (BMPs) of any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES). That is, a *Stormwater Pollution Prevention Plan* (SWPPP) must be developed prior to the time that a site is graded (see NPDES section below). In

addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

10.3.1 APPLICABILITY TO THE PROPOSED PROJECT

Since any "threat" to water quality could conceivably be regulated pursuant to the Porter-Cologne Water Quality Control Act, care will be required when constructing the proposed project to be sure that adequate pre-and post-construction Best Management Practices Plan (BMPs) are incorporated into the project implementation plans.

It should also be noted that prior to issuance of any permit from the RWQCB this agency will require submittal of a Notice of Determination from the City of Santa Rosa indicating that the proposed project has completed a review conducted pursuant to CEQA. The pertinent sections of the CEQA document (typically the biology section) are often submitted to the RWQCB for review prior to the time this agency will issue a permit for a proposed project.

11. STATE WATER RESOURCES CONTROL BOARD (SWRCB)/RWQCB – STORM WATER MANAGEMENT

11.1 Construction General Permit

While federal Clean Water Act NPDES regulations allow two permitting options for construction-related stormwater discharges (individual permits and General Permits), the State Water Resources Control Board (SWRCB) has elected to adopt only one statewide Construction General Permit at this time that will apply to all stormwater discharges associated with construction activities, except from those on Tribal Lands, those in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (CalTrans).

The Construction General Permit requires all dischargers where construction activity disturbs greater than one acre of land, or those sites less than one acre that are part of a common plan of development or sale that disturbs more than one acre of land surface, to:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation. Achieve quantitatively-defined (i.e., numeric) pollutant-specific discharge standards, and conduct much more rigorous monitoring based on the project's projected risk level.

3. Perform inspections of all BMPs.

This Construction General Permit is implemented and enforced by the nine RWQCBs. It is also enforceable through citizens' suits and represents a dramatic shift in the State Water Board's approach to regulating new and redevelopment sites, imposing new affirmative duties and fixed standards on builders and developers.

Types of Construction Activity Covered by the Construction General Permit

- clearing,
- grading,
- disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre or more of total land area.

Construction activity that results in soil disturbances to a smaller area would still be subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses greater than one acre of soil disturbance, or if there is significant water quality impairment resulting from the activity.

Construction activity does not include:

- routine maintenance to maintain original line and grade,
- hydraulic capacity, or original purpose of the facility,
- nor does it include emergency construction activities required to protect public health and safety.

The Construction General Permit includes several "post-construction" requirements. These requirements entail that site designs provide no net increase in overall site runoff and match pre-project hydrology by maintaining runoff volume and drainage concentrations. To achieve the required results where impervious surfaces such as roofs and paved surfaces are being increased, developers must implement non-structural off-setting BMPs, such as landform grading, site design BMPs, and distributed structural BMPs (bioretention cells, rain gardens, and rain cisterns). This "runoff reduction" approach is essentially a State Water Board-imposed regulatory requirement to implement Low Impact Development ("LID") design features. Volume that cannot be addressed using non-structural BMPs must be captured in structural BMPs that are approved by the RWQCB.

Improving the quality of site runoff is necessary to improve water quality in impaired and threatened streams, rivers, and lakes (that is, water bodies on the EPA's 303(d) list). The RWQCB prioritizes the water bodies on the 303(d) list according to potential impacts to beneficial uses. Beneficial uses can include a wide range of uses, such as nautical navigation; wildlife habitat; fish spawning and migration; commercial fishing, including shellfish harvesting; recreation, including swimming, surfing, fishing, boating, beachcombing, and more; water supply for domestic consumption or industrial processes; and groundwater recharge, among other uses. The State is required to develop action plans and establish Total Maximum Daily Loads (TMDLs) to improve water quality within these impaired water bodies. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating the applicable water quality standards.

Pursuant to the CWA, the RWQCB regulates construction discharges under the National Pollutant Discharge Elimination System (NPDES). The project sponsor of construction or other

activities that disturb more than 1 acre of land must obtain coverage under NPDES Construction General Permit Order 2009-0009-DWQ, administered by the RWQCB[1].

11.1.1 APPLICABILITY TO THE PROPOSED PROJECT

The project will be required to obtain coverage under the SWRCB administered Construction General Permit. To obtain coverage the applicant (typically through its civil engineer) must electronically file a number of permit-related compliance documents (Permit Registration Documents (PRDs), including a Notice of Intent (NOI), a risk assessment, site map, signed certification, Stormwater Pollution Prevention Plan (SWPPP), Notice of Termination (NOT), NAL exceedance reports, and other site-specific PRDs that may be required. The PRDs must be prepared by a Qualified SWPPP Practitioner (QSP) or Qualified SWPPP Developer (QSD) and filed by a Legally Responsible Person (LRP) on the RWQCB's Stormwater Multi-Application Report Tracking System (SMARTS). (QSDs are typically civil engineers, professional hydrologists, engineering geologists, or landscape architects.) Once filed, these documents become immediately available to the public for review and comment. At a minimum, the SWPPP shall identify Best Management Practices (BMPs) for implementation during project construction that are in accordance with the applicable guidance and procedures contained in the California Stormwater Quality Association's *California Stormwater Best Management Practices Handbook* (2015).

11.2 RWQCB Municipal Stormwater Permitting Programs

The federal Clean Water Act was amended in 1987 to address urban stormwater runoff pollution of the nation's waters. In 1990, the EPA promulgated rules establishing Phase 1 of the NPDES stormwater program. The Phase 1 program for Municipal Separate Storm Sewer System (MS4s) requires operators that serve populations of 100,000 or greater to implement a stormwater management program to control polluted discharges from these MS4s. While Phase 1 of the municipal stormwater program has focused on large urban areas, Phase 2 of the municipal stormwater program was promulgated by the EPA for smaller urban areas including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes.

MS4 permits require the discharger (or dischargers that are permitted by the MS4 permittees) to develop and implement a SWMP with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify which BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post construction; and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not.

[1] CGP Order 2009-0009-DWQ remains in effect, but has been amended by CGP Order 2009-0014-DWQ, effective February 14, 2011, and CGP Order 2009-0016-DWQ, effective July 17, 2012. The first amendment merely provided additional clarification to Order 2009-0009-DWQ, while Order 2009-0016-DWQ eliminated numeric effluent limits on pH and turbidity (except in the case of active treatment systems), in response to a legal challenge to the original order.

11.2.1 NPDES C.3 REQUIREMENTS

The NPDES C.3 requirements went into effect for any project (public or private) that is "deemed complete" by the City or County (Lead Agency) on or after February 15, 2005, and which will result in the creation or replacement (other than normal maintenance) of at least 10,000 square feet of impervious surface area (roofs, streets, patios, parking lots, etc. Provision C.3 requires the onsite treatment of stormwater prior to its discharge into downstream receiving waters. Note that these requirements are in addition to the existing NPDES requirements for erosion and sedimentation controls during project construction that are typically addressed through acquisition of coverage under the SWRCB administered Construction General Permit. The C.3 requirements are typically required to be implemented by MS4 permittees (and their constituencies).

Projects subject to Provision C3 must include the capture and onsite treatment of all stormwater from the site prior to its discharge, including rainwater falling on building rooftops. Project applicants are required to implement appropriate source control and site design measures and to design and implement stormwater treatment measures in order to reduce the discharge of stormwater pollutants to the *maximum extent practicable.* While the Clean Water Act does not define "maximum extent practicable," the SWMPs required as a condition of the municipal NPDES permits identify control measures (i.e., BMPs) and, where applicable, performance standards, to establish the level of effort required to satisfy the maximum extent practicable criterion. It is ultimately up to the professional judgment of the reviewing municipal staff in the individual jurisdictions to determine whether a project's proposed stormwater controls will satisfy the maximum extent practicable criterion. However, there are numeric criteria used to ensure that treatment BMPs have been adequately sized to accommodate and treat a site's stormwater. The C3 requirements are quite extensive, and their complete explanation is not provided here. However, the following are minimums that should be understood and adhered to:

- The applicant must provide a detailed and realistic site design *and impervious surface area calculations*. This site design *and calculations* will be used by the Lead Agency (County or City) to determine/*verify* the amount of impervious surface area that is being created or replaced. It should include all proposed buildings, roads, walkways, parking lots, landscape areas, etc., that are being created or redeveloped. If large (greater than 10,000 square feet) lots are being created an effort will need to be made to determine the total impervious surface area that could be created on that parcel. For example, if only a portion of the lot is shown as a "building envelope" then the lead agency will need to consider that a driveway will have to be constructed to access the envelope and that the envelope will then be developed as shown. If the C.3 thresholds are met (creation/redevelopment of 10,000 square feet of impervious surface area), a Stormwater Control Plan (SWCP) (if required by the Lead Agency, or whatever steps for compliance with Provision C3 are required locally) must accompany the application.

- If a SWCP is required by the Lead Agency for the project it must be stamped by a Licensed Civil Engineer, Architect, or Landscape Architect.

11.2.2 APPLICABILITY TO THE PROPOSED PROJECT

The Water Board issued county-wide municipal stormwater permits in the early 1990s to operators of MS4s. On November 19, 2015, the Water Board re-issued these county-wide municipal stormwater permits as one Municipal Regional Stormwater NPDES Permit to regulate stormwater discharges from municipalities and local agencies. Permittees in the San Francisco Bay area are included in a Municipal Regional Permit (MRP), issued to 76 cities, counties and flood control districts in 2009 and revised in 2015. Each of the Permittee's must file an Annual Report that is comprised of three parts: regional, countywide, and individual.

The City of Santa Rosa is an MS-4 permittee. It is the applicant's responsibility to ensure that the Proposed Project's civil engineer prepares all required Storm Water Planning documents for submittal to the City of Santa Rosa to comply with its MS4 permit requirements. In 2017, the City of Santa Rosa released "The Storm Water Low Impact Development Technical Design Manual" (SW LID Manual). The SW LID Manual provides technical guidance for project designs that require the implementation of permanent storm water BMPs. The intent of this manual is to provide design guidance to mitigate negative water quality impacts due to development and otherwise to ensure projects meet the City's MS-4 reporting requirements. The SW LID Manual supersedes both the 2005 SUSMP Guidelines and the 2011 version of this SW LID Manual, both of which similarly provided earlier guidance to the development community, ensuring project compliance with the NPDES and the City's MS-4 requirements.

11.3 California Department of Fish and Wildlife Protections

11.3.1 SECTION 1602 OF CALIFORNIA FISH AND GAME CODE

Pursuant to Section 1602 of the California Fish and Game Code: "An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, unless all of the following occur:

(1) CDFW receives written notification regarding the activity in the manner prescribed by CDFW. The notification shall include, but is not limited to, all of the following:
   (A) A detailed description of the project's location and a map.
   (B) The name, if any, of the river, stream, or lake affected.
   (C) A detailed project description, including, but not limited to, construction plans and drawings, if applicable.
   (D) A copy of any document prepared pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.
   (E) A copy of any other applicable local, state, or federal permit or agreement already issued.
   (F) Any other information required by CDFW" (Fish & Game Code 2014).

Please see Section 1602 of the current California Fish and Game Code for further details.

Please also note that while not stated in the regulations above, CDFW typically considers its jurisdiction to include riparian vegetation (that is, the trees and bushes growing along the stream). Thus, any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, including its riparian vegetation, would require entering into a Streambed Alteration Agreement (SBAA) with CDFW prior to commencing with work in the stream. However, prior to authorizing such permits, CDFW typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

11.3.2 APPLICABILITY TO THE PROPOSED PROJECT

There are no streams or drainages on or adjacent to the project site that would likely be regulated by CDFW. Hence, a SBAA with CDFW would not be necessary for this project.

12. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REGULATIONS

A CEQA lead agency must determine if a proposed activity constitutes a project requiring further review pursuant to the CEQA. Pursuant to CEQA, a lead agency would have to determine if there could be significant adverse impacts to the environment from a proposed project. Typically, if within the city limits, the city would be the CEQA lead agency. If a discretionary permit (i.e., conditional use permit) would be required for a project (e.g. an occupancy permit must be issued), the lead agency typically must determine if there could be significant environmental impacts. This is usually accomplished by an "Initial Study." If there could be significant environmental impacts, the lead agency must determine an appropriate level of environmental review prior to approving and/or otherwise permitting the impacts. In some cases, there are "Categorical Exemptions" that apply to the proposed activity; thus the activity is exempt from CEQA. The Categorical Exemptions are provided in CEQA. There are also Statutory Exemptions in CEQA that must be investigated for any proposed project. If the project is not exempt from CEQA, the lowest level of review typically reserved for projects with no significant effects on the environment would be for the lead agency to prepare a "Negative Declaration." If a proposed project would have only minimal impacts that can be mitigated to a level of no significance pursuant to the CEQA, then a "Mitigated Negative Declaration" is typically prepared by the lead agency. Finally, those projects that may have significant effects on the environment, or that have impacts that can't be mitigated to a level considered less than significant pursuant to the CEQA, typically must be reviewed via an Environmental Impact Report (EIR). All CEQA review documents are subject to public circulation, and comment periods.

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under

CEQA, therefore, must be based on analyzing actual rarity and threat of extinction to that species despite its legal status or lack thereof.

12.1.1 APPLICABILITY TO THE PROPOSED PROJECT

This report has been prepared as a Biology Resources Analysis suitable for incorporation into the Addendum to the 2005 Dutton Meadows Project Final Subsequent Environmental Impact Report (2005 SEIR). This document addresses potential impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA.

13. IMPACTS ANALYSIS

Below the criteria used in assessing impacts to Biological Resources is presented.

13.1 Significance Criteria

A significant impact is determined using CEQA and CEQA Guidelines. Pursuant to CEQA §21068, a significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment. Pursuant to CEQA Guideline §15382, a significant effect on the environment is further defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. Other Federal, State, and local agencies' considerations and regulations are also used in the evaluation of significance of proposed actions.

Direct and indirect adverse impacts to biological resources are classified as "significant," "potentially significant," or "less than significant." Biological resources are broken down into four categories: vegetation, wildlife, threatened and endangered species, and regulated "waters of the United States" and/or stream channels.

13.1.1 THRESHOLDS OF SIGNIFICANCE

13.1.1.1 Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.

- Have a substantial adverse effect on federally protected "wetlands" as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

13.1.1.2 Waters of the United States and State.

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the Corps regulates the discharge of dredged or fill material into waters of the United States, which includes wetlands, as discussed in the bulleted item above, and also includes "other waters" (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the state. Thus, substantial impacts to RWQCB regulated areas on a project site would also be considered a significant adverse impact.

13.1.1.3 Stream Channels

Pursuant to Section 1602 of the California Fish and Game Code, CDFW regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFW typically considers to include riparian vegetation. Any proposed activity that would result in substantial modifications to a natural stream channel would be considered a significant adverse impact.

14. IMPACT ASSESSMENT AND PROPOSED MITIGATION

In this section, we discuss potential impacts to sensitive biological resources including nesting birds and protected trees. We follow each impact with a mitigation prescription that when implemented would reduce impacts to a level regarded as less than significant pursuant to CEQA. This impact analysis is based on a Site Development Plan presented in Attachment A.

To reiterate what was stated in the special-status species and regulatory sections above, the project has mitigated all impacts to federally-listed species and state-listed species in compliance with the Federal Endangered Species Act and the California Endangered Species Act to a level regarded as less than significant pursuant to the CEQA by the purchase of mitigation credits at approved mitigation banks. Thus, no additional mitigation for those species is warranted per regulations.

14.1 Impact BIO-1. Development of the Project Would Have a Potentially Significant Adverse Impact on Tree Nesting Raptors (Potentially Significant)

While unlikely, White-tailed Kite could nest on the project site as it has been observed in this area. Raptors (that is, birds of prey) are protected under the Migratory Bird Treaty Act (50 CFR

10.13) and their eggs and young are protected under California Fish and Game Codes Sections 3503, 3503.5.

Potential impacts from the proposed project include disturbance to nesting raptors, and possibly death of adults and/or young. No nesting raptors, including White-tailed Kites, have been identified on the proposed project site; however, no specific surveys for nesting raptors have been conducted. As such, in the absence of survey results, it must be concluded that impacts to nesting raptors from the proposed project would be **potentially significant pursuant to CEQA.** This impact could be mitigated to a level considered less than significant.

14.2 Mitigation Measure BIO-1. Tree Nesting Raptors

To avoid impacts to nesting raptors, a nesting survey shall be conducted 15 days prior to commencing with tree removal or construction work if this work would commence between February 1 and August 31 (the nesting season). The raptor nesting surveys shall be conducted by a biologist with at least two years of demonstrated experience surveying for nesting raptors with detections, and the survey shall include examination of all trees within 200 feet of the entire project site, not just trees slated for removal. A nest survey report shall be prepared upon completion of the survey and provided to the City of Santa Rosa with any recommendations required for establishment of protective buffers as necessary to protect nesting birds.

If nesting raptors are identified during the surveys, the dripline of the nest tree must be fenced with orange construction fencing (provided the tree is on the project site), and a 200-foot radius around the nest tree must be staked with bright orange lath or other suitable staking (a non-disturbance buffer). If the tree is located off the project site, then the non-disturbance buffer shall be demarcated per above where the buffer occurs on the project site. *The size of the buffer may be altered if a qualified biologist (as described above) conducts behavioral observations and determines the nesting raptors are well acclimated to disturbance.* If this occurs, the qualified biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/harassment to the nesting raptors. If the nesting birds show any sign of distress from project activities, the qualified biologist shall have the authority to cease work on the site until it can be determined what a safe buffer distance is, that buffer shall be established, and then work can resume with periodic monitoring by the biologist. No construction or earth-moving activity shall occur within the established non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by July 15. This date may be later and would have to be determined by a qualified biologist. If a qualified biologist is not hired to watch the nesting raptors, then the buffers shall be maintained in place through the month of August and work within the buffer cannot commence until September 1.

Implementation of this mitigation measure would reduce impacts to nesting raptors to a level considered **less than significant**.

14.3 Impact BIO-2. Development of the Project Would Have a Potentially Significant Adverse Impact on Common Nesting Passerine Birds (Potentially Significant)

Common nesting birds such as Mourning Dove, California Scrub-Jay, and House Finch, among others could be impacted by the proposed project. Common birds and their active nests are

protected under California Fish and Game Code (Sections 3503, 3503.5), and the Federal Migratory Bird Treaty Act. Impacts to nesting birds, their eggs, and/or young caused by implementation of the proposed project would be regarded as **potentially significant.** These impacts could be mitigated to levels considered less than significant pursuant to CEQA.

14.4 Mitigation Measure BIO-2. Nesting Passerine Birds

A nesting survey shall be conducted on the project site and within a zone of influence around the project site if project site disturbance associated with the project would commence between February 15 and September 1. The zone of influence includes those areas off the project site where birds could be disturbed by earth-moving vibrations or noise. Accordingly, the nesting survey(s) must cover the project site and an area around the project site boundary. The nesting survey shall be completed 7 days prior to commencing with site work. A nest survey report shall be prepared upon completion of any required survey and provided to the City of Santa Rosa with any recommendations required for establishment of protective buffers as necessary to protect nesting birds.

If passerine birds are identified nesting on or adjacent to the project site, a non-disturbance buffer of 75 feet shall be established. A modified buffer may be prescribed if the nesting attempt is monitored by a qualified biologist and the biologist determines the nesting pair is comfortable with the level of disturbance nearby. If at any time the nesting birds show sign of distress, the qualified biologist monitoring the nest(s) has the authority to cease all project activities near the buffer area and determine an adequate non-disturbance buffer to protect the nesting attempt. The buffer shall be demarcated with painted orange lath or via the installation of orange construction fencing. Disturbance within the buffer shall be postponed until it is determined by a qualified biologist that the young have fledged and have attained sufficient flight skills to leave the area or that the nesting cycle has otherwise completed.

Typically, most passerine birds in the region of the project site are expected to complete nesting by August 1. However, many species can complete nesting by the end of June or in early to mid-July. Regardless, nesting buffers should be maintained until August 1 unless a qualified biologist determines that young have fledged and are independent of their nest at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys should prepare a report that provides details about the nesting outcome and the removal of buffers. This report should be submitted to the City of Santa Rosa prior to the time that nest protection buffers are removed if the date is before August 1.

Implementation of this mitigation measure would reduce impacts to nesting passerine bird species to a level considered **less than significant**.

14.5 Impact BIO-3. Development of the Project Would Have a Potentially Significant Adverse Impact on Protected Trees (Significant)

A *Tree Preservation and Mitigation Report* was prepared for the Dutton Meadows project site by Horticultural Associates, dated June 5, 2018. A total of 64 trees were evaluated and this includes all trees that are present over 4 inches in trunk diameter, per the Santa Rosa Tree Ordinance. According to the report, native species on the site include 25 valley oaks and 2 box elders. Non-

native species on the site include black walnut, pecan, liquidambar, coast redwood, weeping willow, cottonwood, silk tree, olive, English walnut, Grecian laurel, Japanese maple, Lombardy poplar, maple, deodar cedar, Italian cypress, stone Pine, dogwood, eucalyptus, pear, glossy privet, and hawthorn.

Currently, all trees are slated for removal due to the density of this project, and the existing location of trees. Thus, it will be impossible to save any of the trees at this site. Impacts to protected trees resulting from the proposed project would be regarded as **significant.** These impacts could be mitigated to levels considered less than significant pursuant to CEQA.

14.6 Mitigation Measure BIO-3. Protected Trees

Article 4, Section 17-24.050 Permit Category II-Tree Alteration, Removal, or Relocation on Property Proposed for Development, C (1) requires two 15-gallon size trees to be replanted for every 6 inches of trunk diameter removed. Applicant will be required to obtain a permit to remove the trees on the project site. Implementation of this mitigation measure would reduce impacts to trees to a level considered **less than significant.**

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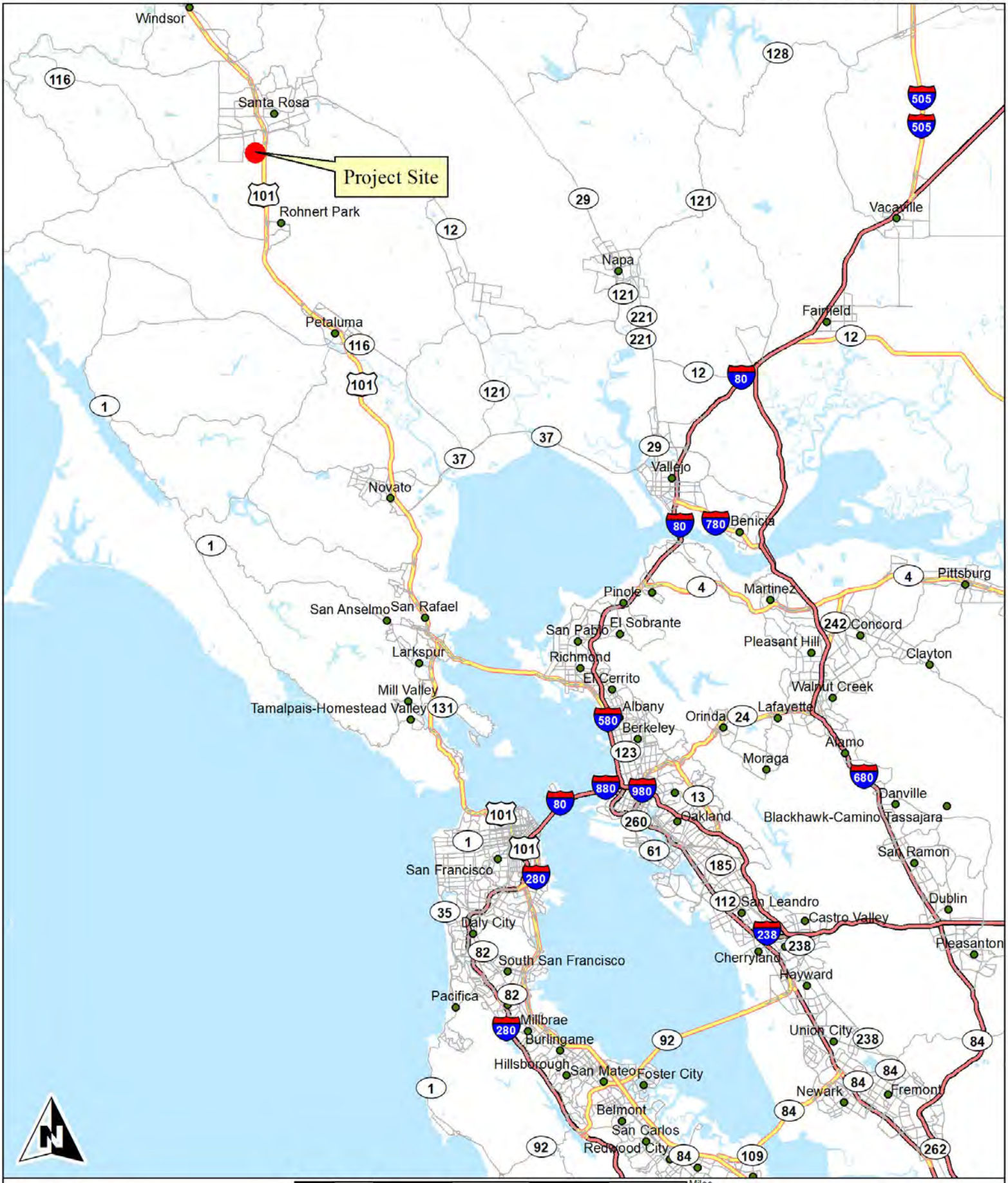

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Figure 1. 2684 Dutton Meadow Project Site
Regional Map
Santa Rosa, California

County: Sonoma
Map Preparation Date: November 30, 2020

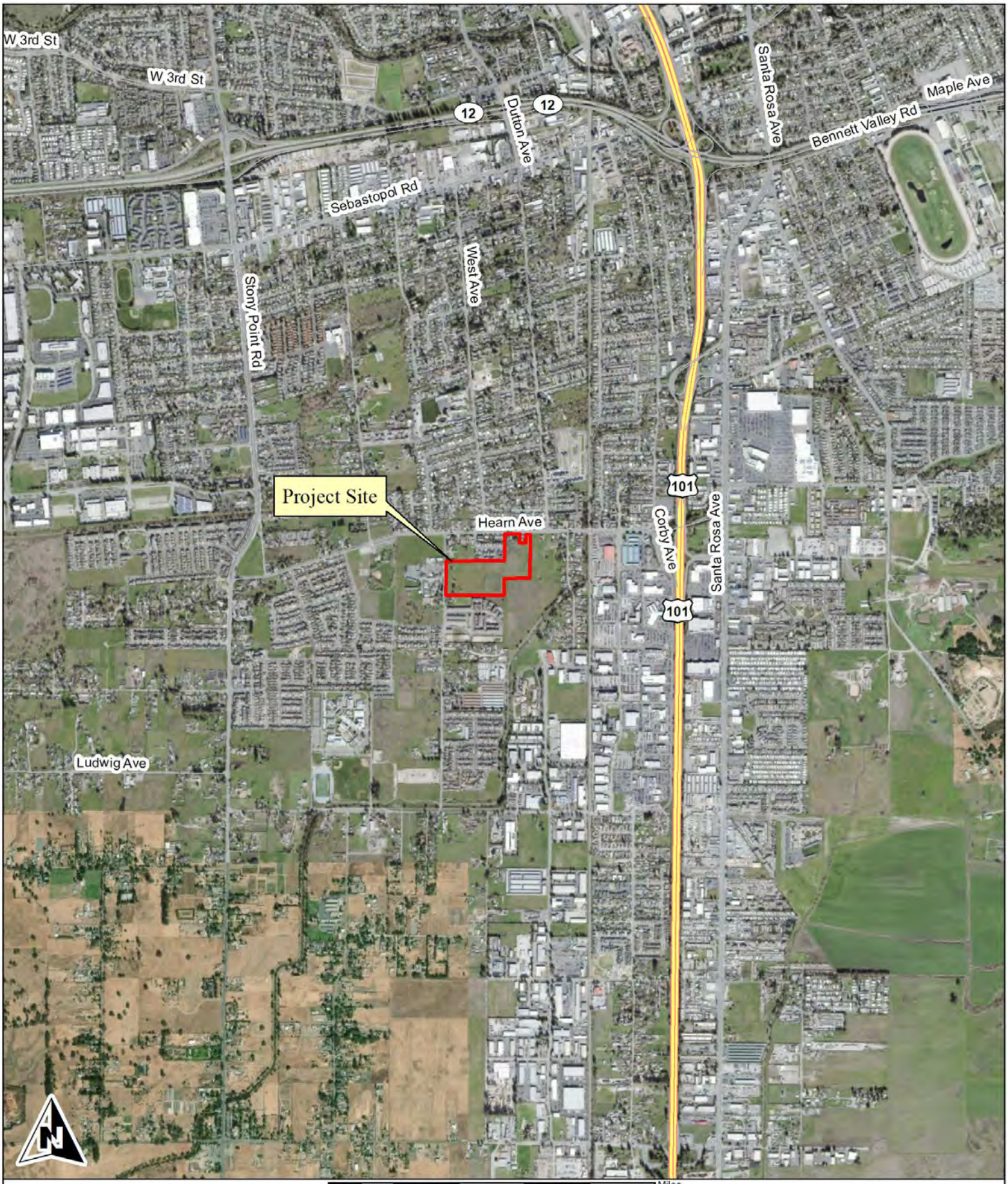

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Figure 2. 2684 Dutton Meadow Project Site
Location Map
Santa Rosa, California

38.412305 -122.726194
Land Grant
7.5-Minute Santa Rosa quadrangle
Aerial Photograph Source: ESRI
Map Preparation Date: November 30, 2020

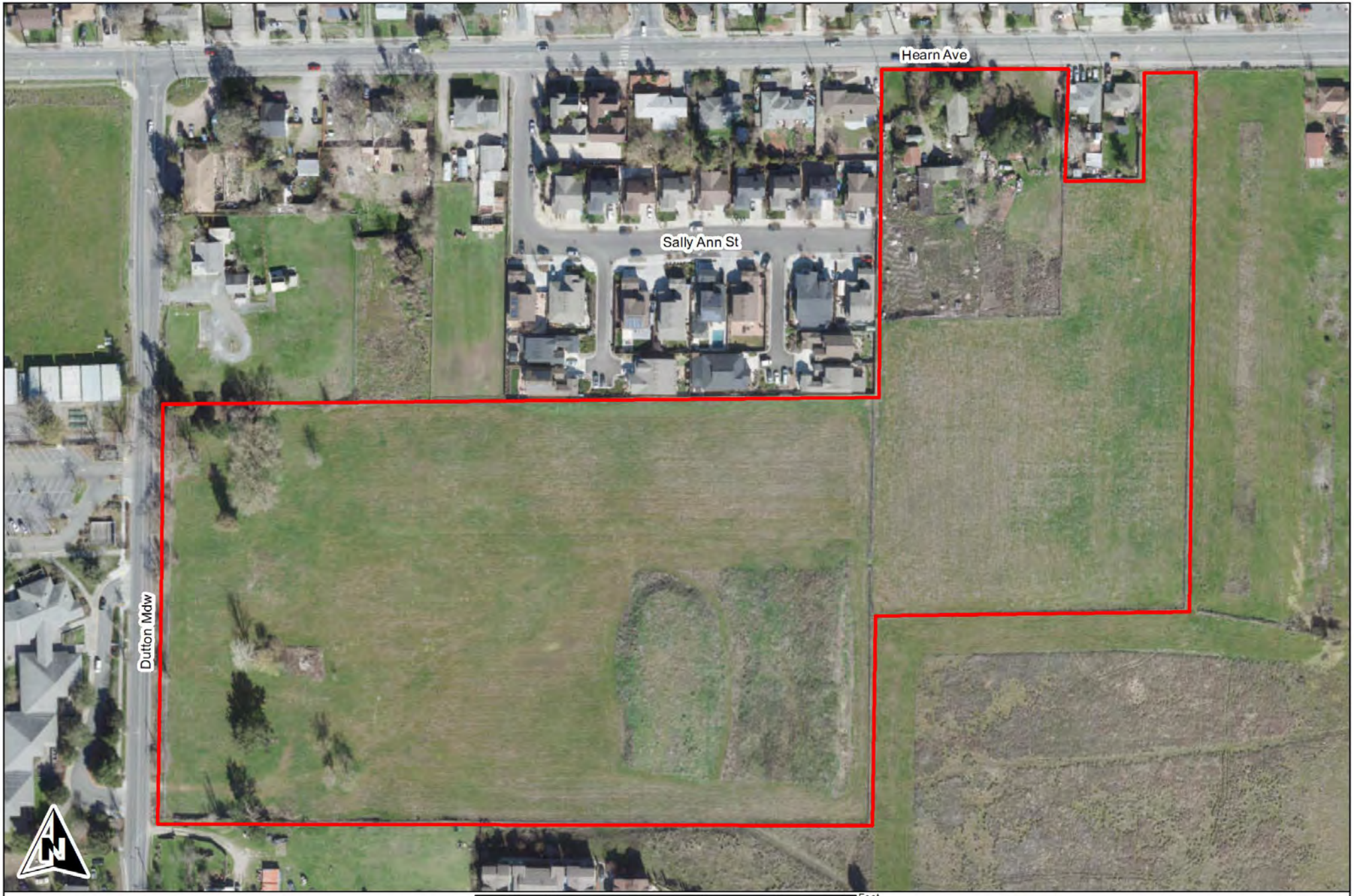

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Figure 3. Aerial Photograph of the
2684 Dutton Meadow Project Site
Santa Rosa, California

Aerial Photograph Source: ESRI
Map Preparation Date: November 30, 2020

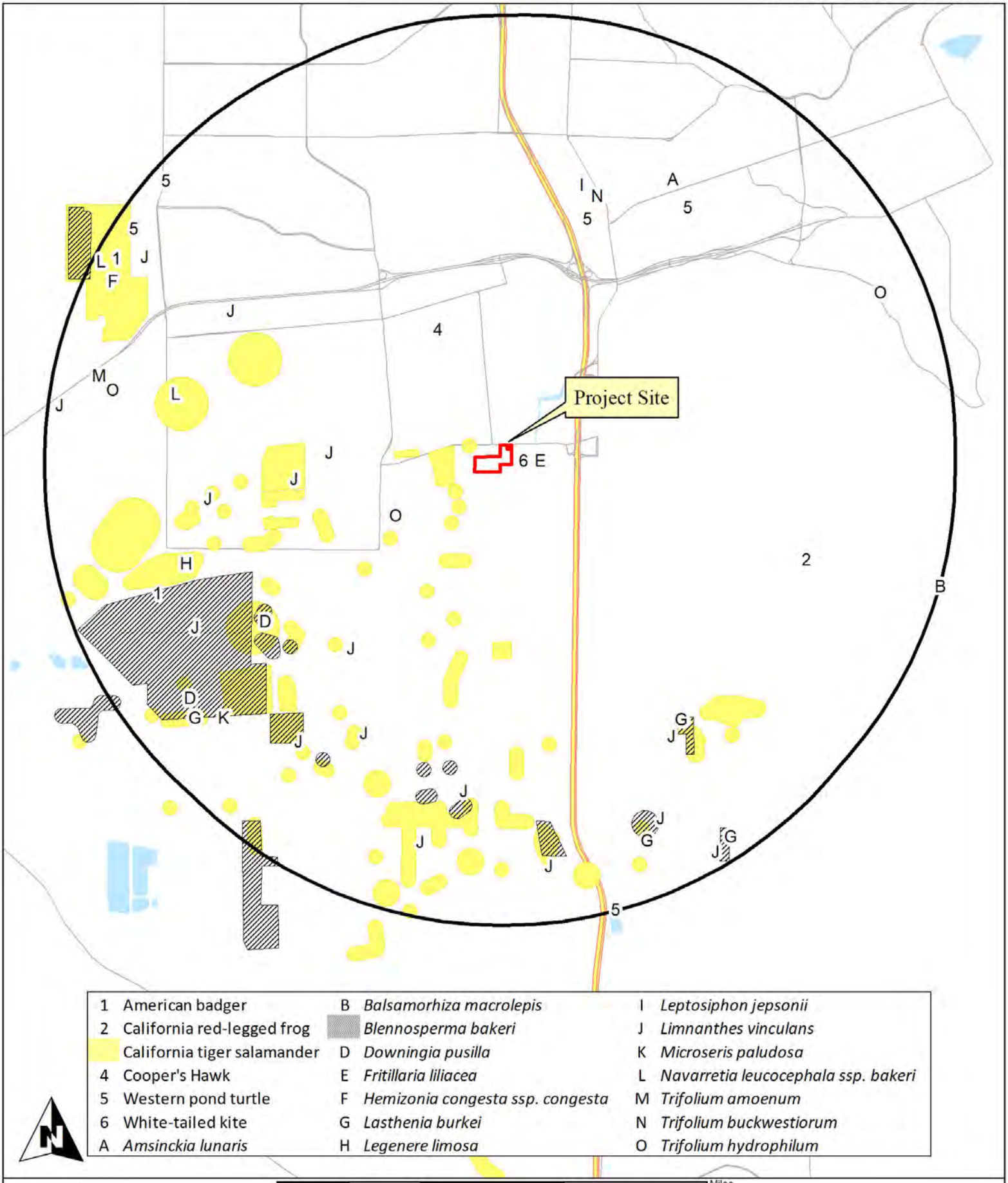

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Figure 4. Known Special-Status CNDDB Species
Within 3 Miles of the
2684 Dutton Meadow Project Site

3 Mile Radius
Source: CDFW, California
Natural Diversity Data Base, 2020
Map Preparation Date: November 30, 2020

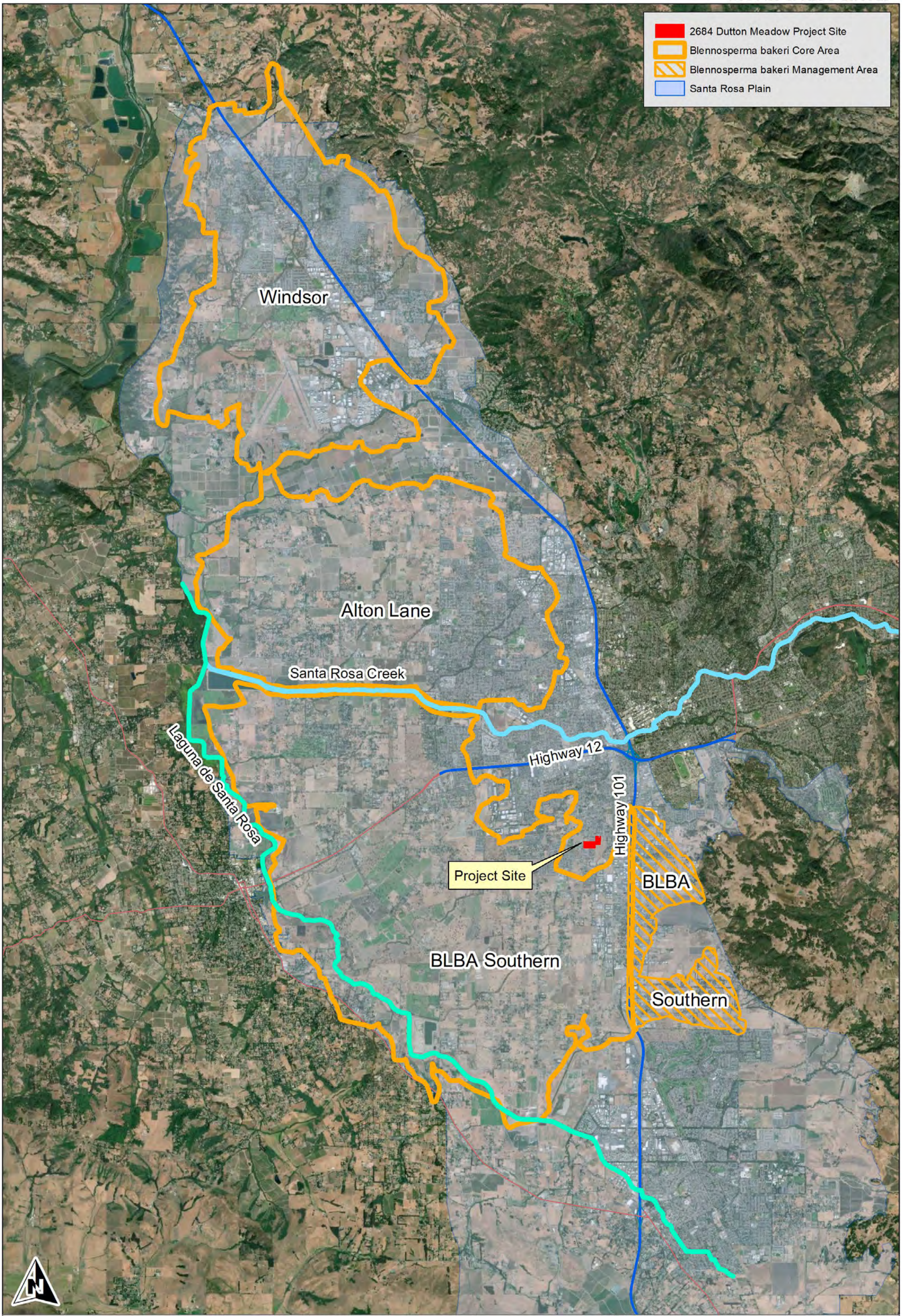

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Figure 5. Blennosperma bakeri Core and Management Areas (from USFWS 2016) in the Vicinity of the 2684 Dutton Meadow Project Site

County: Sonoma
Aerial Photograph Source: ESRI
Map Preparation Date: November 30, 2020

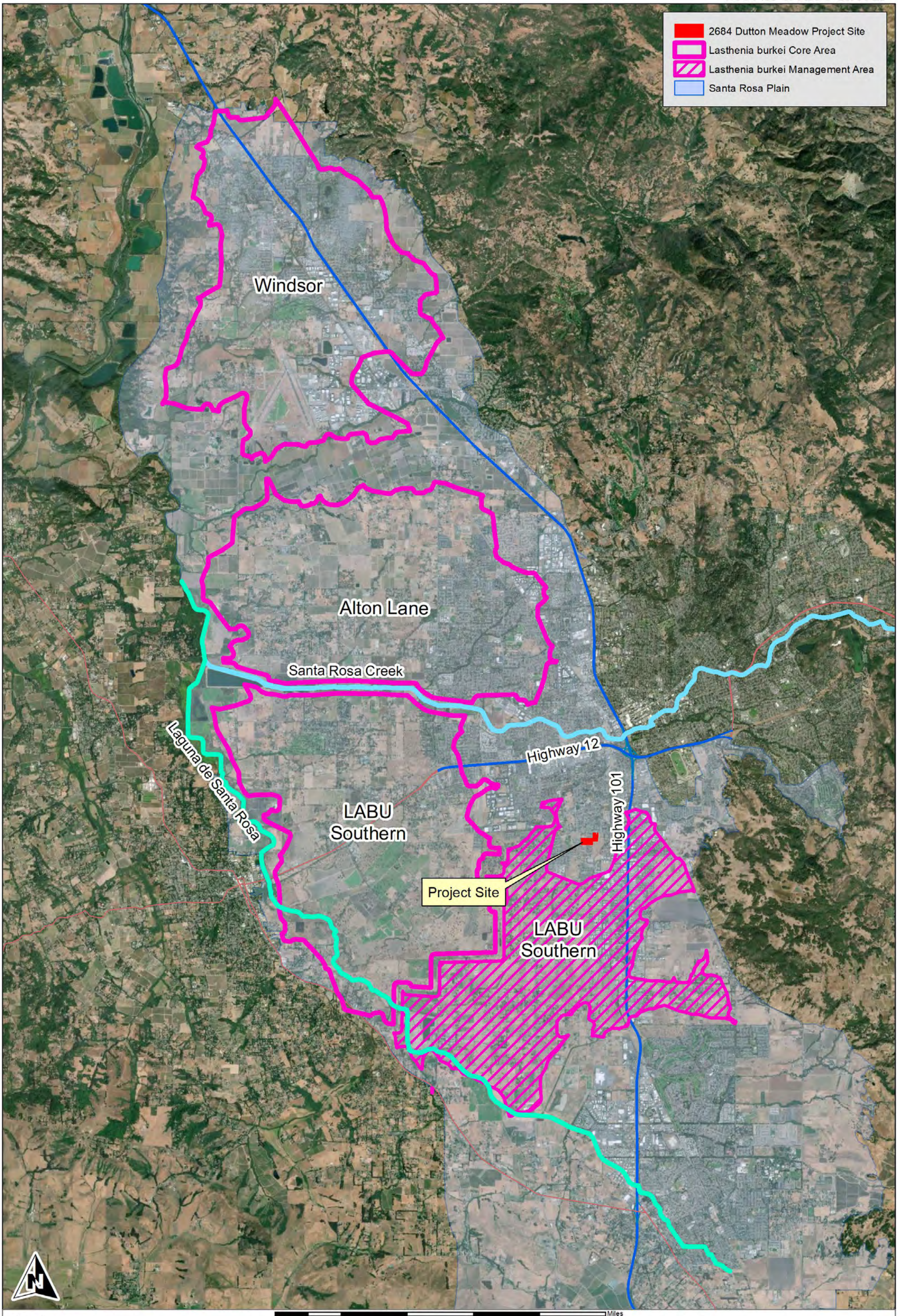

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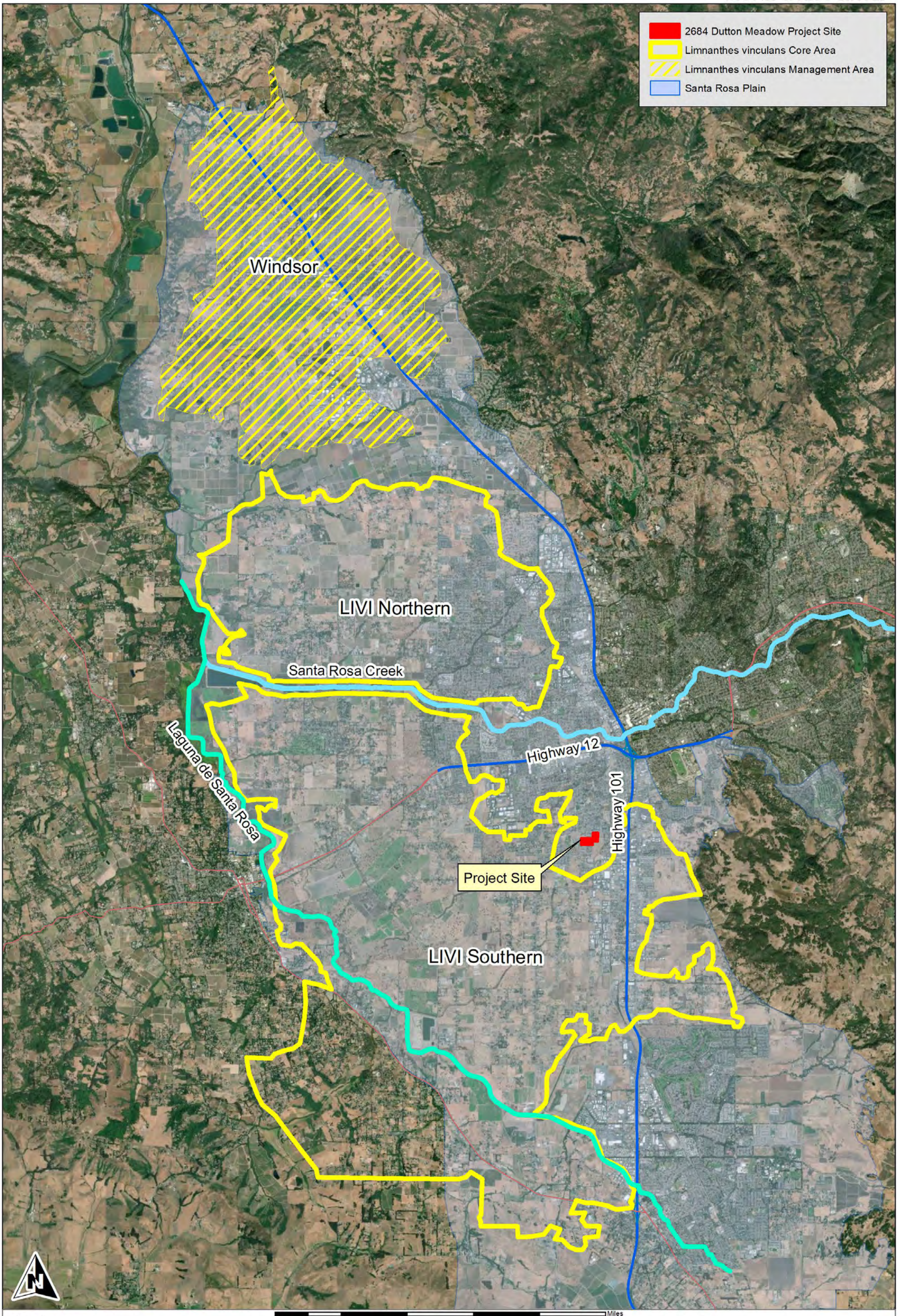
Figure 6. Lasthenia burkei Core and Management Areas (from USFWS 2016) in the Vicinity of the 2684 Dutton Meadow Project Site

County: Sonoma
Aerial Photograph Source: ESRI
Map Preparation Date: November 30, 2020



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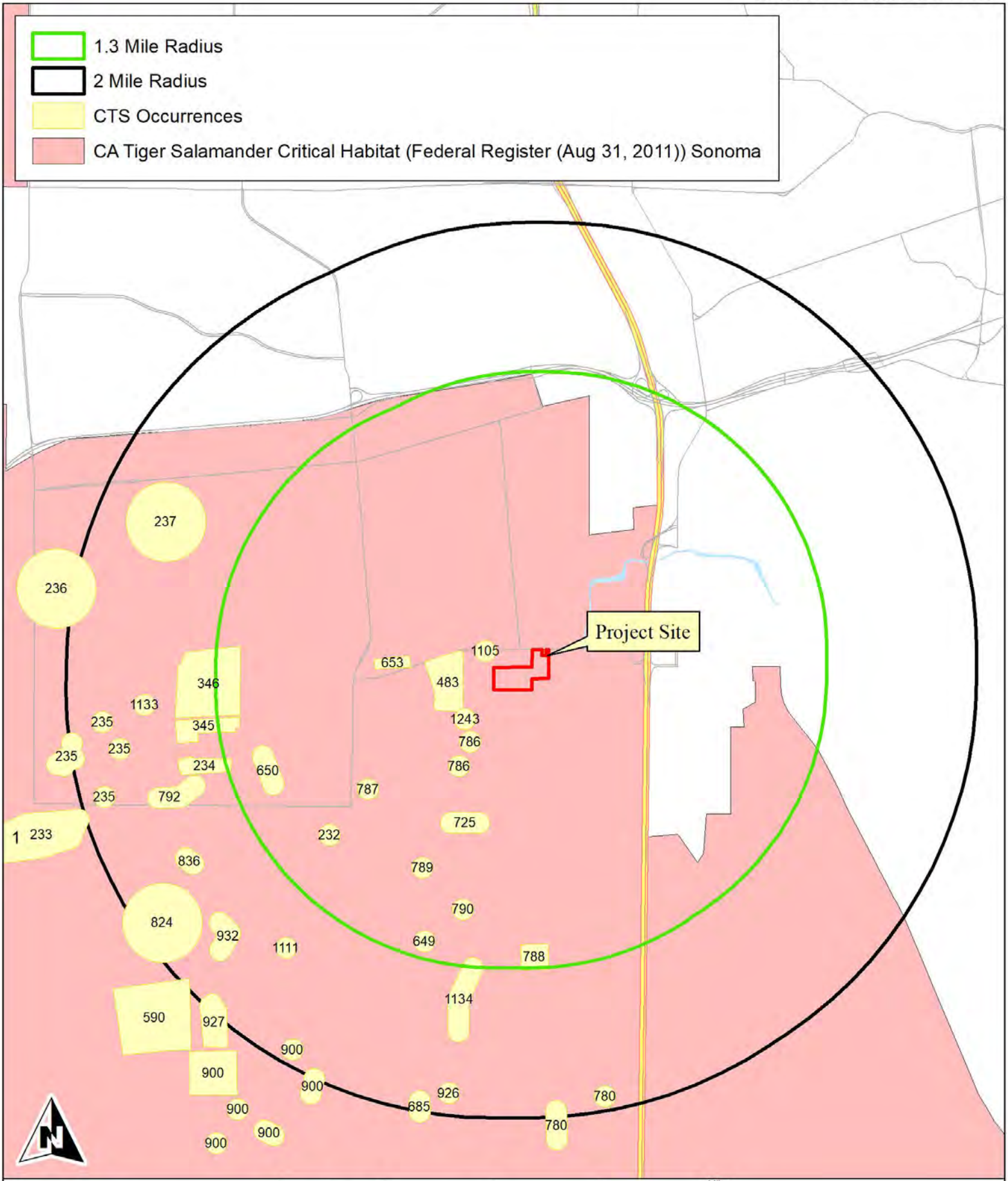
Walnut Creek, California 94595
(925) 947-4867

Figure 7. Limnanthes vinculans Core and Management Areas (from USFWS 2016) in the Vicinity of the 2684 Dutton Meadow Project Site

County: Sonoma
Aerial Photograph Source: ESRI
Map Preparation Date: November 30, 2020



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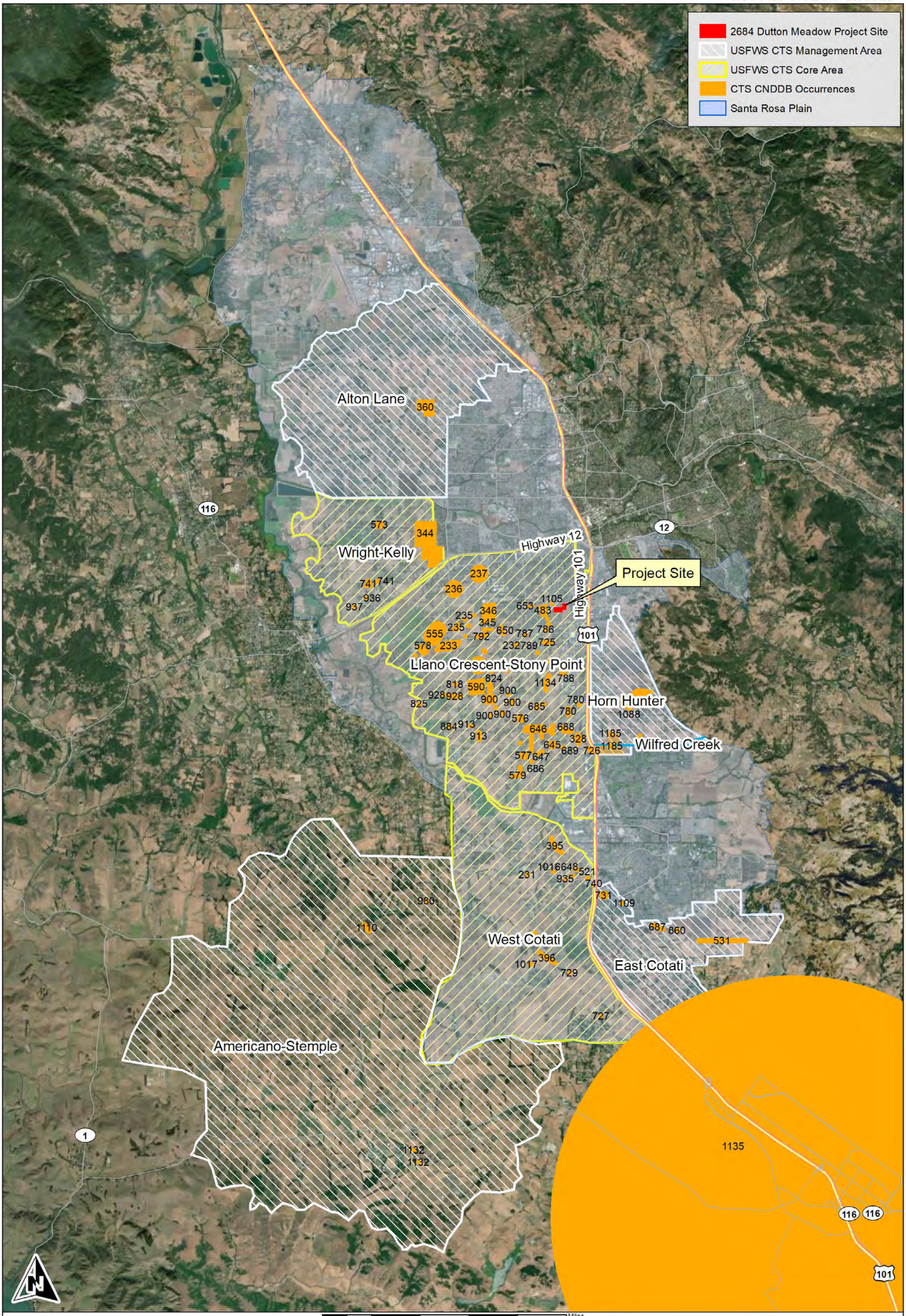
Environmental Consultants
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
(925) 947-4867

Figure 8. USFWS Critical Habitat and CTS Occurrences
Within 2 Miles of the
2684 Dutton Meadow Project Site

Source: CDFW, California
Natural Diversity Data Base, 2020
Map Preparation Date: November 30, 2020



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Walnut Creek, California 94595
(925) 947-4867

Figure 9. 2684 Dutton Meadow Project Site, Santa Rosa, California
Santa Rosa Plain California Tiger Salamander Core and Management Areas
(from USFWS 2016)

County: Sonoma
Aerial Photograph Source: ESRI
Map Preparation Date: November 30, 2020

Table 1

Plant Species Observed on the Dutton Meadows Project Site

Gymnosperms	
Cupressaceae	
Sequoia sempervirens	Redwood
Pinaceae	
**Pinus halepensis*	Aleppo pine
**Pinus sp.*	Pine
Angiosperms - Dicots	
Apiaceae	
**Foeniculum vulgare*	Sweet fennel
**Torilis nodosa*	Knotted hedge-parsley
Asteraceae	
**Cichorium intybus*	Chicory
**Helminthotheca echioides*	Bristly ox-tongue
**Lactuca saligna*	Willow lettuce
**Lactuca serriola*	Prickly lettuce
Leontodon sp.	Hawkbit
**Senecio vulgaris*	Common groundsel
**Sonchus oleraceus*	Common sow-thistle
**Taraxacum officinale*	Common dandelion
**Tragopogon porrifolius*	Common salsify
Brassicaceae	
**Brassica nigra*	Black mustard
**Brassica rapa*	Field mustard
**Raphanus sativus*	Wild radish
Caprifoliaceae	
Lonicera sp.	Honeysuckle
Caryophyllaceae	
**Spergula arvensis*	Stickwort
**Spergularia rubra*	Ruby sand-spurrey
Convolvulaceae	
**Convolvulus arvensis*	Bindweed
Euphorbiaceae	
Chamaesyce sp.	Chamaesyce
Fabaceae	
**Lotus corniculatus*	Birdfoot trefoil
**Medicago polymorpha*	California burclover
**Vicia benghalensis*	Purple vetch
**Vicia sativa*	Common vetch
Fagaceae	
Quercus agrifolia var. agrifolia	Coast live oak

* Indicates a non-native species

Table 1

Plant Species Observed on the Dutton Meadows Project Site

Quercus garryana var. garryana	Garry oak
Quercus lobata	Valley oak
Geraniaceae	
**Geranium dissectum*	Cut-leaf geranium
**Hamamelidaceae*	
**Liquidambar styraciflua*	Liquidambar
**Juglandaceae*	
Juglans hindsii	Northern California black walnut
**Juglans nigra*	Black walnut
**Juglans regia*	English walnut
**Lythraceae*	
**Lythrum hyssopifolia*	Hyssop loosestrife
**Malvaceae*	
**Malva parviflora*	Cheeseweed
**Myrsinaceae*	
**Lysimachia arvensis*	Scarlet pimpernel
**Myrtaceae*	
**Callistemon citrinus*	Crimson bottlebrush
**Oleaceae*	
**Olea europaea*	Olive
**Onagraceae*	
Epilobium brachycarpum	Summer cottonweed
Epilobium ciliatum	Hairy willow-herb
**Plantaginaceae*	
**Kickxia elatine*	Sharppoint fluellin
**Polygonaceae*	
**Polygonum aviculare*	Common knotweed
**Rumex acetosella*	Sheep sorrel
**Rumex crispus*	Curly dock
**Rumex pulcher*	Fiddle dock
**Portulacaceae*	
**Portulaca oleracea*	Common purslane
**Rosaceae*	
**Rubus armeniacus*	Himalayan blackberry
**Rubiaceae*	
Galium aparine	Goose grass
**Salicaceae*	
Populus fremontii subsp. fremontii	Fremont cottonwood
**Populus nigra var. italica*	Lombardy poplar
**Salix babylonica*	Weeping willow

* Indicates a non-native species

Table 1

Plant Species Observed on the Dutton Meadows Project Site

Vitaceae	
**Vitis vinifera*	Cultivated grape
Angiosperms -Monocots	
Amaryllidaceae	
**Agapanthus orientalis*	Lilly-of-the-Nile
Arecaceae	
Washingtonia filifera	California fan palm
Cyperaceae	
Cyperus eragrostis	Tall flatsedge
Poaceae	
**Avena barbata*	Slender wild oat
**Briza minor*	Small quaking grass
Bromus carinatus var. carinatus	California brome
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Bromus madritensis subsp. madritensis*	Foxtail chess
**Cynodon dactylon*	Bermudagrass
**Festuca bromoides*	Brome fescue
**Festuca perennis*	perennial ryegrass
**Holcus lanatus*	Common velvet grass
**Hordeum marinum subsp. gussoneanum*	Mediterranean barley
**Hordeum murinum subsp. leporinum*	Hare barley
**Phalaris aquatica*	Harding grass
**Phalaris paradoxa*	Paradox canary-grass
**Phalaris sp.*	Canary grass

* Indicates a non-native species

Table 2
Wildlife Species Observed on the Dutton Meadows Project Site

Amphibians	
Sierran treefrog	*Pseudacris sierra*
Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Southern alligator lizard	*Elgaria multicarinata*
Birds	
Northern flicker	*Colaptes auratus*
Turkey vulture	*Cathartes aura*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Wild turkey	*Meleagris gallopavo*
Killdeer	*Charadrius vociferus*
Rock pigeon	*Columba livia*
Mourning dove	*Zenaida macroura*
Anna's hummingbird	*Calypte anna*
Nuttall's woodpecker	*Picoides nuttallii*
Black phoebe	*Sayornis nigricans*
Say's phoebe	*Sayornis saya*
California scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Bushtit	*Psaltriparus minimus*
Ruby-crowned kinglet	*Regulus calendula*
Western bluebird	*Sialia mexicana*
Northern mockingbird	*Mimus polyglottos*
European starling	*Sturnus vulgaris*
Cedar waxwing	*Bombycilla cedrorum*
Yellow-rumped warbler	*Setophaga coronata*
California towhee	*Melozone crissalis*
Savannah sparrow	*Passerculus sandwichensis*
Song sparrow	*Melospiza melodia*
Lincoln's sparrow	*Melospiza lincolnii*
White-crowned sparrow	*Zonotrichia leucophrys*
Golden-crowned sparrow	*Zonotrichia atricapilla*
Red-winged blackbird	*Agelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
House finch	*Haemorhous mexicanus*
Lesser goldfinch	*Spinus psaltria*
American goldfinch	*Spinus tristis*
Mammals	
Botta's pocket gopher	*Thomomys bottae*

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Asteraceae					
Balsamorhiza macrolepis Big-scale balsam-root	Fed: - State: - CNPS: Rank 1B.2	March-June	Cismontane woodland; chaparral; valley and foothill grassland; [sometimes serpentinite]. 90 - 1555 meters	Closest record for this species located approximately 3.0 miles southeast of the project site (Occurrence No. 17).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Blennosperma bakeri Sonoma sunshine	Fed: FE State: CE CNPS: Rank 1B.1	February-April	Valley and foothill grassland (mesic); vernal pools.	Closest record for this species located approximately 1.8 miles southwest of the project site (Occurrence No. 8).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Hemizonia congesta congesta White seaside tarplant	Fed: - State: - CNPS: Rank 1B.2	April-November	Valley and foothill grassland. 20 to 560 meters. Clay soils	Closest record for this species located approximately 2.7 miles northwest of the project site (Occurrence No. 27).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Lasthenia burkei Burke's goldfields	Fed: FE State: CE CNPS: Rank 1B.1	April-June	Meadows and seeps (mesic); vernal pools.	Closest record for this species located approximately 2.2 miles south of the project site (Occurrence No. 43).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Microseris paludosa Marsh microseris	Fed: - State: - CNPS: Rank 1B.2	April-July	Closed-cone coniferous forest; cismontane woodland; coastal scrub; valley and foothill grassland. 5-300 m.	Closest record for this species located approximately 2.4 miles southwest of the project site (Occurrence No. 20).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Boraginaceae					
Amsinckia lunaris Bent-flowered fiddleneck	Fed: - State: - CNPS: Rank 1B.2	March-June	Cismontane woodland, valley and foothill grassland, coastal bluff scrub.	Closest record for this species located approximately 2.0 miles north of the project site (Occurrence No. 67).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Campanulaceae					
Downingia pusilla Dwarf downingia	Fed: - State: - CNPS: Rank 2.2	March-May	Valley and foothill grassland (mesic); vernal pools.	Closest record for this species located approximately 1.8 miles southwest of the project site (Occurrence No. 86).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Legenere limosa Legenere	Fed: - State: - CNPS: Rank 1B.1	April-June	Vernal pools.	Closest record for this species located approximately 2.1 miles west of the project site (Occurrence No. 39).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Fabaceae					
Trifolium amoenum Showy Indian clover	Fed: FE State: - CNPS: Rank 1B.1	April-June	Valley and foothill grassland (sometimes serpentinite)	Closest record for this species located approximately 2.5 miles west of the project site (Occurrence No. 20).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Trifolium buckwestiorum Santa Cruz clover	Fed: - State: - CNPS: Rank 1B	May-July	Broadleaf upland forest; coastal prairie; [margins].	Closest record for this species located approximately 1.8 miles north of the project site (Occurrence No. 35).	None. No suitable habitat onsite.
Trifolium hydrophilum Saline clover	Fed: - State: - CNPS: Rank 1B.2	April-June	Marshes and swamps; valley and foothill grassland (mesic, alkaline); vernal pools. 0-300 m.	Closest record for this species located approximately 0.7 miles southwest of the project site (Occurrence No. 14).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Liliaceae					
Fritillaria liliacea Fragrant fritillary	Fed: - State: - CNPS: Rank 1B.2	February-April	Coastal prairie; coastal scrub; valley and foothill grassland; [often serpentinite].	Closest record for this species located approximately 1.9 miles south of the project site (Occurrence No. 49).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Limnanthaceae					
Limnanthes vinculans Sebastopol meadowfoam	Fed: FE State: CE CNPS: Rank 1B.1	April-May	Meadows (mesic); vernal pools.	Closest record for this species located approximately 1.0 miles west of the project site (Occurrence No. 1).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Polemoniaceae					
Leptosiphon jepsonii Jepson's leptosiphon	Fed: - State: - CNPS: Rank 1B.2	March-May	Chaparral; cismontane woodland (usually volcanic).	Closest record for this species located approximately 1.8 miles north of the project site (Occurrence No. 3).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.
Navarretia leucocephala bakeri Baker's navarretia	Fed: - State: - CNPS: Rank 1B.1	May-July	Cismontane woodland; lower montane coniferous forest; meadows (mesic); valley and foothill grassland; vernal pools.	Closest record for this species located approximately 2.2 miles west of the project site (Occurrence No. 32).	None. None found during surveys conducted in 2000-2003 prior to site grading, which removed all habitat.

Table 3

Special-Status Plant Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern

CNPS:
Rank 1A - Presumed extinct in California
Rank 1B - Plants rare, threatened, or endangered in California and elsewhere
Rank 1B.1 - Seriously endangered in California (over 80% occurrences threatened/ high degree and immediacy of threat)
Rank 1B.2 - Fairly endangered in California (20-80% occurrences threatened)
Rank 1B.3 - Not very endangered in California (<20% of occurrences threatened or no current threats known)

CNPS Continued:
Rank 2 - Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 2A - Extirpated in California, common elsewhere
Rank 2B.1 - Seriously endangered in California, but more common elsewhere
Rank 2B.2 - Fairly endangered in California, but more common elsewhere
Rank 2B.3 - Not very endangered in California, but more common elsewhere
Rank 3 - Plants about which we need more information (Review List)
Rank 3.1 - Plants about which we need more information (Review List) Seriously endangered in California
Rank 3.2 - Plants about which we need more information (Review List) Fairly endangered in California
Rank 4 - Plants of limited distribution - a watch list

Table 4

Special-Status Wildlife Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Amphibians				
California tiger salamander (So Co DPS) *Ambystoma californiense*	Fed: FE State: CT Other:	Found in grassland habitats of the valleys and foothills. Requires burrows for aestivation and standing water until late spring (May) for larvae to metamorphose.	Closest record for this species located approximately 0.1 miles north of the project site (Occurrence No. 1105)	None. Surveys conducted in 2001-2003, none found. USFWS required mitigation credits per B.O. Mitigation credits purchased. See text.
California red-legged frog *Rana draytonii*	Fed: FT State: CSC Other:	Occurs in lowlands and foothills in deeper pools and streams, usually with emergent wetland vegetation. Requires 11-20 weeks of permanent water for larval development.	Closest record for this species located approximately 2.1 miles southeast of the project site (Occurrence No. 1464)	None. No aquatic habitats on or adjacent to the project site. No impacts expected.
Reptiles				
Western pond turtle *Emys marmorata*	Fed: - State: CSC Other:	Uncommon to common in suitable aquatic habitat throughout CA, west of the Sierra-Cascade crest and absent from desert regions, except the Mojave River. Associated with permanent or nearly permanent water in a wide variety of habitat types.	Closest record for this species located approximately 1.7 miles north of the project site (Occurrence No. 649)	None. No aquatic habitats on or adjacent to the project site. Site is too far from suitable aquatic habitat, so no nesting on site expected. No impacts expected.
Birds				
White-tailed kite *Elanus leucurus*	Fed: State: FP Other:	Found in lower foothills and valley margins with scattered oaks and along river bottomlands or marshes adjacent to oak woodlands. Nests in trees with dense tops.	Closest record for this species located approximately 0.1 miles east of the project site (Occurrence No. 77)	Low to moderate. Trees on site provide suitable nesting habitat. Pre-construction nesting surveys necessary. See text.
Western burrowing owl *Athene cunicularia hypugaea*	Fed: -- State: CSC Other:	Found in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	No records within 3 miles.	No habitat on site due to absence of ground squirrels (burrow donors) on site.

Table 4

Special-Status Wildlife Species Known to Occur Within 3 Miles of the Dutton Meadows Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Mammals				
American badger *Taxidea taxus*	Fed: - State: CSC Other:	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Need sufficient food, friable soils & open, uncultivated ground. Prey on burrowing rodents. Dig burrows.	Closest record for this species located approximately 2.4 miles southwest of the project site (Occurrence No. 455)	None. No suitable habitat onsite. No burrows or ground squirrels (prey base). No impacts expected.

***Status**

Federal:	State:	State:
FE - Federal Endangered	CE - California Endangered	WL - Watch List. Not protected pursuant to CEQA
FT - Federal Threatened	CT - California Threatened	S1 - Critically Imperiled
FPE - Federal Proposed Endangered	CR - California Rare	S2 - Imperiled
FPT - Federal Proposed Threatened	CC - California Candidate	Global:
FC - Federal Candidate	CSC - California Species of Special Concern	G2 - Imperiled
FPD - Federally Proposed for delisting	FP - Fully Protected	G4 - Apparently Secure

** This frog is listed as “endangered” in the Southern Sierra, central, and southern California coasts and “threatened” in the Northern Sierra and Feather River. This frog is not protected pursuant to CESA on the northern coast of California.

Monk & Associates
Environmental Consultants
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
(925) 947-4867

Exhibit A. Project Site APN Map
Dutton Meadows Project Site
Santa Rosa, California

Aerial Photograph Source: ESRI
Map Preparation Date: January 18, 2021

DUTTON MEADOWS SUBDIVISION
TENTATIVE MAP

2650, 2666, 2684 DUTTON MEADOW
1112, 1200 HEARN AVENUE
Santa Rosa, California

APN 043-071-007, 022, 023 & 043-191-016, 024

ABBREVIATIONS

AAI	ADOBE ASSOCIATES, INC.
AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
AD	AREA DRAIN
AE	ACCESS EASEMENT
APN	ASSESSORS PARCEL NUMBER
BM	BENCHMARK
CB	CATCH BASIN
CL	CLASS
℄	CENTERLINE
CO	CLEANOUT
DI	DROP INLET
DN	DOCUMENT NUMBER
DW	DRIVEWAY
EG	EXISTING GROUND
EP	EDGE OF PAVEMENT
EL	ELEVATION
ESMT	EASEMENT
EX	EXISTING
FG	FINISH GRADE
FH	FIRE HYDRANT
FS	FINISHED SURFACE
GR	GRATE
IG	INVERT GRADE
JT	JOINT TRENCH
LF	LINEAR FEET
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NTS	NOT TO SCALE
OHW	OVERHEAD WIRE
PAE	PRIVATE ACCESS EASEMENT
PL	PROPERTY LINE
PS	PLANTER STRIP
PUE	PUBLIC UTILITY EASEMENT
PVT	PRIVATE
RCE	REGISTERED CIVIL ENGINEER
R/W	RIGHT OF WAY
S	SLOPE
SD	STORM DRAIN
SF	SQUARE FEET
SS	SANITARY SEWER
SSE	SANITARY SEWER EASEMENT
SSCO	SANITARY SEWER CLEANOUT
STA	STATION
STD	STANDARD
SWE	SIDEWALK EASEMENT
TC	TOP OF CURB
TYP	TYPICAL
W	WATER
WE	WATER EASEMENT
WS	WATER SERVICE

BENCHMARK

City of Santa Rosa BM D296.
Hearn Avenue and Dutton Meadows, 3" City disk in monument well at CL intersection.

OWNER/ SUBDIVIDER

Hearn Avenue LLC
DM Associates LLC
3001 Bishop Dr, Suite 100
San Ramon, CA 94583
(925) 999-3975

ENGINEER

James L. Jensen RCE 73042
Adobe Associates, Inc.
1220 N Dutton Avenue
Santa Rosa, California 95401
Phone: (707) 541-2300
Fax: (707) 541-2301

LEGEND

PROPOSED	EXISTING	DESCRIPTION
		PROPERTY BOUNDARY
		CURB & GUTTER
SSMH		SANITARY SEWER & MANHOLE
6" W	W	WATER MAIN & GATE VALVE
		FIRE HYDRANT
		STORM DRAIN & CATCH BASIN (CB)
	#(H)	EXISTING TREE WITH TAG NUMBER FROM ARBORIST REPORT. (H) INDICATES HERITAGE STATUS PER CITY ORDINANCE. "X" INDICATES REMOVAL. SEE HORTICULTURAL ASSOCIATES REPORT DATED JUNE 5, 2018.

SHEET INDEX

C1.0 TITLE SHEET & GENERAL NOTES
C2.0 GRADING, DRAINAGE AND UTILITIES
C2.1 GRADING, DRAINAGE AND UTILITIES

BOUNDARY DESCRIPTION

BEING A PORTION OF THE RANCHO LLANO DE SANTA ROSA, LOCATED IN TOWNSHIP 7 NORTH, RANGE 8 WEST, M.D.B & M.

APN	DN
043-070-023	2002-36737
043-071-022	2002-36737
043-071-007	2002-36737
043-191-016	2006-42541
043-191-024	2006-42541

SITE INFORMATION

TOTAL NO. OF LOTS: 137

SITE AREA: 18.40 ACRES
Smallest Lot Size: 2,702 SF (Lot 117)
Largest Lot Size: 8,226 SF (Lot 130)
Average Lot Size: 3,888 SF

PRESENT ZONING: PI & R

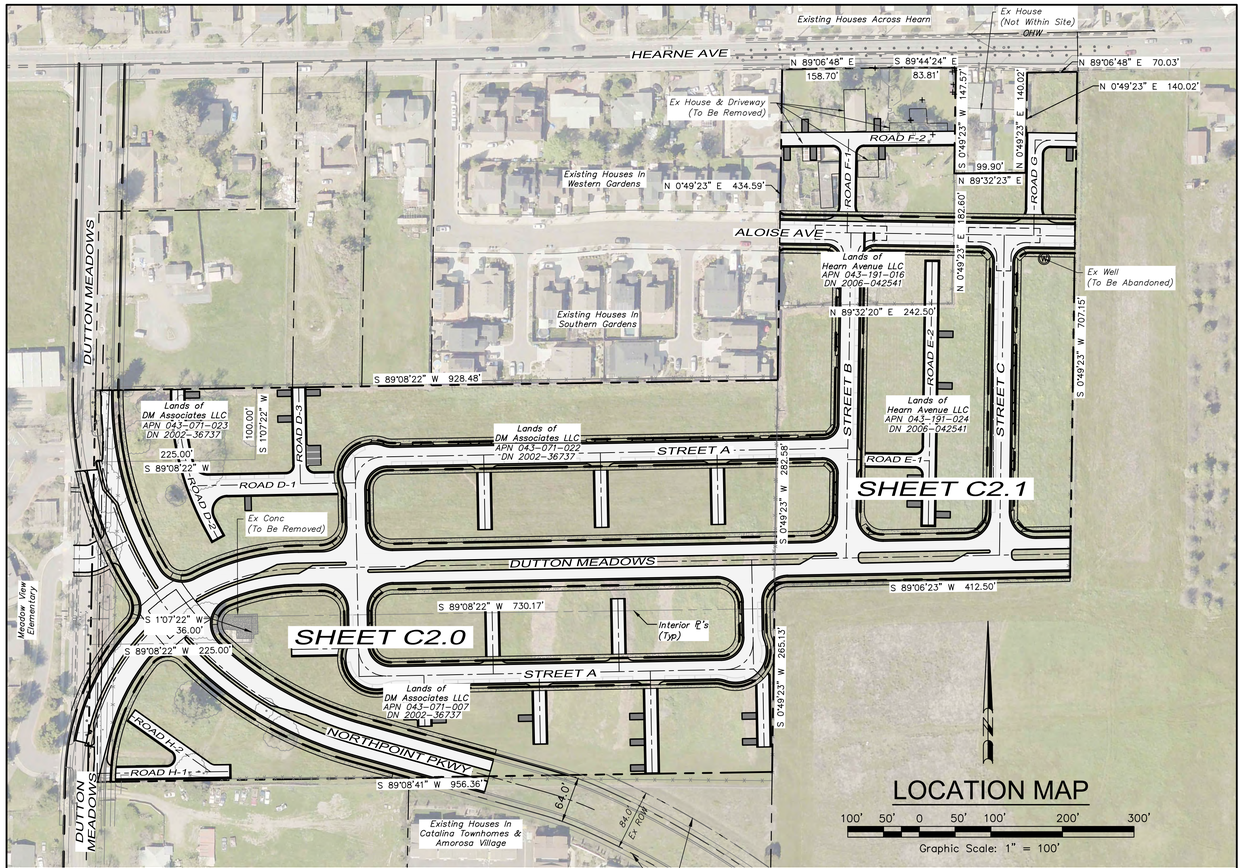
PROPOSED ZONING: PI & R

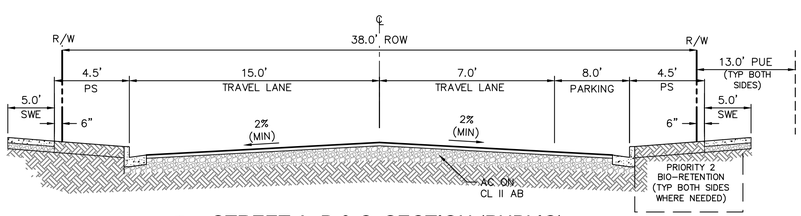
HIGH FIRE SEVERITY ZONE: NO

SOIL CONDITIONS: PROPERTY SOILS APPEAR SUITABLE TO RESIDENTIAL DEVELOPMENT AS PROPOSED.

HERITAGE TREES TO BE REMOVED (TAG NOs)*: 2, 4, 6, 7, 10, 14, 15, 16, 17, 20, 21, 33, 39, 40, 47, 48, 49, 50, 51, 52, 53, 55, 56

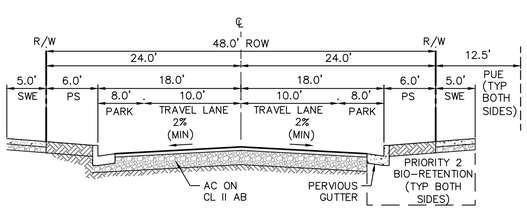
*REFERENCE ARBORIST REPORT
"TREE PRESERVATION AND MITIGATION REPORT"
PREPARED BY HORTICULTURAL ASSOCIATES





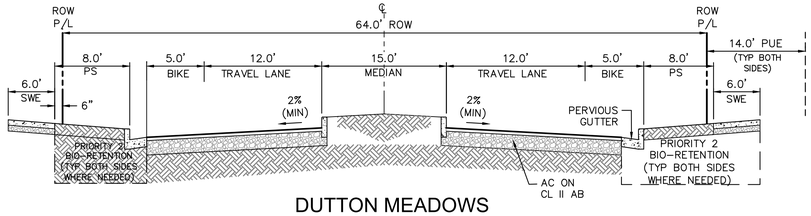
STREET A, B & C SECTION (PUBLIC)

NTS



ALOISE SECTION (PUBLIC)

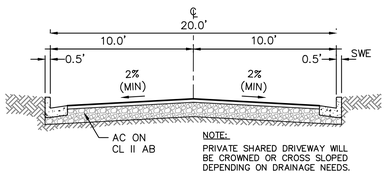
NTS



DUTTON MEADOWS SECTION (PUBLIC)

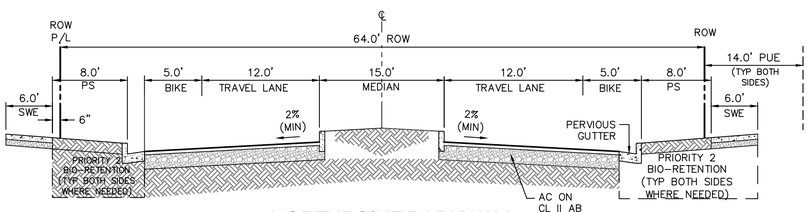
NTS

PER CITY OF SANTA ROSA STD 200J – PARKWAY, MODIFIED TO MATCH PREVIOUS DEDICATION OF NORTHPOINT PARKWAY BY CATALINA TOWNHOMES



LETTERED PARCELS (PRIVATE) DRIVEWAY SECTION

NTS



NORTHPOINT PARKWAY SECTION (PUBLIC)

NTS

PER CITY OF SANTA ROSA STD 200J – PARKWAY, MODIFIED TO MATCH PREVIOUS DEDICATION OF NORTHPOINT PARKWAY BY CATALINA TOWNHOMES

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Revisions

No.	Date	Description	Approved

adobe associates, inc.
civil engineering | land surveying | wastewater
1220 N. Dutton Ave., Santa Rosa, CA 95401
P. (707) 541-2300 F. (707) 541-2301
Website: www.adobeinc.com
"A Service You Can Count On!"

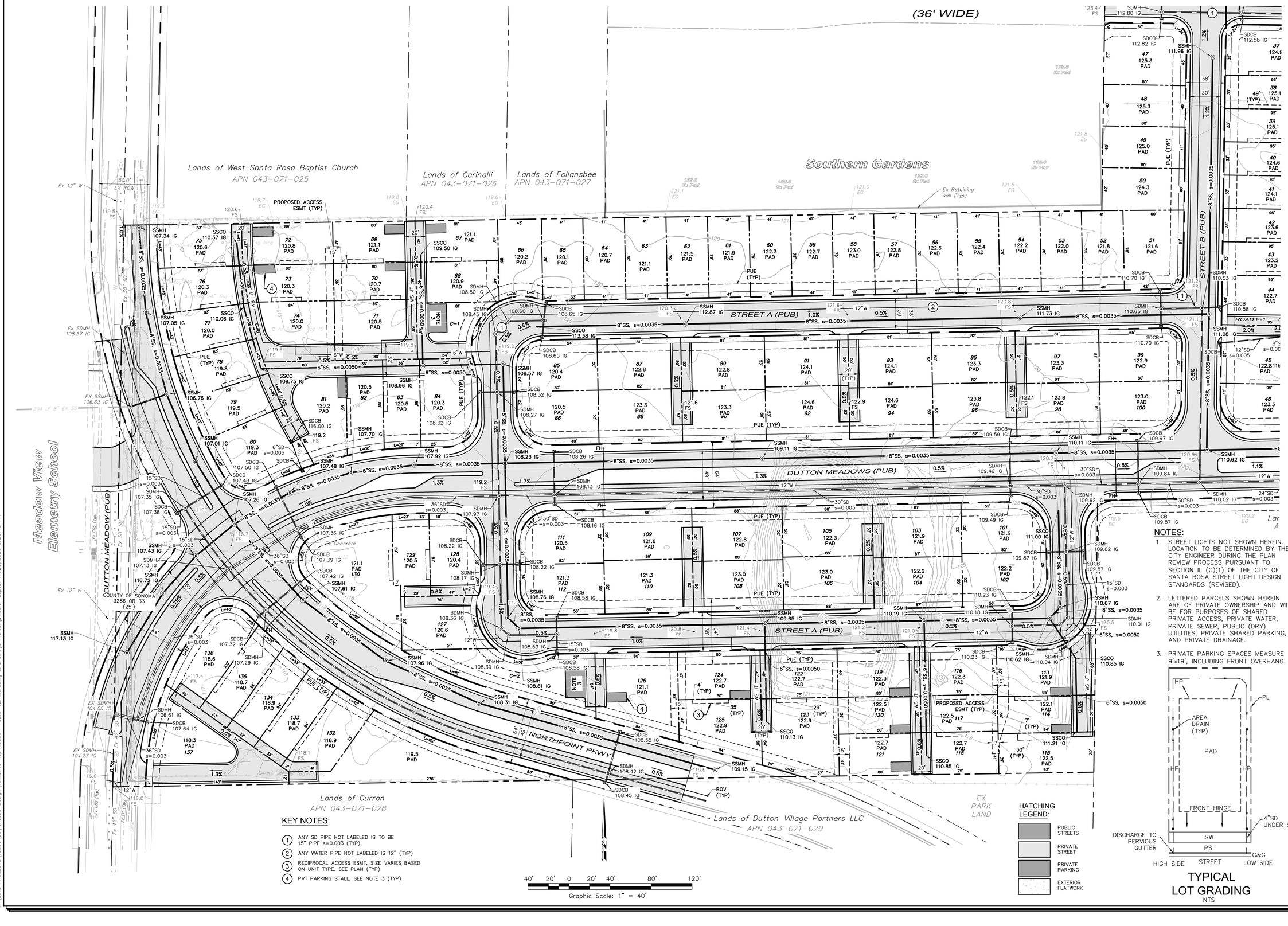
David R. Brown, RCE 41833
My license expires 3/31/2020

PROFESSIONAL ENGINEER * DAVID R. BROWN * No. 41833 Exp. 3/31/2020 * CIVIL * STATE OF CALIFORNIA

DUTTON MEADOWS
TITLE SHEET
2650, 2666, 2684 DUTTON MEADOW
1112, 1200 HEARN AVENUE
Santa Rosa, California
APN 043-071-007, 022, 023

SCALE: AS NOTED
Date: OCT 28, 2020
Design by: TRG/CM
Drawn by: TRG
Checked by: JLJ

Sheet
C1.0
1 of 3 Sheets
Job 18066


(36' WIDE)
Lands of West Santa Rosa Baptist Church
APN 043-071-025
Lands of Carinalli
APN 043-071-026
Lands of Follansbee
APN 043-071-027
Southern Gardens
PROPOSED ACCESS ESMT (TYP)
Ex Retaining Wall (Typ)
STREET A (PUB)
STREET B (PUB)
DUTTON MEADOWS (PUB)
NORTHPOINT PKWY
ROAD E-1
Meadow View Elemetry School
Lands of Curran
APN 043-071-028
Lands of Dutton Village Partners LLC
APN 043-071-029
EX PARK LAND
COUNTY OF SONOMA 3286 OR 33 (25')
294 LF 8" EX SS
Ex 12" W
Ex SDMH 108.57 IG
EX SSMH 106.63 IG
SSMH 117.13 IG
EX SDMH 104.55 IG
EX SDMH 104.23 IG
Ex 42" SD
Ex 30" SD
Ex 12" W
Ex 8" SS
Ex 6" W
Ex 8" W
Ex 4" G
Ex 4" W
Ex 4" SS
Ex 4" SD
Ex 6" SS
Ex 6" SD
Ex 8" SD
Ex 10" SD
Ex 12" SD
Ex 15" SD
Ex 18" SD
Ex 24" SD
Ex 36" SD
Ex 42" SD
Ex 48" SD
Ex 54" SD
Ex 60" SD
Ex 66" SD
Ex 72" SD
Ex 84" SD
Ex 96" SD
Ex 108" SD
Ex 120" SD
Ex 132" SD
Ex 144" SD
Ex 156" SD
Ex 168" SD
Ex 180" SD
Ex 192" SD
Ex 204" SD
Ex 216" SD
Ex

TYPICAL LOT GRADING

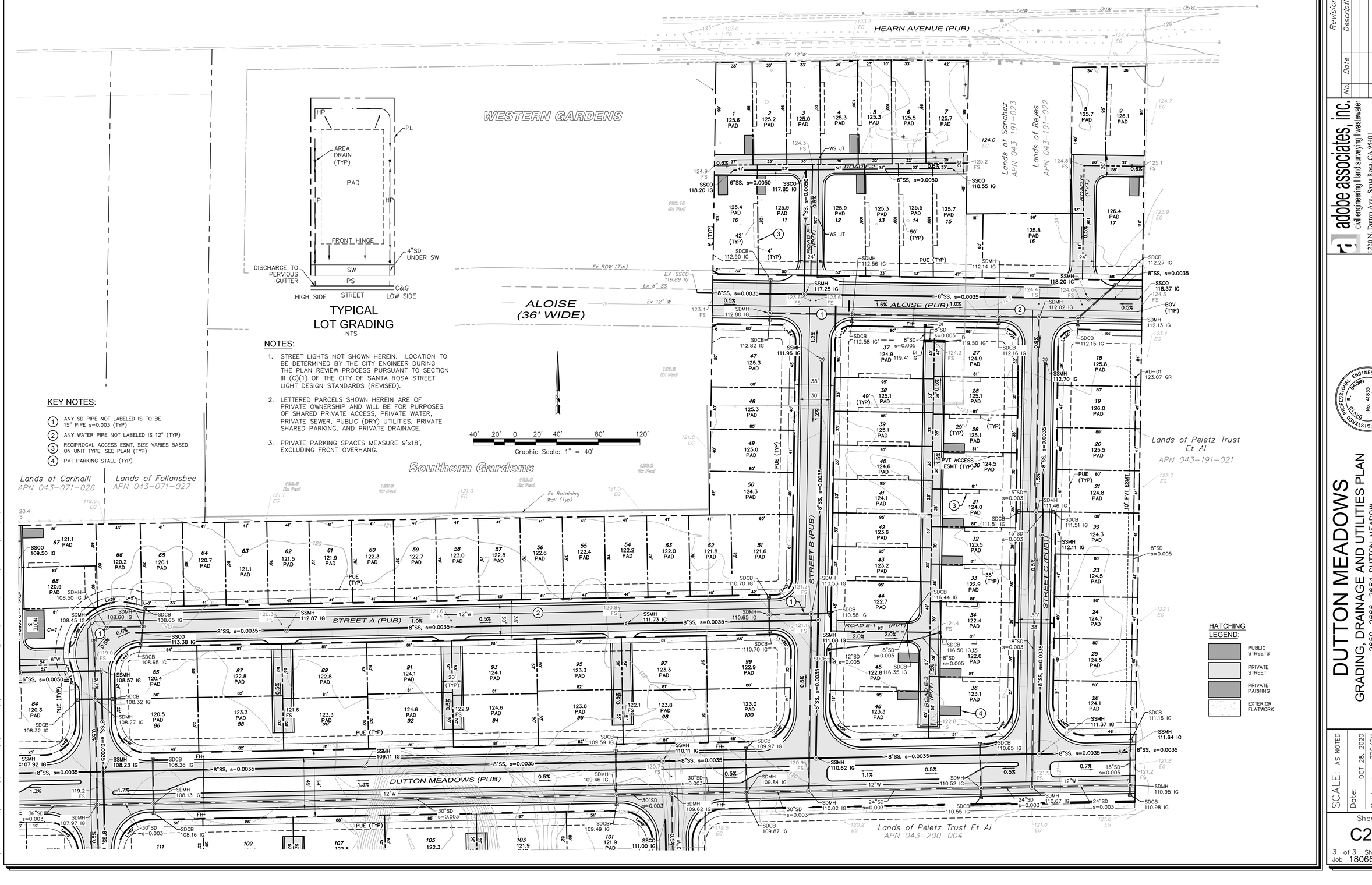
NTS

NOTES:

1. STREET LIGHTS NOT SHOWN HEREIN. LOCATION TO BE DETERMINED BY THE CITY ENGINEER DURING THE PLAN REVIEW PROCESS PURSUANT TO SECTION III (C)(1) OF THE CITY OF SANTA ROSA STREET LIGHT DESIGN STANDARDS (REVISED).
2. LETTERED PARCELS SHOWN HEREIN ARE OF PRIVATE OWNERSHIP AND WILL BE FOR PURPOSES OF SHARED PRIVATE ACCESS, PRIVATE WATER, PRIVATE SEWER, PUBLIC (DRY) UTILITIES, PRIVATE SHARED PARKING, AND PRIVATE DRAINAGE.
3. PRIVATE PARKING SPACES MEASURE 9'x18', EXCLUDING FRONT OVERHANG.

KEY NOTES:

1. ANY SD PIPE NOT LABELED IS TO BE 15" PIPE s=0.003 (TYP)
2. ANY WATER PIPE NOT LABELED IS 12" (TYP)
3. RECIPROCAL ACCESS ESMT, SIZE VARIES BASED ON UNIT TYPE. SEE PLAN (TYP)
4. PVT PARKING STALL (TYP)



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David R. Brown, RCE 41833
My license expires 3/31/2020

REGISTERED PROFESSIONAL ENGINEER * DAVID R. BROWN * No. 41833 Exp. 3/31/2020 * CIVIL * STATE OF CALIFORNIA

DUTTON MEADOWS

GRADING, DRAINAGE AND UTILITIES PLAN

2650, 2666, 2684 DUTTON MEADOW
1112, 1200 HEARN AVENUE
Santa Rosa, California
APN 043-071-007, 022, 023

SCALE: AS NOTED	
Date:	OCT 28, 2020
Design by:	TRG/CM
Drawn by:	TRG
Checked by:	JLJ

Sheet
C2.1
3 of 3 Sheets
Job 18066

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
1-1-03-F-0305

MAY 24 2005

Ms. Jane Hicks
Chief, Regulatory Branch
U.S. Army Corps of Engineers
San Francisco District
333 Market Street
San Francisco, California 94105-2197

Subject: Formal Consultation on the Dutton Meadows Subdivision Phases Two Through Five, Santa Rosa, Sonoma County, California (Corps File No. 26342N)

Dear Mr. Fong:

This is in response to your December 11, 2003, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Dutton Meadows Subdivision Phases Two Through Five Project (Project) located in Santa Rosa, Sonoma County, California. Your request for formal consultation was received in our office on August 7, 2003. This document represents the Service's biological opinion on the effects of the action on the threatened California tiger salamander (*Ambystoma californiense*) (tiger salamander) and endangered plant species Sebastopol meadowfoam (*Limnanthes vinculans)*, Sonoma sunshine (*Blennosperma bakeri*) and Burke's goldfield (*Lasthenia burkei*) (Plants), in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). Critical habitat has not been designated for the tiger salamander or the Plants in Sonoma County; therefore none will be destroyed or adversely modified by the proposed project.

This biological opinion is based on information provided in the following:

1. The August 5, 2003 letter from the Corps of Engineers (Corps) requesting formal consultation;

2. The June 11, 2002 Biological Assessment for the Dutton Meadow Development Project prepared by Olberding Environmental, Inc. and Laurence P. Stromberg, Ph.D.;

TAKE PRIDE IN AMERICA

3. Meetings between the Service, the applicants (Trumark Companies and Dutton Village Partners, LLC) and their representatives (Olberding and Stromberg);

4. E-mail correspondence between Vincent Griego of my staff and the applicants representatives;

5. Field investigations by Vincent Griego;

6. References cited in this Biological Opinion; and

7. Unpublished information held in the Service's files.

CONSULTATION HISTORY

June 11, 2003. The Service received an electronic copy of the Biological Assessment.

August 5, 2003. Corps of Engineers issued a formal request of the Service to initiate Section 7 consultation for the Dutton Meadows project.

August 27, 2003. The Service received a request from the applicant to conduct tiger salamander surveys on Dutton Meadows for winter of 2003/2004.

September 15, 2003. Vincent Griego of my staff informed the applicant that the Service would view that tiger salamanders likely inhabit the Dutton Meadows project site based on nearby tiger salamander observations, the natural history of the species, and the habitat attributes of the project site.

December 29, 2003. The applicant submits a draft Biological Opinion to Dan Buford of my staff.

January 7, 2004. The applicant submits a letter to Dan Buford of my staff inquiring on status of Services' progress on review of Biological Assessment and the Section 7 consultation process.

February 3, 2004. The applicant submits a letter to Dan Buford of my staff and Wayne White inquiring on status of Services' progress on review of Biological Assessment and the Section 7 consultation process.

February 26, 2004. Vincent Griego and Michael Nepsted of my staff visit the Dutton Meadows project site and Gobbi Preserve No. 2 with applicant and his representatives.

April 22, 2004. Representatives of my staff meet with representatives from DFG and applicant to discuss compensation for Dutton Meadows project site.

May 21, 2004. The applicant submits a letter to Dan Buford of my staff and Wayne White inquiring on status of Services' progress on review of Biological Assessment and the Section 7 consultation process.

June 4, 2004. The applicant and his representatives meet with Dan Buford of my staff to present compensation concept.

June 11, 2004. The applicant submits a letter to Dan Buford of my staff summarizing the compensation proposed for the project.

June 22, 2004. Meeting between Cay Goude and Vincent Griego of my staff and the applicants and their representatives to discuss the project, project impacts and compensation.

September 9, 2004. Meeting between Dan Buford and Cay Goude of my staff and the applicants and their representatives.

October 8, 2004. The applicants submit a draft project description for Dutton Meadows project and Gobbi Preserve No. 2 mitigation site.

BIOLOGICAL OPINION

Description of Proposed Action

The proposed Dutton Meadows project site is 56.88 acres located at 2732 Dutton Meadows Avenue, Santa Rosa, Sonoma County, California (Assessor Parcel Numbers 043-071-029, 043-191-021, 043-200-004, 043-071-007, 043-071-022, 043-191-016, 043-119-024, and 043-191-018, -019, -020). The site is bounded by Dutton Meadows Avenue on the west, by Hearn Avenue on the north and by the Colgan Creek Flood Control Channel on the southeast. Dutton Meadows is located southeast of the intersection of Hearn Avenue and Dutton Meadows Avenue, directly across the street from Meadow View Elementary School. The Project consists of 586 residential houses, four acres of park lands, retail and commercial development and pedestrian trails. Pedestrian trails will be provided from the project site to the proposed trail system along Colgan Creek Flood Channel.

Project Schedule and Phasing. Grading is expected to begin in the spring of 2006. Excess soil from the Gobbi Preserve No. 2 habitat restoration and wetland creation project will be stockpiled at the Dutton Meadows project site on approximately 0.7 acre as identified in a March 15, 2005 e-mail from Jeff Olberding and associated attachments. The excess soil will be used as fill for the construction of the Dutton Meadows project. Dutton Meadows will be built and sold in phases based on market demand, which is expected to result in the project being fully constructed within a two-to four-year time period. Model homes and the first phases of production homes will be constructed in 2006. Home construction will continue through 2008 and, depending on market demand, may extend a year or two more. Infrastructure will be constructed in multiple phases; however, most major infrastructure, including storm water facilities and interior roads, will be installed during the first year of construction.

Storm Water Pollution Prevention. A Storm Water Pollution Prevention Plan (SWPPP) will be developed to prevent project construction impacts on habitat and waters draining outside the work areas. Erosion control will be accomplished using conventional techniques suitable for local conditions (soil type, slope, *etc.*). Applicable protection measures, such as barrier and/or silt fencing and regular on-site monitoring, will be used to protect against inadvertent impacts to

areas outside the project impact area during construction.

The applicant will also prepare a Storm Water Quality Management Plan to treat post-construction storm water runoff according to the standards promulgated by the Regional Water Quality Control Board (RWQCB) and implemented through the City of Santa Rosa. Under this plan, a designated portion of the runoff generated by rainfall will be subject to treatment by an approved method, such as bioswales, detention basin, etc., prior to being released to the City's storm water system. Nuisance flows generated during the non-rainy season due to runoff from residential landscaping activities, watering of park lawns, etc, will also be subject to treatment prior to being released to the City's storm water system.

Proposed Conservation Measures. To compensate for adverse effects to 54.43 acres of tiger salamander upland dispersal, foraging, and aestivation habitat and 4.37 acres of seasonal wetlands and a drainage ditch that support potential habitat for the Plants and the tiger salamander, the applicant will establish a conservation easement on 108.8 acres of the Gobbi Ranch Property (Gobbi Preserve No. 2), according to the provisions of the *Wetland and Endangered Species Mitigation Plan, Gobbi Preserve No. 2, Sonoma County, California* (Mitigation Plan). To compensate for impacts to Corps jurisdictional wetland habitat, the applicant will either purchase 5.46 acres of wetland credits at a Corps-approved wetland mitigation bank or construct 5.66 acres of new wetlands at the Gobbi Preserve No. 2. If the applicants purchase mitigation bank credits, the wetlands will not be constructed as described in the Mitigation Plan. All the other elements of the Mitigation Plan would be implemented. After the first five years of the Gobbi Preserve No. 2 being under the protection of the conservation easement, the Gobbi Preserve No. 2 will be dedicated in fee title to the California Department of Fish and Game (DFG). The Gobbi Preserve No. 2 site is located between Stony Point and Llano Roads, south of Todd Road, just outside the limits of the City of Santa Rosa. This site is located directly south of the existing 31-acre Gobbi Mitigation Site (Gobbi Preserve No. 1) on which wetlands were restored as mitigation for the Courtside Village project.

Summary of the Primary Components of the Mitigation Plan

The Mitigation Plan for the proposed Gobbi Preserve No. 2 includes:

1. Preservation of several colonies of Sebastopol meadowfoam and Sonoma sunshine and the vernal pool and swale habitat they occupy;

2. Preservation of three tiger salamander breeding ponds and surrounding upland, dispersal, foraging, and estivation habitat;

3. Restoration of vernal pools, swales, and seasonal wetlands by removing fill spoiled into them during the excavation of Colgan Creek Flood Control Channel; and

4. Construction of additional vernal pools and outlet swales.

Wetlands and Other Sensitive Biological Resources. The Gobbi Preserve No. 2 site provides

108.8 acres of habitat currently supporting both special-status plant and animal species. Tiger salamander larvae were found in three vernal pools on the Gobbi Preserve No. 2 and in 15 vernal pools and one swale on the adjacent 31-acre mitigation site (Gobbi Preserve No. 1). On Gobbi Preserve No. 2, tiger salamander larvae were found in vernal pools with a combined area of 1.99 acres. Of the 17.71 acres of vernal pools, seasonal wetlands and swales on the Preserve, 12.55 acres provide suitable habitat for Sebastopol meadowfoam and Sonoma sunshine. Nineteen separate colonies of Sebastopol meadowfoam and five colonies of Sonoma sunshine occur on the Gobbi Preserve No. 2.

Mitigation Plan Description. The key elements of the mitigation plan are as follows:

1. Goals of Mitigation. The primary goals of the proposed mitigation approach are to compensate for the filling of wetlands and impacts to tiger salamander aestivation habitat through the restoration and creation of vernal pool and seasonal wetland habitat and providing permanent protection of existing wetlands and tiger salamander aestivation habitat by placing the entire mitigation site under a conservation easement and eventual fee title dedication to DFG.

2. Mitigation Actions. Mitigation will involve the restoration and creation of 5.66 acres of vernal pool, connecting swales, and seasonal wetland habitat and the permanent protection and preservation of all 108.8 acres of existing tiger salamander breeding, dispersal and aestivation habitat. Of this total, approximately 4.00 acres will be restored habitat and 1.66 acres will be constructed habitat. Approximately 0.029 acres of an existing seasonal wetland will be impacted by the restoration and construction of the new wetland habitat. The flow and volume of concentrated runoff into existing wetland habitat is expected to increase.

Habitat Type	Area Restored (ac.)	Area Constructed (ac.)	Total (ac.)
Vernal Pool	2.90	1.02	3.92
Swale	1.10	0.64	1.74
Total	4.00	1.66	5.66

3. Schedule. The wetland restoration and construction work is proposed to begin in the spring of 2005 and will be completed during the summer and fall of 2005. Once restoration activities are complete, the Gobbi Preserve No. 2 will be fenced, placed into a permanent conservation easement and managed for tiger salamander and special-status plant species. Mitigation efforts would result in permanent protection of 23.34 acres of wetlands positioned within 85.46 acres of upland aestivation habitat providing a 3.7:1, upland to wetland ratio.

4. Preservation. The applicant will preserve all of the colonies of Sebastopol meadowfoam and Sonoma sunshine, two of the endangered plant species that occur on the Preserve.

5. Short-term Maintenance and Contingency Funds. The applicant will undertake and have responsibility for short-term maintenance and management during the initial five-year monitoring period according to the provisions of the mitigation plan. The applicant will provide an endowment, bond or other acceptable security for the portion of a contingency security. The amount of the contingency security will cover the expected remediation, management and maintenance costs anticipated during the interim management period. The amount will need to be agreed upon with the DFG prior to groundbreaking.

6. Protection. The applicant will place a Service/DFG-approved conservation easement on the 108.8 acre Gobbi Preserve No. 2 and have it recorded no later than 3 months prior to groundbreaking of the Dutton Meadows project site. The conservation easement will be held by the Department of Fish and Game until the five-year monitoring program has been completed. The conservation easement will include, but not limited to, provisions and responsibilities of the applicant and the Department of Fish and Game for the protection of the Gobbi Preserve No. 2 including the dedication of fee title to the Department of Fish and Game after completing the five-year monitoring program of the habitat restoration. The Service will receive a true copy of the recorded conservation easement within 30 days of its recordation. The applicant will use the Service's latest conservation easement template (see attachment) as a model in order to adhere to the Service's minimum standards for conserving the Gobbi Preserve No. 2.

7. Long-term Management. Gobbi Preserve No. 2 will be managed in accordance with the final plan approved for the Gobbi Preserve No. 2 by the Service and California Department of Fish and Game. Management will be adaptive, established initially and modified as necessary based on the results of the monitoring program to maintain the wetlands and habitat for the listed species on the preserve. Livestock grazing will be used as a management tool to reduce wildfire fuel loads and improve or maintain grassland habitat species diversity. Grazing will be conducted in a manner to achieve the goals established by the Service and DFG.

8. Financial Assurances. Prior to groundbreaking for construction of the Dutton Meadows project site and the habitat restoration at the Gobbi Preserve No. 2, the applicant will provide an irrevocable letter of credit to cover the cost of construction of the Gobbi Preserve No. 2 mitigation project and the short-term monitoring and maintenance program. The amount of the funding for construction, short-term monitoring and maintenance, and longer-term monitoring and perpetual management and maintenance of the Gobbi Preserve No. 2 must be approved and accepted by the Service and DFG. Prior to groundbreaking for the construction of the Dutton Meadows project (excluding the habitat restoration at the Gobbi Presserve No. 2), the applicant will provide the Service and the Corps documentation that: (1) funds for the perpetual management of the Gobbi Preserve No. 2 have been transferred to the Department of Fish and Game (2) the DFG has accepted the funds and considers them adequate; and (3) that these funds have been deposited in an account (*i.e.* endowment) that will provide adequate financing for the monitoring and perpetual management and maintenance of the Gobbi Preserve No. 2.

9. Performance Criteria. Evaluation of the rate at which the restored and constructed wetlands approach the structure and composition of natural wetland habitats will be assessed against performance criteria over a five-year monitoring period. The objective of hydrologic monitoring is to determine whether or not the restored and constructed wetlands function adequately.

    a. Vernal Pool Hydrologic Criterion. The hydrologic function of a restored or constructed vernal pool will be considered adequate if, by the end of the monitoring period the mean number of days over which the deepest point (invert) of the pool is inundated falls within the range of means for the reference vernal pools.

    b. Swales Hydrologic Criteria. A restored or constructed swale will be considered to display adequate hydrologic function if: (1) the swale contains standing or flowing water for 30 or more continuous days during the growing season; or (s) when standing or flowing water is not present, some portion of the upper 12 inches of soil at the swale is saturated or inundated for a period of at least 30 consecutive days during the growing season.

    c. Vernal Pool Vegetation Criteria. Vernal pool vegetation will be considered adequately established in each restored or constructed vernal pool if the following performance criteria are met:

        i. the vegetation is dominated by hydrophytic vegetation;

        ii. the number of vernal pool species is 80 percent or more of the average number of vernal pool species in the source or reference pools;

        iii. the total canopy cover of vernal pool species is at least 50 percent of the average cover of vernal pool species in the reference pools; and

        iv. the total cover of vernal pool species shows no significant declines during the monitoring period (unless declines of similar magnitude are observed in the control pools).

    d. Swale Vegetation Criteria. The vegetation in restored and constructed swales will be considered to be satisfactorily established if the following performance criteria are met:

        i. the vegetation is dominated by hydrophytic vegetation;

        ii. the number of plant species is 80 percent or more of the average number of species in the source or reference wetland swales;

iii. the total canopy cover of wetland species is at least 50 percent of the average cover of wetland species in the source or reference wetland swales; and

iv. the total cover of FAC, FACW, and OBL species does not decline during the monitoring period (unless declines are observed in the reference wetlands).

10. Monitoring. The applicant will monitor the hydrologic function and establishment of vegetation in all restored and constructed wetlands. A natural vernal pool/swale complex or another suitable site will serve at the reference site for the monitoring program. The reference site must be prior approved by the Service and DFG.

a. Hydrologic Function in Vernal pools. Measurements of the depth of inundation in vernal pools will be made using staff gages and regular field visits. Staff gages will be installed before the first rainy season. One staff gage will be installed in the bottom (at the invert) of each selected pool and each reference pool. During the rainy season and throughout the period over which the pools contain ponded water each staff gage will be visited and the depth of standing water will be measured on a bi-weekly basis.

b. Hydrologic Function in Swales. Observations of standing or flowing water will be made in the selected swales and each seasonal wetland at the same time staff gage measurements are made in the vernal pools. When standing or flowing water is present, the surface 12 inches of soil will be assumed to be saturated. If standing or flowing water is not observed for more than 14 continuous days during the growing season, a determination will be made as to whether or not the soils within the swale or seasonal wetland are saturated in the upper 12 inches of the soil profile. This determination will be made following the procedures described in the Corps of Engineers' 1987 Wetland Delineation Manual for assessing hydric soils.

c. Vegetation Establishment in Vernal Pools. Small rectangular plots arranged in a systematic grid throughout the portion of the pool below the outlet barrier will be used to sample the vegetation. In each plot, the cover of each species will be estimated. The combined cover of all vernal pool species, which will be used to determine whether or not the cover in the pool meets the cover criterion and to assess cover trends. The species list used to meet the 80% (eighty percent) criterion will be obtained by a visual survey of the entire pool and may include some species not encountered in the plots.

d. Vegetation Establishment in Swales. Each swale will be surveyed independently with a series of systematically allocated sampling units (plots). Sample sites in the swales will be arrayed using equally spaced parallel

transects crossing the swales perpendicular to the axis of flow. The number of species will be recorded in each plot and cover measurements will be made for each species. The species list used to meet the 80-percent criterion will be obtained through a visual survey of the entire unit.

e. Endangered Plant Population Maintenance and Colonization. Annual trends in endangered plant populations will be estimated using either small or medium-sized rectangular plots arranged in a systematic grid throughout the pool or in a swale section that encompasses the plants at the upstream and downstream ends of the population. The number of both Sebastopol meadowfoam and Sonoma sunshine will be counted in each plot.

f. Tiger salamander Breeding. Use of existing known breeding ponds and colonization and use of restored and constructed breeding ponds would be assessed by conducting larval surveys according to the current Service survey protocol. Egg surveys would be conducted during the winter and larval surveys would be conducted during the winter and spring..

Actions Taken to Minimize Impacts of Wetland Restoration and Construction

1. Passive Relocation. The applicant will use a fence-and-ramp system to passively relocate (temporarily exclude) tiger salamander from the three work areas in which wetland restoration and construction are planned. The fence-and-ramp system will prevent migrating adults and juveniles from remaining within the work areas and allow those that have aestivated within these areas to disperse toward the breeding ponds. The layout and materials of the fence-and-ramp system have been approved by the Service and installation has been performed under the Department of Fish and Game permit. Installation was completed before the first rains during the 2004-05 rainy season,. The fence-and-ramp will remain in place until no water remains in the known breeding ponds on Gobbi Preserve No. 1 and Gobbi Preserve No. 2.

2. Biological Monitor. A biological monitor will be on site for part of each day for the entire period during which wetland restoration and construction occur. The applicant's wetland specialist, who will be on-site to monitor the earthwork process, may serve as the biological monitor. The biological monitor will inform the Service and DFG if any tiger salamander are encountered and request a location for release. The biological monitor will prepare a report summarizing the entire operation for submittal to the Service and DFG.

3. Storm Water Pollution Prevention Plan (SWPPP). The applicant will develop and implement a SWPPP designed to prevent impacts of wetland restoration and construction on habitat outside the work areas. The applicant will minimize disturbance of upland habitat during wetland restoration and construction. The length of access, haul roads and the area of stock piles will be minimized and will be clearly

identified prior to groundbreaking. Any areas disturbed during earthwork will be disced, and stockpiled upland topsoil containing seed and mulch will be reapplied to encourage reestablishment of the species common in the annual grassland habitat on the Preserve.

4. Dust Control. The applicant will carry out a dust control program during all active on-site grading operations. The program is intended to minimize the amount of dust leaving construction areas that could be deposited on nearby residents or sensitive habitat. It will consist of continuous use of water trucks during active grading operations. Equipment will be allocated based on weather and wind conditions, and the soil conditions encountered during construction operations.

Actions Taken to Minimize Impacts of the Dutton Meadows Project Construction

The following minimization measures will be implemented for the proposed project, including, where appropriate, the Gobbi Preserve No. 2 mitigation site. They are divided into three categories: protective measures instituted before or during the construction phase that will serve to avoid and minimize impacts; avoidance and minimization protocols conducted before any ground disturbance begins to avoid or minimize take; and conservation of habitat.

Protective Measures

1. A duly trained monitor will be present at all times when work is in progress at the project site and mitigation site to supervise the on-site compliance of these protection measures. A Service-approved biologist will be responsible for appropriate training of the monitor.
2. A training session will be given by the biologist to all construction workers before work is started on the project. After initial training, all new personnel will be given the training as well. The training session will provide pictures of the tiger salamander, information on their biology, measures required to protect these species, relevant Federal and state regulations, penalties to harming or harassing the tiger salamander, and what to do if tiger salamander are found.
3. If a tiger salamander is observed within the project site by a worker, the worker will immediately inform the monitor. The monitor will notify the biologist immediately. All work will halt and machinery turned off within 100 feet of the animal until a biologist can capture and remove the tiger salamander from the work area. Service-approved biologists are the only personnel allowed to handle tiger salamander. tiger salamander found in the work area will be relocated to pre-approved areas no more than one hour after capture.
4. The monitor and the biologist have the authority to halt work activities at any time to prevent harming special status species or when any of these protective measures have been violated. Work will only commence when authorized by the monitor or biologists.

5. Before the start of work each morning, the monitor will check for animals under any equipment such as vehicles and stored pipes.
6. Before the start of work each morning, the monitor will check all excavated steep-walled holes or trenches greater than one foot deep for any wildlife. Wildlife will be removed; the biologist will be notified if tiger salamander are found.
7. A record of all tiger salamander observed and the outcome of that observation will be kept by the biologist and submitted to the Service.
8. Access routes and number and size of staging and work areas will be limited to the minimum necessary to achieve the project goals. Routes and boundaries of the road work will be clearly marked. Off-road driving will be limited to only what is necessary for the project.
9. All foods and food-related trash items, such as lunch bags, plastic sandwich bags, fast food containers, foods of any type, candy wrappers, chip packages, drink bottles and cans, etc., will be enclosed in sealed trash containers and removed completely from the site once every three days. Food items could attract predators into the work area.
10. No pets are allowed anywhere in the project site during construction.
11. A speed limit of 15 mph on dirt roads will be maintained.
12. All equipment will be maintained such that there will be no leaks of automotive fluids such as gasoline, oils, or solvents.
13. Hazardous materials such as fuels, oils, solvents, etc., will be stored in sealable containers in a designated location that is at least 200 feet from aquatic habitats. All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 200 feet from any aquatic habitat.
14. A pollution prevention plan and the identification of best management practices to control storm water discharge, erosion, and sedimentation will be developed and implemented.
15. All grading and clearing will be conducted between April 15 and October 15 of any given year.
16. Project areas outside of the footprint of the development that have been disturbed by construction activities will be re-vegetated with native plants

Avoidance and Minimization Protocols.

At the Gobbi Preserve No. 2 mitigation site, the applicant will use a fence-and-ramp system to passively relocate (temporarily exclude) tiger salamander from the three work areas in which wetland restoration and construction are planned. The fence-and-ramp system will prevent migrating adults and juveniles from remaining within the work areas and allow those that have aestivated within these areas to disperse toward the breeding ponds.

Conservation of Habitat

The *Wetland and Endangered Species Mitigation Plan, Gobbi Preserve No. 2, Sonoma County, California* is included within the project description and described above. This plan describes actions to mitigate for impacts of the proposed project on listed species at the Dutton Meadows project site and various actions to avoid, minimize, and mitigate impacts related to implementation of the mitigation plan at the Gobbi Preserve No. 2. As part of the monitoring program, the following actions will be implemented:

1. Conduct two aquatic surveys at the newly created pond the first spring after it is created. After that, every year for the first five years of the project, every other year for the subsequent 10 years, and every five years thereafter. Survey methods will include dip netting and seining if appropriate. Surveys will be conducted first between March 1 and April 15 and second between April 15 and May 15 of a given year. If tiger salamander are discovered during the first survey, a second survey will not be conducted.

2. Conduct one night survey at the end of February or beginning of March. The night survey will consist of searching the upland habitat for tiger salamander using four-volt lights. Surveys will preferably be conducted on a night after a rainstorm.

3. Record pond characteristics including percent cover, amount of open water, species composition, and water depth during spring surveys. Water levels also will be recorded during all the other filed survey efforts. Photographs will be taken from the same points each year.

4. Monitor the density and height of the terrestrial vegetation twice a year. The grazing management plan will specify the type and timing of measurements to be taken and the modifications to the grazing program needed to maintain vegetation at an appropriate level.

5. Monitor the integrity of the fence each year of the monitoring plan and make necessary repairs.

All monitoring results of the activities proposed above will be provided in annual monitoring report to the Corps and the Service by August 30th of each year for the first 10 years. The report will, if necessary, recommend maintenance practices, repairs, *etc.* (subject to the review and approval of the Service) necessary to ensure the Gobbi Preserve No. 2 continues to function as habitat for the species identified above.

Action Area

The *Action Area* is defined by the Code of Federal Regulations as "all areas to be affected directly or indirectly by the Federal Action, and not merely the immediate area involved in the action." (50 CFR 402.02). The action area for the proposed Dutton Meadows Subdivision includes the 56.88 -acre project development site and the 108.8 acre Gobbi Preserve No. 2

compensation site. An additional element of the Project will include the widening the east side of a short stretch of the extension of Northpoint Parkway from the edge of the project site to Hearn Ave. Part of the area that will be affected by the expansion along the east side of the extension of Northpoint Parkway currently consists of buildings and other hardscape and is not considered tiger salamander habitat. The remaining area, approximately 0.07 acres, brings the total area that will be directly impacted by the Project to 56.95 acres.

Status of the Species

Tiger Salamander

The Sonoma County distinct population segment of the California tiger salamander was emergency listed as endangered on July 22, 2002 (67 **FR** 47726). The salamander was listed as endangered on March 19, 2003 (68 **FR** 13497). The California tiger salamander was listed as threatened on August 4, 2004 (69 **FR** 47212). This latter listing changed the status of the Santa Barbara and Sonoma county populations from endangered to threatened. On August 10, 2004, the Service proposed 47 critical habitat units in 20 counties. No critical habitat was proposed for Sonoma County.

The tiger salamander is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults may reach a total length of 8.2 inches (Petranka 1998). Tiger salamanders exhibit sexual dimorphism; males tend to be larger than females. The coloration of the tiger salamander is white or yellowish markings against black. As adults, California tiger salamanders tend to have the creamy yellow to white spotting on the sides with much less on the dorsal surface of the animal, whereas other tiger salamander species have brighter yellow spotting that is heaviest on the top of the animals.

Historically, the tiger salamander inhabited low elevation grassland and oak savanna plant communities of the Central Valley, and adjacent foothills, and the inner coast ranges in California (Jennings and Hayes 1994; Storer 1925; Shaffer *et al.* 1993). The species occurs from near sea level up to approximately 3,900 feet in the coast ranges and up to about 1600 feet in the Sierra Nevada foothills (Shaffer et al. 2004). Along the coast ranges, the species occurred from the Santa Rosa area of Sonoma County south to the vicinity of Buellton in Santa Barbara County. In the Central Valley and surrounding foothills, the species occurred from northern Yolo County southward to northwestern Kern County and northern Tulare County.

The tiger salamander has an obligate biphasic life cycle (Shaffer *et al.* 2004). Although the larvae salamanders develop in the vernal pools and ponds in which they were born, they are otherwise terrestrial salamanders that spend most of their postmetamorphic lives in widely dispersed underground retreats (Shaffer *et al.* 2004; Trenham *et al.* 2001). Subadult and adult tiger salamanders spend the dry summer and fall months of the year in the burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Storer 1925; Loredo and Van Vuren 1996; Petranka 1998; Trenham

1998a). Camel crickets and other invertebrates within these burrows likely are prey for tiger salamanders, as well as protection from the sun and wind associated with the dry California climate that can cause dessication (drying out) of amphibian skin. Although tiger salamanders are members of a family of "burrowing" salamanders, tiger salamanders are not known to create their own burrows in the wild, likely due to the hardness of soils in the California ecosystems in which they are found. Because they live underground in the burrows of mammals, they are rarely encountered by humans even where they are abundant. The burrows may be active or inactive, but because they collapse within approximately 18 months if not maintained, an active population of burrowing mammals is necessary to sustain sufficient underground refugia for the species (Loredo *et al.* 1996). Tiger salamanders also may utilize leaf litter or dessication cracks in the soil.

Although the upland burrows inhabited by tiger salamanders have often been referred to as "estivation" sites, which implies a state of inactivity, most evidence suggests that tiger salamanders remain active in their underground dwellings. A recent study has found that tiger salamanders move, feed, and remain active in their burrows (Van Hattem 2004). Because tiger salamanders arrive at breeding ponds in good condition and are heavier when entering a pond than when leaving, researchers have long inferred that the tiger salamanders are feeding while underground. Recent direct observations have confirmed this (Trenham 2001; van Hattem 2004). Thus, upland habitat is a more accurate description of the terrestrial areas used by tiger salamanders.

Once fall or winter rains begin, the salamanders emerge from the upland sites on rainy nights to feed and to migrate to the breeding ponds (Stebbins 1985, 1989; Shaffer *et al.* 1993). Adult salamanders mate in the breeding ponds, after which the females lay their eggs in the water (Twitty 1941; Shaffer *et al.* 1993; Petranka 1998). Historically, the tiger salamander utilized vernal pools, but the animals also currently breed in livestock stockponds. Females attach their eggs singly, or in rare circumstances, in groups of two to four, to twigs, grass stems, vegetation, or debris (Storer 1925; Twitty 1941). In ponds with no or limited vegetation, they may be attached to objects, such as rocks and boards on the bottom (Jennings and Hayes 1994). After breeding, adults leave the pool and return to the small mammal burrows (Loredo *et al.* 1996; Trenham 1998a), although they may continue to come out nightly for approximately the next two weeks to feed (Shaffer *et al.* 1993). In drought years, the seasonal pools may not form and the adults can not breed (Barry and Shaffer 1994).

Tiger salamander eggs hatch in ten to 14 days with newly hatched salamanders (larvae) ranging from 0.45 to 0.56 inch in total length (Petranka 1998). The larvae are aquatic. They are yellowish gray in color and have broad fat heads, possess large, feathery external gills, and broad dorsal fins that extend well onto their back. The larvae feed on zooplankton, small crustaceans, and aquatic insects for about six weeks after hatching, after which they switch to larger prey (J. Anderson 1968). Larger larvae have been known to consume smaller tadpoles of Pacific treefrogs (*Pseudacris regilla*) and California red-legged frogs (J. Anderson 1968; P. Anderson 1968). The larvae are among the top aquatic predators in the seasonal pool ecosystems. They

often rest on the bottom in shallow water, but also may be found at different layers in the water column in deeper water. The young salamanders are wary and when approached by potential predators, will dart into vegetation on the bottom of the pool (Storer 1925).

The larval stage of the tiger salamander usually last three to six months, as most seasonal ponds and pools dry up during the summer (Petranka 1998). Amphibian larvae must grow to a critical minimum body size before they can metamorphose (change into a different physical form) to the terrestrial stage (Wilbur and Collins 1973). Individuals collected near Stockton in the Central Valley during April varied from 1.88 to 2.32 inches in length (Storer 1925). Feaver (1971) found that larvae metamorphosed and left the breeding pools 60 to 94 days after the eggs had been laid, with larvae developing faster in smaller, more rapidly drying pools. The longer the ponding duration, the larger the larvae and metamorphosed juveniles are able to grow, and the more likely they are to survive and reproduce (Pechmann *et al.* 1989; Semlitsch *et al.* 1988; Morey 1998; Trenham 1998b). The larvae will perish if a site dries before metamorphosis is complete (P. Anderson 1968; Feaver 1971). Pechmann *et al.* (1988) found a strong positive correlation with ponding duration and total number of metamorphosing juveniles in five salamander species. In Madera County, Feaver (1971) found that only 11 of 30 pools sampled supported larval California tiger salamanders, and 5 of these dried before metamorphosis could occur. Therefore, out of the original 30 pools, only six (20 percent) provided suitable conditions for successful reproduction that year. Size at metamorphosis is positively correlated with stored body fat and survival of juvenile amphibians, and negatively correlated with age at first reproduction (Semlitsch *et al.* 1988; Scott 1994; Morey 1998). In the late spring or early summer, before the ponds dry completely, metamorphosed juveniles leave them and enter upland habitat. This emigration occurs in both wet and dry conditions (Loredo and Van Vuren 1996; Loredo *et al.* 1996). Unlike during their winter migration, the wet conditions that California tiger salamanders prefer do not generally occur during the months when their breeding ponds begin to dry. As a result, juveniles may be forced to leave their ponds on rainless nights. Under these conditions, they may move only short distances to find temporary upland sites for the dry summer months, waiting until the next winter's rains to move further into suitable upland refugia. Once juvenile tiger salamanders leave their birth ponds for upland refugia, they typically do not return to ponds to breed for an average of 4 to 5 years. However, they remain active in the uplands, coming to the surface during rainfall events to disperse or forage (Trenham and Shaffer, unpublished manuscript).

Lifetime reproductive success for California and other tiger salamanders is low. Trenham et al.(2000) found the average female bred 1.4 times and produced 8.5 young that survived to metamorphosis per reproductive effort. This resulted in roughly 11 metamorphic offspring over the lifetime of a female. Two reasons for the low reproductive success are the preliminary data suggests that most individuals of the tiger salamanders require two years to become sexually mature, but some individuals may be slower to mature (Shaffer *et al.* 1993); and some animals do not breed until they are four to six years old. While individuals may survive for more than ten years, many breed only once, and in some populations, less than 5 percent of marked juveniles survive to become breeding adults (Trenham 1998b). With such low recruitment, isolated

populations are susceptible to unusual, randomly occurring natural events as well as from human caused factors that reduce breeding success and individual survival. Factors that repeatedly lower breeding success in isolated pools can quickly extirpate a population.

Dispersal and migration movements made by tiger salamanders can be grouped into two main categories: (1) breeding migration; and (2) interpond dispersal. Breeding migration is the movement of salamanders to and from a pond from the surrounding upland habitat. After metamorphosis, juveniles move away from breeding ponds into the surrounding uplands, where they live continuously for several years. At a study in Monterey County, it was found that upon reaching sexual maturity, most individuals returned to their natal/ birth pond to breed, while 20 percent dispersed to other ponds (Trenham *et al.* 2001). Following breeding, adult tiger salamanders return to upland habitats, where they may live for one or more years before breeding again (Trenham *et al.* 2000).

Tiger salamanders are known to travel large distances from breeding ponds into upland habitats. Maximum distances moved are generally difficult to establish for any species, but tiger salamanders in Santa Barbara County have been recorded to disperse 1.3 miles from breeding ponds (Sweet 1998). Tiger salamanders are known to travel between breeding ponds; one study found that 20 to 25 percent of the individuals captured at one pond were recaptured later at ponds approximately 1,900 and 2,200 feet away (Trenham *et al.* 2001). In addition to traveling long distances during migration to or dispersal from ponds, tiger salamanders may reside in burrows that are far from ponds.

Although the observations above show that tiger salamanders can travel far, typically they stay closer to breeding ponds. Evidence suggests that juvenile tiger salamanders disperse further into upland habitats than adult tiger salamanders. A trapping study conducted in Solano County during winter of 2002/2003 found that juveniles used upland habitats further from breeding ponds than adults (Trenham and Shaffer, unpublished manuscript). More juvenile salamanders were captured at distances of 328, 656, and 1,312 feet from a breeding pond than at 164 feet. Large numbers, approximately 20 percent of total captures, were found 1,312 feet from a breeding pond. Fitting a distribution curve to the data revealed that 95 percent of juvenile salamanders could be found within 2,099 feet of the pond, with the remaining 5 percent being found at even greater distances. Preliminary results from the 2003-04 trapping efforts detected juvenile tiger salamanders at even further distances, with a large proportion of the total salamanders caught at 2,297 feet from the breeding pond (Trenham *et al.*, unpublished data. During post-breeding emigration, radio-equipped adult tiger salamanders were tracked to burrows 62 to 813 feet from their breeding ponds (Trenham 2001). These reduced movements may be due to adult California tiger salamanders having depleted physical reserves post-breeding, or also due to the drier weather conditions that can occur during the period when adults leave the ponds.

In addition, rather than staying in a single burrow, most individuals used several successive burrows at increasing distances from the pond. Although the studies discussed above provide an

approximation of the distances that tiger salamanders regularly move from their breeding ponds, upland habitat features will drive the details of movements in a particular landscape. Trenham (2001) found that radio-tracked adults favored grasslands with scattered large oaks, over more densely wooded areas. Based on radio-tracked adults, there is no indication that certain habitat types are favored as corridors for terrestrial movements (Trenham 2001). In addition, at two ponds completely encircled by drift fences and pitfall traps, captures of arriving adults and dispersing new metamorphs were distributed roughly evenly around the ponds. Thus, it appears that dispersal into the terrestrial habitat occurs randomly with respect to direction and habitat types.

Several species have either been documented to prey or likely prey upon the tiger salamanders including coyotes (*Canis latrans*), raccoons (*Procyon lotor*), opossums (*Didelphis virginiana*), egrets (*Egretta species*), great blue herons (*Ardea herodias*), crows (*Corvus brachyrhynchos*), ravens (*Corvus corax*), bullfrogs (*Rana catesbeiana*), mosquito fish (*Gambusia affinis*), and crayfish (*Procrambus* species).

The tiger salamanders are imperiled throughout its range by a variety of human activities (U.S. Fish and Wildlife Service 2004). Current factors associated with declining populations of the salamander include continued degradation and loss of habitat due to agriculture and urbanization, hybridization with non-native eastern tiger salamanders (*Ambystoma tigrinum*) (Fitzpatrick and Shaffer 2004; Riley *et al.* 2003), and introduced predators. Fragmentation of existing habitat and the continued colonization of existing habitat by non-native tiger salamanders (*Ambystoma tigrinum* and other species) may represent the most significant current threats to tiger salamanders, although populations are likely threatened by more than one factor. Isolation and fragmentation of habitats within many watersheds have precluded dispersal between sub-populations and jeopardized the viability of metapopulations (broadly defined as multiple subpopulations that occasionally exchange individuals through dispersal, and are capable of colonizing or "rescuing" extinct habitat patches). Other threats are predation and competition from introduced exotic species; possible commercial overutilization; disease; various chemical contaminants; road-crossing mortality; and certain unrestrictive mosquito and rodent control operations. The various primary and secondary threats are not currently being offset by existing Federal, State, or local regulatory mechanisms. The tiger salamander also is vulnerable to chance environmental or demographic events, to which small populations are particularly vulnerable.

Burke's goldfields

Burke's goldfields was federally listed as endangered on December 2, 1991 (56 **FR** 61173). No critical habitat has been designated for this species. Burke's goldfields is an annual herb in the aster family (Asteraceae). Plants are typically less than 30 cm in height (Hickman 1993) and usually branched (California Native Plant Society (CNPS) 1977). Leaves are opposite, less than 5 cm in length, and pinnately lobed. Yellow, daisy-like inflorescences with separate involucre bracts (leaf-like structures beneath the flower head) appear from approximately April through June (Skinner and Pavlik 1994). Fruits are achenes (dry, one-seeded fruits) less than 1.5 mm in

length. The fruits of Burke's goldfields can be distinguished from those of other goldfields by the presence of one long awn (bristle and numerous short scales) (Hickman 1993). Individual Burke's goldfields plants may exhibit some geographic variation in morphology (McCarten 1985 as cited in CH2M Hill 1995, Patterson *et al.* 1994). Patterson *et al.* (1994) report robust specimens from the southern Santa Rosa Plain near the Laguna de Santa Rosa and variation in the number of awns from a Lake County population. Burke's goldfields can be distinguished from smooth goldfields (*Lasthenia glaberrima*) because smooth goldfields have partly fused involucre bracts and a pappus (ring of scale-like or hair-like projections at the crown of an achene) of numerous narrowed scales. The linear leaves without lobes distinguish common goldfields (*Lasthenia californica*) from Burke's goldfields (Hickman 1993).

Burke's goldfields is endemic to the central California Coastal Range region and has been reported historically from Mendocino, Lake, and Sonoma counties (CNPS 1977, Patterson *et al.* 1994). The type locality of Burke's goldfields is the only known occurrence from Mendocino County and is possibly extirpated. Two California Natural Diversity Database (CNDDB) occurrences are recorded from Lake County, at Manning Flat and at a winery on Highway 29. Both Lake County occurrences are presumed extant. The remaining occurrences are from Sonoma County (CNDDB 1998). Within Sonoma County, one occurrence is known from north of Healdsburg (Patterson *et al.* 1994). On the Santa Rosa Plain, Burke's goldfields is distributed primarily in the northwestern and central areas with two additional occurrences south of Highway 12 near the Laguna de Santa Rosa (CH2M Hill 1995). The core of the current range of Burke's goldfields is in the Santa Rosa Plain.

Burke's goldfields grow in vernal pools and swales below 500 meters (m) (Hickman 1993). At the Manning Flat occurrence in Lake County, Burke's goldfields is found in a series of claypan vernal pools on volcanic ash soils (56 **FR** 61173, CNDDB 1998). At this location, the species is associated with common goldfields and few-flowered navarretia (*Navarretia leucocephala pauciflora*) (CNDDB 1998). In Sonoma County, the vernal pools containing Burke's goldfields are on nearly level to slightly sloping loams, clay loams, and clays. A clay layer or hardpan approximately 0.6 to 0.9 m below the surface restricts downward movement of water (56 **FR** 61173). Huichica loam is the predominant soil series on which Burke's goldfields is found on the northern part of the Santa Rosa Plain (Patterson *et al.* 1994, CNDDB 1998). Huichica loam is a fine textured clay loam over buried dense clay and cemented layers (Patterson *et al.* 1994). More southerly Burke's goldfields sites likely occur on Wright loam or Clear Lake clay (Patterson *et al.* 1994, CNDDB 1998). Wright loam is a fine silty loam over buried dense clay and marine sediments. Clear Lake clay is hard dense clay from the surface to many feet thick (Patterson *et al.* 1994). Burke's goldfields sometimes occurs along with Sonoma sunshine and Sebastopol meadowfoam (*Limnanthes vinculans*). These three federally listed species are all associated with other plants that commonly grow in vernal pools on the Santa Rosa Plain, including Douglas' pogogyne (*Pogogyne douglasii spp. parviflora*), Lobb's aquatic buttercup (*Ranunculus lobbii*), smooth goldfields, California semaphore grass (*Pleuropogon californicus*), maroonspot downingia (*Downingia concolor*), and button-celery (*Eryngium sp.*) (CNDDB 1998).

The flowers of Burke's goldfields are self-incompatible (Ornduff 1966, Crawford and Ornduff 1989) and insect-pollinated. Seed banks are of particular importance to annual plant species which are subject to uncertain or variable environmental conditions (Cohen 1966, 1967; Parker *et al.* 1989; Templeton and Levin 1979). Burke's goldfields fit this criterion; it is an annual species living in California's highly variable Mediterranean climate.

No information exists with respect to the seed life of Burke's goldfields. Circumstantial evidence suggests that Burke's goldfields successfully germinated from seed in soil collected from a previously developed portion of the Westwind Business Park (Building F) when the soil was translocated and deposited in created seasonal wetlands (C. Wilcox, CDFG, 2000 *in litt.*). As annual species, it is expected that Burke's goldfields and Sonoma sunshine will respond to environmental stochastic events, such as changes in vegetative composition, climate, and disturbance, by partial germination of its seed bank. Baskin *et al.* (1998) indicate that species (annuals) adapted to "risky environments" produce persistent seed banks to offset years of low reproductive success and to ensure the species can persist at a site without immigration. These characteristics can be attributed to Burke's goldfields. Considering the adaptations of these plants to a variable Mediterranean climate it is likely the seed of Burke's goldfields can persist as dormant embryos for an undetermined number of years. Therefore, it is likely that populations of these species may persist undetected for a period of years until conditions are favorable to allow germination. Although formal studies of seed viability have not been conducted for these species, it is reasonable to expect their seed banks may persist for extended periods without germination. Furthermore, it is not unlikely that the individual fruits of Burke's goldfields may be predisposed to variable germination requirements as a strategy for survival.

For species that develop long-lived seed banks, a census of plants growing above ground may not accurately reflect the total number of plants at the site (Rice 1989, Given 1994). Population sizes of California's vernal pool/swale annual plant species, including Burke's goldfields, may fluctuate substantially between very high numbers in some years to very small numbers, or even absence in other years because of varying environmental conditions. Therefore, total extirpation cannot be assumed when above-ground plants of these species are not observed at a site. Furthermore, declines in population size over a few years may not necessarily indicate that habitat is unsuitable (Given 1994), merely that environmental conditions within a vernal pool or swale have not favored seed germination.

Burke's goldfields is threatened with habitat loss, fragmentation, and degradation throughout all or part of its range by factors including urbanization, agricultural land use changes, alterations in hydrology, and erosion (CNPS 1977, 56 **FR** 61173, Patterson *et al.* 1994, CH2M Hill 1995, CNDDB 1998). The only known Mendocino County occurrence is presumably extirpated (CH2M Hill 1995). The Manning Flat occurrence, located on private land in Lake County, is the largest known occurrence of the species and is threatened by extensive gully erosion that is destroying the habitat (CH2M Hill 1995, CNDDB 1998). The second Lake County occurrence is on property owned by a winery. Recent reports suggest that some damage to this population has resulted from vineyard operations (R. Chan, University of California, Berkeley, 1998 *in litt.*).

However, in the past the winery owners appeared willing to coordinate with the Service and the Corps to avoid and/or minimize further damage to the site (N. Haley, Corps, 1998 pers. comm.). On the Santa Rosa Plain, many Burke's goldfields locations have been extirpated due to urbanization and conversion of land to row crops. Formerly well-represented in the vicinity of Windsor, Burke's goldfields has now been nearly extirpated from the area (Patterson *et al.* 1994, CH2M Hill 1995).

Of the 48 known records of Burke's goldfields, 26 are presumed to remain extant, with a majority found on the Santa Rosa Plain. Four populations occur outside of the Santa Rosa Plain, of which only two populations, one in northern Healdsburg and one at the Ployes winery, are extant.

Sonoma sunshine

Sonoma sunshine was federally listed as endangered on December 2, 1991 (56 **FR** 61173). No critical habitat has been designated for this species. Sonoma sunshine is an annual plant in the aster family. Plants are less than 30 cm (11.8 in) tall with alternate, linear leaves (CNPS 1977, Hickman 1993). The lower leaves are entire, and the upper leaves have one to three lobes that are 1 to 3 cm (0.4 to 1.2 in) deep (Hickman 1993). The daisy-like flower heads of Sonoma sunshine are yellow. The ray flowers have dark red stigmas. The disk flowers have white stigmas and white pollen but are otherwise yellow. Achenes are 3 to 4 mm (0.1 to 0.15 in) long with small rounded or conic proturbences (papillate) and 4 to 6 strongly angled edges (CNPS 1997, Hickman 1993). Sonoma sunshine could be confused with common stickseed (*Blennosperma nanum*); however, Sonoma sunshine has longer and fewer lobes on the leaves and is more robust (CNPS 1977). The flowers of Sonoma sunshine are self-incompatible, meaning that they can set seed only when fertilized by pollen from a different plant.

Sonoma sunshine occurs only in Sonoma County. In the Cotati Valley, the species ranges from near the community of Fulton in the north to Scenic Avenue between Santa Rosa and Cotati in the south. Additionally, the species extends or extended from near Glen Ellen to near the junction of State Routes 116 and 121 in the Sonoma Valley. During 2001, two new natural populations were identified north and south of the City of Santa Rosa, increasing the number of previously identified CNDDB occurrences from 26 to 28. Of the 28 occurrences, 21 are presumed to be extant with a majority occurring on the Santa Rosa Plain and one occurring in Glen Ellen. In addition, Sonoma sunshine has been introduced to at least one site on Alton Lane during mitigation activities. Seven populations within or near the City of Santa Rosa have been extirpated.

Sonoma sunshine grows in vernal pools and wet grasslands below 100 m (330 ft) (Hickman 1993). In the Sonoma and Cotati valleys, Sonoma sunshine occurs in vernal pools on nearly level to slightly sloping loams, clay loams, and clays, as described for Burke's goldfields (56 **FR** 61173). The two concentrations of Sonoma sunshine on the Santa Rosa Plain occur on different soil types (Patterson *et al.* 1994). Sonoma sunshine likely grows on Huichica loam north of

Highway 12 and on Wright loam and Clear Lake clay south of Highway 12 (Patterson *et al.* 1994, CNDDB 1998). These soil series are briefly described in the discussion of Burke's goldfields habitat above.

Sonoma sunshine is threatened with habitat loss, fragmentation, and degradation throughout all or part of its range by factors including urbanization, agricultural land use changes, and alterations in hydrology (Patterson *et al.* 1994, CH2M Hill 1995, CNDDB 1998). In the Sonoma Valley, two of five known occurrences have been extirpated. One was extirpated by habitat destruction in 1986, and the area is now a vineyard. At the second site, most habitat was destroyed by grading for home sites in 1980; the remainder was converted to vineyard or overtaken by weeds (CNDDB 1998). Of the presumed extant Sonoma Valley occurrences, one locality has been largely developed. A small area was retained by CDFG when the development took place, but Sonoma sunshine has not been recorded from this area since the subdivision was developed (Service files). A second Sonoma Valley locale is currently pasture. A portion of the occurrence may have been disced, and the landowners of a second portion want to convert the locale to vineyard (C. Wilcox, 1998, pers. comm., Service files). The third Sonoma Valley occurrence is in Sonoma Valley Regional Park, which is not managed for conservation (CNDDB 1998). On the Santa Rosa Plain, one locale has probably been extirpated by completion of a subdivision and one locale by major land alterations on the locale (CNDDB 1998). Of the presumed extant locales, some support severely degraded habitat, are threatened by development, or have not supported confirmed populations of Sonoma sunshine in recent years (CH2M Hill 1995, CNDDB 1998).

Sebastopol meadowfoam

Sebastopol meadowfoam is an annual herb with weak, somewhat fleshy, decumbent stems up to 30 centimeters (11.8 inches) long. The seedlings are unusual among *Limnanthes* species in that they have entire leaves. Leaves of mature plants are up to 10 centimeters (3.9 inches) long and have 3 to 5 leaflets that are narrow and unlobed with rounded tips. The leaves are borne on long petioles; petiole length, like stem length, appears to be promoted by submergence. Sebastopol meadowfoam has fragrant, white flowers that are borne in the leaf axils during April and May. The flowers are bell-shaped or dish-shaped, with petals 12 to 18 millimeters (0.47 to 0.71 inch) long. The sepals are shorter than the petals. The petals turn outward as the nutlets mature. The nutlets are dark brown, 3 to 4 millimeters (0.12 to 0.16 inch) long, and covered with knobby pinkish tubercles (Patterson *et al.* 1994).

Historically, Sebastopol meadowfoam was known from 40 occurrences in Sonoma County and 1 occurrence (occurrence #39) in Napa County, at the Napa River Ecological Reserve. In Sonoma County, all but two occurrences were found in the central and southern portions of the Santa Rosa Plain. Occurrence #20 occurred at Atascadero Creek Marsh west of Sebastopol, and the second (#40) occurred in the vicinity of Knights Valley northeast of Windsor (California Department of Fish and Game 2001).

The current condition of numerous Sebastopol meadowfoam occurrences is unclear, because many have not been visited in over 5 years. The southern cluster of occurrences extends 5 kilometers (3 miles) from Stoney Point Road west to the Laguna de Santa Rosa, and is bounded by Occidental Road to the north and Cotati to the south. The central cluster stretches 1.5 miles on either side of Fulton Road extending northwards from Occidental Road to River Road. Patterson *et al.* (1994) estimated that the Santa Rosa Plain occurrences represent only 10 hydrologically separate populations of Sebastopol meadowfoam. At least one occurrence (#21) has been extirpated from the Santa Rosa Plain (California Department of Fish and Game 2002). Recent field surveys found that all three occurrences outside of the Santa Rosa Plain have probably been extirpated (California Department of Fish and Game 2002).

Sebastopol meadowfoam is an annual plant. The seeds germinate after the first significant rains in fall, although late initiation of rains may delay seed germination. Sebastopol meadowfoam plants grow slowly underwater during the winter, and growth rates increase as the pools dry. Repeated drying and filling of pools in the spring favors development of large plants with many branches and long stems. Sebastopol meadowfoam begins flowering as the pools dry, typically in March or April. The largest plants can produce 20 or more flowers. Flowering may continue as late as mid-June, although in most years the plants have set seed and died back by then (Patterson *et al.* 1994). Each plant can produce up to 100 nutlets (Patterson 1994).

Nutlets of Sebastopol meadowfoam likely remain dormant in the soil, as they do for other species of *Limnanthes* (Jain 1978, Patterson 1994). One case presents strong circumstantial evidence for persistent, long-lived seed banks in this species. A site remote from other Sebastopol meadowfoam colonies was surveyed for several years and lacked flowering populations of Sebastopol meadowfoam while conditions were highly degraded by wallowing hogs (*Sus scrofa*). In the mid-1990's, 12 plants of Sebastopol meadowfoam emerged simultaneously in one area in the first year following removal of hogs. The population expanded rapidly to 60 plants the next year and was larger in subsequent years (Geoff Monk, personal communication). Long-distance dispersal is an improbable explanation for the simultaneous emergence of multiple plants at one location, so seed banks are implicated in this case as well. This example also indicates that lack of Sebastopol meadowfoam during periods of adverse conditions (drought, heavy disturbance, etc.) does not necessarily mean the population is extirpated.

This species grows in Northern Basalt Flow and Northern Hardpan vernal pools (Sawyer and Keeler-Wolf 1995), wet swales and meadows, on the banks of streams, and in artificial habitats such as ditches (Wainwright 1984, Patterson 1990, California Department of Fish and Game 2002). The surrounding plant communities range from oak savanna, grassland, and marsh in Sonoma County to riparian woodland in Napa County (California Department of Fish and Game 2002). Sebastopol meadowfoam grows in both shallow and deep areas, but is most frequent in pools 25 to 51 centimeters (10 to 20 inches) deep (Patterson 1990, Patterson *et al.* 1994). The species is most abundant in the margin habitat at the edge of vernal pools or swales (Pavlik *et al.* 2000, 2001). Most confirmed occurrences of Sebastopol meadowfoam on the Santa Rosa Plain grow on Wright loam or Clear Lake clay soils (Patterson *et al.* 1994, California Department of

Fish and Game 2002). A few occurrences are on other soil types, including Pajaro clay loam, Cotati fine sandy loam, Haire clay loam (Patterson *et al.* 1994) and Blucher fine sandy loam (Wainwright 1984).

Like Burke's goldfields and Sonoma sunshine, Sebastopol meadowfoam has been and continues to be threatened by habitat loss, habitat degradation, and small population size (Table 1). Causes of habitat loss include agricultural conversion, urbanization, and road maintenance. Habitat degradation is caused by excessive grazing by livestock, alterations in hydrology, and competition from non-native species (in some cases, exacerbated by removal of grazing), off-highway vehicle use, and dumping (U.S. Fish and Wildlife Service 1991, Patterson *et al.* 1994, CH2M Hill 1995, California Department of Fish and Game 2002).

Recovery Actions

A conservation strategy titled "Santa Rosa Plain Conservation Strategy" is being developed by a team of representatives from the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, California Department of Fish and Game, Sonoma County and local Cities, North Coast Regional Water Quality Control Board, local governmental agencies, the Laguna de Santa Rosa Foundation, environmental community, and the private landowner community (Conservation Team). The Santa Rosa Plain Conservation Strategy provides strategies to conserve and enhance enough habitat for the tiger salamander in Sonoma County and listed plants including the Sonoma sunshine (Blemnosperma bakeri), Burke's goldfields (Lasthenia burkei), Sebastopol meadowfoam (Limnanthes vinculans), and many-flowered navarretia (Navarretia leucocephala ssp. plieantha) to provide for long-term conservation and assist in the recovery of these species, while considering the need for development consistent with the general plans for the local jurisdictions. Progress on the development of the Santa Rosa Plain Conservation Strategy is posted on the City of Santa Rosa's website.

Environmental Baseline

California Tiger Salamander

Dutton Meadows Project Site. The proposed project site is situated near an extant tiger salamander breeding pond and on land that supports upland, foraging, and dispersal habitat for the tiger salamander. The site is part of a series of parcels that remain undeveloped in the vicinity of the tiger salamander breeding pond and the nearby Southwest Community Park. These lands are either fallow or used as grazing lands and also support upland, foraging, and dispersal habitat for the tiger salamander. Recent development has eliminated much of the land surrounding the Southwest Community Park that probably served as upland aestivation habitat and provided additional breeding ponds for the tiger salamander.

The project site supports several seasonally ponded wetlands. One of these ponds remains inundated for sufficient duration to provide potential breeding habitat for the tiger salamander.

Past aquatic surveys of these wetlands has not confirmed breeding by the tiger salamander. Adjacent undeveloped land also provide potential aestivation habitat for the tiger salamander.

Tiger salamanders continue to breed in the pond at the Southwest Community Park, but the upland habitat for the tiger salamander has been substantially reduced and fragmented. The Southwest Community Park tiger salamander breeding pond is surrounded on the south and west side by residential development, the main public use area of the park and Hearn Avenue to the north, and north of Hearn Avenue is an extant tiger salamander breeding occurrence and rural and urban residential development. The project site lies directly east of the Southwest Community Park and the tiger salamander breeding pond. Meadow View Elementary School lies between most of the project site and the breeding pond and likely poses an impediment to movement of tiger salamander between the project site and the breeding pond.

Gobbi Preserve No. 2. The Gobbi Preserve No. 2 exists on land that is currently used as grazing land for dairy cattle and contains a number of vernal pools and swales. The Gobbi Preserve No. 2 is adjacent to the Gobbi Preserve No. 1, which is a 31-acre parcel where vernal pool habitat was restored as mitigation for development elsewhere in the area, but is still in need of protection via a conservation easement and funding for long term management. The restored vernal pools currently support tiger salamander breeding. The 108.8 acres of the Gobbi Preserve No. 2 supports tiger salamander breeding in at least three vernal pool wetlands and large areas of upland, dispersal, and foraging habitat for the tiger salamander.

Sebastopol Meadowfoam, Sonoma Sunshine and Burke's Goldfield

Dutton Meadows Project Site. The project site is located within the range for the Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfields. The project site supports vernal pool habitat for these three endangered plant species. Some level of surveys were conducted at various parts of the project site in the spring of 2003 and 2004, however they were not performed following the Service's survey guidance, therefore these three endangered species cannot be ruled out as possibly being present at the project site. The nearest recorded observation for Sebastopol meadowfoam is approximately 1.72 miles to the southwest and for Sonoma sunshine the nearest reported observation is approximately 1.75 miles to the southwest. The nearest reported location for Burke's goldfield is approximately 1 mile to the southwest.

Gobbi Preserve No. 2. Sebastopol meadowfoam and Sonoma sunshine occur at the preserve, with Sebastopol meadowfoam being far more prevalent than Sonoma sunshine. The habitat is close to modal for both species given the large number of vernal pools characterized by periods of inundation well within the range for the two species. Also, the site has been grazed at a moderate level for decades. Historically, a considerable amount of potentially suitable habitat was filled with soil spoiled into depressions from Colgan Creek Flood Control Channel when it was realigned and deepened. The adjacent Gobbi Preserve No. 1 also supports populations of Sebastopol meadowfoam and Sonoma sunshine in the restored and constructed vernal pools.

Effects of the Proposed Action

California Tiger Salamander

Dutton Meadows Project Site. The Dutton Meadows Project will likely result in the permanent loss of 56.88 acres of upland and 0.07 acre of wetland features which supports dispersal, foraging, and potential breeding habitat. Graders, bulldozers and other heavy equipment are likely to kill, harm, and harass any tiger salamander inhabiting the 56.95-acre project site during the earth moving activities, infrastructure improvements, building construction, landscaping, and replacement of the natural earth surface of the graded area with hardscape. The project site would become unavailable to dispersing tiger salamanders in the vicinity. Individual tiger salamanders inhabiting the project site could be crushed by construction activities that collapse their burrows or other suitable cover from environmental elements such as high air and surface temperatures. Individual tiger salamanders disturbed by construction activities onsite could attempt overland movements in an attempt to find alternative upland habitat. These individuals could be harassed, injured and killed by pedestrians, vehicles, and urban adapted predators during overland movements at the project site, or during attempts to find more suitable habitats on adjacent lands. Construction of buildings, parking lots, and roads can facilitate the invasion and establishment of plant and animal species that are not native to the area. Disturbance and alteration of habitat adjacent to roads may create favorable conditions for these non-native taxa. Non-native plants and animals may reduce habitat quality for tiger salamanders or their prey, and reduce the productivity or the local carrying capacity for the tiger salamanders.

Construction related activities are likely to cause disruption of surface movement, disruption or complete loss of reproduction, harassment from increased human activity, and permanent and temporary loss of shelter. Because these animals are nocturnal, if construction is performed at night, associated lighting likely would increase all of the above effects. Wise and Buchanan (2002) reviewed the adverse effects that may result from night time illumination on salamander species. Artificial lighting used during night time construction may increase predation of the tiger salamanders, if it occurs during periods of fall, winter, or spring rains, because the amphibians will lose the cover of darkness for movement. Nocturnal foraging by salamander species may be affected by artificial lighting. Wise and Buchanan (2002) reported that in one species of salamander, individuals emerged from refugia to forage within one hour after light levels dropped to dramatically following sunset. During such foraging bouts, visual information was used for locating prey. Greater light levels delay emergence, resulting in less foraging time, but could have increased the ability of the salamanders to capture prey; however, they also could make the amphibians more vulnerable to predation. Many salamanders, such as the tiger salamander, are terrestrial as adults but migrate to ponds to breed and lay eggs. The orientation of some of these terrestrial species away from and toward these ponds is influenced by the spectral characteristics of light (Wise and Buchanan 2002). Artificial lights that emit unusual spectra may disrupt these migration patterns.

Gobbi Preserve No. 2. Restoration and construction of seasonal wetland habitat at the proposed Gobbi Preserve No. 2 will likely directly affect tiger salamanders by killing, harming, and harassing any individuals inhabiting the site within the grading footprint and vicinity. Bulldozers and other heavy equipment may crush, injure, and kill individual tiger salamanders in underground mammal burrows during the soil disturbance. Implementation of a passive relocation program will likely reduce mortality of a portion of the population of tiger salamanders. The applicant will use a one-way fence-and-ramp system to passively relocate (temporarily exclude) tiger salamanders from the three work areas in which wetland restoration and construction are planned. The fence-and-ramp system will prevent migrating adults and juveniles from remaining within the work areas and allow those that were residing underground within these areas to disperse toward the breeding ponds and away from the work area. Tiger salamanders may be indirectly affected by the conversion of upland habitat to seasonal wetland habitat. Seasonal wetland habitat likely does not provide the same level of shelter habitat as other upland areas with shelter provided in gopher tunnels. Gopher mounds have been observed in the bottoms of seasonal wetlands, however the timing of gopher burrow availability in seasonal wetlands likely is not contemporaneous with the period salamanders are seeking upland shelter. Adults are highly unlikely to use the dried pools/ swales for underground shelter in gopher burrows because these individuals leave the pools/swales before they dry out (Cook, in litt., 2004) and seek shelter in upland areas farther from the pools/swales. The juveniles (metamorphosed larvae) are also likely to leave the pools before they dry sufficiently to allow gophers to burrow into the dried pool bottoms, although some early drying pools may have burrows while juveniles are searching for shelter in the uplands. It is possible that juveniles could use a burrow temporarily if all factors were perfect. If the size of the wetland was sufficiently large enough to allow drying of a portion of it closer to the perimeter while larvae were still contained within the flooded area AND gopher burrows were or became available within the dried area, then, the burrow-seeking larvae may have a chance to locate and use these holes. There are a lot of factors that have to line up perfectly which may be a rare event. If juveniles can find their way into burrows at the bottom of the seasonal wetlands, then they would certainly have to leave the pools again (and seek alternative shelter outside of the pool area) when the pools begin to fill up with water at the beginning of the next rainy season. Such movement could increase their risk to predation, fitness, or increased expenditure of time and energy that otherwise may be used for foraging.

The tiger salamander will likely benefit from the preservation and management of the 108.8 acres of breeding, upland, foraging, and aestivation habitat at the Gobi Preserve No. 2.

Sebastopol Meadowfoam, Sonoma Sunshine and Burke's Goldfield

Grading of the Dutton Meadows project site and filling of the approximately 4.37 acres of wetlands will eliminate suitable habitat for Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfield. Some level of surveys were conducted at various parts of the project site in the spring of 2003 and 2004, however they were not performed following the Service's survey guidance, therefore these three endangered species cannot be ruled out as possibly being present

at the Dutton Meadows project site. Individual plants and a seed bank may be lost due to the destruction of this habitat.

Grading of the Gobbi Preserve No. 2 site to restore and construct approximately 4.37 acres of vernal pool wetland habitat will not likely have any direct adverse effects to the extant populations of Sebastopol meadowfoam and Sonoma sunshine. Implementation of erosion-control measures and other best management practices during construction will be utilized to prevent sediments from the vernal pool restoration and construction site from reaching the existing vernal pools at the site will help conserve the extant populations. Access to and operation of construction equipment will be restricted to the limits of excavation, haul routes and temporary stockpile located in upland habitat and minor areas of existing vernal pools elsewhere on Gobbi Preserve No. 2 to collect seed with which the restored and constructed pools and swales will be inoculated. Reestablishment of annual grassland cover in all areas disturbed during construction will prevent erosion and the transport of sediment into existing vernal pools will prevent adverse effects to the extant populations of the Sebastopol meadowfoam and Sonoma sunshine.

Following construction, these restored and constructed wetlands are likely to have a beneficial effect on Sebastopol meadowfoam and Sonoma sunshine by providing additional suitable habitat for these species and connecting nearby vernal pools, thus allowing for a dispersal mechanism for plant seeds between vernal pools supporting populations of Sebastopol meadowfoam and Sonoma sunshine. Colonization of the restored and constructed vernal pools by Sebastopol meadowfoam and Sonoma sunshine will provide additional stability of the local populations of these species through an increase in the number and area of vernal pools that provide suitable habitat for the species. Both of these species have colonized many of the pools restored and constructed at the Gobbi Preserve No. 1 and the Carinalli Todd Road Mitigation Bank among others. Both species colonized the Carinalli site in the first year; Sebastopol meadowfoam colonized the vernal pools and swales in Gobbi Preserve No. 1 in the first year and Sonoma sunshine colonized in the third year following restoration and construction. All populations have remained steady or increased in size at these sites.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.
Cumulative effects to the tiger salamander include continuing and future conversion of suitable breeding, foraging, sheltering, and dispersal habitat resulting from urban development. Additional urbanization can result in road widening and increased traffic on roads that bisect breeding and aestivation sites, thereby increasing road-kill while reducing in size and further fragmenting remaining habitats.

Tiger salamanders probably are exposed to a variety of pesticides and other chemicals throughout their range. Tiger salamanders also could die from starvation by the loss of their prey base. Hydrocarbon and other contamination from oil production and road runoff; the application of numerous chemicals for roadside maintenance; urban/suburban landscape maintenance; and rodent and vector control programs may all have negative effects on tiger salamander populations. In addition, tiger salamanders may be harmed through collection by local residents.

A commonly used method to control mosquitoes, used in Sonoma County (Marin/Sonoma Mosquito and Vector Control District, internet website 2002), is the application of methoprene, which increases the level of juvenile hormone in insect larvae and disrupts the molting process. Lawrenz (1984) found that methoprene (Altosid SR 10) retarded the development of selected crustacea that had the same molting hormones (*i.e.*, juvenile hormone) as insects, and anticipated that the same hormone may control metamorphosis in other arthropods. Because the success of many aquatic vertebrates relies on an abundance of invertebrates in temporary wetlands, any delay in insect growth could reduce the numbers and density of prey available (Lawrenz 1984).

The threats to Burke's goldfields, Sonoma sunshine, and Sebastopol meadowfoam described in the "Status of the Species" section above, such as unauthorized fill of wetlands, urbanization, increases in non-native species, and continued and expanded irrigation of pastures with recycled wastewater discharge, are likely to continue with concomitant adverse effects on these species resulting in additional habitat loss and degradation; inclreasingly isolated populatins (exacerbating the disruption of gene flow patterns); and further reductions in the reproduction, numbers, and distribution of these species which will decrease their ability to respond to stochastic events.

Cumulative effects to Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and the tiger salamander could increase in the future if the current application of the Corp's regulatory authority under the Clean Water Act changes. On January 9, 2001 the United States Supreme Court issued an opinion regarding Solid Waste Agency of Northern Cook County, Petitioner v. United States Army Corps of Engineers, et al. (SWANCC) which addressed the Corps regulatory authority over isolated wetlands. The Corps' San Francisco District generally has regulated wetlands on the Santa Rosa Plain which are hydrologically connected to the Laguna de Santa Rosa, a tributary of the Russian River. However, following the SWANCC decision, we understand that the Corps has determined that some seasonal wetlands on the Santa Rosa Plain are isolated from navigable waters. Reduced application of the Corps' regulatory authority, and subsequent lack of Section 7 consultation with the Service, on such isolated wetlands could result in increased impacts to federally listed species in the Santa Rosa Plain from future State, Tribal, local or private actions.

CONCLUSION

After reviewing the current status of the tiger salamander and the three listed plant species (Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfield), the environmental baseline

for the actions areas, and the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the Dutton Meadows project and Gobbi Preserve No. 2 is not likely to jeopardize the continued existence of the tiger salamander, Sebastopol meadowfoam, Sonoma sunshine, or Burke's goldfield. This determination is based on the fact that the project site only provides upland habitat for the breeding population for the degraded Southwest Community Park pond and the pond's hydrology has been compromised due to the residential housing developments nearby, tiger salamander breeding has not been observed on the project site and the three listed plants have not been observed flowering during past floral surveys. The loss of upland foraging, dispersal, and seasonal wetland habitat at the project site will be minimized by the preservation and management of 108.8 acres of tiger salamander and the three listed plant habitat at the Gobbi Preserve No. 2 site. Critical habitat has not been designated for these species; therefore none will be adversely modified.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the Corps so they become binding conditions of project authorization for the exemption under 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Corps (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of 7(o)(2) may lapse.

Sections 7(b)(4) and 7(o)(2) of the Act do not apply to listed plant species. However, protection of listed plants is provided to the extent that the Act requires a Federal permit for removal or reduction to possession of endangered and threatened plants from areas under Federal jurisdiction, or for any act that would remove, cut dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

Amount or Extent of Take

California Tiger Salamander

The Service anticipates that incidental take of the tiger salamander will be difficult to detect or quantify for the following reasons: the activity patterns of tiger salamanders makes the finding of a dead specimen unlikely, losses may be masked by annual fluctuations in numbers, and the species occurs in habitat that makes it difficult to detect. Due to the difficulty in quantifying the number of tiger salamanders that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the number of acres of habitat that will be affected as a result of the action. Therefore, the Service estimates that the proposed action will result in the permanent loss of 56.95 and temporary modification of 26.06 acres of habitat suitable for tiger salamander foraging, sheltering, and movements. Anticipated take is expected to be in the form of harm, harassment, injury, and mortality from habitat loss and modification, construction related disturbance, increased predation, reduced fitness, and by ongoing operation and use of the Project.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the tiger salamander in Sonoma County. Critical habitat has not been designated for the tiger salamander in Sonoma County therefore none will be adversely modified or destroyed.

Reasonable and Prudent Measure

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the effect of take on the tiger salamander:

1. Minimize the potential for harm, harassment, or mortality of tiger salamander.

Term and Condition

To be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. The project shall be implemented as proposed.

Reporting Requirements

The Corps shall submit a post-construction compliance report to the Sacramento Fish and Wildlife Office within 60 calendar days of the completion of construction activity or within 60 days of any break in construction activity lasting more than 60 days. This report shall detail (i)

dates that groundbreaking at the project started and the project was completed; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of the failure to meet such measures, if any; (iv) known project effects on the tiger salamander, if any; (v) occurrences of incidental take of any of this species; and (vi) other pertinent information.

The Service must be notified within 24 hours of the finding of any injured or dead tiger salamander, or any unanticipated damage to salamander habitat associated with project construction. Notification must include the date, time, and precise location of the specimen/incident, and any other pertinent information. The Service contact person is Deputy Assistant Field Supervisor, Endangered Species Division in the Sacramento Fish and Wildlife Office, at (916) 414-6625. Any dead or injured specimens will be reposited with the Service's Division of Law Enforcement, 2800 Cottage Way, Room W-2928, Sacramento, California 95825, telephone (916) 414-6660.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. We make the following conservation recommendations:

1. Encourage or require the use of appropriate California native species in re-vegetation and habitat enhancement efforts associated with projects authorized by the Corps.

2. Deny permits which result in further destruction of Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and the tiger salamander habitat, and preserve other onsite wetlands for pollinators and seed dispersers.

3. Facilitate educational programs geared toward the importance and conservation of seasonal wetlands.

4. Encourage seed banking in Center for Plant Conservation certified botanic gardens (provided the seed collection does not adversely affect the source populations).

5. Assist the Service in implementing recovery actions being developed for Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and the tiger salamander.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action on the proposed Dutton Meadows project. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact Vincent Griego or Ryan Olah of the Sacramento Fish and Wildlife Office at (916) 414-6600, if you have any questions regarding this opinion.

Sincerely,

Cay C. Goude

Cay C. Goude
Assistant Field Supervisor

cc:
California Department of Fish and Game, Yountville, CA (Attn: Carl Wilcox)
U.S. Environmental Protection, San Francisco, CA (Attn: Mike Monroe)
Regional Water Quality Control Board, Santa Rosa, CA (Attn: Andrew Jenson)
City of Santa Rosa, Santa Rosa, CA
Trumark Companies, Danville, CA (Attn: Garrett Hinds)
Harvey Rich, Greenbrae, CA

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DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

AUG 0 5 2003

Regulatory Branch

SUBJECT: File Number 26342N

Mr. Dan Buford
U.S. Fish and Wildlife Service
2800 Cottage Way W-2605
Sacramento, California 95825

Dear Mr. Buford:

We hereby request initiation of formal consultation under Section 7 of the Endangered Species Act on California tiger salamander (Ambystoma californiense), regarding a request by Trumark Companies, for authorization under a Department of the Army permit to fill 4.37 acres of seasonal wetland, to construct the Dutton Meadows subdivision phases two through five, located at 2732 Dutton Meadows, in the City of Santa Rosa, Sonoma County, California. The Corps previously issued a permit for Dutton Meadows Phase I, and the wetlands on this site have already been filled. The project site is located in close proximity to the Southwest Community Park, which contains a known breeding pond. Although no California tiger salamander have been observed utilizing habitat on the project site during three years or surveys, it is possible that they may use the property as aestivation habitat.

It is our understanding that a description of the project and a biological assessment have already been forwarded directly to you by Jeff Olberding, environmental consultant. Should you have any questions or need any more information regarding this matter, please call Philip Shannin of our Regulatory Branch at 415-977-8445. Please address all correspondence to the Regulatory Branch and refer to the file number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane Hicks
Chief, North Section

Copy Furnished:

Jeff Olberding, ~~Danville~~, California

cc: Garrett
Jason
Chris

California Regional Water Quality Control Board
North Coast Region
William R. Massey, Chairman

Dan Skopec
Acting Secretary

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Arnold Schwarzenegger
Governor

RECEIVED
MAY 22 2006

May 19, 2006

Mr. Garrett Hinds
Trumark Companies
4185 Blackhawk Plaza Circle
Suite 200
Danville, CA 94506

Dear Mr. Hinds:

Subject: Issuance of Clean Water Act Section 401 Certification (Water Quality Certification) for the Dutton Meadows Phase I Project, Sonoma County

File: Dutton Meadows Phase I Project (APNs 043-071-07, -22, -23) Sonoma County, WDID No. 1B01099WNSO

This Order by the California Regional Water Quality Control Board, North Coast Region (Regional Water Board), is being issued pursuant to Section 401 of the Clean Water Act (33 USC 1341). On September 9, 2005, the Regional Water Board received an application and $15,055.50 processing fee from Mr. Garrett Hinds, on behalf of Trumark Companies (Applicant), requesting a Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill Projects) for a combination of five properties (Lechmanski, Peletz, Nelson, Minoia, and DM Associates, LLC) collectively referred to as the Dutton Meadows Project, located on 56.88 acres in Santa Rosa, Sonoma County. This Water Quality Certification Order exclusively covers the Dutton Meadows Phase I Project located at 2650, 2666 and 2684 Dutton Meadows (APNs 043-071-07, -022, -23).

On February 1, 2002, Water Quality Certification was issued to Mr. Tux Tuxhorn of the Tuxhorn Company for the Bellevue Ranch Phase 8 Project located at 2650 and 2684 Dutton Meadows, Santa Rosa, Sonoma County (WDID No. 1B01060WNSO). On March 5, 2002, the Water Quality Certification Order was amended to reflect the change in property ownership to Mr. Garrett Hinds of Trumark Companies. This Order, WDID No. 1B01099WNSO, hereby takes precedence over the previous order issued for the Bellevue Ranch Phase 8 Project and the previous order (WDID No. 1B01060WNSO) is rescinded.

Information describing the proposed project was noticed for public comment for a 21-day period on the Regional Water Board's website. No comments were received. The project will cause permanent impacts to seasonal wetlands associated with Colgan Creek and the Russian River Hydrologic Unit No.114.00.

Project Description: The Dutton Meadows Phase I Project (Project) is located in the southwestern section of Santa Rosa, Sonoma County, and is bordered on the north by Hearn Avenue and on the west by S. Dutton Avenue. The Project is located at 2650, 2666 and 2684 Dutton Meadow (formerly known as Dutton Avenue) and has a total area of 12.0 acres. The purpose of this project is to develop the 12.0 acres for residential use.

Phase I consists of the construction of 127 lots, 4 parcels, and a 1.13-acre affordable housing site for 35 condominiums. The units of the project will be accessible by common driveways in the rear of the lots. Three of the four parcels consist of common areas for use by the homeowners of the subdivision and will be maintained by the Homeowners Association. One of these three parcels (Parcel D) will involve the installation of a detention pond in order to treat storm water runoff from Phase I. The fourth parcel will be offered to the Bellevue Union School District.

The development of the project will be built and sold in phases based on market demand, which is expected to result in the project Project being fully constructed within a two- to four-year time period. Model homes and the first phases of production homes will be constructed in 2006. Grading is expected to begin in the spring of 2006. Pre-construction Best Management Practices (BMPs) have been incorporated into the final project plans in order to reduce and control soil erosion. In the event that construction activities take place during the wet season months of October 15th through June 15th, additional winterization BMPs will be implemented in order to stabilize all bare soils.

Post-construction storm water treatment controls have been incorporated into the project in order to decrease potential detrimental impacts associated with storm water runoff from the developed site. Source control BMPs are also incorporated into the project including: installation of open space areas, wide planter strips, drain inlet marking, native landscape materials, reducing irrigation needs, and promoting public awareness on the importance of storm water pollution prevention through educational brochures, signage, and creek stewardship programs.

Receiving Water:	Colgan Creek, Laguna Hydrologic Sub Area No. 114.21, Russian River Hydrologic Unit No. 114.00
Federal Permit:	Pending U.S. Army Corps of Engineers Individual 404 Permit (File Number 26342N)
State and Local Approvals:	Not Applicable
Filled or Excavated Area:	Total Area Impacted: 0.16 acres of wetland habitat Area Temporarily Impacted: 0.00 acres Area Permanently Impacted: 0.16 acres
Compensatory Mitigation Overview:	Total Mitigation Area: 0.16 acres Wetland Created/Restored: 0.00 acres Wetland Enhanced: 0.16 acre Wetland Existing (Avoided): 0.00 acre

Compensatory Mitigation:

Approximately 0.16 acres of seasonal wetland habitat was previously filled on the Dutton Meadows Phase I property in accordance with U.S. Army Corps of Engineers (File No. 24554N) and with the Regional Water Board authorization (WDID No. 1B01061WNSO – Bellevue Ranch, Phase 8). The entire proposed Dutton Meadows project directly affects approximately 54.43 acres of upland habitat presumed to provide aestivation habitat for the endangered California tiger salamander (CTS). The wetland habitat impacted on-site is also potential habitat for Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfields.

Compensatory mitigation for permanent impacts to 4.37 acres (1.97 acres Waters of the U.S., 2.4 acres Waters of the State), and for impacts to suitable habitat for federally listed plant species and California tiger salamander (*Ambystoma californiense*) (CTS), will be achieved as outlined in *Wetland and Endangered Species Mitigation Plan Gobbi Preserve No. 2* dated November 30, 2004. Mitigation for the Dutton Meadows Projects included the creation of 1.66 acres and the restoration of 4.0 acres of wetland habitat for a final mitigation ratio of 1.25:1, in addition to the establishment of the 108.8 acre Gobbi Preserve No. 2. Construction of the wetlands and establishment of the preserve has already been approved and began in Fall 2005 (WDID No. 1B04163WNSO). The Preserve is located between Stony Point and Llano Roads, south of Todd Road, and just outside the limits of the City of Santa Rosa.

Non-compensatory Mitigation:

A *Preliminary Storm Water Pollution Mitigation Plan for the Minoia Property* (SWPMP) was developed on April 6, 2005, with maps updated in February 2006. According to the SWPMP, source control BMPs will be incorporated into the project including: installation of unconnected downspouts, open space areas, wide planter strips, drain inlet marking, native landscape materials, and promoting public awareness on the importance of storm water pollution prevention through educational brochures, signage, and creek stewardship programs. Submittal of a Storm Water Pollution Prevention Plan (SWPPP) to the Regional Water Board will be required prior to the commencement of construction activities.

Post-Construction Storm Water Pollution Prevention:

In addition, to deal with the Regional Water Board's requirement to provide post-construction storm water treatment for the proposed project, the Applicant will install a detention basin as described in the SWPMP. The detention basin was designed according to calculations used to determine the size needed to treat the runoff from the 85th percentile storm event. Failure to implement the treatment plan as described in the above-referenced plan will be considered a violation of this Waiver of Waste Discharge Requirements, and is subject to

Regional Water Board enforcement actions. No monitoring and reporting program will be required, as it is not in the public interest.

CEQA Compliance: The City of Santa Rosa, as the lead California Environmental Quality Act (CEQA) agency, has determined that this project qualifies for an Environmental Impact Report pursuant to CEQA. (SCH# 2002092016; August 2, 2005)

Standard Conditions: Pursuant to Title 23, California Code of Regulations, Section 3860 (23 CCR 3860), the following three standard conditions shall apply to this project:

1) This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code and article 6 (commencing with section 3867) of Chapter 28, Title 23 of the California Code of Regulations (CCR 23) 23 CCR 3867.

2) This certification action is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to subsection 3855(b) of Chapter 28, CCR 23 and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3) This certification is conditioned upon total payment of any fee required under Chapter 28, CCR 23 and owed by the applicant.

Additional Conditions: Pursuant to 23 CCR 3859(a), the applicant shall comply with the following additional conditions:

1) The Regional Water Board shall be notified in writing at least five working days (working days are Monday – Friday) prior to the commencement of grading work, with details regarding the construction schedule, in order to allow staff to be present on-site during construction, and to answer any public inquiries that may arise regarding the project.

2) No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature, other than that authorized by this permit, shall be allowed to enter into or be placed where it may be washed by rainfall into Waters of the State. When operations are completed, any excess material or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

3) Best Management Practices for sediment and turbidity control shall be implemented and in place prior to, during, and after construction in order to ensure that no silt or sediment enters surface waters.

4) All fill material used on the site shall be clean and free of contaminants. A characterization report for all imported fill materials shall be provided to the Regional Water Board prior to the commencement of grading work.

5) A copy of this permit must be provided to the Contractor and all subcontractors conducting the work, and must be in their possession at the work site.

6) If, at any time, a discharge to surface waters occurs, or any water quality problem arises, the project shall cease immediately and the Regional Water Board shall be notified promptly.

7) The overall design and development of Dutton Meadows Phase I Project shall include the post-construction storm water BMPs outlined in the *Preliminary Storm Water Pollution Mitigation Plan for the Minoia Property*, with maps updated in February 2006, that have been prepared by Civil Design Consultants, Inc. for incorporation into the project to mitigate for storm water discharges associated with post-development of the site. BMPs shall be implemented into the project, as proposed by the project applicant and Civil Design Consultants, Inc., and as outlined above in the non-compensatory mitigation section of this order.

8) This Order is not transferable. In the event of any change in control of ownership of land presently owned or controlled by the Applicant, the Applicant shall notify the successor-in-interest of the existence of this Order by letter and shall forward a copy of the letter to the Regional Water Board at the above address.

   To discharge dredged or fill material under this Order, the successor-in-interest must send to the Regional Water Board Executive Officer a written request for transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the person(s) responsible for contact with the Regional Water Board. The request must also describe any changes to the Project proposed by the successor-in-interest or confirm that the successor-in-interest intends to implement the Project as described in this Order.

9) The Applicant shall provide photos of the completed work to the appropriate Regional Water Board staff person, in order to document compliance. The Applicant shall also provide photos of the completed work areas after the first significant rainfall event in order to ensure that erosion control has been successful.

10) The overall design and development of the Dutton Meadows Phase I Project shall include pre- and post-construction storm water BMPs. The Applicant shall submit a Storm Water Pollution Prevention Plan (SWPPP) for approval by Regional Water Board staff prior to the commencement of construction activities, including grading and/or filling of seasonal wetland habitat.

11) The Applicant shall provide as-built plans for the Detention Basin (Parcel D) after installation to the appropriate Regional Water Board staff person, in order to document compliance.

Water Quality Certification:

I hereby issue an order [23 CCR Subsection 3831(e)] certifying that the authorized discharge from Dutton Meadows Phase I Project (WDID No. 1B01099WNSO) will comply with the applicable provisions of sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act [33 USC Subsection 1341 (a)(1)] , and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017- DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification" which requires compliance with all conditions of this Water Quality Certification (Enclosed).

Except insofar as may be modified by any preceding conditions, all certification actions are contingent on: a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicant's project description, and b) compliance with all applicable requirements of the Regional Water Board's Water Quality Control Plan for the North Coast Region (Basin Plan).

Expiration:

The authorization of this certification for any dredge and fill activities expires on October 15, 2011. Conditions and monitoring requirements outlined in this certification are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

Please notify John Short at (707) 576-2065 and in writing prior to construction (pursuant to Additional Condition No. 1 above) so that we can answer any public inquiries about the work.

Sincerely,

for Catherine E. Kuhlman
Executive Officer

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Enclosure: State Water Resources Control Board Order No. 2003-0017-DWQ, General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification.

cc: Mr. Oscar Balaguer, SWRCB, 401 Program Manager, Clean Water Act Section 401 Certification and Wetlands Unit Program

Mr. Philip Shannin, U.S. Army Corps of Engineers, Regulatory Branch, 333 Market Street, San Francisco, CA 94105

Mr. Vincent Griego, Sacramento Field Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room 2605, Sacramento, CA 95815

City of Santa Rosa Department of Community Development, 100 Santa Rosa Ave., P.O. Box 1678, Santa Rosa, CA 95402-1678

Mr. Kevin Doble, Sonoma County Permit and Resources and Management Department, 2550 Ventura Avenue, Santa Rosa, CA 95403

Mr. Jeff Olberding, Olberding Environmental, 3127 Vistamont Drive, Suite 100, San Jose, CA 95118

STATE WATER RESOURCES CONTROL BOARD

WATER QUALITY ORDER NO. 2003 - 0017 - DWQ

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR DREDGED OR FILL DISCHARGES THAT HAVE RECEIVED STATE WATER QUALITY CERTIFICATION (GENERAL WDRs)

The State Water Resources Control Board (SWRCB) finds that:

1. Discharges eligible for coverage under these General WDRs are discharges of dredged or fill material that have received State Water Quality Certification (Certification) pursuant to federal Clean Water Act (CWA) section 401.

2. Discharges of dredged or fill material are commonly associated with port development, stream channelization, utility crossing land development, transportation water resource, and flood control projects. Other activities, such as land clearing, may also involve discharges of dredged or fill materials (e.g., soil) into waters of the United States.

3. CWA section 404 establishes a permit program under which the U.S. Army Corps of Engineers (ACOE) regulates the discharge of dredged or fill material into waters of the United States.

4. CWA section 401 requires every applicant for a federal permit or license for an activity that may result in a discharge of pollutants to a water of the United States (including permits under section 404) to obtain Certification that the proposed activity will comply with State water quality standards. In California, Certifications are issued by the Regional Water Quality Control Boards (RWQCB) or for multi-Region discharges, the SWRCB, in accordance with the requirements of California Code of Regulations (CCR) section 3830 et seq. The SWRCB's water quality regulations do not authorize the SWRCB or RWQCBs to waive certification, and therefore, these General WDRs do not apply to any discharge authorized by federal license or permit that was issued based on a determination by the issuing agency that certification has been waived. Certifications are issued by the RWQCB or SWRCB before the ACOE may issue CWA section 404 permits. Any conditions set forth in a Certification become conditions of the federal permit or license if and when it is ultimately issued.

5. Article 4, of Chapter 4 of Division 7 of the California Water Code (CWC), commencing with section 13260(a), requires that any person discharging or proposing to discharge waste, other than to a community sewer system, that could affect the quality of the waters of the State,[1] file a report of waste discharge (ROWD). Pursuant to Article 4, the RWQCBs are required to prescribe waste discharge requirements (WDRs) for any proposed or existing discharge unless WDRs are waived pursuant to CWC section 13269. These General WDRs fulfill the requirements of Article 4 for proposed dredge or fill discharges to waters of the United States that are regulated under the State's CWA section 401 authority.

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[1] "Waters of the State" as defined in CWC Section 13050(e)

IT IS HEREBY ORDERED that WDRs are issued to all persons proposing to discharge dredged or fill material to waters of the United States where such discharge is also subject to the water quality certification requirements of CWA section 401 of the federal Clean Water Act (Title 33 United States Code section 1341), and such certification has been issued by the applicable RWQCB or the SWRCB, unless the applicable RWQCB notifies the applicant that its discharge will be regulated through WDRs or waivers of WDRs issued by the RWQCB. In order to meet the provisions contained in Division 7 of CWC and regulations adopted thereunder, dischargers shall comply with the following:

1. Dischargers shall implement all the terms and conditions of the applicable CWA section 401 Certification issued for the discharge. This provision shall apply irrespective of whether the federal license or permit for which the Certification was obtained is subsequently deemed invalid because the water body subject to the discharge has been deemed outside of federal jurisdiction.

2. Dischargers are prohibited from discharging dredged of fill material to waters of the United States without first obtaining Certification from the applicable RWQCB or SWRCB.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on November 19, 2003.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gary M. Carlton
Nancy H. Sutley

NO: None.

ABSENT: None.

ABSTAIN: None.

Debbie Irvin
Clerk to the Board

California Regional Water Quality Control Board
North Coast Region
William R. Massey, Chairman

Winston I. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

Internet Address: http://www.swrcb.ca.gov/rwqcb1/
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: 1 (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

February 1, 2002

Mr. Tux Tuxhorn
Tuxhorn Company
P.O. Box 11128
Santa Rosa, CA 95406

Dear Mr. Tuxhorn:

Subject: Waiver of Waste Discharge Requirements and Issuance of Clean Water Act Section 401 Conditional Certification for Bellevue Ranch Phase 8, Sonoma County, California.

File: 401 Certification – Bellevue Ranch Phase 8
WDID No. 1B01060WNSO

This letter responds to Mr. Tux Tuxhorn's July 12, 2001, request for a Clean Water Act, Section 401, Water Quality Certification that the proposed project described below will not violate state water quality standards. The North Coast Water Quality Control Board (Regional Water Board) received a complete application and processing fee in the amount of $1,000.00 on July 12, 2001. A 21-day Public Notice was issued on October 11, 2001 on the Regional Water Board website. Comments were received from the public regarding concerns over California Tiger Salamander (*Ambystoma californiense*) (CTS) habitat loss and appropriate mitigation measures. Those comments have been considered and appear to be addressed through the CTS mitigation measures implemented as required by the California Department of Fish and Game (CDFG).

Project Description: Mr. Tux Tuxhorn of the Tuxhorn Company requested Water Quality Certification pursuant to administrative regulations and Clean Water Act Section 401, and a Waiver of Waste Discharge Requirements pursuant to Porter-Cologne Water Quality Control Act Authorities for the proposed Bellevue Ranch Phase 8. The proposed Bellevue Ranch Phase 8 project will be developed as a medium density townhouse project, which will include associated roadways, infrastructure, and landscaping. The project site is a 12.0-acre site that is currently undeveloped, located at 2650 and

"The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at: http://www.swrcb.ca.gov/."

2684 Dutton Meadows Drive in Santa Rosa, Sonoma County, California (APNs 043-071-07, -22, -23).
According to the application, the project will result in filling of 0.16 acre of seasonal wetland habitat as a result of complete grading and build-out of the site. According to Mr. Charlie Patterson, Plant Ecologist, the wetland habitat present on the site includes highly degraded, isolated, seasonal wetland habitat that occurs in the form of several small, shallow (less than 15 inches deep) remnant sections of swale topography that still collect and retain soil saturation. As determined by the CDFG the entire site also represents CTS (*Ambystoma californiense*) estivation habitat; consequently there will be permanent removal of 12.0 acres of this species habitat.

After construction, discharges of storm water runoff from the site are likely to contain nutrients, pesticides, bacteria, petroleum products, heavy metals, and sediment typically identified with urban runoff. In order to mitigate for these potential impacts to waters of the state, the applicant will develop and implement a Storm Water Pollution Prevention Plan to help prevent water quality violations during the construction of the project. Prior to the commencement of construction, the applicant will file a Notice of Intent (NOI) with the State Water Resources Control Board to comply with the terms of the General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (Storm Water General Permit).

In addition, the overall design and development of the Bellevue Ranch Phase 8 will be required to include a combination of post-construction storm water runoff Best Management Practices (BMPs) to manage the quantity and improve the quality of storm water runoff from all impervious surfaces. The final design of the development shall include storm water containment and treatment through storm water BMPs such as vegetated swales, bottomless catch basins, and detention basins. The BMPs will be designed to provide treatment of the 85th percentile/24 hour precipitation event, which equates to approximately 0.95 inches, according to criteria from the North Coast Regional Water Quality Control Board (Regional Water Board).

Receiving Waters:	Seasonal Wetlands
Hydrologic Unit:	114.21 – Laguna HSA
Filled or Excavated Area:	0.16 – acre of seasonal wetland habitat
Federal Permit:	The Army Corps of Engineers (ACOE) issued a Nationwide Clean Water Act (CWA) Section 404 Permit 39 - *Residential, Commercial, and Institutional Developments* (Corps File No. 24554N) on May 8, 2001, for the filling of 0.16 acre of seasonal wetland habitat on the project site.
Compensatory Mitigation:	The impacts to wetland habitat, suitable habitat for listed plant species, and the CTS habitat were mitigated through creation of 0.16 acre of replacement in-kind seasonal wetland habitat, and preservation of 0.16 acre of high quality wetland habitat at the Yuba Mitigation Bank, on Yuba Drive, Santa Rosa, Sonoma County, California. The Yuba Mitigation bank is a 10.99-acre parcel of almost level land at the western end of Yuba Drive in southwestern Santa Rosa, Sonoma County, California (APN 035-211-019). The site is in the final approval process by the Interagency Mitigation Bank Review Team (MBRT), for dedication to long term conservation, and will be transferred in Fee Title to the California Department of Fish and Game (DFG) to be preserved in perpetuity. According to the applicant, the actual mitigation design for created wetlands has already been fully implemented and has successfully functioned as wetland habitat through one winter/spring season. The California Department of Fish and Game (CDFG) is the lead agency under the California Environmental Quality Act (CEQA) responsible for determining adequate avoidance/mitigation measures for potential impacts to CTS breeding and estivating habitat. The Regional Water Board is the permitting agency responsible for protecting all the beneficial uses of wetlands, which includes CTS and its breeding and estivation habitat. In most cases, the Regional Water Board requires the same mitigation measures that the CDFG determines to be appropriate for the protection of CTS and its habitat. The CDFG has reviewed the

proposed project, and based on ongoing efforts to provide enhancement of potential summer dormancy and winter breeding habitats for CTS at the Yuba Drive Mitigation Bank, CDFG has determined that additional mitigation efforts for CTS are not needed for the current and pending Bellevue Ranch projects (including Phases 6 and 8).

CEQA Compliance:

The proposed project was covered in the Southwest Santa Rosa Area Final Environmental Impact Report (EIR), Resolution Number 21805, which was certified by the Council of the City of Santa Rosa on June 21, 1994, and updated in May 2000. A mitigation Monitoring and Reporting Program was developed by EIP Associates for the Southwest Santa Rosa EIR in May 2000.

Standard Conditions:

Pursuant to Section 3860 of Title 23 of the California Code of Regulations (23 CCR), the following three standard conditions shall apply to this project:

1) This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code and Section 3867 of Title 23 of the California Code of Regulations.

2) This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3) The validity of any non-denial certification action (Actions 1 and 2) shall be conditioned upon total payment of the full fee required under 23 CCR Sections 3833, unless otherwise stated in writing by the certifying agency.

Additional Conditions:

Pursuant to Section 3859(a) of Title 23 of the California Code of Regulations (23 CCR), the applicant shall comply with the following additional conditions:

1) The Regional Water Board shall be notified in writing at least 48 hours prior to the commencement of grading work, with details regarding the construction schedule, in order to allow staff to be present onsite during construction, and to answer any public inquiries that may arise regarding the project.

2) Construction work shall comply with provisions in the North Coast Basin Water Quality Control Plan.

3) Fueling, lubrication, maintenance, operation, and storage of vehicles and equipment shall not result in a discharge or a threatened discharge to any surface waters. At no time shall the applicant use any vehicle or equipment, which leaks any substance that may impact water quality. Staging and storage areas for vehicles and equipment shall be located outside of any surface waters of the state.

4) Best Management Practices for sediment and turbidity control shall be implemented and in place prior to, during, and after construction in order to ensure that no silt or sediment enters surface waters.

5) The overall design and development of Bellevue Ranch Phase 8 shall include a combination of post-construction storm water runoff Best Management Practices (BMPs) to manage the quantity and improve the quality of storm water runoff from all impervious surfaces, equal to the 85th percentile/24 hour precipitation event (0.95-inches). Prior to the Discharger qualifying for termination of coverage under the Storm Water General Permit, the Discharger shall submit as-built plans showing the location, size and other details of all post-construction storm water treatment facilities. The engineering plans shall be stamped by an engineer registered in the state of California.

6) Wetland mitigation shall include creation of 0.16 acre on in-kind seasonal wetland habitat, and 0.16 acre of preservation of high quality existing wetland habitat at the Yuba Drive Mitigation Bank.

7) An as-built report of the wetland mitigation performed for Bellevue Ranch Phase 8 at the Yuba Drive Mitigation Bank shall be submitted to the Regional Water Board by March 15, 2002. The report shall document the entire mitigation construction activities, and shall include photographic documentation taken to document the extent of inundation/saturation within created impoundments.

8) If additional mitigation and monitoring measures for CTS are deemed necessary by the CDFG at a future date, the project applicant shall implement those measures in accordance with the CDFG findings and CEQA.

9) The Regional Water Board shall be provided with yearly monitoring reports for the creation and preservation mitigation as required under this permit. Reports shall be prepared by a professional consultant with in-depth experience in wetland ecosystem creation and function, as well as wetland mitigation monitoring techniques. Reports shall also include photographic documentation of the mitigation site. At the end of each monitoring year (years one through five), a detailed Annual Monitoring Report shall be submitted. After five years have passed, the mitigation will be evaluated for proper functionality, and a decision will be made whether additional mitigation measures are necessary.

10) A copy of this permit must be provided to the Contractor and all subcontractors conducting the work, and must be in their possession at the work site.

11) If at any time a discharge to surface waters occurs, or any water quality problem arises, the project will cease immediately and the Regional Water Board will be notified promptly.

"The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at: http://www.swrcb.ca.gov/."

12) The issuance of this permit is expressly conditioned upon the applicant's compliance with all federal and state environmental laws, and may be revoked if any violations occur.

13) The project shall comply with all plans and details submitted as part of the application for this permit.

14) This Waiver/Certification may be revoked if the Discharge violates waiver/certification conditions or causes an impact to the water quality of waters of the state.

Waiver of Waste Discharge Requirements:

The proposed construction activity meets the waiver provisions of Regional Water Board Resolution No. 87-113 and, if constructed according to the information submitted and conditions of this waiver, this project will comply with applicable water quality standards. Therefore, we hereby waive the need for waste discharge requirements.

Water Quality Certification:

I hereby issue an order [23 CCR Subsection 3831(e)] certifying that any discharge from Bellevue Ranch Phase 8 (Facility No. 1B01060WNSO), will comply with the applicable provisions of Sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act [33 USC Subsection 1341 (a)(1)].

All certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicant's project description, and (b) on compliance with all applicable requirements of the Water Quality Control Plan for the North Coast Basin.

Expiration:

This waiver of waste discharge requirements and water quality certification expires upon completion of the project or on December 31, 2006, whichever occurs first.

Any person affected by this action of the Regional Water Board may petition the State Water Resources Control Board (State Board) to review the action in accordance with Section 13320 of the California Water Code and Title 23, California code of Regulations, Section 2050. The petition must be received by the State Board within 30 days of the date of this Waiver/Certification. Copies of the law and regulations applicable to filing petitions will be provided upon request. In addition to filing a petition with the State Board, any person affected by this Waiver/Certification may request the Regional Water Board to reconsider this Waiver/Certification. Such request should be made within 30 days of the date of this Waiver/Certification. Note that even if reconsideration by the Regional Water Board is sought, filing a petition with the State Board within the 30-day period is necessary to preserve the petitioner's legal rights.

Please notify Andrew Jensen of my staff at (707) 576-2683 when the construction commences so we can answer any public inquiries about the work.

Sincerely,

Susan A. Warner
Executive Officer

AJJ:tab/bellevueranchphase8.doc

cc: Mr. Charlie Patterson, Plant Ecologist, 1806 Ivanhoe, Lafayette, CA 94549

Mr. Oscar Balaguer, SWRCB, Chief Water Quality Certification Unit, Division of Water Quality

Mr. Erik Spiess, SWRCB, Office of Chief Council

Ms. Jane Hicks, US Army Corps of Engineers, Regulatory Branch, 333 Market Street, San Francisco, CA 94105

Mr. Don Hankins, US Fish and Wildlife Service, Wetlands Division, 2800 Cottage Way, Room 2605, Sacramento, CA 95815

Mr. Carl Wilcox, Department of Fish and Game, Region 3, P.O. Box 47, Yountville, CA 94599

Mr. Liam Davis, Department of Fish and Game, Region 3, P.O. Box 47, Yountville, CA 94599

Director of Water Division (WTR-1), US EPA, Region 9, 75 Hawthorne Street, San Francisco, CA 94105, Re: Water Quality Certification

Mr. Philip T. Northern, Department of Biology, Sonoma State University, 1801 E. Cotati Avenue, Rohnert Park, CA 94928

4. Buyer and Seller shall pay one-half of the escrow fee charged by escrow holder, or $ 300.00 (Three Hundred Dollars), whichever is less. Seller shall pay any and all brokerage commissions payable in connection with this transaction, Seller shall pay the cost (if any) of recording or registering transfer of credits.

5. Seller represents and warrants to Buyer that Seller has obtained tentative approval from all governmental agencies for these credits and subject to receiving such final approvals, has good and marketable title to such credits. This agreement is subject to receipt of such final approvals. This agreement is subject to the previously committed credits.

6. **Liquidated Damages:** Buyer and Seller agree that if Buyer fails to complete this purchase for reason of any default of Buyer, unless as stated in Item # 1 of the agreement:

(a) Seller shall be released from the obligation to sell the credits to the Buyer.

(b) Seller shall retain, as liquidated damages for breach of contract, the total deposit(s) actually paid.

(c) In the event of a dispute, funds deposited in trust accounts or escrow are not released automatically and require mutual, signed instruction from both Buyer and Seller, judicial decision, or arbitration award.

7. This agreement contains the entire understanding of the parties and constitutes the sole and only agreement between them concerning the subject matter hereof or the rights and duties of any of them in connection herewith. Any agreements or representations between the parties hereto prior to the date of this agreement regarding the "Vernal Pool Mitigation Purchase Agreement" not expressly set forth in this agreement are null and void.

8. **Attorney's Fees:** In the event that a legal dispute arises under this Agreement, the prevailing party shall recover its attorney's fees and costs (*including expert witness fees*) from the other party.

Buyer: Bellevue Ranch Partnership

By: Mark C Tognazzini Date: 9/1/99

Title: President B-T Land Development Inc General Partner in Bellevue Ranch Partnership

Seller: Sonoma Vernal Pool, Inc.

By:_____ Date:_____

VERNAL POOL MITIGATION PURCHASE AGREEMENT

COPY

cc: Ellie

In reference to the purchase of Vernal Pool Mitigation Credits, pertaining to the "conservation easement" that has been placed on the real property located at 1187 Todd Road, Santa Rosa, California (aka APN 134-051-023) between SONOMA VERNAL POOL, INC., Seller and Bellevue Ranch Partnership, Buyer, the undersigned parties hereby agree as follows:

1. Seller shall deliver to Buyer, for the sum of $ 130,000.00 (One Hundred Thirty Thousand Dollars), "restoration mitigation credits" ("credits"), representing 6.5 (six and one-half) credits of wetlands. These credits are being used to offset the mitigation need of the The Bellevue Ranch Partners Company, located at:

Derno Park		
Acreage of fill:	2732 Stony Point Road	Santa Rosa, Ca. 95407
Assessors Parcel Number	0.38 acres 134-042-024	File Number: 23769N
Dutton Meadows, Phase # 6		
Acreage of fill:	2773 Dutton Meadows	Santa Rosa, Ca. 95407
Assessors Parcel Number	0.37 acres 043-072-005	File Number: 20264-N
McGill/Gould		
Acreage of fill:	2684 Dutton Meadows	Santa Rosa, Ca. 95407
Assessors Parcel Number(s)	0.16 042-071-023,022 & 007	File Number: Applied for

TOTAL CREDITS NEED FOR THE THREE (3) PROJECTS IS 9.5 (NINE AND ONE/HALF) CREDITS. SELLER CAN ONLY PROVIDE BUYER WITH 6.5 (SIX AND ONE/HALF) CREDITS NOW, BUT AS CREDITS BECOME AVAILABLE, BUYER MAY PURCHASE ADDITIONAL CREDITS - WITH NO INCREASE IN DEPOSIT, BUT SHALL CLOSE ON ALL CREDITS AS PER ITEM # 1-b BELOW.

a. Said credits shall be be approved by all the required regulatory governmental agencies prior to transfer to Buyer, and said transfer shall be effected at the Closing referred to in Section 3 by (a) Seller's execution and delivery of an appropriate instrument of transfer in such registries or administrative records as may exist for such purpose, and/or (c) by such other deliveries and/or acts as may be reasonably necessary to evidence and confirm Seller's transfer thereof to, and vesting of title thereto in, Buyer.

b. Said credits shall be subject to the Buyer receiving the necessary permit to vacate the existing "404 Grading Permit", and to be able to fill the existing wetlands located on-site at the subject property, in favor of mitigation of these wetlands at an off site mitigation site, at the above mentioned property located at 1187 Todd Road, Santa Rosa, California. Should the Buyer be unsuccessful in his attempt to secure said permit on or before October 26, 1999, the Buyer and Seller shall mutually agree to (a) extend this agreement in 30 day increments, or (b) Buyer may terminate this agreement, whereby all deposits held in escrow shall be promptly returned to the Buyer and this transaction shall be considered null and void.

2. Buyer shall deposit the sum of $ 13,000.00 (Nineteen Thousand Dollars) into an escrow account at Fidelity Title within 5 (five) business days of acceptance of this agreement. If for any reason, at no fault of the Buyer or Seller, the 6.5 (six and one-half) credits of mitigation credits cannot be transferred to the Buyer by the Closing dated established in paragraph 3, Buyer may, at its election (a) extend such closing date until such credits can be delivered, or (b) terminate this Agreement, whereupon said monies shall be returned to the Buyer and this agreement shall be void.

INITIAL MLT

APPENDIX E: ARBORIST'S REPORT

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE PRESERVATION AND MITIGATION REPORT

DUTTON MEADOWS
SANTA ROSA, CA

Prepared For:

Trumark Homes
3001 Bishop Drive, Suite 100
San Ramon, CA 94583

Prepared by:

John C. Meserve
Consulting Arborist and Horticulturist
International Society of Arboriculture
ISA Certified Arborist, WE #0478A

DECEMBER 8, 2020

HORTICULTURAL Associates
Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

December 8, 2020

Trevor Brown
Assistant Project Manager
3001 Bishop Dr., Ste. 100
San Ramon, CA 94583

Re: Updated *Tree Preservation and Mitigation Report*, Dutton Meadows Subdivision, Santa Rosa, California

Trevor,

Attached you will find our updated *Tree Preservation and Mitigation Report* for the above noted site in Santa Rosa. This updated report is based on a new development plan. A total of 64 trees were evaluated and this includes all trees that were 6 inches or larger in trunk diameter.

Each tree is identified in the field with a numbered aluminum tag placed on the trunk at approximately eye level.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also includes information about expected impacts of the proposed development plan and recommendations for action based on the plan reviewed. A *Key to Tree inventory Chart* is included, along with *Tree Fencing Detail* and *Tree Preservation Guidelines*. A *Tree Location Plan* shows the location and numbering sequence of all evaluated trees.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred on any tree, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their health or structural condition. No other trees beyond those listed have been included in this report. If other trees need to be included it is the responsibility of the client to provide that direction.

EXISTING SITE CONDITION SUMMARY

The project site consists of a large infill parcel of empty land surrounded by subdivision development.

EXISTING TREE SUMMARY

Species native to the site include Valley Oak, Box Elder, Coast Live Oak, and Western Cottonwood

Native species present that are planted and not native to the site include Coast Redwood.

Non-native species included Black Walnut, Pecan, English Walnut, Edible Pear, Eucalyptus, Deodar Cedar, Italian Cypress, Sweetgum, Japanese Maple, Weeping Willow, Silk Tree, Olive, Grecian Laurel, Lombardy Poplar, Maple, Stone Pine, Dogwood, Silver Maple, Hawthorn, and Glossy Privet

CONSTRUCTION IMPACT SUMMARY

Based on the conceptual plan that we evaluated that did not include details of grading, underground utilities, or storm drains the following summary of impacts is provided:

(3) Trees that can be preserved

(53) Trees that must be removed due to the expected impacts of development

(8) Trees that are exempt from preservation and mitigation

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

TREE INVENTORY CHART

December 8, 2020

TREE INVENTORY
Dutton Meadows Subdivision
With Mitigation Calculations

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations	Mitigation Inches
1	*Juglans nigra*	Black Walnut	7+5.5	18	12	3	3	3	2	12.5
2	*Quercus lobata*	Valley Oak	9	20	12	3	3	3	2	9
3	*Carya illinoinensis*	Pecan	19.5	35	22	3	2	1	1, 6, 7, 8, 9	0
4	*Quercus lobata*	Valley Oak	11.5	30	16	3	3	3	2	11.5
5	*Quercus lobata*	Valley Oak	4.5	14	6	3	3	3	2	4.5
6	*Quercus lobata*	Valley Oak	5.5	16	6	3	3	3	2	5.5
7	*Quercus lobata*	Valley Oak	9.5	25	14	4	3	3	2	9.5
8	*Quercus lobata*	Valley Oak	36.5	50	39	4	3	3	2	36.5
9	*Liquidambar styraciflua*	Liquidambar	24	50	32	4	2	3	2	24
10	*Quercus lobata*	Valley Oak	39.5	45	33	3	2	3	2	39.5
11	*Sequoia sempervirens*	Coast Redwood	30	55	18	4	3	3	2	30
12	*Salix babylonica*	Weeping Willow	39	35	20	3	2	3	2	39
13	*Popoulus fremontii*	Poplar	16+17	60	28	4	2	3	2	0
14	*Quercus lobata*	Valley Oak	8+9	20	16	3	3	3	2	17
15	*Quercus lobata*	Valley Oak	9.5+7.5+11.5	32	18	2	3	3	2	28.5

HORTICULTURAL ASSOCIATES
P.O. Box 1261, Glen Ellen, CA 95442
707.935.3911

TREE INVENTORY
Dutton Meadows Subdivision
With Mitigation Calculations

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations	Mitigation Inches
16	*Quercus lobata*	Valley Oak	11+12	25	22	3	3	3	2	23
17	*Quercus lobata*	Valley Oak	9.5	22	16	2	3	3	2	9.5
18	*Sequoia sempervirens*	Coast Redwood	34	45	18	3	3	3	2	34
19	*Albizia julibrissin*	Silk Tree	6+4+4.5	24	16	4	4	3	2	14.5
20	*Quercus lobata*	Valley Oak	12.5	35	18	3	3	3	2	12.5
21	*Olea europaea*	Olive	4+3+4+1	14	9	4	4	3	2	12
22	*Juglans regia*	English Walnut	5.5+6.5	15	12	4	4	3	2	12
23	*Laurus nobilis*	Grecian laurel	1+1+1+1+1+1	18	10	4	3	3	2	6
24	*Acer negundo*	Box Elder	10	18	13	3	2	3	2	10
25	*Liquidambar styraciflua*	Liquidamber	7.5	32	12	3	3	3	2	7.5
26	*Acer japonica*	Japanese Maple	4.5+2.5+3+3	12	9	4	3	3	2	13
27	*Juglans regia*	English Walnut	18	16	18	3	3	3	2	18
28	*Populus fremontii*	Cottonwood	12	22	16	4	3	3	2	0
29	*Acer negundo*	Box Elder	7.5	9	5	3	2	3	2	7.5
30	*Populus nigra 'Italica'*	Lombardi Poplar	8+10+12+12	50	14	3	2	3	2	0

TREE INVENTORY
Dutton Meadows Subdivision
With Mitigation Calculations

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations	Mitigation Inches
31	*Populus nigra 'Italica'*	Lombardi Poplar	4+12+8	45	12	3	2	3	2	0
32	*Acer species*	Maple	17	25	24	3	2	3	2	17
33	*Quercus lobata*	Valley Oak	10	30	20	4	2	3	2	10
34	*Cedrus Deodara*	Deodar Cedar	24	50	20	4	3	3	2	24
35	*Populus nigra 'Italica'*	Lombardi Poplar	4+12+8	25	8	4	2	3	2	0
36	*Cupressus sempervirens*	Italian Cyprus	4	16	2	2	3	3	2	4
37	*Cupressus sempervirens*	Italian Cyprus	6	22	2	4	3	3	2	6
38	*Cedrus Deodara*	Deodar Cedar	17.5	35	16	4	3	3	2	17.5
39	*Quercus lobata*	Valley Oak	11	35	18	3	3	3	2	11
40	*Quercus lobata*	Valley Oak	11	30	16	3	3	3	2	11
41	*Pinus pinea*	Stone pine	33.5	40	29	4	2	3	2	33.5
42	*Cornus florida*	Dogwood	7	14	10	4	4	3	2	7
43	*Populus nigra 'Italica'*	Lombardi Poplar	23	25	6	3	2	3	2	0
44	*Populus nigra 'Italica'*	Lombardi Poplar	33	55	12	3	2	3	2	0
45	*Salix babylonica*	Weeping Willow	40	12	10	2	1	3	2	40

TREE INVENTORY
Dutton Meadows Subdivision
With Mitigation Calculations

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations	Mitigation Inches
46	*Sequoia sempervirens*	Coast Redwood	26	50	14	2	2	3	2	26
47	*Quercus lobata*	Valley Oak	8+7+7+7.5	26	18	3	3	3	2	29.5
48	*Quercus lobata*	Valley Oak	19	40	20	3	3	3	2	19
49	*Quercus lobata*	Valley Oak	7+7.5	22	14	3	3	3	2	14.5
50	*Quercus lobata*	Valley Oak	6.5+6	20	14	4	4	3	2	12.5
51	*Quercus lobata*	Valley Oak	20.5	35	22	3	3	3	2	20.5
52	*Quercus lobata*	Valley Oak	17	24	22	3	3	3	2	17
53	*Quercus lobata*	Valley Oak	10	18	9	2	2	3	2	10
54	*Juglans regia*	English Walnut	5	16	12	3	2	1	1, 6, 7, 8, 9	0
55	*Quercus lobata*	Valley Oak	12	30	22	3	2	1	1, 6, 7, 8, 9	0
56	*Quercus lobata*	Valley Oak	13.5	20	24	3	2	3	2	13.5
57	*Juglans regia*	Black Walnut	5.5+9+7+9+7.5	18	18	4	3	3	2	38
58	*Quercus lobata*	Valley Oak	6.5	16	9	4	4	3	2	6.5
59	*Eucalyptus species*	Eucalyptus	8+8+8+8+8+8	40	18	3	2	3	2	48
60	*Acer species*	Maple	4+3.5	20	12	2	2	3	2	7.5

TREE INVENTORY
Dutton Meadows Subdivision
With Mitigation Calculations

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations	Mitigation Inches
61	*Acer saccharinum*	Silver Maple	16	30	20	4	4	3	2	0
62	*Pyrus communis*	Edible Pear	4+4+4	18	12	3	3	3	2	12
63	*Crataegus cordata*	Hawthorn	14	22	16	4	2	3	2	14
64	*Ligustrum lucidum*	Glossy Privet	8+6.5+4.5	18	12	2	2	3	2	0
									Total trunk inches	916
916 total trunk inches divided by 6 and multiplied by 2 = 305 x 15 gallon replacement trees for mitigation										

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

Dutton Meadows Subdivision
Santa Rosa, California

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level and the *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured, to the nearest one half inch, to document its diameter at 4 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Development Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation due to their very close proximity to construction or because they are located within the footprint of construction and cannot be preserved.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A very minor or no impact on long term tree integrity can be expected as a result of proposed development.

(0) No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible.

(2) Removal is required due to significant development impacts.

(3) Removal is recommended due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing condition.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean, raise, or provide necessary clearance. Prune to reduce branches that are over-loaded, over-extended, largely horizontal, arching, or have foliage concentrated near the branch ends, per International Society of Arboriculture Pruning Standards.

Pruning to occur by, or under the supervision of, an Arborist certified by the International Society of Arboriculture. Pruning Standards are attached to this report.

TREE LOCATION PLAN

TREE LOCATION AND NUMBERING PLAN
DUTTON MEADOWS SUBDIVISION
SANTA ROSA, CA

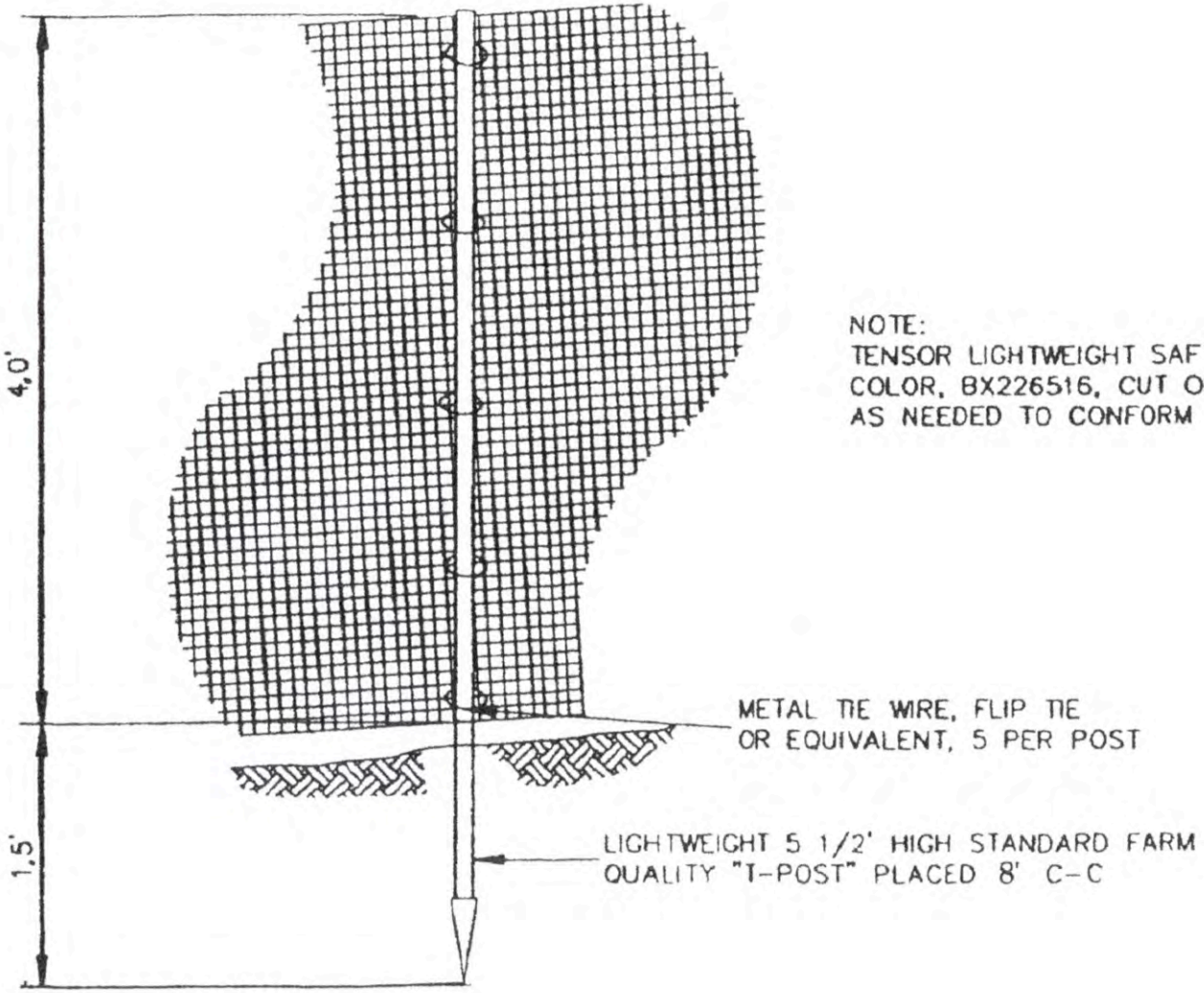
TREE LOCATION AND NUMBERING PLAN
DUTTON MEADOWS SUBDIVISION
SANTA ROSA, CA

0 30 60 120

TREE LOCATION AND NUMBERING PLAN
DUTTON MEADOWS SUBDIVISION
SANTA ROSA, CA

TREE LOCATION AND NUMBERING PLAN
DUTTON MEADOWS SUBDIVISION
SANTA ROSA, CA

TREE FENCING DETAIL



NOTE:
TENSOR LIGHTWEIGHT SAFTY GRID, ORANGE
COLOR, BX226516, CUT OR FOLD AT POSTS
AS NEEDED TO CONFORM TO SLOPING TERRAIN.

TREE PROTECTION FENCING DETAIL

TREE PRESERVATION GUIDELINES

GENERAL TREE PROTECTION GUIDELINES

INTRODUCTION

Great care must be exercised when development is proposed in the vicinity of established trees of any type. The trees present at construction sites require specialized protection techniques during all construction activities to minimize negative impact on their long term health and vigor. The area immediately beneath and around canopy driplines is especially critical, and the requirements and procedures that follow are established to protect short and long term tree integrity. The purpose of this protection guideline is therefore to define the procedures that must be followed during any and all phases of development in the immediate vicinity of designated and protected trees.

Established, mature trees respond in a number of different ways to the disruption of their natural conditions. Change of grade within the root system area or near the root collar, damage to the bark of the trunk, soil compaction above the root system, root system reduction or damage, or alteration of summer soil moisture levels may individually or collectively cause physiological stress leading to tree decline and death. The individual impacts of these activities may cause trees to immediately exhibit symptoms and begin to decline, but more commonly the decline process takes many years, with symptoms appearing slowly and over a period of time. Trees may not begin to show obvious signs of decline from the negative impacts of construction until many years after construction is completed. It is not appropriate to wait for symptoms to appear, as this may be too late to correct the conditions at fault and to halt decline.

It is therefore critical to the long-term health of all protected trees that a defined protection program be established before beginning any construction activity where protected trees are found. Once incorporated at the design level, it is mandatory that developers, contractors, and construction personnel understand the critical importance of these guidelines, and the potential penalties that will be levied if they are not fully incorporated at every stage of development.

The following guidelines are meant to be utilized by project managers and those supervising any construction in the vicinity of protected trees including grading contractors, underground contractors, all equipment operators, construction personnel, and landscape contractors. These protection guidelines are presented in a brief outline form to be applied to each individual activity that occurs during development activities. It is left to project managers to implement these protection measures. Questions which

arise, or interpretation of guidelines as they apply to specific site activities, must be referred to the designated project arborist as they occur.

TREE PROTECTION ZONE

1. The canopy dripline is illustrated on the Improvement Plans and represents the area around each tree, or group of trees, which must be protected at all times with tree protection fencing. No encroachment into the dripline is allowed at any time, and unauthorized entry may be subject to civil action and penalties.

2. The dripline will be designated by the project arborist at a location determined to be adequate to ensure long term tree viability and health.

TREE PROTECTION FENCING

1. Prior to initiating any construction activity on a construction project, including demolition or grading, temporary protective fencing shall be installed at each site tree. Fencing shall be located at the dripline designated by the project arborist or illustrated on the Improvement Plans.

2. Fencing shall be minimum 4' height at all locations, and shall form a continuous barrier without entry points around all individual trees, or groups of trees. Barrier type fencing such as *Tensar* plastic fencing is recommended, but any fencing system that adequately prevents entry will be considered for approval by the project arborist. The use of post and cable fencing is not acceptable.

3. Fencing shall be installed in a professional manner with steel fence posts (standard quality farm 'T' posts work well) placed no more than 8 feet on center. Fencing shall be attached to each post at 5 locations with plastic electrical ties, metal tie wire, or flip tie. See fencing detail.

4. Fencing shall serve as a barrier to prevent encroachment of any type by construction activities, equipment, materials storage, or personnel.

5. All encroachment into the fenced dripline must be approved in writing. Approved dripline encroachment may require additional mitigation or protection measures.

6. Contractors and subcontractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation.

7. Fencing shall be upright and functional at all times from start to completion of project. Fencing shall remain in place and not be moved or removed until all construction activities at the site are completed.

TREE PRUNING AND TREATMENTS

1. All recommendations for pruning or other treatments must be completed prior to acceptance of the project. It is strongly recommended that pruning be completed prior to the start of grading to facilitate optimum logistics and access.
2.
3. All pruning shall be conducted in conformance with International Society of Arboriculture pruning standards, and all pruning must occur by, or under the direct supervision of, an arborist certified by the International Society of Arboriculture.

GRADING AND TRENCHING

1. Any construction activity that necessitates soil excavation in the vicinity of preserved trees shall be avoided where possible, or be appropriately mitigated under the guidance of the project arborist. All contractors must be aware at all times that specific protection measures are defined, and non conformance may generate stop-work orders.

2. The designated dripline is defined around all site trees to be preserved. Fences protect the designated areas. No grading or trenching is to occur within this defined area unless so designated by the Improvement Plan, and where designated shall occur under the direct supervision of the project arborist.

3. Trenching should be routed around the dripline whenever possible. Where trenching has been designated within the dripline, utilization of underground technology to bore, tunnel or excavate with high-pressure air or water will be specified. Hand digging will be generally discouraged unless site conditions restrict the use of alternate technology.

4. All roots greater than one inch in diameter shall be cleanly hand-cut as they are encountered in any trench or in any grading activity. The tearing of roots by equipment of any type shall not be allowed. Mitigation treatment of pruned roots shall be specified by the project arborist as determined by the degree of root pruning, location of root pruning, and potential exposure to desiccation. No pruning paints or sealants shall be used on cut roots.

5. Where significant roots are encountered mitigation measures such as supplemental irrigation and/or organic mulches may be specified by the project arborist to offset the reduction of root system capacity.

6. Retaining walls are effective at holding grade changes outside the area of the dripline and are recommended where necessary. Retaining walls shall be constructed in post and beam or drilled pier construction styles where they are necessary near or within a dripline.

7. Placement of fill soils is generally discouraged within the dripline, but in some approved locations may be approved to cover up to 30% of this area. The species and condition of the tree shall be considered, as well as site and soil conditions, and depth of fill. Retaining walls should be utilized to minimize the area of fill within the dripline. Type of fill soil and placement methods shall be reviewed prior to placement.

8. Grade changes outside the dripline, or those necessary in conjunction with retaining walls, shall be designed so that drainage water of any type or source is not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%. If grading toward the root collar is unavoidable, appropriate surface and/or subsurface drain facilities shall be installed so that water is effectively diverted away from root collar area.

9. Approved fill soils within the dripline may also be mitigated using aerated gravel layers and/or perforated aeration tubing systems.

10. Tree roots will be expected to grow into areas of soil fill, and quality of imported soil shall be considered. Ideally, fill soil should be site soil that closely matches that present within the root zone area. When import soil is utilized it must be the same or slightly coarser texture than existing site soil, should have a pH range comparable to site soils, and generally should have acceptable chemical properties for appropriate plant growth. A soil analysis is recommended prior to importation to evaluate import soil for these criteria.

11. Grade reduction within the designated dripline shall be generally discouraged, and where approved, shall be conducted only after careful consideration and coordination with the project arborist.

12. Foundations of all types within the dripline shall be constructed using design techniques that eliminate the need for trenching into natural grade. These techniques might include drilled piers, grade beams, bridges, or cantilevered structures. Building footprints should generally be outside the dripline whenever possible.

DRAINAGE

The location and density of native trees on many sites may be directly associated with the presence of naturally occurring water, especially ephemeral waterways. Project design,

especially drainage components, should take into consideration that these trees may begin a slow decline if this naturally present association with water is eliminated.

TREE DAMAGE

Any form of tree damage which occurs during the demolition, grading, or construction process shall be evaluated by the project arborist. Specific mitigation measures will be developed to compensate for or correct the damage. Fines and penalties may also be levied.

Measures may include, but are not limited to, the following:

- pruning to remove damaged limbs or wood
- bark scoring to remove damaged bark and promote callous formation
- alleviation of compaction by lightly scarifying the soil surface
- installation of a specific mulching material
- supplemental irrigation during the growing season for up to 5 years
- treatment with specific amendments intended to promote health, vigor, or root growth
- vertical mulching or soil fracturing to promote root growth
- periodic post-construction monitoring at the developer's expense
- tree replacement, or payment of the established appraised value, if the damage is so severe that long term survival is not expected

FERTILIZATION

1. Native trees generally do not require supplemental fertilization unless exhibiting a deficiency symptom. Following completion of construction any tree that exhibits symptoms of a specific nutrient deficiency shall be fertilized to compensate for the deficiency. Soil or tissue analysis may be required to identify the deficiency.

2. Distressed trees, or trees damaged by construction in any way, may be detrimentally affected by supplemental fertilization. The decision to fertilize, and with what fertilizers, shall be made by the project arborist based on conditions and appearance observed at the completion of the project.

PEST CONTROL

A close visual examination for tree pests shall be conducted by the pruning contractor as he completes recommended pruning procedures. If a serious infestation is present, that was not apparent from ground observation, then pest control measures may be considered. However, the simple presence of tree pests does not warrant the use of chemical pesticides. Only a serious infestation, capable of causing tree decline, would warrant pesticide use. The use of organic sprays or pesticidal soaps is the preferred method for treating any serious pest infestation.

WEED CONTROL

No specific measures are recommended for weed control, and the presence of weeds should not be considered problematic in relation to continued tree health. However, use of contact weed killers and pre-emergent weed killers are generally not recommended due to their potential for root system damage if improperly applied.

DISEASE CONTROL

No specific measures are recommended for disease control unless noted in the Tree Protection and Preservation Plan. All disease control measures should be based on observation of actual conditions in the tree canopy.

MULCHING

Trees will generally benefit from the application of a 4 inch layer of chipped bark mulch over the soil surface within the greater root zone area. Ideal mulch material is a chipped bark containing a wide range of particle sizes. Bark mulches composed of shredded redwood, bark screened for uniformity of size, or chipped lumber will not function as beneficially. Rock and gravel mulches are generally discouraged due to their minimal benefit.

PLANTING UNDER EXISTING TREES

1. The installation of lawn beneath established native trees is strongly discouraged because it has the potential to initiate serious disease. If planting is required for aesthetic or functional purposes, the use of drought tolerant, woody species is most appropriate. Species should be selected for their ability to survive with minimal or no water through the summer months after the initial establishment period. Only drip irrigation should be utilized within the canopy dripline to minimize summer water in the root zone.

APPENDIX F: PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

Project No.
7699.200.303

July 24, 2018

Mr. Robin Miller
Trumark Homes, LLC
3001 Bishop Drive, Suite 100
San Ramon, CA 94583

Subject: Dutton Meadows
Santa Rosa, California

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Dear Mr. Miller:

ENGEO is pleased to present our phase I environmental site assessment of the subject property (Property), located in Santa Rosa, California. The attached report includes a description of the site assessment activities, along with ENGEO's findings, opinions, and conclusions regarding the Property.

ENGEO has the specific qualifications based on education, training, and experience to assess the nature, history, and setting of the Property, and has developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312 and the American Standard Testing Method (ASTM) Practice E1527-13. We declare that, to the best of our professional knowledge and belief, the responsible charge for this study meets the definition of Environmental Professional as defined in Section 312.10 of 40 CFR Part 312 and ASTM E1527-13.

We are pleased to be of service to you on this project. If you have any questions concerning the contents of our report, please contact us.

Sincerely,

ENGEO Incorporated

Kelsey Gerhart

Jeffrey A. Adams, PhD, PE

kg/jaa/dt

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APPENDIX G – Qualifications of Environmental Professional

EXECUTIVE SUMMARY

ENGEO conducted a phase I environmental site assessment for the approximately 18-acre Property located southeast of the intersection of Dutton Meadow and Hearn Avenue in Santa Rosa, California (Property). Please refer to Table 1.1 for both physical addresses and Assessor's Parcel Numbers (APN) associated with the Property.

A review of historical aerial photography and previous reports found the Property had formerly been utilized for ranch and agricultural purposes. The eastern portion of the Property appears to have been cultivated with orchards, and the western portion of the Property had been utilized as a ranch; a portion of this ranch appears to have been used for the stockpiling of material.

The current development plan includes 127 single-family residential units, 75 detached garage units, interior roads, underground utilities, exterior flatwork, and landscaping.

This assessment included a review of local, state, tribal, and federal environmental record sources, standard historical sources, aerial photographs, fire insurance maps and physical setting sources. A reconnaissance of the Property was conducted to review site use and current conditions to check for the storage, use, production or disposal of hazardous or potentially hazardous materials and interviews with persons knowledgeable about current and past site use.

A review of regulatory databases maintained by county, state, tribal, and federal agencies found no documentation of hazardous materials violations or discharge on the Property and did not identify contaminated facilities within the appropriate American Society for Testing and Materials (ASTM) search distances that would reasonably be expected to impact the Property

In 2007, ENGEO conducted a phase II environmental site assessment for the Property to address both the historical use of the Property, including the former ranch and cultivation areas, and the presence of undocumented stockpiles at the Property.

A review of the analytical findings associated with the soil samples recovered from the former ranch and orchard areas did not identify pesticide concentrations above respective screening levels. Samples recovered from the former ranch and orchards exhibited metallic analytes (arsenic, lead, and mercury levels) consistent with background concentrations for the State of California. Based on the analytical findings, ENGEO indicated that the Property does not appear to have been significantly impacted from past agricultural practices.

For stockpile sampling, TPH-gasoline, OCP, PCB, VOC, and SVOC analytes were not detected above laboratory reporting limits. TPH-diesel and TPH-motor oil concentrations were below screening levels. Metallic analytes were reported within the expected range of background concentrations from the State of California. ENGEO opined that the stockpiled soils on the Property appear to be suitable, from an environmental standpoint, for unrestricted land use, and would not be classified as California hazardous waste based on the analyses performed.

At the time of the of the 2007 environmental site assessment, the earliest historical aerial photograph dated 1953 depicted orchards on the eastern portion of the Property. A review of the recently provided EDR aerial photograph dated 1942 found the orchard had extended over the central portion of the Property. This portion of the Property was not sampled at the time of the 2007 agrichemical assessment.

Based on the findings of this assessment, no controlled Recognized Environmental Conditions (RECs), or historical RECs were identified for the Property; however, the following REC was identified for the Property:

- A review of historical aerial photographs found the Property and the surrounding area had been historically utilized as agricultural land. Based on the readily available historical aerial photographs at the time of the 2007 assessment, an agrichemical assessment was performed on the eastern portion of the Property. A review of historical aerial photographs from the 1940s found the extent of the former orchard had traversed the central portion of the Property. Based upon the timeframe of agricultural use, pesticides or other agricultural chemicals might have been applied to the portion of the Property not sampled at the time of the 2007 assessment and thus could be present in near-surface soils. These chemicals are persistent in the environment and toxic concentrations may remain many years after application. ENGEO recommends an agrichemical assessment, including the recovery of near-surface soil samples, be performed within the uncharacterized former orchard area prior to site redevelopment activities.

Based on a review of records and historical aerial photographs, features of potential environmental concern were identified for the Property. These features, not considered to be RECs, include the following:

- Based on our review of historic aerial photographs, the existing structures situated on the northeastern portion of the Property were constructed no later than the early 1970s. In our experience, rural residential structures and associated outbuildings of this age may exhibit actionable concentrations of lead and organochlorine pesticides in near-surface soil at the building perimeters. Prior to site redevelopment, ENGEO recommends a near-surface soil-sampling program be conducted along the perimeter of the buildings to address potential lead and pesticide impact at the Property.

- Given the age of the existing structures, it is conceivable that both lead-based paint and asbestos-containing material are present within the structures. ENGEO recommends retaining a licensed contractor to perform an asbestos and lead-based paint survey prior to demolition.

- The existing stockpiles were characterized in 2007. If additional material has been imported to the Property and/or added to the stockpile subsequent to characterization activities performed in 2007, ENGEO recommends the stockpile be re-characterized prior to site reuse and/or off-haul.

- If a septic system is uncovered during future site grading activities, ENGEO recommends abandoning and disposing of the septic tank under appropriate State and local regulations.

- ENGEO recommends the existing well be properly abandoned/destroyed under appropriated State and local regulations.

ENGEO has performed a phase I environmental site assessment in general conformance with the scope and limitations of ASTM E1527-13 and the standards and practices of the All Appropriate Inquiry – Final Rule (40 Code of Federal Regulations Part 312). Any exceptions to, or deletions from, this practice are described in Section 5.1 of this report. Based on the findings of this assessment, ENGEO recommends additional studies as outlined above.

1.0 INTRODUCTION

1.1 SITE LOCATION AND DESCRIPTION

ENGEO conducted a phase I environmental site assessment for the approximately 18-acre Property located southeast of the intersection of Dutton Meadow and Hearn Avenue in Santa Rosa, California (Property). Please refer to Table 1.1 for both physical addresses and Assessor's Parcel Numbers (APN) associated with the Property.

TABLE 1.1: Property Information

PHYSICAL ADDRESS	APN	AREA (acres)
1200 Hearn Avenue	043-191-016	1.84
1112 Hearn Avenue	043-191-024	4.6
2684 Dutton Meadow	043-071-007	8.04
2666 Dutton Meadow	043-071-022	3.18
2650 Dutton Meadow	043-071-023	0.46

A review of historical aerial photography and previous reports found the Property had formerly been utilized for ranch and agricultural purposes. The eastern and central portions of the Property appear to have been cultivated with orchards, and the western portion of the Property had been utilized as a ranch; the southern portion of this ranch appears to have been used for the stockpiling of soil material.

1.2 CURRENT USE OF PROPERTY AND ADJOINING PROPERTIES

The northeastern portion of the relatively level Property is occupied by several residential structures and associated outbuildings. The remainder of the Property is primarily used as undeveloped open space with seasonal grasses and limited amounts of construction debris observed throughout. Two large stockpiles were observed on the southern portion of the Property at the time of the site reconnaissance.

The Property is bounded by residential development to the north and south, what appears to be former agricultural land to the east, and Meadow View Elementary School to the west. The Property is located in a predominantly residential area of Santa Rosa.

1.3 SITE AND VICINITY CHARACTERISTICS

According to published topographic maps, the relatively level Property lies at an elevation of approximately 122 feet above mean sea level (msl). The Property is located within the Coast Ranges geologic province of California, a series of northwest-trending ridges and valleys. Locally, the Property is mapped as underlain by alluvium and fluvial deposits (Sims, 1973). This material generally consists of sand, silt, gravel and clay.

Geocheck – Physical Setting Source Summary of the Environmental Resources Data report (Appendix A) indicated two Federal United States Geological Survey (USGS) and 17 state wells located within 1 mile of the Property. The Physical Setting Source Summary also provided hydrogeologic information for use as an indicator of groundwater flow direction in the immediate area. Based on 28 data points, groundwater flow within 1 mile of the Property appears to be variable.

We reviewed the Department of Water Resources On-line Water Data Library for depth to water in the vicinity of the Property. The website identified three 'residential' wells and one water quality station within 1 mile of the Property. A residential well located approximately 0.7 mile southeast of the Property reported recent depth to groundwater measurements ranging between approximately 19 and 26 feet below the ground surface.

The site-specific depth to groundwater and direction of groundwater flow was not determined as part of this assessment. Fluctuations in groundwater levels may occur seasonally and over a period of years due to variations in precipitation, temperature, irrigation and other factors.

We reviewed the Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) website and map database to determine if any historic oil and/or gas wells were located within the Property. No wells were mapped within 1 mile of the Property.

1.4 PURPOSE OF PHASE I ENVIRONMENTAL SITE ASSESSMENT

This assessment was performed at the request of Trumark Homes, LLC. The objective of this phase I environmental site assessment is to identify Recognized Environmental Conditions (RECs) associated with the Property. As defined in the ASTM Standard Practice E1527-13, an REC is "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment."

1.5 DETAILED SCOPE OF SERVICES

The scope of services performed included the following:

- A review of previous environmental reports.
- A review of publicly available and practically reviewable standard local, state, tribal, and federal environmental record sources.
- A review of publicly available and practically reviewable standard historical sources, aerial photographs, fire insurance maps and physical setting sources.
- A reconnaissance of the Property to review site use and current conditions. The reconnaissance was conducted to check for the storage, use, production or disposal of hazardous or potentially hazardous materials.
- Interviews with owners/occupants and public sector officials.
- Preparation of this report with our findings, opinions, and conclusions.

1.6 SIGNIFICANT ASSUMPTIONS OR DEVIATIONS FROM ASTM STANDARD PRACTICE

There were no significant deviations from the ASTM Standard.

1.7 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

The professional staff at ENGEO strives to perform its services in a proper and professional manner with reasonable care and competence but is not infallible. The recommendations and conclusions presented in this report were based on the findings of our study, which were developed solely from the contracted services. The findings of the report are based in part on contracted database research, out-of-house reports and personal communications. The opinions formed by ENGEO are based on the assumed accuracy of the relied upon data in conjunction with our relevant professional experience related to such data interpretation. ENGEO assumes no liability for the validity of the materials relied upon in the preparation of this report.

This document must not be subject to unauthorized reuse; that is, reuse without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time. The findings from a phase I environmental site assessment are valid for one year after completion of the report. Updates of portions of the assessment may be necessary after a period of 180 days after completion.

This phase I environmental site assessment is not intended to represent a complete soil or groundwater characterization, nor define the depth or extent of soil or groundwater contamination. It is intended to provide an evaluation of potential environmental concerns associated with the use of the Property. A more extensive assessment that would include a subsurface exploration with laboratory testing of soil and groundwater samples could provide more definitive information concerning site-specific conditions. If additional assessment activities are considered for the Property and if other entities are retained to provide such services, ENGEO cannot be held responsible for any and all claims arising from or resulting from the performance of such services by other persons or entities. ENGEO can also not be held responsible from any and all claims arising or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

1.8 SPECIAL TERMS AND CONDITIONS

ENGEO has prepared this report for the exclusive use of our client, Trumark Homes, LLC. It is recognized and agreed that ENGEO has assumed responsibility only for undertaking the study for the client. The responsibility for disclosures or reports to a third party and for remedial or mitigative action shall be solely that of the Client.

Laboratory testing of soil or groundwater samples was not within the scope of the contracted services. The assessment did not include an asbestos survey, an evaluation of lead-based paint, an inspection of light ballasts for polychlorinated biphenyls (PCBs), a radon evaluation, or a mold survey.

This report is based upon field and other conditions discovered at the time of preparation of ENGEO's assessment. Visual observations referenced in this report are intended only to represent conditions at the time of the reconnaissance. ENGEO would not be aware of site contamination, such as dumping and/or accidental spillage, that occurred subsequent to the reconnaissance conducted by ENGEO personnel.

2.0 RECORDS REVIEW

2.1 PROPERTY RECORDS

2.1.1 Title Report/Ownership

The Title Report lists recorded land title detail, ownership fees, leases, land contracts, easements, liens, deficiencies, and other encumbrances attached to or recorded against a subject property. Laws and regulations pertaining to land trusts vary from state to state and the detail of information presented in a Title Report can vary greatly by jurisdiction. As a result, ENGEO utilizes a Title Report, when provided to us, as a supplement to other historical record sources.

A Preliminary Title Report, prepared by First American Title Company and dated February 13, 2018, was provided for our review. The Property title is vested in:

- Hearn Avenue LLC, A California Limited Liability Company, as to Parcels A and B DM Associates, LLC, A California Limited Liability Company, as to Parcels C, D and E.

A review of the provided Title Report found several Notices of Non-Compliance (Violation) issued by the City of Santa Rosa Department of Community Development. In general, the reported violations of the Santa Rosa City Code (SRCC) were associated with the maintenance and upkeep of the existing structures on the Property.

This report is included in Appendix D.

2.2 PREVIOUS ENVIRONMENTAL REPORTS

ENGEO; Phase I Environmental Site Assessment, Minoia Property, Santa Rosa, California; April 20, 2007; Project No. 7699.2.002.02

ENGEO conducted a phase I environmental site assessment for the eastern portion of the greater study area in 2007.

Based on the findings of the assessment, ENGEO identified the following potential recognized environmental conditions (RECs) at the Property:

- Several material storage areas were observed during the site reconnaissance. Materials viewed in some of these areas included hazardous and potentially hazardous materials.
- An orchard occupied the southern Property area since at least the mid-1950s through the mid-1960s.

Based on the findings of their assessment, ENGEO recommended the following:

- A study should be conducted to evaluate the former orchard area for the presence of persistent agrichemicals.
- If not in use, the hazardous and potentially hazardous materials stored on the Property should be removed and disposed of in an appropriate manner.

- An asbestos and lead-based paint survey should be conducted of the structures prior to their renovation or demolition.

- The water well should be abandoned in accordance with State and local regulations if not used for beneficial purposes. Groundwater should be tested if it is intended for beneficial use.

- Septic systems, if determined to be present, should be removed in accordance with the State and local regulations.

ENGEO; Phase I Environmental Site Assessment, Dutton Meadow Properties, Santa Rosa, California; April 20, 2007; Project No. 7699.2.001.02

ENGEO conducted a phase I environmental site assessment for the western portion of the greater study area in 2007.

Based on the findings of the assessment, ENGEO identified the following potential RECs at the Property:

- Two large undocumented stockpiles were encountered during the site reconnaissance. No documentation was located concerning the origin of the soil.

- During a site reconnaissance of the Property, ENGEO observed a number of areas of debris, including empty paint and oil containers.

- A former poultry farm may have operated on the Property.

Based on the findings of their assessment, ENGEO recommended the following:

- A study should be conducted to evaluate the Property for the presence of persistent agrichemicals associated with the poultry farm operation.

- The stockpiled materials should be characterized prior to re-use on site or removed to an off-site location.

- The debris piles should be removed and disposed of in an appropriate manner. Efforts to secure the Property should be undertaken to discourage dumping of additional material.

- An asbestos and lead-based paint survey should be conducted of the structures prior to their renovation or demolition.

- Septic systems. If determined to be present, should be removed in accordance with the State and local regulations.

- Water wells, if determined to be present, should be abandoned in accordance with State and local regulations.

ENGEO; Phase II Environmental Site Assessment, Dutton Meadow Residential Development, Santa Rosa, California; October 3, 2007; Project No. 7699.2.001.03

ENGEO conducted a phase II environmental site assessment for the Property in 2007 to address both the historical use of the Property, including the former ranch and cultivation areas, and the presence of undocumented stockpiles at the Property.

On August 9, 2007, 16 discrete soil samples were recovered from the former ranch and cultivated areas. The soils samples were analyzed on a discrete basis for arsenic and analyzed as four 4-point composites for organochlorine pesticides (OCPs), lead, and mercury.

A review of the analytical findings associated with the soil samples recovered from the former ranch and orchard areas did not identify pesticide concentrations above respective screening levels.

Samples recovered from the former ranch and orchards exhibited metallic analytes (arsenic, lead and mercury levels) consistent with background concentrations for the State of California. Based on the analytical findings, ENGEO indicated that the Property does not appear to have been significantly impacted from past agricultural practices.

On September 29, 2007, ENGEO recovered a total of 44 soil samples from stockpiled material on site. The samples were analyzed as eleven 4-point composite samples for total petroleum hydrocarbons (TPH) as gasoline, diesel and motor oil, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), OCPS, polychlorinated biphenyls (PCBs), and CAM-17 metals.

TPH-gasoline, OCP, PCB, VOC, and SVOC analytes were reported below the laboratory reporting limits. TPH-diesel and TPH-motor oil concentrations were below screening levels. Metallic analytes were reported within the expected range of background concentrations from the State of California. ENGEO opined that the stockpiled soils on the Property appear to be suitable, from an environmental standpoint, for unrestricted land use, and would not be classified as California hazardous waste based on the analyses performed.

2.3 HISTORICAL RECORD SOURCES

The purpose of the historical record review is to develop a history of the previous uses or occupancies of the Property and surrounding area in order to identify those uses or occupancies that are likely to have led to recognized environmental conditions on the Property.

2.3.1 Historical Topographic Maps

Historical USGS topographic maps were reviewed to determine if discernible changes in topography or improvements pertaining to the Property had been recorded. The following maps were provided to us through an EDR Historical Topographic Map Report, presented in Appendix C.

TABLE 2.3.1-1: Historical Topographic Maps

QUAD	YEAR	DESCRIPTION
Santa Rosa	1916	The Property appears to be occupied by two structures; one structure is depicted on the northeastern portion of the Property, and a second structure is visible on the southwestern corner of the Property. Two roadways are shown in the present-day locations of Hearn Avenue and Dutton Meadow. A railroad line is shown east of the Property.
Santa Rosa	1944	Land use conditions appear similar to the earlier topographic map. Several additional structures are visible on the adjacent parcels.
Santa Rosa/Sebastopol	1954	Orchards appear to be mapped on both the eastern and central portion of the Property. Four structures are visible on the northern portion of the easternmost parcels, and three structures are mapped on the western side of the Property. Orchards and small structures are shown in the surrounding area. Development, including the county fairgrounds and Veteran's Memorial Auditorium, appears to have had advanced further north of the Property. The Naval Auxiliary Air Station (identified as inactive) is mapped northwest of the Property.
Santa Rosa/Sebastopol	1968 and 1973	Several additional structures are shown on the western portion of the Property. The northern portion of the easternmost parcels appear to be mapped as part of the developed area and a single structure is shown on the central portion of the eastern side of the Property. A flood control channel and Highway 101 are mapped southeast and east of the Property, respectively. Residential development continues to spread further north of the Property. The Santa Rosa Air Center is now mapped west-northwest of the Property. Highway 101 is shown further east
Sebastopol/ Santa Rosa	1980 and 1998	Conditions at the Property appear similar to the earlier topographic maps. Development continues to spread in the surrounding area.
Sebastopol/ Santa Rosa	2012	Individual structures are no longer depicted on the topographic map. Paved roadways appear to be shown in their present-day configurations.

2.3.2 Aerial Photographs

The following aerial photographs, provided by EDR, were reviewed for information regarding past conditions and land use at the Property and in the immediate vicinity. These photographs are presented in Appendix E.

TABLE 2.3.2-1: Aerial Photographs

YEAR	DESCRIPTION
1942	The eastern and central portion of the Property appears to have been cultivated with orchards. Structures, likely associated with both dwellings and agricultural practices, are visible on the northernmost portion of the eastern parcels and on the western side of the Property near the present-day Dutton Meadow roadway. The neighboring properties appear to also be utilized as agricultural land. A creek is visible further east of the Property.
1952	The central portion of the Property appear to no longer be cultivated with orchards. The easternmost portion of the Property remains cultivated with orchards and structures are visible on the northern portion of the eastern parcels. Two long, linear structures, possibly greenhouses, are visible on the eastern Property boundary. The western portion of the Property appears to be comprised of fallow land with structures (likely farmhouses and associated outbuildings) on the western Property boundary. Residential development is visible north of the Property.

YEAR	DESCRIPTION
1968 and 1973	Orchards are no longer visible on the Property. The northern and southern corners of the westernmost portion of the Property remains developed with several structures including a linear structure, likely a coop. Numerous structures are visible on the northern side of the easternmost portion of the Property. An additional structure is visible on the central portion of the easternmost parcels. Orchards are still visible both east and south of the Property. Residential development continues to spread further north of the Property.
1982 and 1985	Conditions at the Property and neighboring parcels appear similar to the earlier photographs. The structure, likely a coop, is no longer visible on the southwestern portion of the Property.
1993	Land use conditions at the Property appear similar to the earlier photographs with the exception of what appears to be dry farming activities on the western portion of the Property.
2006	The Property no longer appears to be utilized for agricultural activities. The southern part of the central portion of the Property appears to be occupied by two large stockpiles.
2010	The structures formerly located on the western portion of the Property appear to have been demolished, with the exception of one structure. Paths, likely associated with the hauling of import material, are visible within the vicinity of the stockpiled material. The northernmost portion of the eastern side of the Property remains developed.
2014	Structures are no longer visible on the western side of the Property. A few of the structures located on the eastern side of the Property appear to have been demolished, including the structure located on the central portion of the eastern parcels; several structures remain visible on the northwestern corner of the eastern parcels.

2.3.3 Fire Insurance Maps

EDR prepared a Sanborn Fire insurance map search for the Property and surrounding properties. EDR reported that no maps were available for the Property and surrounding properties.

2.3.4 City Directory

City Directories, published since the 18th century for major towns and cities, lists the name of the resident or business associated with each address.

The following listings were identified for the Property:

- 1200 Hearn Avenue
  - Residential listings (individuals' names) (1953-2006)

- 1112 Hearn Avenue
  - Residential listings (individuals' names) (1953-1990)

No listings were identified for 2650, 2666, and 2684 Dutton Meadow.

Surrounding listings primarily include residential, school district/schools, and a church (the Tree of Fellowship). A city directory search conducted by EDR is located in Appendix F.

2.4 ENVIRONMENTAL RECORD SOURCES

EDR performed a search of federal, tribal, state, and local databases regarding the Property and nearby properties. Details regarding the databases searched by EDR are provided in Appendix A.

A list of the facilities documented by EDR within the approximate minimum search distance of the Property is provided below.

2.4.1 Standard Environmental Records

2.4.1.1 Subject Property

The Property is not listed on the Standard Environmental Record source databases.

2.4.1.2 Other Properties

The following databases include facilities listed within the appropriate ASTM search distances of the Property on Standard Environmental Records sources.

TABLE 2.4.1.2-1

FACILITY	STREET	DATABASES
MEADOWVIEW ELEMENTARY SCHOOL EXPANSION	2641 DUTTON MEADOW	ENVIROSTOR
RAY'S FOOD CENTER	2423 DUTTON AVE	LUST
MEADOW VIEW EXPANSION, HEARN AVE. PARCELS	1550 & 1590 HEARN AVENUE	ENVIROSTOR
FOUCHE AUTO WRECKERS	2290 DUTTON AVE	SEMS, SLIC
FOUCHE BROS	2290 DUTTON AVENUE	SLIC, ENVIROSTOR
MEAD CLARK LUMBER SUPPLY	RAILROAD AVENUE 175	LUST
AM AND PM MINI MARKET	440 HEARN AVE	SLIC, LUST
A-1 MINI STORAGE	2868 DUTTON AVENUE, SOUTH	SLIC
SHELL SERVICE STATION	2575 CORBY DR	RCRA-SQG, LUST
CORBY SHELL	2575 CORBY AVE	LUST
MANLY HONDA	2750 CORBY AVENUE	AST, LUST
ROSELAND UNIVERSITY PREP CHARTER SCHOOL	1777 WEST AVENUE	ENVIROSTOR
MANLY MITSUBISHI	2755 CORBY AVENUE	LUST
BIDDULPH CHEVROLET	2770 CORBY AVE	RCRA-SQG, LUST
DUTTON & ASSOCIATES	1850 BURBANK AVENUE	SLIC
PRESTIG IMPORTS	2800 CORBY AVE	RCRA-SQG, LUST
MANI, RICHARD	200 TALMAGE	LUST
FORMER MANI SITE	200 TALMADGE ROAD	LUST
REDWOOD CHEMICAL	2450 STONEY POINT ROAD	ENVIROSTOR
DUTTON & ASSOCIATES	1800 BURBANK AVENUE	SLIC
PRESTIGE ACURA	CORBY AVENUE 2840	LUST
SANTA ROSA AMC-JEEP MAZDA	2820 CORBY AVE	LUST
ZUMWALT MAGRINI USED CARS	2820 CORBY	LUST
PRESTIGE ACURA	2840 CORBY AVENUE	LUST
UNITED GROCERS	DUTTON AVENUE 3000	LUST
MARKET WHOLESALE GROCERY CO	3000 DUTTON AVE	LUST
FREEMAN TOYOTA	2875 CORBY	LUST

FACILITY	STREET	DATABASES
HEPPER, TOM	2775 SANTA ROSA AVENUE	LUST
PRESTIGE LINCOLN MERCURY	2979 CORBY AVENUE	LUST
NEW ROSELAND AREA ELEMENTARY SCHOOL	1683 BURBANK AVENUE	ENVIROSTOR
MARTIN PROPERTY	BELLEVUE AVENUE EAST	ENVIROSTOR
GOLDEN TECHNOLOGY SITE	3017 AND 3019 SANTA ROSA AVENUE	ENVIROSTOR, RESPONSE
REDWOOD OIL COMPANY	455 YOLANDA AVENUE	LUST
SONOMA COUNTY INDIAN HEALTH PROJECT, INC	1440 STONY POINT ROAD	ENVIROSTOR
SANTA ROSA CIRCUITS	35 AND 48 WEST BARHAM AVENUE	ENVIROSTOR
FLYERS ENERGY 3017	459 YOLANDA AVENUE	LUST
SANTA ROSA PLATING WORKS	80 BARHAM AVE	ENVIROSTOR
BROMLEY PROPERTY	1500 SANTA ROSA	SLIC, LUST
TRANSCO TRANSMISSION	1470 SANTA ROSA AVENUE	LUST, ENVIROSTOR
BURT STREET DEVELOPMENT	YOLANDA & PETALUMA ROADS	VCP, ENVIROSTOR
PROPOSED DUTTON AVENUE SCHOOL SITE	3255/3261 DUTTON AVENUE	ENVIROSTOR
METAL ENGINEERING	532 ASTON AVE	LUST

2.4.2 Additional Environmental Records

2.4.2.1 Subject Property

The Property is listed on the following Additional Environmental Record source databases.

TABLE 2.4.2.1-1

FACILITY	STREET	DATABASES
HEARN AVE LLC VICTORIA VAGES	1112 HEARN AVE	HAZNET
BELLEVUE RANCH PHASE 8	2684 DUTTON MEADOW	FINDS

2.4.2.2 Other Properties

The following database(s) include(s) facilities listed within the appropriate ASTM search distances of the Property on the Additional Environmental Record sources.

TABLE 2.4.2.2-1

FACILITY	STREET	DATABASES
HEARN AVENUE LLC	1120 HEARN AVE	HAZNET
MEADOWVIEW ELEMENTARY SCHOOL EXPANSION	2641 DUTTON MEADOW	SCH
RAY & JOE LAZZINI	2423 DUTTON AVE	FID, SWEEPS UST
RAY'S FOOD CENTER	2423 DUTTON AVE	HIST UST, HIST CORTESE
EK TEST & REPAIR	2423 DUTTON AVE	HIST UST, CUPA
ANDYS SERVICE	2423 DUTTON AVE	EDR GAS STATIONS

FACILITY	STREET	DATABASES
MEADOW VIEW EXPANSION, HEARN AVE. PARCELS	1550 & 1590 HEARN AVENUE	SCH
SHIBBYS CLEANING	1525 HEARN AVE	EDR DRY CLEANERS
HAYNES RESIDENCE	2803 S DUTTON AVE	SWEEPS UST
SONOMA RANGER UNIT HEADQUARTER	2210 WESST COLLEGE AVE	FID, SWEEPS UST, HIST UST
GREG'S AUTOMOTIVE	DUTTON	PROP65
RELIABLE HARDWARE & STEEL CO.	2707 DOWD DR	FID, HIST UST, SWEEPS UST
MEAD CLARK LUMBER SUPPLY	3RD ST	HIST CORTESE
AM AND PM MINI MARKET	440 HEARN AVE	CHMIRS, SWEEPS UST
AM/PM MINI MART	440 HEARN AVENUE	PROP65, HIST CORTESE
SHELL SERVICE STATION	2575 CORBY DR	FINDS, ECHO, HAZNET
CORBY SHELL	2575 CORBY AVE	CUPA, HAZNET, SWEEPS UST, HIST CORTESE
MANLY HONDA	2750 CORBY AVENUE	HIST CORTESE
ROSELAND UNIVERSITY PREP CHARTER SCHOOL	1777 WEST AVENUE	SCH
MANLY MITSUBISHI	2755 CORBY AVENUE	SWEEPS UST, HIST CORTESE
BIDDULPH CHEVROLET	2770 CORBY AVE	FINDS, ENF, ECHO, FID, HIST UST, SWEEPS UST, HIST CORTESE
PRESTIG IMPORTS	2800 CORBY AVE	FID, ENF, HIST UST, EMI, CORTESE, SWEEPS UST
MANI, RICHARD	200 TALMAGE	HIST CORTESE
FORMER MANI SITE	200 TALMADGE ROAD	ENF
SANTA ROSA AMC-JEEP MAZDA	2820 CORBY AVE	FID, HIST UST, SWEEPS UST
ZUMWALT MAGRINI USED CARS	2820 CORBY	HIST CORTESE
PRESTIGE ACURA	2840 CORBY AVENUE	SWEEPS UST, HIST CORTESE
MARKET WHOLESALE GROCERY CO	3000 DUTTON AVE	HIST UST, HIST CORTESE
FREEMAN TOYOTA	2875 CORBY	PROP65, HIST CORTESE
HEPPER, TOM	2775 SANTA ROSA AVENUE	PROP65, HAZNET, HIST CORTESE, ENF
PRESTIGE LINCOLN MERCURY	2979 CORBY AVENUE	PROP65, HIST CORTESE
OPTICAL COATING LABORATORY INC	STORMDRAIN @ NORTHPOINT	PROP65
NEW ROSELAND AREA ELEMENTARY SCHOOL	1683 BURBANK AVENUE	SCH
FORMER ARCO STATION	1745 SANAT ROSA AVE	PROP65
MARTIN PROPERTY	BELLEVUE AVENUE EAST	SCH
GOLDEN TECHNOLOGY SITE	3017 AND 3019 SANTA ROSA AVENUE	HIST CALSITES, DEED
REDWOOD OIL COMPANY	455 YOLANDA AVENUE	EMI, PROP65, NPDES, ENF, CORTESE, HIST CORTESE
RESIDENCE	1267 CORBY AVE	PROP65
FLYERS ENERGY 3017	459 YOLANDA AVENUE	PROP65, HAZNET, HIST CORTESE, NPDES
BROMLEY PROPERTY	1500 SANTA ROSA	PROP65, HIST CORTESE
RINO GAS	1410 SANTA ROSA AVENUE	PROP65

FACILITY	STREET	DATABASES
TRANSCO TRANSMISSION	1470 SANTA ROSA AVENUE	PROP65, HIST CORTESE
ANGIE KENDALL	2611 GIFFEN AVENUE	PROP65
PROPOSED DUTTON AVENUE SCHOOL SITE	3255/3261 DUTTON AVENUE	SCH
METAL ENGINEERING	532 ASTON AVE	FID, HIST UST, PROP65, SWEEPS UST

The following summarizes relevant Property-related information:

- FINDS listing for Bellevue Ranch Phase 8 located at 2684 Dutton Meadow (dated October 10, 2015). The listing appears to be associated with a Clean Water Act Section 401 water quality certification.

- The HAZNET listing for the Property is associated with the disposal of the following waste:
  - 1112 Hearn Avenue – Hearn Ave LLC Victoria Vages: asbestos-containing waste; 5.52 tons disposed of at a landfill or a surface impoundment that will be closed as a landfill (2015)

The following summarizes nearby facilities identified on the GeoTracker and EnviroStor databases:

- Ray's Food Center, located at 2423 Dutton Avenue (approximately 150 feet northeast of the Property), is listed as a closed leaking underground storage tank (LUST) site. The identified contaminant of concern includes gasoline and the potential media of concern includes an aquifer used for drinking water supply. A review of the site history found four underground storage tanks (USTs) were removed from the Property in 1986. Approximately 450 cubic yards of soil was removed from the Property in 1990. Oxygen sparging was performed at the site but proved ineffective. A pilot test injection of 150 pounds of Klozur CR mixed with water occurred in 2013. Water supply wells located at 2450 Dutton Avenue and 1103 Hearn Avenue were sampled in 2015 and were non-detect for all constituents of concern. On September 12, 2017, the site was granted closure with site management requirements in place.

- Meadowview Elementary School Expansion, located at 2641 Dutton Meadow (approximately 200 feet northwest of the Property), is listed as a certified DTSC Cleanup Program site. In 2009, reports indicate that the shallow soil surrounding the former residence and an out-building were impacted with elevated concentrations of both lead and OCPs. Remedial work was performed in 2015. On June 1, 2016, DTSC approved the removal action completion report (RACR) with no further action.

- Fouche Auto Wreckers, located at 2290 Dutton Avenue (approximately 1,000 feet northeast of the Property), is identified as open cleanup program site that is under remediation. Soil and groundwater were reportedly affected by the auto wrecking activities performed at the site. A review of the case summary found soil cleanup work has been performed. As indicated in a report published by Edd Clark & Associates, Inc. (Edd) in 2015, historic and current groundwater monitoring at the site has indicated that 1,1,1-trichloroethane (TCA) and its breakdown product 1,1-dichloroethene (1,1-DCE) are the primary residual contaminants of concern in groundwater since the extensive cleanup was conducted in 2001 and 2006. Based on groundwater sampling performed in 2015, TCA and 1,1-DCE were reported at

concentrations of <0.5 micrograms per liter (µg/L) in all the remaining wells; Edd opined that the remedial actions at the site had removed the former source of halogenated VOCs (HVOCs) at the site. As indicated on the GeoTracker database, soil testing for lead and groundwater testing for HVOCs is ongoing, and the site is currently being developed into residential housing.

Based on the distances to the identified database sites, the reported direction of groundwater flow, and the EDR findings, none of the above-stated off-Property sites would be expected to pose an environmental risk to the Property. Properties that are on the "Orphan Summary" list appear to be located beyond the ASTM recommended radius search criteria and/or do not appear to pose an environmental risk to the Property.

2.5 REGULATORY AGENCY FILES AND RECORDS

The following agencies were contacted pertaining to possible past development and/or activity at the Property.

TABLE 2.5-1: Regulatory Agency Records

NAME OF AGENCY	RECORDS REVIEWED
City of Santa Rosa City Clerk	We contacted the City of Santa Rosa for files pertaining to the Property. We reviewed the following Property-related files at City Hall on July 20, 2018: • 2684 Dutton Meadow o Permit - 16,000-cubic-yard stockpile (2005) o Permit - Demolition of substandard house (2012) • 1112 Hearn Avenue o Permi t- Replace existing power pole (2008) o Permit - Additions/alterations to residential structure (expired 2008) o Permit - Electrical (expired 2008) o Permit - Demolition of 925-square-foot house, 400-square-foot shed and clean up garbage, trailers, and vehicles (2014) o Permit - Additions/alterations (expired 2015) o Permit - Repair or replace three windows. Fix damaged trim and/or framing around windows (2007) • 1200 Hearn Avenue o Permit - Additions/alterations to residential structure (expired 2008) o Permit - Demolition of 556-square-foot garage structure (2011) o Permit - Demolition of 1,274-square-foot duplex structures J #3T324 (2011) o Permit - Replace existing furnace in Unit C (2013) o Map showing the extent of the non-jurisdictional wetlands on the project site (2003) o Letter from RWQCB titled, Notice of Coverage, Waiver of Waste Discharge Requirement for Minor Dredging and Filling Activities (2006)

NAME OF AGENCY	RECORDS REVIEWED
	• 2650 Dutton Meadow o Permit - Comply with code enforcement case and demo SFD and rear outbuilding. All utilities to be capped at property line (2008) • 2666 Dutton Meadow o Permit - Comply with code enforcement case demo existing barn. Cap utilities at property line (2008) In addition to the aforementioned documents, the following planning files were provided for our review: a General Plan Amendment Package (2003) and associated correspondence, rezoning and tentative map documentation, conditional use permit applications, a letter indicating the issuance of a 401 certification from the North Coast Regional Water Quality Control Board (2006), design reviews, and related planning documentation. No environmental and/or hazardous materials related documentation was identified by the City at the time of the records request.
City of Santa Rosa Fire Department	We contacted the Santa Rosa Fire Department for files pertaining to the Property. A representative informed us that no records were identified for the Property.
County of Sonoma Department of Health Services- Environmental Health & Safety	We contacted the County of Sonoma Department of Health Services – Environmental Health & Safety for Property-related information. A representative informed us that no records were identified for the Property.
Sonoma County Permit & Resource Management	We contacted the Sonoma County Permit & Resource Management for files pertaining to the Property. On April 24, 2018, a representative provided us with a list of the permit history by address and APN. We also reviewed the Permit and Resource Management Department online database for information pertaining to the Property. The following information was identified for the Property: • 1200 Hearn Avenue (APN 043-191-016): o Record of Survey – Map approved (2006) o Building – Repair (1988) o Building – Foundation (1988) o Building – Fire repair (1984) o Building – Fire repair (1984) o Building – Repair SFD (1979) • 1112 Hearn Avenue (APN 043-191-024): o Well permit – 5 geotechnical borings (2007) o Record of Survey – Map approved (2006) o Building – Replace gas line (1987) o Building – Replace doors (1987) o Building – New roof repair (1986) o Electrical – Electric service (1966)

NAME OF AGENCY	RECORDS REVIEWED
	• 2684 Dutton Meadow (APN 043-071-007): o Well permit – 5 geotechnical borings (2007) o Record of Survey – Map approved (2006) o Building – Repair E/P (1979) o Building – Ins barn (1979) o Building – Ins SFD (1979) o Building – Termite repair (1979) o Building – E Misc. (1978) o Building – Repair Sys (1975) o Building – Repair Sys (1975) o Building – Repair (1971) • 2666 Dutton Meadow (APN 043-071-022): o Record of Survey – Map approved (2006) • 2650 Dutton Meadow (APN 043-071-023): o Record of Survey – Map approved (2006) o Building – Repair System (1979)
County of Sonoma- Fire & Emergency Services Department	We contacted County of Sonoma Fire and Emergency Services Department for files pertaining to the Property. A representative informed us that no record of CUPA files were identified for the Property.
Sonoma County Assessor's Office	A review of the County Assessor's Office website found the Property is identified with Assessor's Parcel Numbers (APNs) 043-191-016, 043-191-024, 043-071-007, 043-071-022, and 043-071-023.
California State Water Resources Control Board	The California State Water Resources Control Board's online database, GeoTracker, was reviewed for files relating to the Property. There were no listings for the Property in the GeoTracker database. Nearby listings are summarized in the previous section.
Department of Toxic Substances Control	We reviewed the EnviroStor database maintained by the Department of Toxic Substances Control (DTSC) for files relating to the Property. There were no records for the Property listed in the EnviroStor database. Nearby listings are summarized in the previous section.

3.0 SITE RECONNAISSANCE

3.1 METHODOLOGY

ENGEO conducted a reconnaissance of the Property on July 20, 2018. The reconnaissance was performed by Kelsey Gerhart, Project Engineer of ENGEO. The Property was viewed for hazardous materials storage, superficial staining or discoloration, debris, stressed vegetation, or other conditions that may be indicative of potential sources of soil or groundwater contamination. The Property was also checked for evidence of fill/ventilation pipes, ground subsidence, or other evidence of existing or preexisting underground storage tanks. Photographs taken during the site reconnaissance are presented in Figure 4.

3.2 GENERAL SITE SETTING

The northeastern portion of the relatively level Property is occupied by several residential structures, associated outbuildings, and parked trailers. A concrete slab and related building material was observed on the western portion of the Property at the time of the site

reconnaissance. Two large stockpiles were observed on the southern portion of the Property as described in the 2007 report. The remainder of the Property is primarily used as undeveloped open-space with overgrown seasonal grasses and limited amounts of construction debris observed throughout. Visibility of the ground surface was limited at the time of the site reconnaissance and the southeastern half of the Property was viewed from the perimeter.

3.3 EXTERIOR OBSERVATIONS

The following table summarizes our observations during the reconnaissance:

TABLE 3.3-1: Exterior Site Observations

FEATURE TYPE	OBSERVATIONS
Structures	Several residential structures, outbuildings/sheds, and parked trailers were observed on the northeastern portion of the Property at the time of the sire reconnaissance. A concrete slab and related building material was observed on the western portion of the Property at the time of the site reconnaissance.
Hazardous Substances and Petroleum Products/Containers	No hazardous substances were observed within the Property at the time of the site reconnaissance. A minor amount of petroleum products/typical vehicular fluids were observed within buckets on the northeastern portion of the Property.
Storage Tanks (underground and above-ground)	No evidence of storage tanks (underground and/or above-ground) were noted at the time of the site reconnaissance.
Odors	No odors indicative of hazardous materials or petroleum material impacts were noted at the time of the site reconnaissance.
Pools of Potentially Hazardous Liquid	No pools of potentially hazardous liquid were observed within the Property at the time of the site reconnaissance.
Drums	One drum with household debris, including wood, was observed on the northeastern portion of the Property at the time of the site reconnaissance.
Polychlorinated Biphenyls (PCBs)	No PCB-containing materials were observed within the Property during our reconnaissance.
Pits, Ponds, and Lagoons	No pits, ponds, or lagoons were observed within the Property at the time of the site reconnaissance.
Stained Soil/Pavement	No stained soil or pavement was observed within the Property at the time of our site reconnaissance; however, select portions of the Property were overgrown with seasonal vegetation and thus limited ground visibility at the time of the site reconnaissance.
Stressed Vegetation	No signs of stressed vegetation were observed on the Property at the time of the site reconnaissance.
Solid Waste/Debris	A minimal amount of solid waste/debris was observed throughout the Property at the time of the site reconnaissance.
Wastewater	No wastewater conveyance systems were observed at the Property during the reconnaissance.
Wells	Current tenants indicated a well is located within the undeveloped portion of the eastern side of the Property. The tenants indicated that the associated structures are no longer visible and the well has been capped but not properly abandoned at the ground surface.

3.4 INTERIOR OBSERVATIONS

The interior of the existing residential dwellings and associated outbuildings were not accessed at the time of the site reconnaissance.

3.5 ASBESTOS-CONTAINING MATERIALS AND LEAD-BASED PAINT

An asbestos and lead-based paint survey was not conducted as part of this assessment. Given the age of the existing structures, it is conceivable that asbestos-containing materials and lead-based paint materials may exist within the structures.

3.6 INDOOR AIR QUALITY

An evaluation of indoor air quality, mold, or radon was not included as part of the contracted scope of services. The California Department of Health Services has conducted studies of radon risks throughout the state, sorted by zip code. Results of the studies indicate that 18 tests were conducted within the Property zip code, with none exceeding the current EPA action level of 4 picocuries per liter {pCi/L}[1]).

In accordance with ASTM E2600-10 (Tier 1) (*Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*); There are no potential petroleum hydrocarbon sources for vapor intrusion within 1/10 mile of the Property or volatile organic compound (VOCs) sources within 1/3 mile of the Property.

4.0 INTERVIEWS

We did not receive completed Client-based or Key Site Manager-based environmental site assessment questionnaires at the time of report publication.

5.0 EVALUATION

5.1 OPINIONS AND DATA GAPS

It is our opinion that the findings of this study are based on a sufficient level of information obtained during our contracted scope of services to render a conclusion as to whether additional appropriate investigation is required to identify the presence or likely presence of a REC.

The following data gaps were identified:

- We did not receive completed Client-based or Key Site Manager-based environmental site assessment questionnaires at the time of report publication.
- The interior of the existing residential dwellings and associated outbuildings were not accessed at the time of the site reconnaissance.

[1] California Department of Public Health – Radon Program (https://www.cdph.ca.gov/Programs/CEH/DRSEM/CDPH%20Document%20Library/EMB/Radon/Radon%20Test%20Results.pdf).

The data gaps identified during this process are not expected to affect the conclusions as to the presence or lack of presence of RECs at the Property.

5.2 FINDINGS AND CONCLUSIONS

This assessment included a review of local, state, tribal, and federal environmental record sources, standard historical sources, aerial photographs, fire insurance maps and physical setting sources. A reconnaissance of the Property was conducted to review site use and current conditions to check for the storage, use, production or disposal of hazardous or potentially hazardous materials and interviews with persons knowledgeable about current and past site use.

A review of regulatory databases maintained by county, state, tribal, and federal agencies found no documentation of hazardous materials violations or discharge on the Property and did not identify contaminated facilities within the appropriate American Society for Testing and Materials (ASTM) search distances that would reasonably be expected to impact the Property

In 2007, ENGEO conducted a phase II environmental site assessment for the Property to address both the historical use of the Property, including the former ranch and cultivation areas, and the presence of undocumented stockpiles at the Property.

A review of the analytical findings associated with the soil samples recovered from the former ranch and orchard areas did not identify pesticide concentrations above respective screening levels. Samples recovered from the former ranch and orchards exhibited metallic analytes (arsenic, lead, and mercury levels) consistent with background concentrations for the State of California. Based on the analytical findings, ENGEO indicated that the Property does not appear to have been significantly impacted from past agricultural practices.

For stockpile sampling, TPH-gasoline, OCP, PCB, VOC, and SVOC analytes were not detected above laboratory reporting limits. TPH- diesel and TPH-motor oil concentrations were below screening levels. Metallic analytes were reported within the expected range of background concentrations from the State of California. ENGEO opined that the stockpiled soils on the Property appear to be suitable, from an environmental standpoint, for unrestricted land use, and would not be classified as California hazardous waste based on the analyses performed.

At the time of the of the 2007 environmental site assessment, the earliest historical aerial photograph dated 1953 depicted orchards on the eastern portion of the Property. A review of the recently provided EDR aerial photograph dated 1942 found the orchard had extended over the central portion of the Property. This portion of the Property was not sampled at the time of the 2007 agrichemical assessment.

Based on the findings of this assessment, no controlled RECs or historical RECs were identified for the Property; however, the following REC was identified for the Property:

- A review of historical aerial photographs found the Property and the surrounding area had been historically utilized as agricultural land. Based on the readily available historical aerial photographs at the time of the 2007 assessment, an agrichemical assessment was performed on the eastern portion of the Property. A review of historical aerial photographs from the 1940's found the extent of the former orchard had traversed the central portion of the Property. Based upon the timeframe of agricultural use, pesticides or other agricultural chemicals might have been applied to the portion of the Property not sampled at the time of the 2007 assessment and thus could be present in near-surface soils. These chemicals are persistent

in the environment and toxic concentrations may remain many years after application. ENGEO recommends an agrichemical assessment, including the recovery of near surface soil samples, be performed within the uncharacterized former orchard area prior to site redevelopment activities.

Based on a review of records and historical aerial photographs, features of potential environmental concern were identified for the Property. These features, not considered to be RECs, include the following:

- Based on our review of historic aerial photographs, the existing structures situated on the northeastern portion of the Property were constructed no later than the early 1970s. In our experience, rural residential structures and associated outbuildings of this age may exhibit actionable concentrations of lead and organochlorine pesticides in near surface soil at the building perimeters. Prior to site redevelopment, ENGEO recommends a near-surface soil sampling program be conducted along the perimeter of the buildings to address potential lead and pesticide-impact at the Property.

- Given the age of the existing structures, it is conceivable that both lead-based paint and asbestos-containing material are present within the structures. ENGEO recommends retaining a licensed contractor to perform an asbestos and lead-based paint survey prior to demolition.

- The existing stockpiles were characterized in 2007. If additional material has been imported to the Property and/or added to the stockpile subsequent to characterization activities performed in 2007, ENGEO recommends the stockpile be re-characterized prior to site reuse and/or off-haul.

- If a septic system is uncovered during future site grading activities, ENGEO recommends abandoning and disposing of the septic tank under appropriate State and local regulations.

- ENGEO recommends the existing well be properly abandoned/destroyed under appropriated State and local regulations.

ENGEO has performed a phase I environmental site assessment in general conformance with the scope and limitations of ASTM E1527-13 and the standards and practices of the All Appropriate Inquiry – Final Rule (40 Code of Federal Regulations Part 312). Any exceptions to, or deletions from, this practice are described in Section 5.1 of this report. Based on the findings of this assessment, ENGEO recommends additional studies as outlined above.

SELECTED REFERENCES

Google Maps (http://maps.google.com)

Google Earth

California Department of Water Resources (http://www.water.ca.gov/waterdatalibrary/)

California Department of Conservation (DOGGR) (http://maps.conservation.ca.gov/doms/doms-app.html)

California Department of Public Health – Radon Program (https://www.cdph.ca.gov/Programs/CEH/DRSEM/CDPH%20Document%20Library/EMB/Radon/Radon%20Test%20Results.pdf).

ENGEO; Phase I Environmental Site Assessment, Dutton Meadow Properties, Santa Rosa, California; April 20, 2007; Project No. 7699.2.001.02

ENGEO; Phase II Environmental Site Assessment, Dutton Meadow Residential Development, Santa Rosa, California; October 3, 2007; Project No. 7699.2.001.03

ENGEO; Phase I Environmental Site Assessment, Minoia Property, Santa Rosa, California; April 20, 2007; Project No. 7699.2.002.02

Sims, J.D., Fox, K.F., Barstow, J.A., and Helley, E.J., 1973, Preliminary Geologic Map of Sonoma

County and Western Napa County, California, USGS

FIGURES

FIGURE 1: Vicinity Map
FIGURE 2: Site Plan
FIGURE 3: Assessor's Parcel Map
FIGURE 4: Site Photographs

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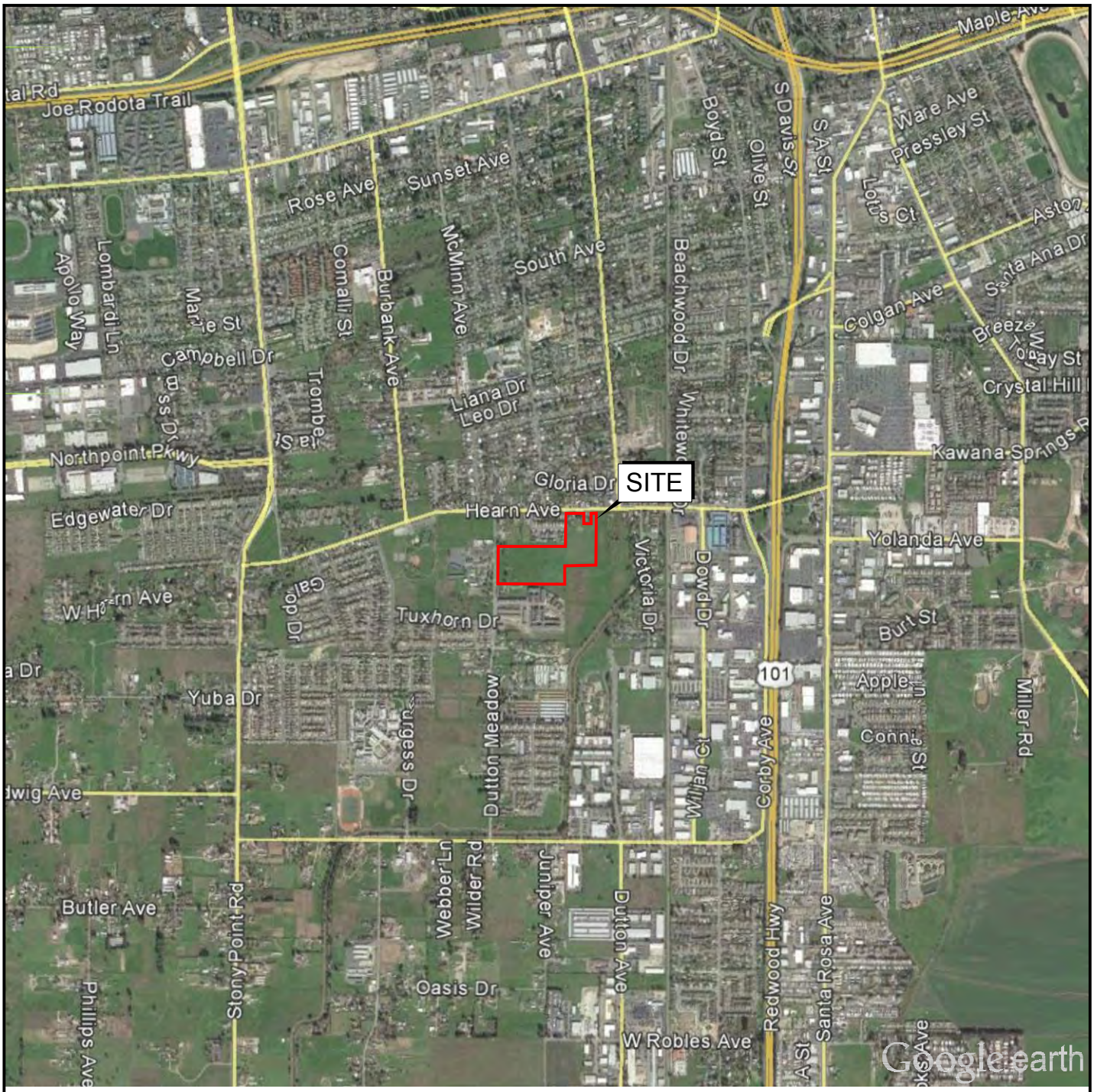

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0 FEET 2000

0 METERS 1000

BASE MAP SOURCE: GOOGLE EARTH MAPPING SERVICE

ENGEO Expect Excellence

VICINITY MAP

DUTTON MEADOWS

SANTA ROSA, CALIFORNIA

PROJECT NO.: 7699.200.303		FIGURE NO. 1
SCALE: AS SHOWN		
DRAWN BY: SRP	CHECKED BY: JAA	

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ORIGINAL FIGURE PRINTED IN COLOR

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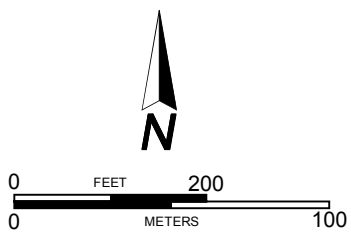

BASE MAP SOURCE: GOOGLE EARTH MAPPING SERVICE

ENGEO Expect Excellence

SITE PLAN
DUTTON MEADOWS
SANTA ROSA, CALIFORNIA

PROJECT NO.: 7699.200.303	FIGURE NO. 2
SCALE: AS SHOWN	
DRAWN BY: SRP	CHECKED BY: JAA

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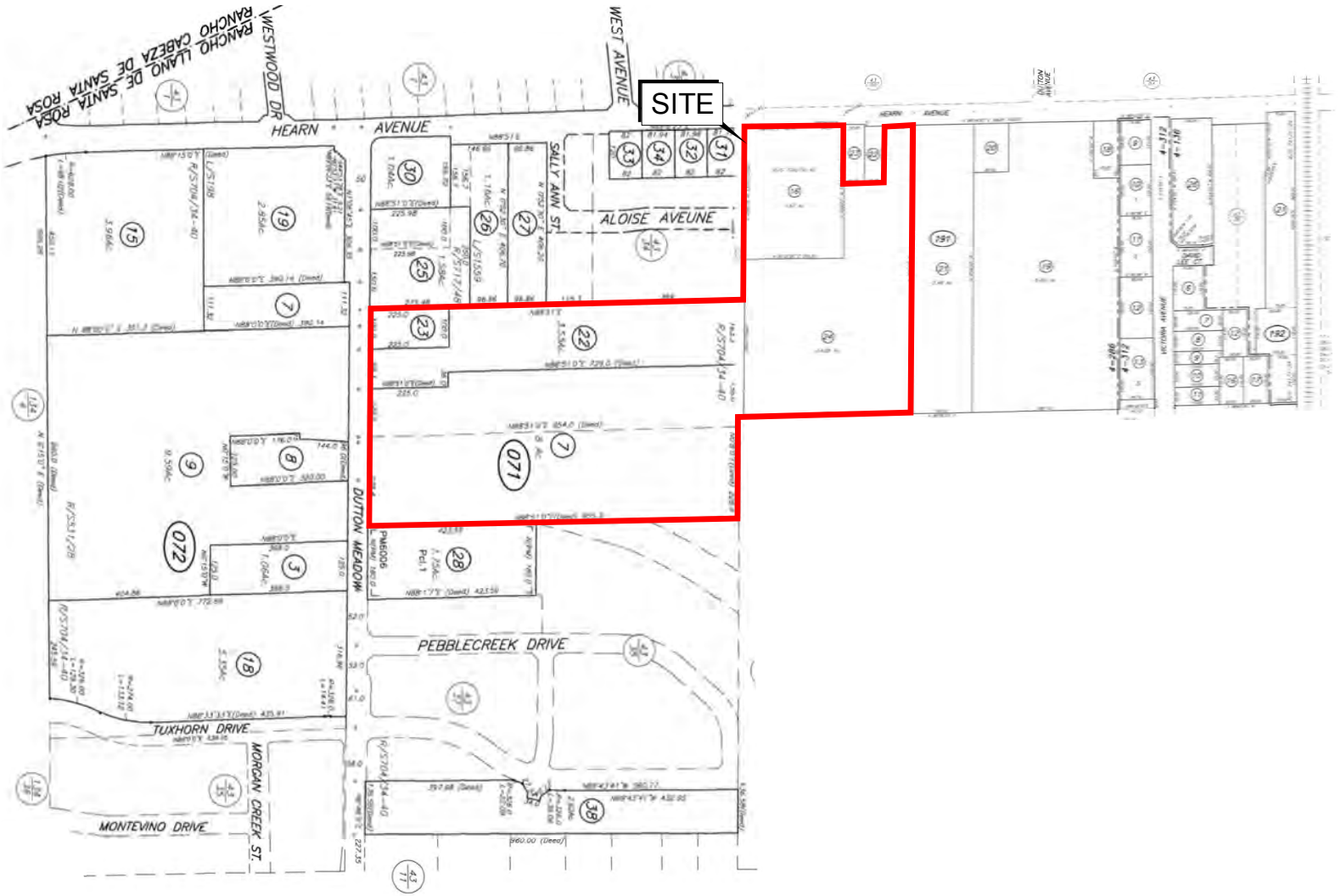

N

0 FEET 400

0 METERS 200

BASE MAP SOURCE: SONOMA COUNTY

ENGEO Expect Excellence

ASSESSOR'S PARCEL MAP

DUTTON MEADOWS

SANTA ROSA, CALIFORNIA

PROJECT NO.: 7699.200.303		FIGURE NO. 3
SCALE: AS SHOWN		
DRAWN BY: SRP	CHECKED BY: JAA	

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VIEW OF THE WESTERN PORTION OF THE PROPERTY

DEBRIS OBSERVED ON THE
WESTERN PORTION OF THE PROPERTY

CONCRETE SLAB AND ASSOCIATED BUILDING MATERIAL
OBSERVED ON THE WESTERN PORTION OF THE PROPERTY

STOCKPILES OBSERVED ON THE PROPERTY
AT THE TIME OF THE SITE RECONNAISSANCE

VIEW OF THE NORTHEASTERN PORTION OF THE PROPERTY

ENGEO Expect Excellence

SITE PHOTOGRAPHS
DUTTON MEADOWS
SANTA ROSA, CALIFORNIA

PROJECT NO.: 7699.200.303
SCALE: NO SCALE
DRAWN BY: SRP | CHECKED BY: JAA

FIGURE NO. 4A

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STRUCTURES OBSERVED ON THE NORTHEASTERN PORTION OF THE PROPERTY

STRUCTURE OBSERVED ON THE NORTHEASTERN PORTION OF THE PROPERTY

NORTHEASTERN PORTION OF THE PROPERTY

VIEW OF THE SOUTHEASTERN PORTION OF THE PROPERTY CAPTURED FROM THE PERIMETER

ENGEO Expect Excellence

SITE PHOTOGRAPHS

DUTTON MEADOWS

SANTA ROSA, CALIFORNIA

PROJECT NO.: 7699.200.303	FIGURE NO. 4B
SCALE: NO SCALE	
DRAWN BY: SRP	CHECKED BY: JAA

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APPENDIX G: TRAFFIC REPORT

June 22, 2021

Mr. Robin Miller
Trumark Homes
3001 Bishop Drive, Suite 100
San Ramon, CA 94583

Addendum to the *Traffic Impact Study for the Revised Dutton Meadows Phase II Project*

Dear Mr. Miller;

As requested by City staff, W-Trans has completed this Addendum to the *Traffic Impact Study for the Revised Dutton Meadows Phase II Project* (TIS), May 20, 2021. The specific concern identified that is addressed in this addendum is the potential for distribution assumptions via Aloise Avenue to change under future conditions upon the completion of the Dutton Avenue extension. All other information in the 2021 TIS remains valid for the project as currently proposed.

Trip Distribution

In the traffic study it was assumed that under Future Conditions, with planned improvements including the Northpoint Parkway connection as well as the Dutton Avenue Extension, trips to and from Hearn Avenue to the east would occur predominantly along Dutton Avenue rather than Dutton Meadow, as assumed for short-term conditions. However, consideration was not given to the volume of project traffic assigned to Aloise Avenue under short-term conditions that would also be rerouted given the convenience of using the proposed new street connection under future conditions. Upon further review it was determined that it is reasonable to expect that fewer trips would use Aloise once Dutton Avenue is completed.

The distribution assumptions anticipated under these future conditions with the reduced assignment to Aloise Avenue are shown in this updated version of Table 7. The 12 percent of trips previously assigned to Aloise Avenue were reassigned to the Dutton Avenue Extension.

Table 7 – Future Trip Distribution Assumptions (modified)

Route	Percent
To/From Hearn Ave east of Dutton Ave via Dutton Ave Extension	67
To/From Hearn Ave east of Dutton Ave via Aloise Ave	3
To/From Hearn Ave west of Dutton Meadow via Northpoint Pkwy	12
To/From Hearn Ave west of Dutton Meadow via Aloise Ave	3
To/From Dutton Ave north of Hearn Ave via Dutton Ave Extension	8
To/From Dutton Ave north of Hearn Ave via Aloise Ave	2
To/From Dutton Ave south of Hearn Ave via Northpoint Pkwy	5
TOTAL	**100**

Future plus Project Conditions

It is noted that even with this variation to the distribution assumptions and associated trips through the Dutton Avenue/Hearn Avenue intersection, given that the analysis in this report is for a larger iteration of the project, and the change in distribution would result in no change to the total number of project trips entering the intersection

but rather reallocation of fewer than ten trips each from through movements to turning movements, the plus project analysis would still be conservative and representative of the currently proposed project with fewer units.

We hope this additional information adequately addresses the concern submitted to the City. Thank you for giving us the opportunity to provide these services.

Sincerely,

Briana Byrne, TE
Associate Engineer

Dalene J. Whitlock, PE, PTOE
Senior Principal

DJW/bkb/SRO461.L1

Memorandum

Date: August 19, 2021

Project: SRO461

To: Robin Miller
Trumark

From: Dalene J. Whitlock
dwhitlock@w-trans.com

Subject: Compliance with Arterial Operation Policies in the *Traffic Impact Study for the Revised Dutton Meadows Phase II Project*

A question has arisen regarding whether the analysis presented in the *Traffic Impact Study for the Revised Dutton Meadows Phase II* (TIS) project complies with the City of Santa Rosa's standards and policies as presented in the *Roseland Area/ Sebastopol Road Specific Plan EIR* (RASRSP EIR). It is noted that when this EIR was prepared the City was using an arterial service level exclusively and did not have an operational standard for intersections. The policy has since been modified and the City has returned to applying an intersection Level of Service standard.

While some of the policies and mitigation measures in the RASRSP EIR refer to corridor service levels, the TIS relies on an analysis of intersection operation, in keeping with the standards in effect at the time of its preparation. However, because intersections are the points of the greatest conflict and reflect the highest levels of delay, it is typical for operation of a corridor to be at least as good as, if not better than, the intersection with the greatest delay. Since all of the intersections evaluated in the TIS are currently operating at LOS D or better and they are all expected to continue operating acceptably at LOS D or better with project traffic added to both current and future volumes, it is reasonable to conclude that arterial operation is and will continue to be acceptable. As a result, there is no need to perform arterial operation analysis to determine whether the project is consistent with policies related to arterial operation.

DJW/djw/SRO461.M1

Traffic Impact Study for the Revised Dutton Meadows Phase II Project

Prepared for the City of Santa Rosa

Submitted by
W-Trans

May 20, 2021

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C. Sight Distance
D. Signal Warrant Calculations Sheets
E. Pedestrian Crossing Worksheet

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Executive Summary

The proposed Dutton Meadows Phase II project would include the construction of 137 single-family dwelling units. The project site primarily vacant, with 18.4 acres located east of Dutton Meadow and south of Hearn Avenue. The project would generate an average of 1,274 net new daily trips; of which 100 would occur during the morning peak hour and 134 during the evening peak hour. The project differs from the project previously approved for the site which included 191 single family dwelling units and also includes fewer units than included in the *Roseland Area/Sebastopol Road Specific Plan*. The anticipated peak hour trip generation for the project as currently proposed is lower than that of the approved project. The project would have access points at Dutton Meadows and Hearn Avenue via Aloise Avenue and the future planned Northpoint Parkway.

The project includes the new planned intersection of Dutton Meadow/Northpoint Parkway wherein the Northpoint Parkway extension would be a northwest-southeast street. South of Meadowview Elementary, Dutton Meadow would curve towards the east, intersect with Northpoint Parkway, and traverse the project site. Under existing conditions, the study intersections operate at acceptable service levels. With the proposed project, including the new Northpoint Parkway/Dutton Meadow intersection, the service levels would continue to be acceptable. Under the future scenario, without and with the project, with the planned configuration of Northpoint Parkway, all study intersections would operate at acceptable service levels. A signal is not warranted at the intersection of Sally Ann Street/Hearn Avenue with the addition of the project trips to either the existing or future projected volumes.

Per the *Dutton Meadows Project Draft Subsequent Environmental Impact Report,* CH2M Hill, 2004, the need for connected sidewalks as well as bike lanes on Northpoint Parkway was identified. The proposed project would provide continuous pedestrian facilities on-site as well as bike lanes along Northpoint Parkway. Per the *Roseland Area/Sebastopol Road Specific Plan Environmental Impact Report,* Michael Baker International, 2016, there are two Traffic and Transportation impacts and mitigations identified and the project is not expected to conflict with either. The proposed facilities for pedestrians, bicyclists, and transit users would be adequate with implementation of the recommendation that the proposed bus stop near the Northpoint Parkway/Dutton Meadows intersection include a bench for transit users.

Since the Dutton Meadows/Northpoint Parkway configuration would result in a change to the internal circulation at the Meadowview Elementary, it is recommended that the internal circulation for the school be modified.

Sight lines along the new section of Dutton Meadows through the project site were reviewed. At each project roadway or driveway that intersects with Dutton Meadows, there would be adequate sight lines for speeds of up to 25 mph based on corner or stopping sight distance criteria, as applicable. In order to maintain these sight lines, any vegetation or landscaping should be low-lying or have trees with canopies maintained above seven feet.

To prevent conflicts at two locations where intersections are located less than 200 feet, centerline to centerline, it is recommended that sight lines be maintained at both locations. For the intersection about 800 feet east of the Northpoint Parkway/Dutton Meadows intersection and on the south side of Dutton Meadows, it is recommended that the median extend through the intersection, restricting access to right-turns in and out only.

Introduction

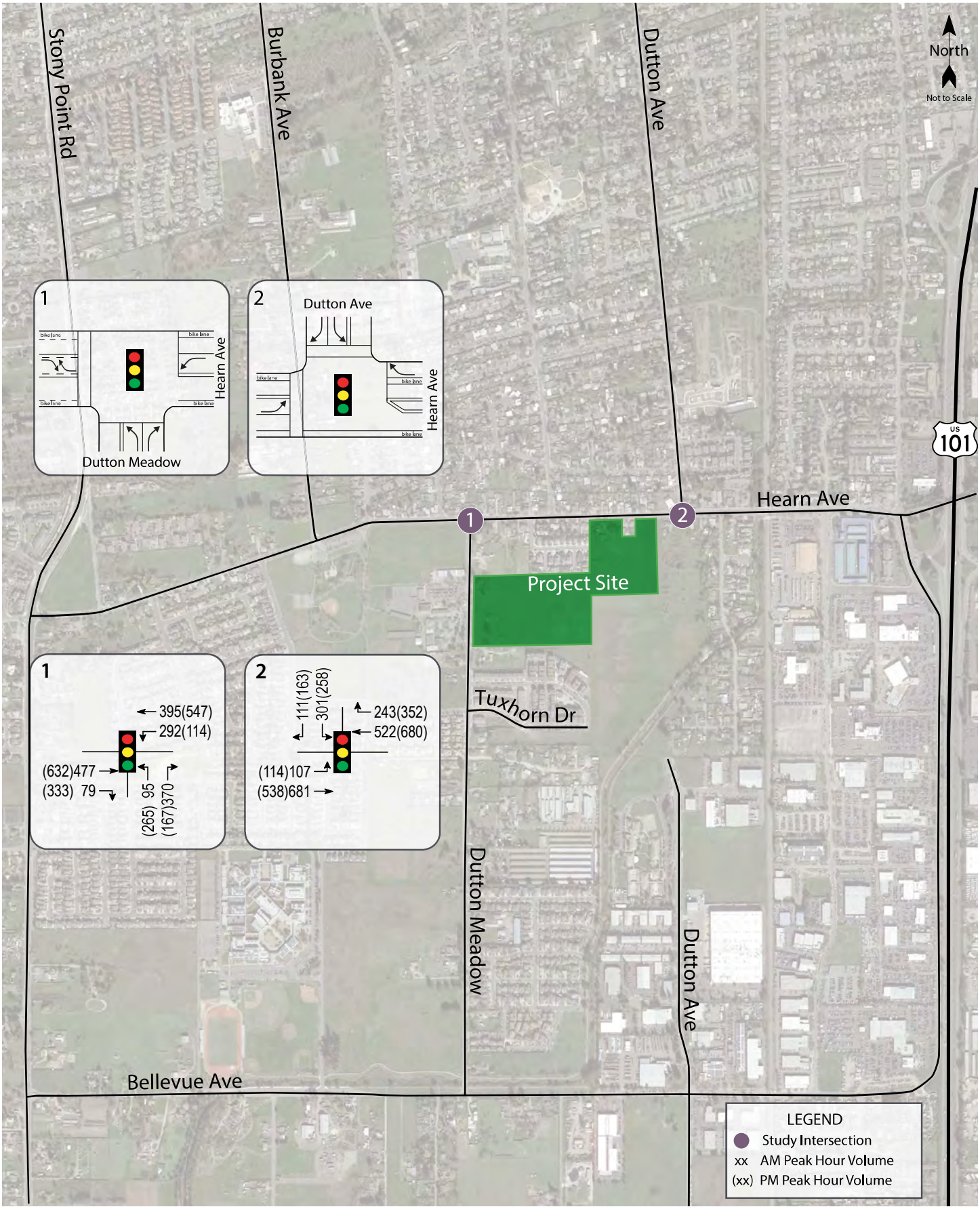
This report presents an analysis of the potential traffic impacts that would be associated with development of a proposed 137 single family homes to be located east of Dutton Meadow and south of Hearn Avenue in the City of Santa Rosa. The project as proposed differs from what was previously analyzed in that it is less intense and the portion of the planned Northpoint Parkway extension that traverses the site is consistent with the layout indicated in the General Plan. The traffic study was completed in accordance with the criteria established by the City of Santa Rosa and is consistent with standard traffic engineering techniques. The scope of work was reviewed and approved by City staff.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to a level of insignificance as defined by the City's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to access for pedestrians, bicyclists, and to transit are also addressed.

Project Profile

The project consists of 137 single-family dwellings. Currently, there are two single-family houses on the proposed project site; most of the project site is open field. The Dutton Meadows Phase II project previously approved by the City for this site included 191 single family dwelling units and this land use is reflected in the General Plan. The project was evaluated as part of the *Roseland Area/Sebastopol Road Specific Plan* EIR. For that analysis, approximately 22 multi-family units and 143 single family units were assumed for the site. The project site is located east of Dutton Meadow and south of Hearn Avenue, as shown in Figure 1.



sro461.ai 1/21

Traffic Impact Study for the Revised Dutton Meadows Phase II Project

Figure 1 – Study Area, Existing Lane Configurations and Existing Traffic Volumes

Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the following intersections:

1. Hearn Avenue/Dutton Meadow
2. Hearn Avenue/Dutton Avenue
3. Northpoint Parkway/Dutton Meadow (new intersection created by project)

Operating conditions during the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Intersections

Hearn Avenue/Dutton Meadow is a three-legged signalized intersection with two lanes on the northbound and westbound approaches, and one lane on the eastbound approach. The westbound left-turn has protected phasing, along with overlap phasing for the northbound right-turn movement. The west leg has a crosswalk and curb ramps. Hearn Avenue has bike lanes in both directions.

Hearn Avenue/Dutton Avenue is a four-legged signalized intersection with two lanes on all approaches except the northbound approach. This northbound approach is a placeholder for a future road connection, with some facilities already in place; however, the intersection essentially operates as a three-legged intersection without the south leg. There are right-turn overlap phases for the westbound and southbound approaches which operate concurrently with the southbound and eastbound left-turns, respectively. The west and north legs have crosswalks and curb ramps, and Hearn Avenue has bike lanes.

Northpoint Parkway/Dutton Meadow is a planned intersection that would be constructed as part of the proposed project. According to the City of Santa Rosa General Plan and the *Roseland Area/Sebastopol Road Specific Plan* (RASRSP), City of Santa Rosa, 2016, the intersection would be a four-legged intersection with Northpoint Parkway in the northwest-southeast direction and Dutton Meadow as the minor cross-street. Per the General Plan, Northpoint Parkway would be a four-lane arterial, though the RASRSP indicates that one lane in each direction with a two-way left-turn lane or median would be adequate given the decrease in anticipated demand. The intersection would be signalized. It is understood that the intersection as proposed would be consistent with the City's plans.

The locations of the existing study intersections and the existing lane configurations and controls are shown in Figure 1.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The study intersections are all currently controlled by a traffic signal, or are expected to be in the future, and were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, the signal timing for the existing intersections, under the existing and future scenarios, provided by the City for the *Roseland Area/Sebastopol Road Specific Plan*, were applied for the analysis.

The ranges of delay associated with the various levels of service are indicated in Table 1.

Table 1 – Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual,* Transportation Research Board, 2010

Traffic Operation Standards

Section 5.8 Transportation Goals & Policy of the *Santa Rosa General Plan 2035* states:

T-D-1 *– Maintain a Level of Service (LOS) D or better along all major corridors. Exceptions to meeting the standard include:*

- Within downtown;
- Where attainment would result in significant degradation;
- Where topography or impacts makes the improvement impossible; or
- Where attainment would ensure loss of an area's unique character.

The LOS is to be calculated using the average traffic demand over the highest 60-minute period.

Traffic Engineering Division will require a level of service evaluation of arterial and collector corridors if deemed necessary.

T-D-2 *– Monitor level of service at intersections to assure that improvements or alterations to improve corridor level of service do not cause severe impacts at any single intersection.*

General interpretation of Policy T-D-2. The impact to an intersection is considered adverse if the project related and/or future trips result in:

1. The level of service (LOS) at an intersection degrading from LOS D or better to LOS E or F, OR
2. An increase in average vehicle delay of greater than 5 seconds at a signalized intersection where the current LOS operates at either LOS E or F.
3. Queuing impacts based on a comparative analysis between the design queue length and the available queue storage capacity. Impacts include, but are not limited to, spillback queue at project access locations (both ingress and egress), turn lanes at intersections, lane drops, spill back that impacts upstream intersections or interchange ramps.
4. Exceptions may be granted under the following conditions:
    a. Within downtown,
    b. Where attainment would result in significant degradation,
    c. Where topography or impacts makes the improvement impossible; or
    d. Where attainment would ensure loss of an area's unique character.

Because the City of Santa Rosa's policies emphasize capacity on the through streets and at signalized intersections, operation of uncontrolled intersections was considered acceptable if the average delay for the intersection as a whole reflects LOS D operation, or better. Attempting to achieve LOS D or better operation on all minor side-street approaches would result in degradation of the overall operation of the system through installation of traffic signals at locations where they would not otherwise be necessary.

T-C-3 *– Implement traffic calming techniques on streets subject to high speed and/or cut-through traffic, in order to improve neighborhood livability, Techniques Include:*

- Narrow Streets
- On-street parking
- Choker or diverters

- Decorative crosswalks
- Planted islands

General interpretation of Policy T-C-3. An impact is considered adverse if the project has the potential to alter community character by significantly increasing cut-through traffic, unexpected vehicle maneuvers or commercial vehicle trips in a residential area.

T-H-3 *– Require new development to provide transit improvements, where a rough proportionality to demand from the project is established. Transit improvements may include:*

- Direct and paved pedestrian access to transit stops
- Bus turnouts and shelters
- Lane width to accommodate buses.

General interpretation of Policy T-H-3. An impact is considered significant if the project has the potential to disrupt existing transit operations or establishes transit facilities and equipment such that it creates a sight distance deficiency or vehicle conflict point.

T-J *– Provide attractive and safe streets for pedestrian and bicyclists.*

General interpretation of Policy T-J. An impact is considered significant if the project generates 20 pedestrians in any single hour at an unsignalized intersection, mid-block crossing or where no crossing has been established.

An impact is further considered significant if the project interrupts existing or proposed pedestrian, bicycle and transit facilities, path or travel, direct access resulting in excessive rerouting or creates a vehicle conflict condition which affects the safety of other roadway users.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. Volume data was collected April 17, 2018 when while local schools, specifically Meadow View Elementary School, were in session. With the updated project analysis, new data collection was considered but ultimately decided against given the reduced vehicle volumes on the roadways due to COVID-19 stay-at-home orders.

Intersection Levels of Service

Under these conditions, the two existing study intersections are operating acceptably at LOS C or better during both peak hours. Since the intersection of Northpoint Parkway/Dutton Meadow would either be completed under the future scenario or with the project, no service level was determined for this location under existing conditions. The existing traffic volumes are shown in Figure 1. A summary of the intersection level of service calculations is contained in Table 2, and copies of the Level of Service calculations are provided in Appendix A.

Table 2 – Existing Peak Hour Intersection Levels of Service				
Study Intersection	**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**
1. Hearn Ave/Dutton Meadow	12.3	B	33.6	C
2. Hearn Ave/Dutton Ave	21.4	C	19.3	B
3. Northpoint Pkwy/Dutton Meadow	-	-	-	-

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Future Conditions

Future Volumes

Future peak hour volume projections were taken from a build out analysis which is contained in the RASRSP ; this scenario represents cumulative traffic conditions that would be expected upon build out of the land uses identified in the City's General Plan.

It should be noted that some of the projected future volumes from the RASRSP are less than existing volumes. This can be attributed to the planned improvements in the area that would result in changes to the circulation system. However, to be consistent with the Specific Plan, the volumes from the Plan were applied. Further, though development of the project site was assumed and trips included in the SCTA model volumes applied in the Specific Plan analysis, these trips were not subtracted out of the future volumes for the "without project" scenario, resulting in a more conservative analysis.

Future Infrastructure

As mentioned, there are network improvements within the study area that were applied to the analysis based on the RASRSP. Improvements include extending the Dutton Avenue from its current terminus near Duke Court to a planned roundabout where drivers would turn right to continue to the existing Dutton Avenue/Hearn Avenue intersection resulting in the planned four-legged intersection. Other improvements at that intersection would be a new westbound left turn lane, a new eastbound through lane, and reassigning the southbound right-turn lane into a southbound through/right-turn lane.

As planned, Northpoint Parkway would begin where Dutton Avenue turns right at the roundabout, continuing north to intersect with Hearn Avenue, replacing part of Dutton Meadow, which would curve northeast beginning near Meadowview Elementary School, extend through the project site, and end at the Dutton Avenue extension south of Hearn Avenue. Per the Specific Plan, the roadway would have three lanes, with one lane in each direction and either a two-way left-turn lane or median. The plan notes that the City's General Plan indicates that Northpoint Parkway would be a four-lane street but based on the planned decrease in demand, three lanes would be sufficient.

Additionally, the Plan suggests adding an eastbound right-turn pocket at Hearn Avenue and Northpoint Parkway, previously Dutton Meadow.

Under the anticipated Future volumes, with the planned improvements, the study intersections are expected to operate acceptably at LOS D or better. At the Hearn Avenue/Dutton Meadow intersection, with the addition of the eastbound right-turn lane, the delay is expected to significantly decrease during the p.m. peak hour. Future volumes, planned intersection geometries, and the planned circulation network are shown in Figure 2; operating conditions are summarized in Table 3.

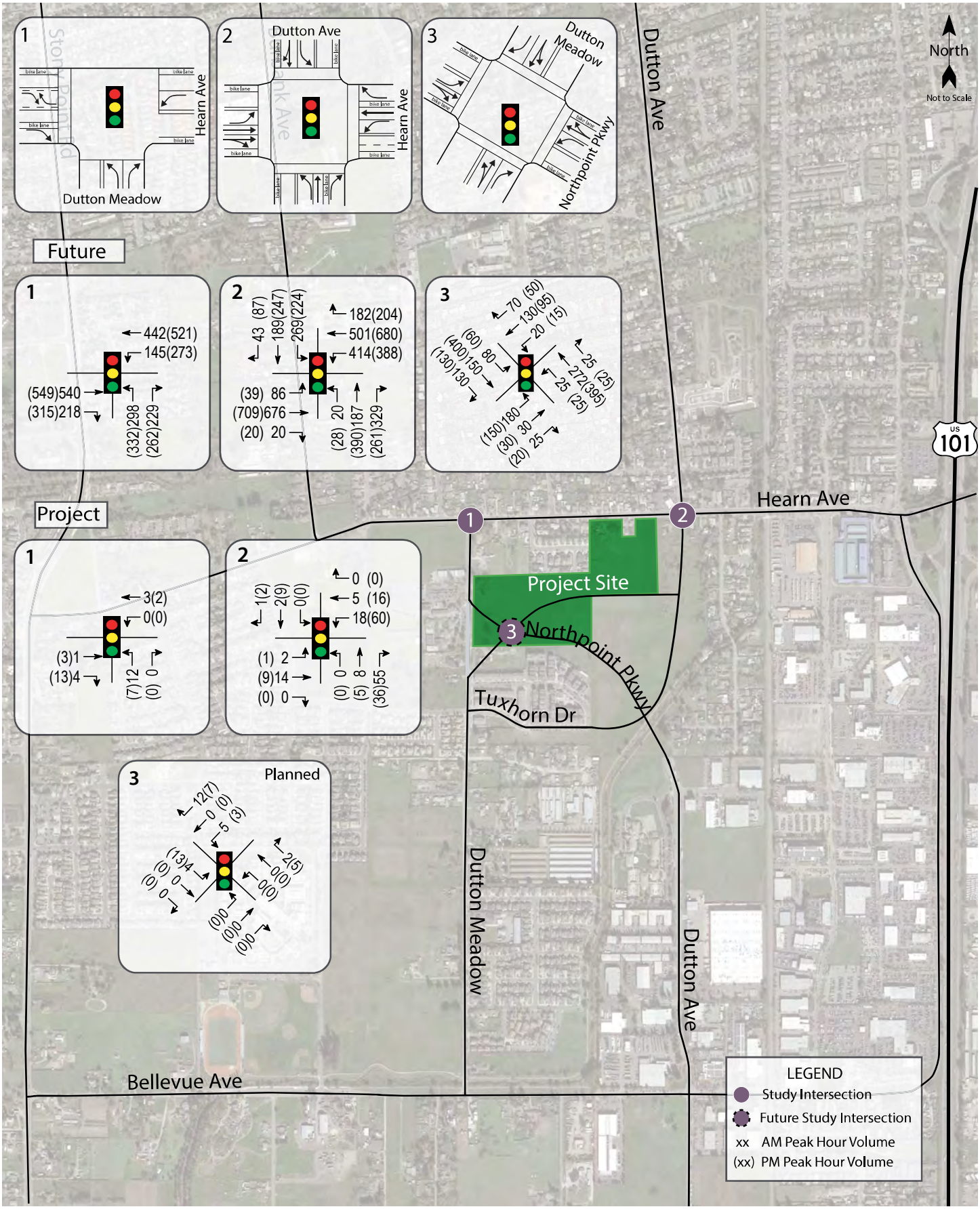


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Figure 2 – Future Lane Configurations and Traffic Volumes

W-Trans

Table 3 – Planned Future Peak Hour Intersection Levels of Service				
Study Intersection	**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**
1. Hearn Ave/Dutton Meadow	11.3	B	14.4	B
2. Hearn Ave/Dutton Ave	47.1	D	46.6	D
3. Northpoint Pkwy/Dutton Meadow	16.7	B	17.3	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Project Description

The project consists of 137 single-family houses. The 18.4-acre project site is located along the east side of Dutton Meadow and south side of Hearn Avenue. There would be several access points to the site. Under the existing conditions, access to the site would be from a newly constructed intersection on Dutton Meadow and connection to Hearn Avenue via Aloise Avenue. Under the future scenario, with further circulation improvements to be constructed with development of other parcels in the area, there would be an additional connection to the Dutton Avenue extension east of the project site. With the proposed project, two single-family dwellings would be eliminated, though most of the land is open field. The site plan is shown in Figure 3.

The project, as previously approved and incorporated in the General Plan, included a total of 191 single-family dwellings. The project was also evaluated as part of the RASRSP. For that analysis, approximately 22 multi-family units and 143 single family units were assumed for the site. The calculation for this unit approximation is included in Appendix B.

Trip Generation

The anticipated trip generations for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 for single-family detached housing (Land Use #210); rates for apartments (Land Use #220) were applied to the accessory dwelling units that were previously proposed.

The project has been analyzed several times at varying densities. The project was first approved with 191 single family homes. As part of the RASRSP, the approximate unit count used for the analysis was 22 multi-family units and 143 single family units. The calculation for this approximation is included in the Appendix B. Compared to the Specific Plan, the currently proposed project, which includes 137 dwelling units, is expected to generate 218 fewer new trips daily, including 15 less during the morning peak hour and 18 fewer during the evening peak hour. These results are summarized in Table 4.

Source: Trumark Homes 10/20

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Figure 3 – Site Plan

Table 4 – Project Iterations Trip Generation Summary											
Land Use	**Units**	**Daily**		**AM Peak Hour**				**PM Peak Hour**			
		Rate	**Trips**	**Rate**	**Trips**	**In**	**Out**	**Rate**	**Trips**	**In**	**Out**
Approved											
Single-Family Homes	191 du	9.44	1,803	0.74	141	35	106	0.99	189	119	70
Roseland Specific Plan											
Single-Family Homes	143 du	9.44	1,350	0.74	106	26	80	0.99	142	89	53
Apartment (ADU)	22 du	7.32	161	0.46	10	2	8	0.56	12	8	4
RASRSP Subtotal			**1,511**		**116**	**28**	**88**		**154**	**97**	**57**
Currently Proposed											
Single-Family Homes	137 du	9.44	1,293	0.74	101	25	76	0.99	136	85	51
Net Difference (Current-RSP)			***-218***		***-15***	***-3***	***-12***		***-18***	***-12***	***-6***

Note: du = dwelling unit; RASRSP = *Roseland Area/Sebastopol Road Specific Plan*

It should be noted that the following analysis was performed for a previous, larger iteration of the project. Since the previous analysis did not result in any identified operational deficiencies, the previous analysis is considered conservative. With deductions taken into account for the two existing single family homes that would be removed with the project, the currently proposed project is expected to generate a net average of 1,274 trips per day, including 100 a.m. peak hour trips and 134 trips during the p.m. peak hour. Compared to what was previously analyzed, the project is expected to generate 527 fewer daily trips, with 32 fewer during the morning and 38 less during the evening. Table 5 provides a summary of the trip generation for the project as currently proposed versus that assumed for the analysis.

Table 5 – Proposed Versus Analyzed Trip Generation Summary											
Land Use	**Units**	**Daily**		**AM Peak Hour**				**PM Peak Hour**			
		Rate	**Trips**	**Rate**	**Trips**	**In**	**Out**	**Rate**	**Trips**	**In**	**Out**
Existing											
Single-Family Homes	-2 du	9.44	-19	0.74	-1	0	-1	0.99	-2	-1	-1
Previously Analyzed											
Single-Family Homes	130 du	9.44	1,227	0.74	96	24	72	0.99	129	81	48
Apartment (ADU)	81 du	7.32	593	0.46	37	9	28	0.56	45	29	16
Previous Subtotal			**1,820**		**133**	**33**	**100**		**174**	**110**	**64**
Previous Net Increase			***1,801***		***132***	***33***	***99***		***172***	***109***	***63***
Currently Proposed											
Single-Family Homes	137 du	9.44	1,293	0.74	101	25	76	0.99	136	85	51
Current Net Increase			**1,274**		**100**	**25**	**75**		**134**	**84**	**50**
Net Difference (Current-Previous)			***-527***		***-32***	***-8***	***-24***		***-38***	***-25***	***-13***

Note: du = dwelling unit

Trip Distribution

Existing Conditions

The pattern used to allocate new project trips to the street network under existing conditions was determined by assessing employment patterns for residents in the southwest quadrant of Santa Rosa as indicated by the U.S. Census Bureau using data from 2015. The applied assumptions are shown in Table 6.

Table 6 – Existing with Project Trip Distribution Assumptions

Route	Percent
To/From Hearn Ave east of Dutton Ave via Dutton Meadow	55
To/From Hearn Ave east of Dutton Ave via Aloise Ave	15
To/From Hearn Ave west of Dutton Meadow via Dutton Meadow	12
To/From Hearn Ave west of Dutton Meadow via Aloise Ave	3
To/From Dutton Ave north of Hearn Ave via Dutton Meadow	8
To/From Dutton Ave north of Hearn Ave via Aloise Ave	2
To/From Dutton Meadow south of Hearn Ave	5
TOTAL	**100**

Future Conditions

Planned improvements including the Northpoint Parkway connection as well as the Dutton Avenue Extension were taken into consideration to determine the distribution and routing of new project trips to the planned and proposed street network under future conditions. The distribution assumptions used for evaluating future conditions are shown in Table 7.

Table 7 – Future Trip Distribution Assumptions

Route	Percent
To/From Hearn Ave east of Dutton Ave via Dutton Ave Extension	55
To/From Hearn Ave east of Dutton Ave via Aloise Ave	15
To/From Hearn Ave west of Dutton Meadow via Northpoint Pkwy	12
To/From Hearn Ave west of Dutton Meadow via Aloise Ave	3
To/From Dutton Ave north of Hearn Ave via Dutton Ave Extension	8
To/From Dutton Ave north of Hearn Ave via Aloise Ave	2
To/From Dutton Ave south of Hearn Ave via Northpoint Pkwy	5
TOTAL	**100**

Intersection Operation

Existing plus Project Conditions

Upon adding trips associated with the project as previously proposed to existing volumes, with the new intersection of Northpoint Parkway/Dutton Meadow, the study intersections are expected to continue operating acceptably. These results are summarized in Table 8. Project traffic volumes, along with the roadway network used for the Existing plus Project analysis, are shown in Figure 4.

Table 8 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Hearn Ave/Dutton Meadow	12.3	B	33.6	C	13.2	B	49.9	D
2. Hearn Ave/Dutton Ave	21.4	C	19.3	B	19.6	B	19.6	B
3. Northpoint Pkwy/Dutton Meadow	-	-	-	-	11.1	B	7.9	A

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

With the addition of project-related traffic volumes, average delay at the intersection of Hearn Avenue/Dutton Avenue is projected to decrease during the a.m. peak hour. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the intersection average, resulting in a better balance between approaches and lower overall average delay. The project adds traffic predominantly to the eastbound and westbound through movements, which have average delays lower than the average for the intersection, resulting in a slight reduction in the overall average delay. The conclusion could incorrectly be drawn that the project improves operation based on this data alone; however, it is more appropriate to conclude that the project trips are expected to make use of excess capacity, so drivers will experience little, if any, change in conditions because of the project.

Finding – The study intersections are expected to continue operating acceptably at the same or better service levels with project traffic added to existing volumes.

Future plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Future volumes and with the planned future expansion of the local network, the study intersections are expected to operate acceptably. The Future plus Project traffic volumes and the planned street system are shown in Figure 5. The Future plus Project operating conditions are summarized in Table 9.

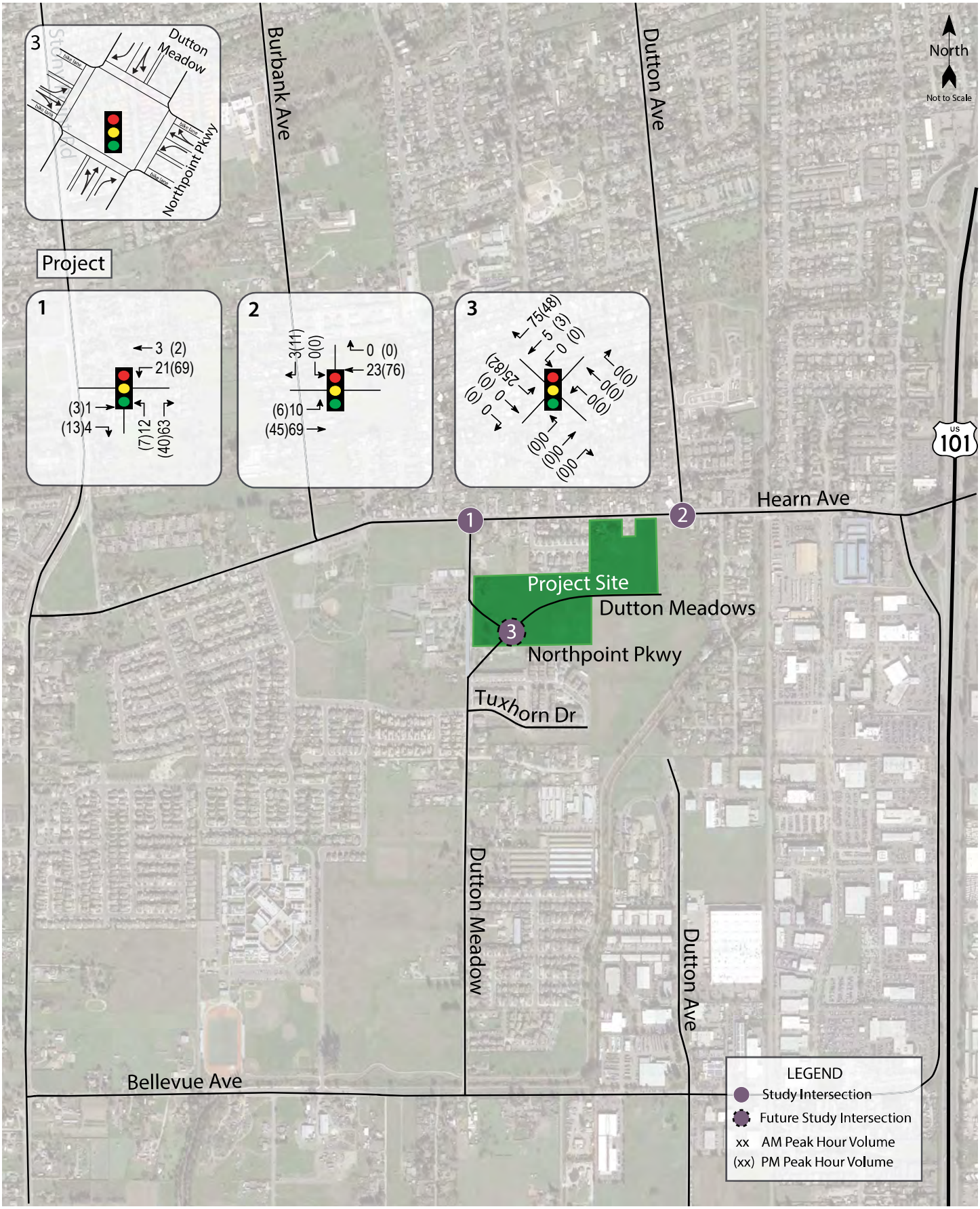

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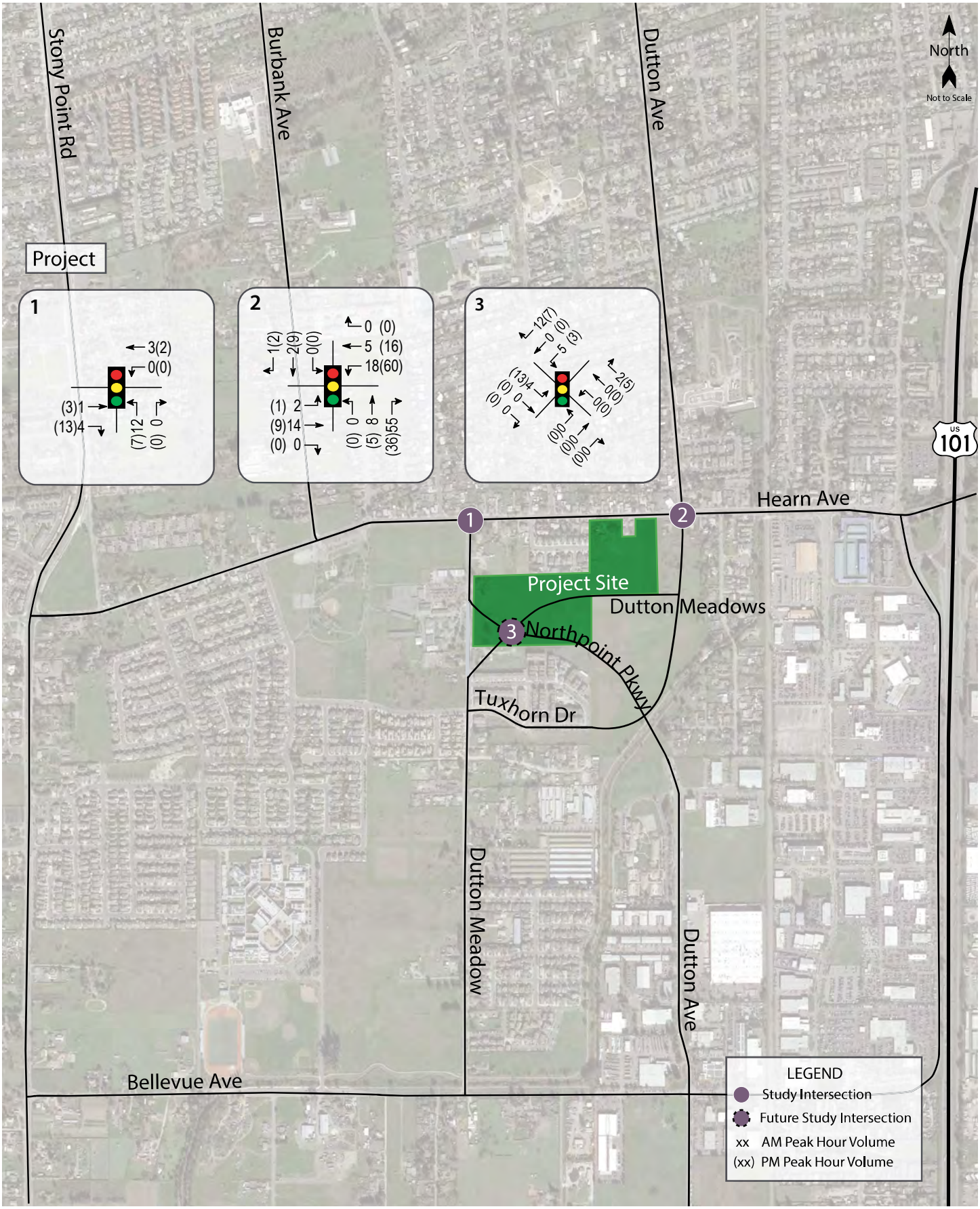
Figure 4 – Existing Study Area with Project and Project Volumes



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Traffic Impact Study for the Revised Dutton Meadows Phase II Project

Figure 5 – Future Study Area with Project and Project Volumes

Table 9 – Planned Future and Future plus Project Peak Hour Intersection Levels of Service								
Study Intersection	**Future Conditions**				**Future plus Project**			
	AM Peak		**PM Peak**		**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1. Hearn Ave/Dutton Meadow	11.3	B	14.4	B	11.6	B	14.8	B
2. Hearn Ave/Dutton Ave	47.1	D	46.6	D	49.5	D	51.3	D
3. Northpoint Pkwy/Dutton Meadow	16.7	B	17.3	B	16.9	B	16.2	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

It should be noted that under the Future and Future plus Project scenarios the delay at the intersection of Hearn Avenue/Dutton Meadow is less than under existing conditions. This can be attributed to the planned future improvements at the intersection including the addition of an eastbound right-turn pocket. With the change in roadway geometry in addition to the projected growth, it would be reasonable to assume the signal timing would be updated and as such, result in reduced delays.

Finding – The study intersections will continue operating acceptably with project traffic added to future volumes. The intersection of Northpoint Parkway/Dutton Meadow, with either the planned or proposed configuration, would be expected to operate at an acceptable service level.

Vehicle Miles Traveled

As noted previously, the Dutton Meadows project was included in the *Roseland Area/Sebastopol Road Specific Plan* EIR. At the time it was analyzed and certified, California's Environmental Quality Act (CEQA) used Level of Service as the metric for determining a transportation impact. As of July 1, 2020, the metric was updated to include Vehicle Miles Traveled (VMT); however, since the project was included in that analysis with more units than currently proposed, the project can rely on that environmental document's findings. As such, no VMT analysis was performed for the project.

Access and Circulation

The planned roadway alignment would bisect the site in such a way as to create a large, triangular-shaped parcel. As planned, Northpoint Parkway would be a regional arterial street and would act as an alternate route for traffic in the Southwest quadrant of Santa Rosa. Where the existing surrounding street network is predominantly north-south and east-west streets, Northpoint Parkway would be a northwest-southeast street.

Alternative Modes

Pedestrians

Within the Dutton Meadows project site, there would be a continuous pedestrian network. The configuration of Northpoint Parkway/Dutton Meadow would include pedestrian crossings on each leg of the intersection. From the Northpoint Parkway/Dutton Meadow intersection, sidewalks would be constructed and conform to the existing pedestrian network on Dutton Meadows which includes separated pedestrian paths on the westerly side of Dutton Meadows.

The site's internal circulation as well as the need for a pedestrian crossing of Dutton Meadows, potentially with enhancements, was reviewed. The intent of a crosswalk is to guide pedestrians to a specific location to cross the street though, per the *California Vehicle Code*, a driver must yield to any pedestrian crossing the roadway within any unmarked crosswalk at an intersection. With the project there would be several intersections along Dutton Meadows where pedestrians would legally be able to cross, regardless of whether it had a marked or unmarked crosswalk. When more sections of Northpoint Parkway are constructed to the east, there will likely be more intersections, and potentially a land use that will attract pedestrian trips.

Guidance from the National Cooperative Highway Research Program (NCHRP) Report 552, *Guidelines for Analysis of Investments in Bicycle Facilities*, considers pedestrian volumes, walking speed, crossing distance, and roadway volumes and ultimately leads to recommendations for an appropriate level of crossing enhancements. Upon reviewing the expected volumes for the roadway, and assuming that there would be at least 20 pedestrians crossing, which is the minimum number for which enhancements would be warranted, only a striped crosswalk would be recommended based on the guidance.

Considering that there is currently no land use that is expected to attract pedestrian crossings of Dutton Meadows that could not be accommodated with the proposed crosswalks at Dutton Meadows/Northpoint Parkway intersection, that pedestrians could still legally cross Dutton Meadows at any of the proposed intersections, and that only a marked crosswalk is warranted based on the expected roadway volumes, no crosswalk east of Northpoint Parkway on Dutton Meadows is recommended. When Northpoint Parkway is extended east of the project site, it is likely that there may be a future need for one or more crosswalks but placing a crosswalk at this time without a demonstrated or specific anticipated need is not recommended.

Bicyclists

As proposed the new sections of Northpoint Parkway and Dutton Meadows would have bike lanes. This is consistent with the RASRSP as well as the *Santa Rosa Bicycle and Pedestrian Master Plan Update 2018*.

Transit

As part of the project, a new bus stop location is proposed on the southeast corner of the new Dutton Meadows/Northpoint Parkway intersection. The bus stop should include a shelter and bench.

Identified Mitigation

Based on the *Dutton Meadows Project Draft Subsequent Environmental Impact Report,* CH2M Hill, 2004, the need for a connected sidewalk system and implementation of planned bicycle facilities were identified. The proposed project would provide continuous pedestrian facilities in the site as well as bike lanes along Northpoint Parkway and Dutton Meadows.

The two Traffic and Transportation mitigations detailed in the RASRSP were to provide construction traffic control plans to the City prior to construction and for the City to monitor queueing at the Dutton Avenue westbound off-ramp to address a cumulatively considered impact. The project is not expected to conflict with either mitigation.

Sight Distance

At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time should be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed. Sight distance was considered for the stop-controlled approaches along the new Dutton Meadows Alignment. Sight distance was evaluated based on the criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance at intersections of public streets is based on corner sight distances while the recommended sight distances for a driveway are based on stopping sight distance. Both use the approach travel speeds as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street. For the purposes of the analysis, each of the parcel boundaries were assumed as a potential obstruction location.

As proposed, there would be four unsignalized intersections east of the Dutton Meadows/Northpoint Parkway approximately 250, 800, 925, and 1,145 feet away. As proposed, there would be a private driveway 250 feet southwest of the Dutton Meadows/Northpoint Parkway intersection on Dutton Meadows.

At the intersection approximately 250 east of the signalized intersection, from the north leg of the intersection, a driver would have a clear line of sight to the west through the Northpoint Parkway intersection, which is adequate for an approach speed of 25 mph. Since Dutton Meadows is the minor street at the signalized intersection, vehicles exiting the signalized intersection eastbound would typically be traveling at a speed of less than 25 mph at the point where they first acquire sight of the intersection. From the south leg of the unsignalized intersection, which would be located on the inside of the proposed curve in Dutton Meadow, the line of sight would be only about 225 feet to the west along Dutton Meadows but a 325-foot clear line of sight would be available to the southbound left-turn movement at the signalized Northpoint Parkway intersection. These distances assume the eye of the driver is set back 15 feet from the edge of travel way and that there could be a vertical obstruction on the adjacent parcel's plots. Since the minimum recommended corner sight distance for posted speed of 25 mph is 275 feet, the line of sight from 15-foot setback would not meet the recommended line of sight for this speed, but would be adequate for the lower speeds of drivers exiting the signalized intersection and increasing speeds from a stopped position. Often where a line of sight is obstructed, drivers intuitively approach the edge of travel. Measuring the line of sight assuming that the vehicle abutted the travel lane on Dutton Meadow, 275 feet sight line could be achieved; however, any landscaping or landmarks on the two parcels east of the intersection would need to be low-lying and no fencing or other vertical elements greater than three feet in height installed. From either the north or south leg of this unsignalized intersection there would be a clear line of sight to the east for a posted speed limit of 25 mph.

East of the Dutton Meadows/Northpoint Parkway intersection, Dutton Meadows is proposed to straighten out. For the other three project roads that intersect with the straight section of Dutton Meadows, there would be a clear line of sight in both directions adequate for a posted speed limit of 25 mph. Where there would be project

roads and access points on both sides of the Dutton Meadows extension, there would be a clear line of sight from both.

From the proposed project driveway about 250 feet southwest of the Dutton Meadows/Northpoint Parkway intersection, there would be a clear line of sight to the north through the intersection for about 250 feet and since the roadway is flat and straight to the south, the line of sight is more than 430 feet. Since private driveways are based on stopping sight distance, the line of sight to the north would be adequate for a posted speed of 35 mph and to the south, for a posted speed of 50 mph.

In order to maintain clear lines of sight it is recommended that any landscaping along the Dutton Meadows frontages in these areas be low-lying vegetation no more than three feet above the elevation of the roadway, and any tree canopies be trimmed and maintained to be no less than seven feet above the roadway elevation.

Sight Distance exhibits are included in Appendix C.

Internal Street System Design

The proposed site plan was reviewed for consistency with applicable design standards. Based on the City's standard, side streets proposed with less than 200 feet between their centerlines require review as part of the traffic analysis. There are two locations where two roadway centerlines are less than 200 feet apart. The first instance of this is the two intersections located approximately 800 and 925 feet east from the Northpoint Parkway intersection and subsequently called Location 1. The second location, called Location 2, involves the intersection 925 feet from Northpoint Parkway and the intersection 150 feet to the north. Both locations are identified on the site plan provided in Figure 3.

At Location 1, given the direction of the offset, there would be the potential for head-on collisions between eastbound and westbound vehicles turning left into the adjacent side streets. To eliminate the potential for conflicts at Location 1, it is recommended that the median on Dutton Meadows extend through the intersection 800 feet from and on the south side of Northpoint Parkway resulting in right-turn access/egress only at this location. Given the proposed configuration, there would be full access to that street via the Dutton Meadows intersection 250 feet from Northpoint Parkway. From the stop-controlled approaches at these intersections, there would be clear lines of sight from one intersection to the other. By restricting the intersection 800 feet from Northpoint Parkway to right-turn access only, both intersections would be expected to operate acceptably.

For Location 2, the potential conflicts would be between drivers entering the north-south project street from either the stop-controlled eastbound side-street approach or Dutton Meadows. Based on the stopping sight distance criteria, 150 feet is an adequate stopping sight distance for speeds of up to 25 miles per hour. Since northbound drivers would have just completed either an eastbound left-turn or westbound right-turn, they would likely not be traveling more than 25 mph so there would be a sufficient distance for a northbound driver to respond to a conflicting eastbound left-turning vehicle. To maintain adequate lines of sight between the two intersections, all landscaping or fences should be low-lying. Any tree canopies should be maintained at seven feet above the street elevation.

Signal Warrant

A signal warrant analysis was performed to determine potential need for a traffic signal at Hearn Avenue/Sally Ann Street intersection.

Chapter 4C of the *California Manual on Uniform Traffic Control Devices* (CA-MUTCD) provides guidance on when a traffic signal should be considered. There are nine different warrants, or criteria, presented but Warrant 3 was applied as it is often the first warrant to be met.

Warrant 3, has a notice that this signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time. Under the Peak Hour Warrant the need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:

A. If all three of the following conditions exist for the same one hour (any four consecutive 15-minute periods) of an average day:

    1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: four vehicle-hours for a one-lane approach; or five vehicle-hours for a two-lane approach, and
    2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
    3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

Under the existing and projected future volumes, with and without the project added trips, the peak hour signal warrant is not met. The signal warrant sheets are included in Appendix D.

Meadowview Elementary School Frontage

With the planned roadway configuration, access to and from the Meadowview elementary would change. There are currently three driveways, the most northerly for the parking lot with the other two for the one-way pick-up and drop-off loop used by the buses. With the planned Northpoint Parkway intersection geometry, the inbound driveway to the pick-up drop-off loop would be removed but the roadway would conform with the other two driveways. Therefore, with the planned intersection configuration, the internal circulation for the school would need to be reconstructed.

It is reasonable to assume that some residents of the proposed project would have children that attend the Meadowview Elementary school and would want to walk to the school. Crosswalks with pedestrian crossing time were assumed for each approach and would provide adequate access to the school site.

Conclusions and Recommendations

Conclusions

- The project is expected to generate 1,274 net new trips daily, including 100 during the morning peak hour and 134 during the evening peak hour. The peak trip generation for the proposed project would be less than that associated with what was previously approved for the site and analyzed for the site in the *Roseland Area/Sebastopol Road Specific Plan*.

- The study intersections are expected to operate acceptably under both Existing and future conditions. With the addition of the project trips, the study intersections and the new Dutton Meadow/Northpoint Parkway intersection would operate at acceptable service levels.

- The project would provide continuous pedestrian facilities as well as bike lanes along Northpoint Parkway and the new section of Dutton Meadows. A marked crosswalk on Dutton Meadows east of its intersection with Northpoint Parkway is not recommended.

- From each of the projects access points there is a clear line of sight for a posted speed of 25 mph. For the south leg of the unsignalized intersection 250 feet east of the Northpoint Parkway intersection, the driver would need to approach the travel land and the two adjacent parcels on the southerly side of Dutton Meadows would need to keep any vertical elements clear of the line of sight.

- There are two locations where intersections are less than 200 feet apart, which does not comply with the City's design standards.

- A signal is not warranted at the intersection of Sally Ann Street/Hearn Avenue under existing and future peak hour volumes, with and without the project.

- For the planned configuration for Dutton Meadow/Northpoint Parkway, the school's internal circulation would need to be modified.

Recommendations

- In order to maintain a clear line of sight, any landscaping in the median on Northpoint Parkway or in the public space between the sidewalk and the roadway, should be low lying vegetation and maintained to be no more than three feet above the elevation of the roadway. Any trees should have their canopies trimmed to be no less than seven feet above the elevation of the roadway. For the parcels on the south side of Dutton Meadows between the Northpoint Parkway intersection and the first access road to the project site, there should be no vertical obstructions on the parcel between the patio and the roadway.

- The proposed bus stop near the intersection of Northpoint Parkway/Dutton Meadows should include a bench and shelter.

- In order to avoid potential conflicts between the two intersections located 800 and 950 feet from the Northpoint Parkway/Dutton Meadows intersection, the median on Dutton Meadow should extend through the intersection 800 feet from Northpoint Parkway resulting in right-turn only access and egress. Landscaping and fences between the intersections located 950 feet from the Northpoint Parkway/Dutton Meadows intersection and the one 150 feet to the north should be low-lying to maintain adequate sight lines.

Study Participants and References

Study Participants

Principal in Charge	Dalene J. Whitlock, PE, PTOE
Associate Engineers	Briana Byrne, TE, Kevin Carstens, PE, TE
Graphics/Editing/Formatting	Alex Scrobonia, Katia Wolfe, Hannah Yung-Boxdell
Quality Control	Dalene J. Whitlock, PE, PTOE

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Appendix A

Intersection Level of Service Calculations

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HCM 2010 Signalized Intersection Summary
1: Dutton Meadow & Hearn Ave

10/18/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	477	79	292	395	95	370
Future Volume (veh/h)	477	79	292	395	95	370
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863
Adj Flow Rate, veh/h	518	77	317	429	103	380
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	646	96	386	1313	269	585
Arrive On Green	0.41	0.41	0.22	0.70	0.15	0.15
Sat Flow, veh/h	1580	235	1774	1863	1774	1583
Grp Volume(v), veh/h	0	595	317	429	103	380
Grp Sat Flow(s),veh/h/ln	0	1815	1774	1863	1774	1583
Q Serve(g_s), s	0.0	13.3	7.8	4.1	2.4	0.0
Cycle Q Clear(g_c), s	0.0	13.3	7.8	4.1	2.4	0.0
Prop In Lane		0.13	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	742	386	1313	269	585
V/C Ratio(X)	0.00	0.80	0.82	0.33	0.38	0.65
Avail Cap(c_a), veh/h	0	1183	771	1313	964	1205
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.0	17.1	2.6	17.6	12.0
Incr Delay (d2), s/veh	0.0	2.1	1.7	0.1	0.9	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.0	4.0	2.1	1.2	4.1
LnGrp Delay(d),s/veh	0.0	14.1	18.8	2.7	18.5	13.3
LnGrp LOS		B	B	A	B	B
Approach Vol, veh/h	595			746	483	
Approach Delay, s/veh	14.1			9.6	14.4	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.6	22.4				36.0		10.0
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	20.0	* 30				30.0		25.0
Max Q Clear Time (g_c+I1), s	9.8	15.3				6.1		4.4
Green Ext Time (p_c), s	0.4	3.6				2.7		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
2: Hearn Ave & Dutton Ave

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	681	0	0	522	243	0	0	0	301	0	111
Future Volume (veh/h)	107	681	0	0	522	243	0	0	0	301	0	111
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	114	724	0	0	555	250	0	0	0	320	0	73
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	1388	0	0	1186	1285	0	2	0	356	0	426
Arrive On Green	0.08	0.74	0.00	0.00	0.64	0.64	0.00	0.00	0.00	0.20	0.00	0.20
Sat Flow, veh/h	1774	1863	0	0	1863	1520	0	1863	0	1774	0	1503
Grp Volume(v), veh/h	114	724	0	0	555	250	0	0	0	320	0	73
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1520	0	1863	0	1774	0	1503
Q Serve(g_s), s	7.7	19.6	0.0	0.0	18.7	3.9	0.0	0.0	0.0	21.3	0.0	4.5
Cycle Q Clear(g_c), s	7.7	19.6	0.0	0.0	18.7	3.9	0.0	0.0	0.0	21.3	0.0	4.5
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	1388	0	0	1186	1285	0	2	0	356	0	426
V/C Ratio(X)	0.82	0.52	0.00	0.00	0.47	0.19	0.00	0.00	0.00	0.90	0.00	0.17
Avail Cap(c_a), veh/h	235	1388	0	0	1186	1285	0	246	0	411	0	472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.9	6.4	0.0	0.0	11.4	1.9	0.0	0.0	0.0	47.2	0.0	33.0
Incr Delay (d2), s/veh	3.1	1.0	0.0	0.0	1.3	0.3	0.0	0.0	0.0	20.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	10.2	0.0	0.0	10.0	3.7	0.0	0.0	0.0	12.4	0.0	1.9
LnGrp Delay(d),s/veh	58.0	7.4	0.0	0.0	12.7	2.3	0.0	0.0	0.0	67.6	0.0	33.2
LnGrp LOS	E	A			B	A				E		C
Approach Vol, veh/h		838			805			0			393	
Approach Delay, s/veh		14.3			9.5			0.0			61.2	
Approach LOS		B			A						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		93.7		27.3	13.1	80.6		0.0
Change Period (Y+Rc), s		3.6		3.0	3.6	3.6		4.0
Max Green Setting (Gmax), s		66.4		28.0	16.0	46.8		16.0
Max Q Clear Time (g_c+I1), s		21.6		23.3	9.7	20.7		0.0
Green Ext Time (p_c), s		6.2		1.0	0.1	4.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
1: Dutton Meadow & Hearn Ave 10/18/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	632	333	114	547	265	167
Future Volume (veh/h)	632	333	114	547	265	167
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863
Adj Flow Rate, veh/h	672	340	121	582	282	146
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	649	328	163	1313	353	460
Arrive On Green	0.56	0.56	0.09	0.70	0.20	0.20
Sat Flow, veh/h	1158	586	1774	1863	1774	1583
Grp Volume(v), veh/h	0	1012	121	582	282	146
Grp Sat Flow(s),veh/h/ln	0	1744	1774	1863	1774	1583
Q Serve(g_s), s	0.0	38.4	4.6	9.2	10.4	0.0
Cycle Q Clear(g_c), s	0.0	38.4	4.6	9.2	10.4	0.0
Prop In Lane		0.34	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	977	163	1313	353	460
V/C Ratio(X)	0.00	1.04	0.74	0.44	0.80	0.32
Avail Cap(c_a), veh/h	0	977	699	1313	828	885
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	15.1	30.3	4.3	26.1	19.0
Incr Delay (d2), s/veh	0.0	38.3	2.5	0.2	4.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	28.6	2.3	4.8	5.5	2.2
LnGrp Delay(d),s/veh	0.0	53.4	32.8	4.6	30.3	19.4
LnGrp LOS		F	C	A	C	B
Approach Vol, veh/h	1012			703	428	
Approach Delay, s/veh	53.4			9.4	26.6	
Approach LOS	D			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.9	42.0				51.9		16.6
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	27.0	* 38				38.4		32.0
Max Q Clear Time (g_c+I1), s	6.6	40.4				11.2		12.4
Green Ext Time (p_c), s	0.1	0.0				4.2		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
2: Hearn Ave & Dutton Ave 10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	538	0	0	680	352	0	0	0	258	0	163
Future Volume (veh/h)	114	538	0	0	680	352	0	0	0	258	0	163
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	118	555	0	0	701	351	0	0	0	266	0	125
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	1435	0	0	1229	1281	0	2	0	311	0	390
Arrive On Green	0.08	0.77	0.00	0.00	0.66	0.66	0.00	0.00	0.00	0.18	0.00	0.18
Sat Flow, veh/h	1774	1863	0	0	1863	1521	0	1863	0	1774	0	1496
Grp Volume(v), veh/h	118	555	0	0	701	351	0	0	0	266	0	125
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1521	0	1863	0	1774	0	1496
Q Serve(g_s), s	7.9	11.8	0.0	0.0	24.8	6.0	0.0	0.0	0.0	17.6	0.0	8.2
Cycle Q Clear(g_c), s	7.9	11.8	0.0	0.0	24.8	6.0	0.0	0.0	0.0	17.6	0.0	8.2
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	1435	0	0	1229	1281	0	2	0	311	0	390
V/C Ratio(X)	0.82	0.39	0.00	0.00	0.57	0.27	0.00	0.00	0.00	0.86	0.00	0.32
Avail Cap(c_a), veh/h	182	1435	0	0	1229	1281	0	246	0	381	0	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.10	0.10	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.8	4.5	0.0	0.0	11.2	2.1	0.0	0.0	0.0	48.4	0.0	36.5
Incr Delay (d2), s/veh	2.0	0.1	0.0	0.0	1.9	0.5	0.0	0.0	0.0	14.7	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	6.0	0.0	0.0	13.3	5.4	0.0	0.0	0.0	9.9	0.0	3.5
LnGrp Delay(d),s/veh	56.7	4.6	0.0	0.0	13.2	2.7	0.0	0.0	0.0	63.1	0.0	37.0
LnGrp LOS	E	A			B	A				E		D
Approach Vol, veh/h		673			1052			0			391	
Approach Delay, s/veh		13.8			9.7			0.0			54.8	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		96.8		24.2	13.4	83.4		0.0
Change Period (Y+Rc), s		3.6		3.0	3.6	3.6		4.0
Max Green Setting (Gmax), s		68.4		26.0	12.4	52.4		16.0
Max Q Clear Time (g_c+I1), s		13.8		19.6	9.9	26.8		0.0
Green Ext Time (p_c), s		4.3		1.1	0.0	6.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
1: Northpoint Parkway & Hearn Ave

10/18/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	540	218	145	442	298	229
Future Volume (veh/h)	540	218	145	442	298	229
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	540	210	145	442	298	209
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	745	620	235	1145	416	581
Arrive On Green	0.40	0.40	0.13	0.61	0.23	0.23
Sat Flow, veh/h	1863	1549	1774	1863	1774	1583
Grp Volume(v), veh/h	540	210	145	442	298	209
Grp Sat Flow(s),veh/h/ln	1863	1549	1774	1863	1774	1583
Q Serve(g_s), s	10.7	4.1	3.4	5.3	6.8	0.0
Cycle Q Clear(g_c), s	10.7	4.1	3.4	5.3	6.8	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	745	620	235	1145	416	581
V/C Ratio(X)	0.72	0.34	0.62	0.39	0.72	0.36
Avail Cap(c_a), veh/h	2016	1676	607	2781	1134	1222
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	9.1	18.0	4.3	15.4	10.1
Incr Delay (d2), s/veh	1.4	0.3	1.0	0.2	2.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	1.8	1.7	2.6	3.6	1.9
LnGrp Delay(d),s/veh	12.5	9.4	18.9	4.5	17.7	10.5
LnGrp LOS	B	A	B	A	B	B
Approach Vol, veh/h	750			587	507	
Approach Delay, s/veh	11.6			8.0	14.7	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.4	21.1				30.5		13.3
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	15.0	* 47				65.4		28.0
Max Q Clear Time (g_c+I1), s	5.4	12.7				7.3		8.8
Green Ext Time (p_c), s	0.1	4.8				3.2		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
2: Dutton Ave & Hearn Ave

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	676	20	414	501	182	20	187	329	269	189	43
Future Volume (veh/h)	86	676	20	414	501	182	20	187	329	269	189	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	86	676	20	414	501	174	20	187	329	269	189	1
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	1028	30	436	890	722	51	344	681	257	556	3
Arrive On Green	0.06	0.29	0.29	0.25	0.48	0.48	0.03	0.18	0.18	0.14	0.30	0.30
Sat Flow, veh/h	1774	3506	104	1774	1863	1510	1774	1863	1583	1774	1851	10
Grp Volume(v), veh/h	86	341	355	414	501	174	20	187	329	269	0	190
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1863	1510	1774	1863	1583	1774	0	1861
Q Serve(g_s), s	5.5	19.2	19.3	26.2	21.9	7.8	1.3	10.4	17.0	16.5	0.0	9.1
Cycle Q Clear(g_c), s	5.5	19.2	19.3	26.2	21.9	7.8	1.3	10.4	17.0	16.5	0.0	9.1
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	108	519	540	436	890	722	51	344	681	257	0	559
V/C Ratio(X)	0.79	0.66	0.66	0.95	0.56	0.24	0.39	0.54	0.48	1.05	0.00	0.34
Avail Cap(c_a), veh/h	110	519	540	436	890	722	109	433	757	257	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.8	35.3	35.3	42.3	21.3	17.6	54.4	42.1	23.4	48.8	0.0	31.1
Incr Delay (d2), s/veh	25.7	5.1	4.9	30.7	2.6	0.8	4.8	1.3	0.5	69.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	10.1	10.5	16.5	11.9	3.4	0.7	5.5	7.5	13.0	0.0	4.7
LnGrp Delay(d),s/veh	78.5	40.3	40.2	73.0	23.8	18.4	59.2	43.5	23.9	117.9	0.0	31.4
LnGrp LOS	E	D	D	E	C	B	E	D	C	F		C
Approach Vol, veh/h		782			1089			536			459	
Approach Delay, s/veh		44.4			41.6			32.0			82.1	
Approach LOS		D			D			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	37.4	6.8	37.8	11.0	58.5	20.0	24.6
Change Period (Y+Rc), s	4.0	4.0	3.5	3.5	4.0	4.0	3.5	3.5
Max Green Setting (Gmax), s	28.0	28.0	7.0	36.0	7.1	48.9	16.5	26.5
Max Q Clear Time (g_c+I1), s	28.2	21.3	3.3	11.1	7.5	23.9	18.5	19.0
Green Ext Time (p_c), s	0.0	2.4	0.0	1.1	0.0	4.1	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	47.1
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
3: Northpoint Parkway & Dutton Meadow

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	30	25	20	130	70	25	272	25	80	150	130
Future Volume (veh/h)	180	30	25	20	130	70	25	272	25	80	150	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	180	30	25	20	130	70	25	272	25	80	150	130
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	256	43	264	32	210	299	420	436	40	401	205	177
Arrive On Green	0.17	0.17	0.17	0.13	0.13	0.13	0.10	0.26	0.26	0.06	0.22	0.22
Sat Flow, veh/h	1531	255	1583	247	1604	1583	1774	1681	155	1774	922	799
Grp Volume(v), veh/h	210	0	25	150	0	70	25	0	297	80	0	280
Grp Sat Flow(s),veh/h/ln	1786	0	1583	1850	0	1583	1774	0	1835	1774	0	1722
Q Serve(g_s), s	4.6	0.0	0.6	3.2	0.0	1.6	0.4	0.0	5.9	1.4	0.0	6.3
Cycle Q Clear(g_c), s	4.6	0.0	0.6	3.2	0.0	1.6	0.4	0.0	5.9	1.4	0.0	6.3
Prop In Lane	0.86		1.00	0.13		1.00	1.00		0.08	1.00		0.46
Lane Grp Cap(c), veh/h	298	0	264	242	0	299	420	0	476	401	0	382
V/C Ratio(X)	0.70	0.00	0.09	0.62	0.00	0.23	0.06	0.00	0.62	0.20	0.00	0.73
Avail Cap(c_a), veh/h	688	0	610	713	0	702	934	0	1193	512	0	663
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	14.7	17.1	0.0	14.3	10.3	0.0	13.6	11.5	0.0	15.0
Incr Delay (d2), s/veh	3.0	0.0	0.2	2.6	0.0	0.4	0.1	0.0	1.3	0.2	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.3	1.8	0.0	0.7	0.2	0.0	3.1	0.7	0.0	3.2
LnGrp Delay(d),s/veh	19.4	0.0	14.8	19.7	0.0	14.7	10.4	0.0	15.0	11.8	0.0	17.8
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		235			220			322			360	
Approach Delay, s/veh		18.9			18.1			14.6			16.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	14.8		10.9	8.0	13.2		9.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.0	27.0		16.0	16.0	16.0		16.0
Max Q Clear Time (g_c+I1), s	3.4	7.9		6.6	2.4	8.3		5.2
Green Ext Time (p_c), s	0.0	1.6		0.8	0.0	0.9		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
1: Northpoint Parkway & Hearn Ave

10/22/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	549	315	273	521	332	262
Future Volume (veh/h)	549	315	273	521	332	262
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	549	307	273	521	332	242
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	717	596	332	1189	429	679
Arrive On Green	0.39	0.39	0.19	0.64	0.24	0.24
Sat Flow, veh/h	1863	1549	1774	1863	1774	1583
Grp Volume(v), veh/h	549	307	273	521	332	242
Grp Sat Flow(s),veh/h/ln	1863	1549	1774	1863	1774	1583
Q Serve(g_s), s	14.1	8.3	8.1	7.7	9.6	0.0
Cycle Q Clear(g_c), s	14.1	8.3	8.1	7.7	9.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	717	596	332	1189	429	679
V/C Ratio(X)	0.77	0.51	0.82	0.44	0.77	0.36
Avail Cap(c_a), veh/h	1372	1141	744	2255	873	1076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	12.9	21.4	5.0	19.4	10.6
Incr Delay (d2), s/veh	1.7	0.7	2.0	0.3	3.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	3.6	4.1	4.0	5.0	2.5
LnGrp Delay(d),s/veh	16.4	13.6	23.4	5.2	22.4	10.9
LnGrp LOS	B	B	C	A	C	B
Approach Vol, veh/h	856			794	574	
Approach Delay, s/veh	15.4			11.5	17.6	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.9	24.7				38.6		16.2
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	23.0	* 40				66.4		27.0
Max Q Clear Time (g_c+I1), s	10.1	16.1				9.7		11.6
Green Ext Time (p_c), s	0.3	5.0				3.9		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Notes
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
2: Dutton Ave & Hearn Ave

10/22/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	709	20	388	680	204	28	390	261	224	247	87
Future Volume (veh/h)	39	709	20	388	680	204	28	390	261	224	247	87
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	39	709	20	388	680	196	28	390	261	224	247	45
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	936	26	415	851	689	64	421	729	251	505	92
Arrive On Green	0.04	0.27	0.27	0.23	0.46	0.46	0.04	0.23	0.23	0.14	0.33	0.33
Sat Flow, veh/h	1774	3511	99	1774	1863	1508	1774	1863	1583	1774	1523	277
Grp Volume(v), veh/h	39	357	372	388	680	196	28	390	261	224	0	292
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1863	1508	1774	1863	1583	1774	0	1801
Q Serve(g_s), s	2.5	21.1	21.2	24.4	35.6	9.2	1.8	23.4	12.1	14.1	0.0	14.7
Cycle Q Clear(g_c), s	2.5	21.1	21.2	24.4	35.6	9.2	1.8	23.4	12.1	14.1	0.0	14.7
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	77	472	491	415	851	689	64	421	729	251	0	597
V/C Ratio(X)	0.50	0.76	0.76	0.93	0.80	0.28	0.44	0.93	0.36	0.89	0.00	0.49
Avail Cap(c_a), veh/h	110	472	491	436	851	689	109	433	739	257	0	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.3	38.4	38.4	42.8	26.5	19.3	53.8	43.2	19.9	48.1	0.0	30.4
Incr Delay (d2), s/veh	3.8	8.3	8.0	26.9	7.7	1.0	4.6	25.5	0.3	29.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	11.4	11.8	15.1	20.2	4.1	0.9	15.0	5.3	9.0	0.0	7.4
LnGrp Delay(d),s/veh	57.1	46.7	46.5	69.7	34.2	20.4	58.4	68.6	20.2	77.4	0.0	31.0
LnGrp LOS	E	D	D	E	C	C	E	E	C	E		C
Approach Vol, veh/h		768			1264			679			516	
Approach Delay, s/veh		47.1			43.0			49.6			51.1	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.7	34.4	7.6	41.3	9.0	56.1	19.7	29.3
Change Period (Y+Rc), s	4.0	4.0	3.5	3.5	4.0	4.0	3.5	3.5
Max Green Setting (Gmax), s	28.0	28.0	7.0	36.0	7.1	48.9	16.5	26.5
Max Q Clear Time (g_c+I1), s	26.4	23.2	3.8	16.7	4.5	37.6	16.1	25.4
Green Ext Time (p_c), s	0.2	1.9	0.0	1.7	0.0	4.2	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	46.7
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
3: Dutton Meadow & Northpoint Parkway

10/22/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	30	20	15	95	50	25	395	25	60	400	130
Future Volume (veh/h)	150	30	20	15	95	50	25	395	25	60	400	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	150	30	20	15	95	50	25	395	25	60	400	130
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	43	227	25	156	230	43	595	38	84	494	161
Arrive On Green	0.14	0.14	0.14	0.10	0.10	0.10	0.02	0.34	0.34	0.05	0.37	0.37
Sat Flow, veh/h	1490	298	1583	252	1598	1583	1774	1734	110	1774	1348	438
Grp Volume(v), veh/h	180	0	20	110	0	50	25	0	420	60	0	530
Grp Sat Flow(s),veh/h/ln	1788	0	1583	1850	0	1583	1774	0	1843	1774	0	1785
Q Serve(g_s), s	4.2	0.0	0.5	2.5	0.0	1.2	0.6	0.0	8.4	1.4	0.0	11.6
Cycle Q Clear(g_c), s	4.2	0.0	0.5	2.5	0.0	1.2	0.6	0.0	8.4	1.4	0.0	11.6
Prop In Lane	0.83		1.00	0.14		1.00	1.00		0.06	1.00		0.25
Lane Grp Cap(c), veh/h	257	0	227	181	0	230	43	0	633	84	0	655
V/C Ratio(X)	0.70	0.00	0.09	0.61	0.00	0.22	0.59	0.00	0.66	0.71	0.00	0.81
Avail Cap(c_a), veh/h	658	0	583	681	0	658	163	0	890	245	0	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	16.2	18.8	0.0	16.4	21.0	0.0	12.1	20.4	0.0	12.4
Incr Delay (d2), s/veh	3.5	0.0	0.2	3.3	0.0	0.5	12.2	0.0	1.2	10.6	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.2	1.4	0.0	0.6	0.4	0.0	4.4	0.9	0.0	6.2
LnGrp Delay(d),s/veh	21.2	0.0	16.3	22.1	0.0	16.9	33.2	0.0	13.3	31.0	0.0	15.9
LnGrp LOS	C		B	C		B	C		B	C		B
Approach Vol, veh/h		200			160			445			590	
Approach Delay, s/veh		20.7			20.5			14.5			17.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	18.9		10.2	5.0	19.9		8.3
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.0	21.0		16.0	4.0	23.0		16.0
Max Q Clear Time (g_c+I1), s	3.4	10.4		6.2	2.6	13.6		4.5
Green Ext Time (p_c), s	0.0	1.8		0.7	0.0	2.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Traffic Volume (veh/h)	478	83	313	398	107	433		
Future Volume (veh/h)	478	83	313	398	107	433		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863		
Adj Flow Rate, veh/h	520	81	340	433	116	449		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	642	100	408	1331	261	597		
Arrive On Green	0.41	0.41	0.23	0.71	0.15	0.15		
Sat Flow, veh/h	1569	244	1774	1863	1774	1583		
Grp Volume(v), veh/h	0	601	340	433	116	449		
Grp Sat Flow(s),veh/h/ln	0	1813	1774	1863	1774	1583		
Q Serve(g_s), s	0.0	14.0	8.7	4.1	2.8	0.8		
Cycle Q Clear(g_c), s	0.0	14.0	8.7	4.1	2.8	0.8		
Prop In Lane		0.13	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	0	741	408	1331	261	597		
V/C Ratio(X)	0.00	0.81	0.83	0.33	0.45	0.75		
Avail Cap(c_a), veh/h	0	1142	745	1331	931	1195		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	12.4	17.5	2.5	18.5	12.9		
Incr Delay (d2), s/veh	0.0	2.6	1.7	0.1	1.2	1.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	7.4	4.4	2.1	1.5	5.3		
LnGrp Delay(d),s/veh	0.0	15.0	19.2	2.7	19.7	14.9		
LnGrp LOS		B	B	A	B	B		
Approach Vol, veh/h	601			773	565			
Approach Delay, s/veh	15.0			9.9	15.9			
Approach LOS	B			A	B			

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.6	23.1				37.6		10.0
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	20.0	* 30				30.0		25.0
Max Q Clear Time (g_c+I1), s	10.7	16.0				6.1		4.8
Green Ext Time (p_c), s	0.4	3.5				2.8		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	750	0	0	545	243	0	0	0	301	0	114
Future Volume (veh/h)	117	750	0	0	545	243	0	0	0	301	0	114
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	121	773	0	0	562	243	0	0	0	310	0	75
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	1379	0	0	1162	1265	0	2	0	354	0	432
Arrive On Green	0.08	0.74	0.00	0.00	0.62	0.62	0.00	0.00	0.00	0.20	0.00	0.20
Sat Flow, veh/h	1774	1863	0	0	1863	1520	0	1863	0	1774	0	1502
Grp Volume(v), veh/h	121	773	0	0	562	243	0	0	0	310	0	75
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1520	0	1863	0	1774	0	1502
Q Serve(g_s), s	7.4	20.3	0.0	0.0	17.9	3.7	0.0	0.0	0.0	18.6	0.0	4.1
Cycle Q Clear(g_c), s	7.4	20.3	0.0	0.0	17.9	3.7	0.0	0.0	0.0	18.6	0.0	4.1
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	1379	0	0	1162	1265	0	2	0	354	0	432
V/C Ratio(X)	0.82	0.56	0.00	0.00	0.48	0.19	0.00	0.00	0.00	0.87	0.00	0.17
Avail Cap(c_a), veh/h	200	1379	0	0	1162	1265	0	102	0	419	0	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.6	6.3	0.0	0.0	11.1	2.0	0.0	0.0	0.0	42.7	0.0	29.7
Incr Delay (d2), s/veh	8.6	1.1	0.0	0.0	1.4	0.3	0.0	0.0	0.0	16.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	10.7	0.0	0.0	9.5	3.4	0.0	0.0	0.0	10.7	0.0	1.7
LnGrp Delay(d),s/veh	58.2	7.4	0.0	0.0	12.6	2.4	0.0	0.0	0.0	58.9	0.0	29.9
LnGrp LOS	E	A			B	A				E		C
Approach Vol, veh/h		894			805			0			385	
Approach Delay, s/veh		14.3			9.5			0.0			53.3	
Approach LOS		B			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		85.0		25.0	12.8	72.2		0.0
Change Period (Y+Rc), s		3.6		3.0	3.6	3.6		3.0
Max Green Setting (Gmax), s		68.4		26.0	12.4	52.4		6.0
Max Q Clear Time (g_c+I1), s		22.3		20.6	9.4	19.9		0.0
Green Ext Time (p_c), s		7.0		1.0	0.0	5.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
3: Dutton Meadow & Elem School D/W/Northpoint Parkway

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	0	42	5	0	75	0	438	0	25	301	0
Future Volume (veh/h)	70	0	42	5	0	75	0	438	0	25	301	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	70	0	42	5	0	75	0	438	0	25	301	0
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	0	118	108	0	272	0	582	0	490	993	0
Arrive On Green	0.07	0.00	0.07	0.06	0.00	0.06	0.00	0.31	0.00	0.11	0.53	0.00
Sat Flow, veh/h	1774	0	1583	1774	0	1583	0	1863	0	1774	1863	0
Grp Volume(v), veh/h	70	0	42	5	0	75	0	438	0	25	301	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	0	1863	0	1774	1863	0
Q Serve(g_s), s	1.4	0.0	0.9	0.1	0.0	1.5	0.0	7.7	0.0	0.3	3.3	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.9	0.1	0.0	1.5	0.0	7.7	0.0	0.3	3.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	132	0	118	108	0	272	0	582	0	490	993	0
V/C Ratio(X)	0.53	0.00	0.36	0.05	0.00	0.28	0.00	0.75	0.00	0.05	0.30	0.00
Avail Cap(c_a), veh/h	784	0	699	784	0	874	0	926	0	490	1337	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	15.9	16.0	0.0	13.1	0.0	11.2	0.0	6.3	4.7	0.0
Incr Delay (d2), s/veh	3.2	0.0	1.8	0.2	0.0	0.5	0.0	2.0	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	0.1	0.0	0.7	0.0	4.2	0.0	0.1	1.7	0.0
LnGrp Delay(d),s/veh	19.4	0.0	17.7	16.2	0.0	13.6	0.0	13.2	0.0	6.4	4.9	0.0
LnGrp LOS	B		B	B		B		B		A	A	
Approach Vol, veh/h		112			80			438			326	
Approach Delay, s/veh		18.8			13.8			13.2			5.0	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	8.0	15.3		6.7		23.3		6.2
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	4.0	18.0		16.0		26.0		16.0
Max Q Clear Time (g_c+I1), s	2.3	9.7		3.4		5.3		3.5
Green Ext Time (p_c), s	0.0	1.7		0.3		1.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
1: Dutton Meadow & Hearn Ave

10/18/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	635	346	183	549	272	207
Future Volume (veh/h)	635	346	183	549	272	207
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1863	1863
Adj Flow Rate, veh/h	676	354	195	584	289	188
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	599	314	239	1319	358	533
Arrive On Green	0.52	0.52	0.13	0.71	0.20	0.20
Sat Flow, veh/h	1143	599	1774	1863	1774	1583
Grp Volume(v), veh/h	0	1030	195	584	289	188
Grp Sat Flow(s),veh/h/ln	0	1742	1774	1863	1774	1583
Q Serve(g_s), s	0.0	38.4	7.8	9.8	11.4	0.0
Cycle Q Clear(g_c), s	0.0	38.4	7.8	9.8	11.4	0.0
Prop In Lane		0.34	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	913	239	1319	358	533
V/C Ratio(X)	0.00	1.13	0.82	0.44	0.81	0.35
Avail Cap(c_a), veh/h	0	913	654	1319	775	905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	17.4	30.8	4.5	27.9	18.3
Incr Delay (d2), s/veh	0.0	71.7	2.6	0.2	4.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	36.4	4.0	5.0	6.0	2.9
LnGrp Delay(d),s/veh	0.0	89.2	33.4	4.8	32.2	18.7
LnGrp LOS		F	C	A	C	B
Approach Vol, veh/h	1030			779	477	
Approach Delay, s/veh	89.2			11.9	26.9	
Approach LOS	F			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	13.5	42.0				55.5		17.8
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	27.0	* 38				38.4		32.0
Max Q Clear Time (g_c+I1), s	9.8	40.4				11.8		13.4
Green Ext Time (p_c), s	0.2	0.0				4.2		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	49.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
2: Hearn Ave & Dutton Ave

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	583	0	0	756	352	0	0	0	258	0	174
Future Volume (veh/h)	120	583	0	0	756	352	0	0	0	258	0	174
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	124	601	0	0	779	351	0	0	0	266	0	138
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	1434	0	0	1222	1276	0	2	0	311	0	396
Arrive On Green	0.08	0.77	0.00	0.00	0.66	0.66	0.00	0.00	0.00	0.18	0.00	0.18
Sat Flow, veh/h	1774	1863	0	0	1863	1521	0	1863	0	1774	0	1496
Grp Volume(v), veh/h	124	601	0	0	779	351	0	0	0	266	0	138
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1863	1521	0	1863	0	1774	0	1496
Q Serve(g_s), s	8.3	13.3	0.0	0.0	29.9	6.1	0.0	0.0	0.0	17.6	0.0	9.1
Cycle Q Clear(g_c), s	8.3	13.3	0.0	0.0	29.9	6.1	0.0	0.0	0.0	17.6	0.0	9.1
Prop In Lane	1.00		0.00	0.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	1434	0	0	1222	1276	0	2	0	311	0	396
V/C Ratio(X)	0.83	0.42	0.00	0.00	0.64	0.28	0.00	0.00	0.00	0.85	0.00	0.35
Avail Cap(c_a), veh/h	182	1434	0	0	1222	1276	0	246	0	381	0	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.5	4.7	0.0	0.0	12.3	2.2	0.0	0.0	0.0	48.4	0.0	36.5
Incr Delay (d2), s/veh	2.1	0.1	0.0	0.0	2.6	0.5	0.0	0.0	0.0	14.6	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	6.7	0.0	0.0	16.0	5.4	0.0	0.0	0.0	9.9	0.0	3.8
LnGrp Delay(d),s/veh	56.7	4.8	0.0	0.0	14.9	2.8	0.0	0.0	0.0	63.0	0.0	37.1
LnGrp LOS	E	A			B	A				E		D
Approach Vol, veh/h		725			1130			0			404	
Approach Delay, s/veh		13.7			11.1			0.0			54.1	
Approach LOS		B			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		96.8		24.2	13.8	83.0		0.0
Change Period (Y+Rc), s		3.6		3.0	3.6	3.6		4.0
Max Green Setting (Gmax), s		68.4		26.0	12.4	52.4		16.0
Max Q Clear Time (g_c+I1), s		15.3		19.6	10.3	31.9		0.0
Green Ext Time (p_c), s		4.8		1.2	0.0	7.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
3: Dutton Meadow & Elem School D/W/Northpoint Parkway

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	0	4	3	0	48	0	429	0	82	440	0
Future Volume (veh/h)	8	0	4	3	0	48	0	429	0	82	440	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	8	0	4	3	0	48	0	429	0	82	440	0
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	22	0	20	81	0	269	0	596	0	556	1059	0
Arrive On Green	0.01	0.00	0.01	0.05	0.00	0.05	0.00	0.32	0.00	0.12	0.57	0.00
Sat Flow, veh/h	1774	0	1583	1774	0	1583	0	1863	0	1774	1863	0
Grp Volume(v), veh/h	8	0	4	3	0	48	0	429	0	82	440	0
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	0	1863	0	1774	1863	0
Q Serve(g_s), s	0.1	0.0	0.1	0.1	0.0	0.8	0.0	6.5	0.0	0.8	4.3	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.1	0.1	0.0	0.8	0.0	6.5	0.0	0.8	4.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	22	0	20	81	0	269	0	596	0	556	1059	0
V/C Ratio(X)	0.36	0.00	0.20	0.04	0.00	0.18	0.00	0.72	0.00	0.15	0.42	0.00
Avail Cap(c_a), veh/h	883	0	788	883	0	985	0	1043	0	556	1506	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.7	0.0	15.7	14.7	0.0	11.4	0.0	9.7	0.0	5.3	3.9	0.0
Incr Delay (d2), s/veh	9.3	0.0	4.8	0.2	0.0	0.3	0.0	1.7	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.0	0.0	0.4	0.0	3.6	0.0	0.4	2.2	0.0
LnGrp Delay(d),s/veh	25.1	0.0	20.5	14.9	0.0	11.7	0.0	11.3	0.0	5.5	4.2	0.0
LnGrp LOS	C		C	B		B		B		A	A	
Approach Vol, veh/h		12			51			429			522	
Approach Delay, s/veh		23.5			11.9			11.3			4.4	
Approach LOS		C			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	8.0	14.3		4.4		22.3		5.5
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	4.0	18.0		16.0		26.0		16.0
Max Q Clear Time (g_c+I1), s	2.8	8.5		2.1		6.3		2.8
Green Ext Time (p_c), s	0.0	1.7		0.0		2.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
1: Northpoint Parkway & Hearn Ave

10/18/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	541	222	145	445	310	229
Future Volume (veh/h)	541	222	145	445	310	229
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	541	214	145	445	310	209
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	744	618	233	1139	427	588
Arrive On Green	0.40	0.40	0.13	0.61	0.24	0.24
Sat Flow, veh/h	1863	1549	1774	1863	1774	1583
Grp Volume(v), veh/h	541	214	145	445	310	209
Grp Sat Flow(s),veh/h/ln	1863	1549	1774	1863	1774	1583
Q Serve(g_s), s	10.9	4.3	3.4	5.4	7.2	0.0
Cycle Q Clear(g_c), s	10.9	4.3	3.4	5.4	7.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	744	618	233	1139	427	588
V/C Ratio(X)	0.73	0.35	0.62	0.39	0.73	0.36
Avail Cap(c_a), veh/h	1984	1649	598	2737	1116	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	9.3	18.3	4.4	15.6	10.1
Incr Delay (d2), s/veh	1.4	0.3	1.0	0.2	2.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	1.8	1.8	2.8	3.7	1.9
LnGrp Delay(d),s/veh	12.7	9.7	19.3	4.6	17.9	10.5
LnGrp LOS	B	A	B	A	B	B
Approach Vol, veh/h	755			590	519	
Approach Delay, s/veh	11.8			8.2	14.9	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.4	21.4				30.8		13.7
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	15.0	* 47				65.4		28.0
Max Q Clear Time (g_c+I1), s	5.4	12.9				7.4		9.2
Green Ext Time (p_c), s	0.1	4.8				3.2		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
2: Dutton Ave & Hearn Ave

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	690	20	432	506	182	20	195	384	269	191	44
Future Volume (veh/h)	88	690	20	432	506	182	20	195	384	269	191	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	88	690	20	432	506	174	20	195	384	269	191	2
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	957	28	436	850	688	51	382	714	257	591	6
Arrive On Green	0.06	0.27	0.27	0.25	0.46	0.46	0.03	0.21	0.21	0.14	0.32	0.32
Sat Flow, veh/h	1774	3508	102	1774	1863	1508	1774	1863	1583	1774	1839	19
Grp Volume(v), veh/h	88	348	362	432	506	174	20	195	384	269	0	193
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1863	1508	1774	1863	1583	1774	0	1858
Q Serve(g_s), s	5.6	20.3	20.3	27.7	23.1	8.1	1.3	10.6	20.0	16.5	0.0	9.0
Cycle Q Clear(g_c), s	5.6	20.3	20.3	27.7	23.1	8.1	1.3	10.6	20.0	16.5	0.0	9.0
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	110	483	502	436	850	688	51	382	714	257	0	597
V/C Ratio(X)	0.80	0.72	0.72	0.99	0.60	0.25	0.39	0.51	0.54	1.05	0.00	0.32
Avail Cap(c_a), veh/h	110	483	502	436	850	688	109	433	757	257	0	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	37.5	37.5	42.9	23.2	19.1	54.4	40.2	22.7	48.8	0.0	29.3
Incr Delay (d2), s/veh	26.6	7.2	7.0	40.8	3.1	0.9	4.8	1.1	0.7	69.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	10.9	11.3	18.5	12.5	3.5	0.7	5.6	8.8	13.0	0.0	4.7
LnGrp Delay(d),s/veh	79.3	44.7	44.5	83.6	26.2	19.9	59.2	41.3	23.4	117.9	0.0	29.6
LnGrp LOS	E	D	D	F	C	B	E	D	C	F		C
Approach Vol, veh/h		798			1112			599			462	
Approach Delay, s/veh		48.4			47.5			30.4			81.0	
Approach LOS		D			D			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	35.1	6.8	40.1	11.1	56.0	20.0	26.9
Change Period (Y+Rc), s	4.0	4.0	3.5	3.5	4.0	4.0	3.5	3.5
Max Green Setting (Gmax), s	28.0	28.0	7.0	36.0	7.1	48.9	16.5	26.5
Max Q Clear Time (g_c+I1), s	29.7	22.3	3.3	11.0	7.6	25.1	18.5	22.0
Green Ext Time (p_c), s	0.0	2.1	0.0	1.1	0.0	4.1	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	49.5
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
3: Northpoint Parkway & Dutton Meadow

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	30	25	25	130	82	25	272	27	84	150	130
Future Volume (veh/h)	180	30	25	25	130	82	25	272	27	84	150	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	180	30	25	25	130	82	25	272	27	84	150	130
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	43	264	41	211	310	416	427	42	397	204	177
Arrive On Green	0.17	0.17	0.17	0.14	0.14	0.14	0.09	0.26	0.26	0.06	0.22	0.22
Sat Flow, veh/h	1531	255	1583	298	1550	1583	1774	1668	166	1774	922	799
Grp Volume(v), veh/h	210	0	25	155	0	82	25	0	299	84	0	280
Grp Sat Flow(s),veh/h/ln	1786	0	1583	1848	0	1583	1774	0	1834	1774	0	1722
Q Serve(g_s), s	4.7	0.0	0.6	3.3	0.0	1.8	0.4	0.0	6.1	1.5	0.0	6.3
Cycle Q Clear(g_c), s	4.7	0.0	0.6	3.3	0.0	1.8	0.4	0.0	6.1	1.5	0.0	6.3
Prop In Lane	0.86		1.00	0.16		1.00	1.00		0.09	1.00		0.46
Lane Grp Cap(c), veh/h	298	0	264	251	0	310	416	0	470	397	0	381
V/C Ratio(X)	0.71	0.00	0.09	0.62	0.00	0.26	0.06	0.00	0.64	0.21	0.00	0.74
Avail Cap(c_a), veh/h	682	0	604	705	0	698	925	0	1181	503	0	657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	14.8	17.1	0.0	14.3	10.4	0.0	13.9	11.7	0.0	15.2
Incr Delay (d2), s/veh	3.1	0.0	0.2	2.5	0.0	0.5	0.1	0.0	1.4	0.3	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.3	1.9	0.0	0.8	0.2	0.0	3.3	0.7	0.0	3.2
LnGrp Delay(d),s/veh	19.6	0.0	14.9	19.5	0.0	14.8	10.5	0.0	15.3	11.9	0.0	18.0
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		235			237			324			364	
Approach Delay, s/veh		19.1			17.9			14.9			16.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	14.7		11.0	8.0	13.3		9.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.0	27.0		16.0	16.0	16.0		16.0
Max Q Clear Time (g_c+I1), s	3.5	8.1		6.7	2.4	8.3		5.3
Green Ext Time (p_c), s	0.0	1.6		0.8	0.0	0.9		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
1: Northpoint Parkway & Hearn Ave

10/18/2018

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	552	328	273	523	339	262
Future Volume (veh/h)	552	328	273	523	339	262
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	552	320	273	523	339	242
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	719	598	332	1187	434	683
Arrive On Green	0.39	0.39	0.19	0.64	0.24	0.24
Sat Flow, veh/h	1863	1549	1774	1863	1774	1583
Grp Volume(v), veh/h	552	320	273	523	339	242
Grp Sat Flow(s),veh/h/ln	1863	1549	1774	1863	1774	1583
Q Serve(g_s), s	14.4	8.9	8.3	7.9	10.0	0.0
Cycle Q Clear(g_c), s	14.4	8.9	8.3	7.9	10.0	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	719	598	332	1187	434	683
V/C Ratio(X)	0.77	0.54	0.82	0.44	0.78	0.35
Avail Cap(c_a), veh/h	1348	1121	731	2216	858	1062
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	13.3	21.8	5.1	19.7	10.7
Incr Delay (d2), s/veh	1.8	0.7	2.0	0.3	3.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	3.9	4.2	4.0	5.2	2.5
LnGrp Delay(d),s/veh	16.7	14.0	23.8	5.4	22.8	11.0
LnGrp LOS	B	B	C	A	C	B
Approach Vol, veh/h	872			796	581	
Approach Delay, s/veh	15.7			11.7	17.9	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.0	25.1				39.2		16.6
Change Period (Y+Rc), s	3.6	* 3.6				3.6		3.0
Max Green Setting (Gmax), s	23.0	* 40				66.4		27.0
Max Q Clear Time (g_c+I1), s	10.3	16.4				9.9		12.0
Green Ext Time (p_c), s	0.3	5.1				3.9		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
2: Dutton Ave & Hearn Ave

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	718	20	448	696	204	28	395	297	224	256	89
Future Volume (veh/h)	40	718	20	448	696	204	28	395	297	224	256	89
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	40	718	20	448	696	196	28	395	297	224	256	47
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	888	25	436	847	685	64	425	750	251	508	93
Arrive On Green	0.04	0.25	0.25	0.25	0.45	0.45	0.04	0.23	0.23	0.14	0.33	0.33
Sat Flow, veh/h	1774	3512	98	1774	1863	1508	1774	1863	1583	1774	1521	279
Grp Volume(v), veh/h	40	362	376	448	696	196	28	395	297	224	0	303
Grp Sat Flow(s),veh/h/ln	1774	1770	1840	1774	1863	1508	1774	1863	1583	1774	0	1800
Q Serve(g_s), s	2.5	21.9	21.9	28.0	37.1	9.3	1.8	23.7	13.9	14.1	0.0	15.4
Cycle Q Clear(g_c), s	2.5	21.9	21.9	28.0	37.1	9.3	1.8	23.7	13.9	14.1	0.0	15.4
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	78	448	465	436	847	685	64	425	750	251	0	601
V/C Ratio(X)	0.51	0.81	0.81	1.03	0.82	0.29	0.44	0.93	0.40	0.89	0.00	0.50
Avail Cap(c_a), veh/h	110	448	465	436	847	685	109	433	757	257	0	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.3	40.0	40.0	43.0	27.1	19.5	53.8	43.1	19.4	48.1	0.0	30.4
Incr Delay (d2), s/veh	3.8	11.2	10.9	50.5	8.9	1.0	4.6	26.3	0.3	29.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	12.0	12.5	19.8	21.0	4.1	0.9	15.3	6.1	9.0	0.0	7.8
LnGrp Delay(d),s/veh	57.1	51.2	50.8	93.5	35.9	20.5	58.4	69.4	19.8	77.4	0.0	31.1
LnGrp LOS	E	D	D	F	D	C	E	E	B	E		C
Approach Vol, veh/h		778			1340			720			527	
Approach Delay, s/veh		51.3			52.9			48.5			50.8	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	32.8	7.6	41.5	9.0	55.8	19.7	29.5
Change Period (Y+Rc), s	4.0	4.0	3.5	3.5	4.0	4.0	3.5	3.5
Max Green Setting (Gmax), s	28.0	28.0	7.0	36.0	7.1	48.9	16.5	26.5
Max Q Clear Time (g_c+I1), s	30.0	23.9	3.8	17.4	4.5	39.1	16.1	25.7
Green Ext Time (p_c), s	0.0	1.7	0.0	1.8	0.0	3.9	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	51.3
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
3: Northpoint Parkway & Dutton Meadow

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	30	20	18	95	57	25	395	30	73	400	130
Future Volume (veh/h)	150	30	20	18	95	57	25	395	30	73	400	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	150	30	20	18	95	57	25	395	30	73	400	130
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	43	227	30	158	246	292	575	44	391	493	160
Arrive On Green	0.14	0.14	0.14	0.10	0.10	0.10	0.02	0.34	0.34	0.05	0.37	0.37
Sat Flow, veh/h	1490	298	1583	294	1554	1583	1774	1710	130	1774	1348	438
Grp Volume(v), veh/h	180	0	20	113	0	57	25	0	425	73	0	530
Grp Sat Flow(s),veh/h/ln	1788	0	1583	1848	0	1583	1774	0	1840	1774	0	1785
Q Serve(g_s), s	4.2	0.0	0.5	2.6	0.0	1.4	0.4	0.0	8.7	1.1	0.0	11.7
Cycle Q Clear(g_c), s	4.2	0.0	0.5	2.6	0.0	1.4	0.4	0.0	8.7	1.1	0.0	11.7
Prop In Lane	0.83		1.00	0.16		1.00	1.00		0.07	1.00		0.25
Lane Grp Cap(c), veh/h	256	0	227	188	0	246	292	0	618	391	0	653
V/C Ratio(X)	0.70	0.00	0.09	0.60	0.00	0.23	0.09	0.00	0.69	0.19	0.00	0.81
Avail Cap(c_a), veh/h	653	0	578	675	0	663	412	0	882	538	0	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.9	0.0	16.3	18.8	0.0	16.2	10.4	0.0	12.6	9.4	0.0	12.5
Incr Delay (d2), s/veh	3.5	0.0	0.2	3.1	0.0	0.5	0.1	0.0	1.4	0.2	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.2	1.4	0.0	0.6	0.2	0.0	4.6	0.6	0.0	6.4
LnGrp Delay(d),s/veh	21.4	0.0	16.4	21.9	0.0	16.7	10.5	0.0	13.9	9.7	0.0	16.1
LnGrp LOS	C		B	C		B	B		B	A		B
Approach Vol, veh/h		200			170			450			603	
Approach Delay, s/veh		20.9			20.2			13.7			15.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	18.7		10.3	5.0	20.0		8.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.0	21.0		16.0	4.0	23.0		16.0
Max Q Clear Time (g_c+I1), s	3.1	10.7		6.2	2.4	13.7		4.6
Green Ext Time (p_c), s	0.0	1.8		0.7	0.0	2.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

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Appendix B

Roseland Specific Plan – Dutton Meadows Unit Count Calculation

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APN	Acreage	LU	Units/acres	Units	MF	SF
043-071-007-000	4.82	M-L	10	48.2	7.23	40.97
043-071-022-000	6.66	M-L	10	66.6	9.99	56.61
043-071-023-000	0.52	M-L	10	5.2	0.78	4.42
043-191-016-000	1.84	M-L	10	18.4	2.76	15.64
043-191-024-000	4.59	Mixed				
est. 0.63		M-L	10	6.3	0.945	5.355
est. 3.96		L	5	19.8		19.8
	18.43				21.705	142.795
					22	**143**

		Multi-Family	Single-Family
M-L	Med-Low Density Housing	15%	85%
L	Low-Density Housing	-	100%

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Appendix C

Sight Distance

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DUTTON MEADOWS

SRO461

SIGHT DISTANCE

FEBRUARY 2021

PROJECT SUMMARY:
Total Number of Homes: 137 du

Product A: Front-Load

(26)	Plan 1A	40'-6"'x71'-6" lot	3bd/2.5ba	1692 sf

Product B: Court

(16)	Plan 2A	40'-6"x71'-6" lot	3bd/2.5ba	1767 sf
(16)	Plan 2B	43'x71'-6" lot	4bd/3ba	2181 sf

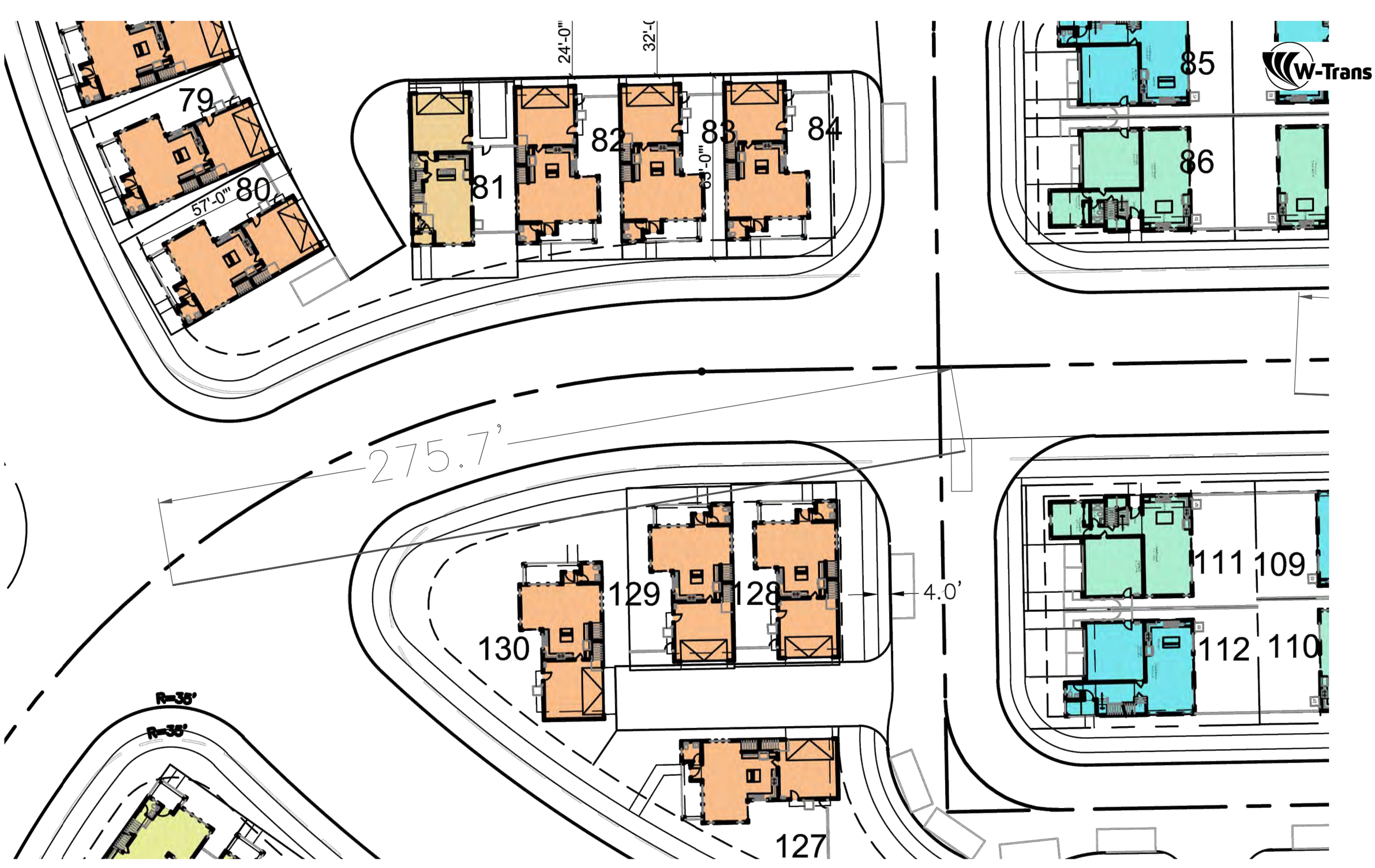
Product C: Alley-Load

(24)	Plan 3A	36'x68' lot	3bd/2.5ba	1680 sf
(29)	Plan 3B	36'x62'-6" lot	3bd/2.5ba	1820 sf
(26)	Plan 3C	32'-6"x77'-6" lot	3bd+Loft/2.5ba	2065 sf

Acreage: 18.43
Density: 7.43 du/ac

Parking:

In-garage:	274 spaces
On-street:	116 spaces
On-driveway:	136 spaces
On-lot:	29 spaces
Total:	535 spaces
Ratio:	4.05 sp/du



DUTTON MEADOWS

SIGHT DISTANCE

SRO461

FEBRUARY 2021

DUTTON MEADOW
NORTHPOINT PKWY
251.5'
434.8'

Appendix D

Signal Warrant Calculations Sheets

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Warrant 3: Peak-Hour Volumes and Delay

Hearn Avenue & Sally Ann Street
Santa Rosa

Project Name: TIS for the Updated Dutton Meadows Phase II Project

Intersection: 1

	Major Street	Minor Street
Street Name	Hearn Avenue	Sally Ann Street
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	25

Population less than 10,000? No
Date of Count: Tuesday, April 17, 2018
Scenario: AM Existing

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.2 vehicle-hours

Condition A2 — Not Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 33 vph

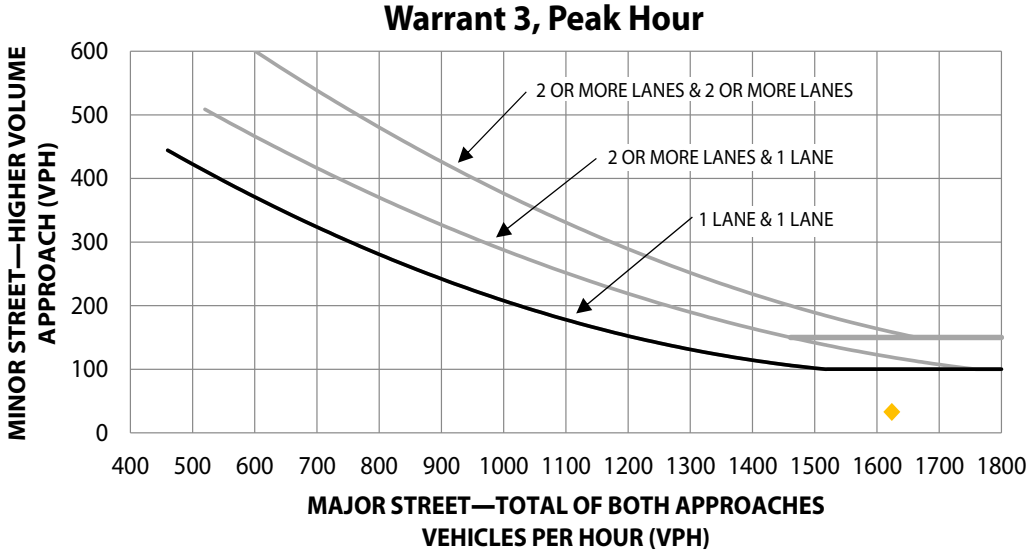
Condition A3 — Met

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 1657 vph

Condition B — Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Hearn Avenue & Sally Ann Street
Santa Rosa

Project Name: TIS for the Updated Dutton Meadows Phase II Project

Intersection: 1

	Major Street	Minor Street
Street Name	Hearn Avenue	Sally Ann Street
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	25

Population less than 10,000? No
Date of Count: Tuesday, April 17, 2018
Scenario: PM Existing

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.12 vehicle-hours

Condition A2 — Not Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 22 vph

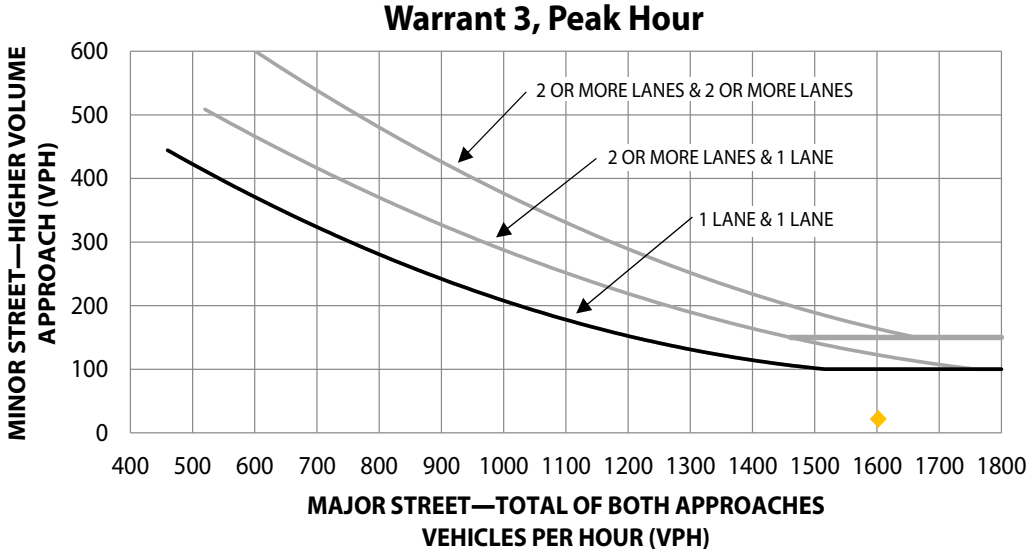
Condition A3 — Met

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 1624 vph

Condition B — Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Hearn Avenue & Sally Ann Street
Santa Rosa

Project Name: TIS for the Updated Dutton Meadows Phase II Project

Intersection: 1

	Major Street	Minor Street
Street Name	Hearn Avenue	Sally Ann Street
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	25

Population less than 10,000? No
Date of Count: Tuesday, April 17, 2018
Scenario: AM Future

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.16 vehicle-hours

Condition A2 — Not Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 33 vph

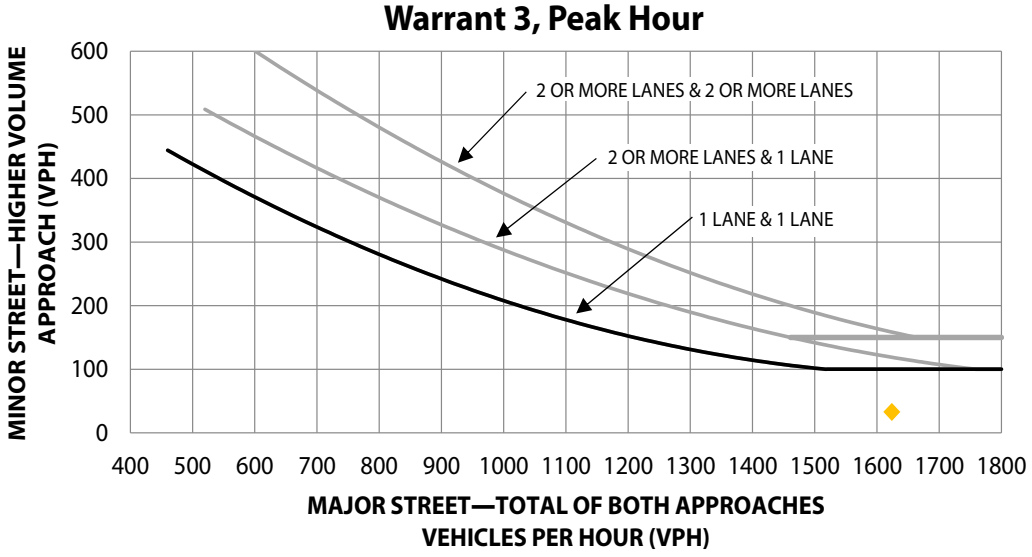
Condition A3 — Met

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 1657 vph

Condition B — Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Hearn Avenue & Sally Ann Street
Santa Rosa

Project Name: TIS for the Updated Dutton Meadows Phase II Project

Intersection: 1

	Major Street	Minor Street
Street Name	Hearn Avenue	Sally Ann Street
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	30	25

Population less than 10,000? No
Date of Count: Tuesday, April 17, 2018
Scenario: PM Future

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.12 vehicle-hours

Condition A2 — Not Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 22 vph

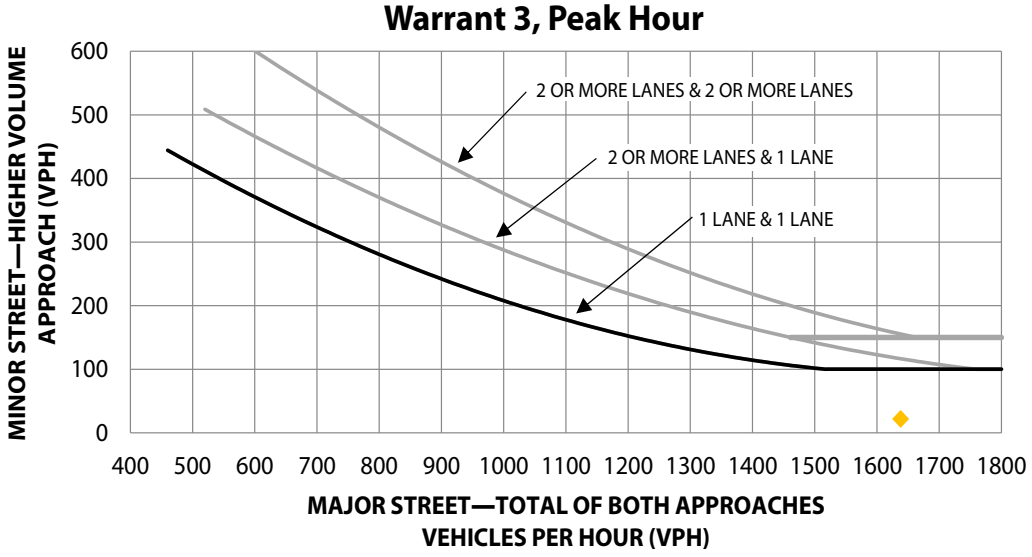
Condition A3 — Met

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 1660 vph

Condition B — Not Met

The plotted point falls above the curve



Appendix E

Pedestrian Crossing Worksheet

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TCRP Report 112 - NCHRP Report 562 - Pedestrian Crossing Treatment Worksheet
Worksheet 1: Peak-Hour, 35 MPH or Less

Analyst and Site Information

Analyst:	BKB	Major Street:	Dutton Meadow
Analysis Date:	1-Apr-21	Minor Street or Location:	East of Northpoint Parkway
Data Collection Date:		Peak Hour:	Future AM Peak with Project

Step 1: Select worksheet (speed reflects posted or statutory speed limit or 85th percentile speed on the major street):
a) Worksheet 1 - 35 mph or less
b) Worksheet 2- exceeds 35 mph, communities with less than 10,000, or where major transit stop exists

Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a TCD type of treatment?

2a	Peak-hour pedestrian volume (ped/h), vp ○If 2a ≥ 20 ped/h, then go to Step 3. ○If 2a < 20 ped/h, then consider median refuge islands, curb extensions, traffic calming, etc. as feasible.	**2a**	20

Step 3: Does the crossing meet the pedestrian volume warrant for a traffic signal?

3a	Major road volume, total of both approaches during peak hour (veh/h), V maj-s	**3a**	378
3b	○Minimum signal warrant volume for peak hour (use 3a for Vmaj-s), SC •SC = 0.00021 Vmaj-s² - 0.74072 Vmaj-s + 734.125)/0.75 **OR** •[(0.00021 3a² - 0.74072 3a + 734.125)/0.75]	**3b**	645.52
3c	○If 3b< 133, then enter 133. If 3b ≥ 133, then enter 3b.	**3c**	645.5179733
3d	○If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce 3c by up to 50 percent; otherwise enter 3c. ○If 2a ≥ 3d, then the warrant has been met and a traffic signal should be considered if not within 300 ft of another traffic signal. Otherwise, the warrant has not been met. Go to Step 4.	**3d**	645.5179733

Step 4: Estimate pedestrian delay.

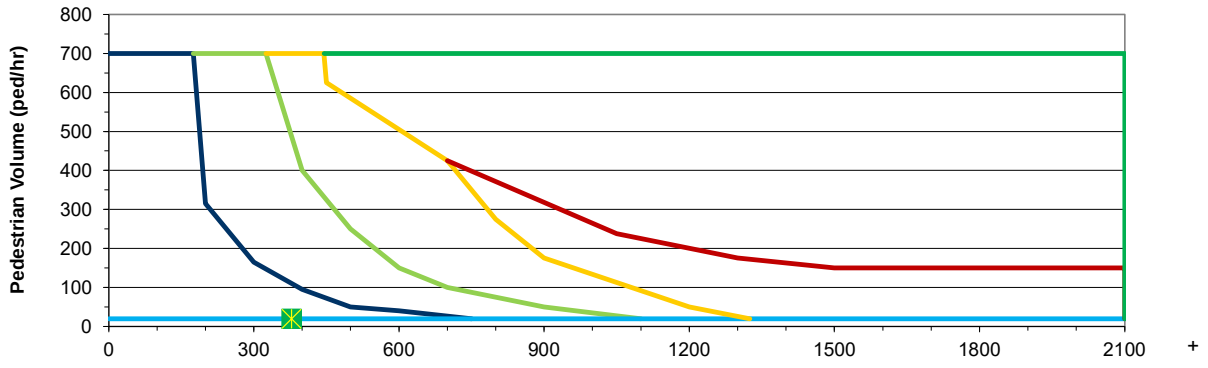
4a	Pedestrian crossing distance, curb to curb (ft), L	**4a**	50
4b	Pedestrian walking speed (ft.s), Sp	**4b**	3.5
4c	Pedestrian start-up time and end clearance time (s), ts	**4c**	7
4d	○Critical gap required for crossing pedestrian (s), tc= (L/Sp) + ts OR [(4a/4b) + 4c)]	**4d**	21.29
4e	Major road volume, total of both approaches or approach being crossed if median refuge island is present during peak hour (veh.h), Vmaj-d	**4e**	378
4f	○Major road flow rate (veh/s), v = Vmaj-d/3600 OR [4e/3600]	**4f**	0.11
4g	○Average pedestrian delay (s/person), dp = ($e^{v\,tc}$ - v tc - 1) / v OR [($e^{4f \times 4d}$-4f x 4d - 1) / 4f]	**4g**	58.20
4h	○Total pedestrian delay (h), Dp=(dp x Vp) / 3600 OR [(4g x 2a) / 3600] (this is estimated delayfor all pedestrians crossing the major roadway without a crossing treatment - assumes 05 compliance). This calculated value can be replaced with the actual total pedestrian delay measured at the site.	**4h**	0.32

Step 5: Select treatment based upon total pedestrian delay and expected motorist compliance.

5a	Expected motorist compliance at pedestrian crossings in region, Comp = high or low	**5a**	LOW

Total Pedestrian Delay Dp (**4h**) and Comp (**5a**)	**Treatment Category** (see Descriptions of Sample Treatments for examples)
Dp ≥21.3h (Comp = high or low) OR 5.3h≤Dp<21.3 h and Comp = low	DO NOT USE RED
1.3h ≤ Dp < 21.3h and Comp = high or low) OR 5.3 ≤ Dp < 21.3 h and Comp = high	DO NOT USE ACTIVE OR ENHANCED
Dp < 1.3 h (Comp = high or low)	USE CROSSWALK

Roadway Configuration: 50' Wide, <35 mph, Vped = 3.5 ft/s



LEGEND
Study Intersection
Signal
Enhanced-High Visibility/Active when Present
Red
Enhanced-High Visibility/Active when Present (if high compliance expected) OR Red (if low compliance expected)
Striped Crosswalk
No Treatment

DESCRIPTIONS OF TREATMENT TYPE

RED	ENHANCED-HIGH VISIBILITY/ACTIVE WHEN PRESENT	
	Active When Present	**Enhanced/High Visibility**
• Midblock Signal	• In Roadway Warning Lights	• In-Street Crossing Signs
	• Passive/Pushbutton Flashing Beacons	• High Visibility Signs/Markings
• Half Signal		• Pedestrian Refuge Islands
	• Pedestrian Crossing Flags	• Raised Crosswalks
		• Curb Extensions
• HAWK	• Rapid Rectangular Flashing Beacons	• Advanced Signage
		• Advanced Stop/Yield Lines
		• Constant Flashing Yellow Beacons

TCRP Report 112 - NCHRP Report 562 - Pedestrian Crossing Treatment Worksheet
Worksheet 1: Peak-Hour, 35 MPH or Less

Analyst and Site Information

Analyst:	BKB	Major Street:	Dutton Meadow
Analysis Date:	1-Apr-21	Minor Street or Location:	East of Northpoint Parkway
Data Collection Date:		Peak Hour:	Future PM Peak with Project

Step 1: Select worksheet (speed reflects posted or statutory speed limit or 85th percentile speed on the major street):
a) Worksheet 1 - 35 mph or less
b) Worksheet 2- exceeds 35 mph, communities with less than 10,000, or where major transit stop exists

Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a TCD type of treatment?

2a	Peak-hour pedestrian volume (ped/h), vp ○If 2a ≥ 20 ped/h, then go to Step 3. ○If 2a < 20 ped/h, then consider median refuge islands, curb extensions, traffic calming, etc. as feasible.	**2a**	20

Step 3: Does the crossing meet the pedestrian volume warrant for a traffic signal?

3a	Major road volume, total of both approaches during peak hour (veh/h), V maj-s	**3a**	303
3b	○Minimum signal warrant volume for peak hour (use 3a for Vmaj-s), SC •SC = 0.00021 Vmaj-s² - 0.74072 Vmaj-s + 734.125)/0.75 **OR** •[(0.00021 3a² - 0.74072 3a + 734.125)/0.75]	**3b**	705.29
3c	○If 3b< 133, then enter 133. If 3b ≥ 133, then enter 3b.	**3c**	705.2889733
3d	○If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce 3c by up to 50 percent; otherwise enter 3c. ○If 2a ≥ 3d, then the warrant has been met and a traffic signal should be considered if not within 300 ft of another traffic signal. Otherwise, the warrant has not been met. Go to Step 4.	**3d**	705.2889733

Step 4: Estimate pedestrian delay.

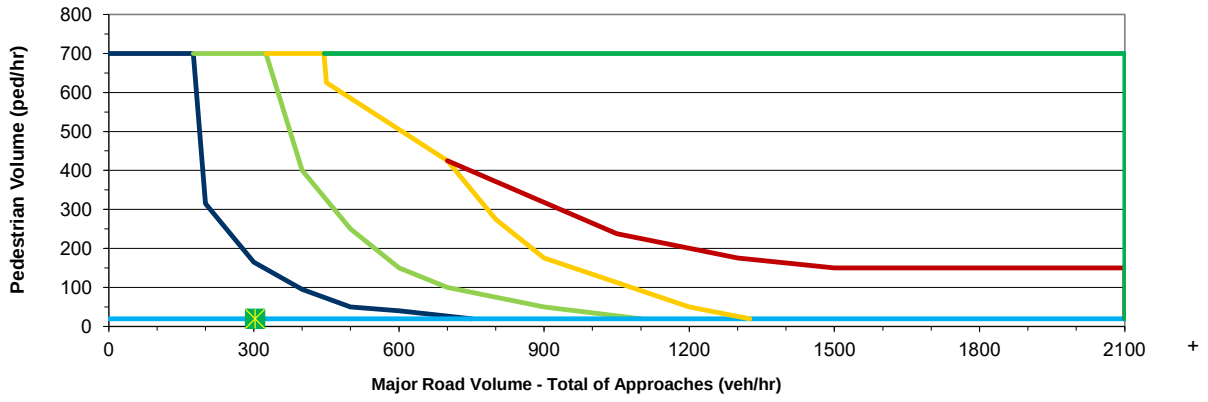
4a	Pedestrian crossing distance, curb to curb (ft), L	**4a**	50
4b	Pedestrian walking speed (ft.s), Sp	**4b**	3.5
4c	Pedestrian start-up time and end clearance time (s), ts	**4c**	7
4d	○Critical gap required for crossing pedestrian (s), tc= (L/Sp) + ts OR [(4a/4b) + 4c)]	**4d**	21.29
4e	Major road volume, total of both approaches or approach being crossed if median refuge island is present during peak hour (veh.h), Vmaj-d	**4e**	303
4f	○Major road flow rate (veh/s), v = Vmaj-d/3600 OR [4e/3600]	**4f**	0.08
4g	○Average pedestrian delay (s/person), dp = ($e^{v\,tc}$ - v tc - 1) / v OR [($e^{4f \times 4d}$-4f x 4d - 1) / 4f]	**4g**	38.11
4h	○Total pedestrian delay (h), Dp=(dp x Vp) / 3600 OR [(4g x 2a) / 3600] (this is estimated delayfor all pedestrians crossing the major roadway without a crossing treatment - assumes 05 compliance). This calculated value can be replaced with the actual total pedestrian delay measured at the site.	**4h**	0.21

Step 5: Select treatment based upon total pedestrian delay and expected motorist compliance.

5a	Expected motorist compliance at pedestrian crossings in region, Comp = high or low	**5a**	LOW

Total Pedestrian Delay Dp (**4h**) and Comp (**5a**)	**Treatment Category** (see Descriptions of Sample Treatments for examples)
Dp ≥21.3h (Comp = high or low) OR 5.3h≤Dp<21.3 h and Comp = low	DO NOT USE RED
1.3h ≤ Dp < 21.3h and Comp = high or low) OR 5.3 ≤ Dp < 21.3 h and Comp = high	DO NOT USE ACTIVE OR ENHANCED
Dp < 1.3 h (Comp = high or low)	USE CROSSWALK

Roadway Configuration: 50' Wide, <35 mph, Vped = 3.5 ft/s



LEGEND
Study Intersection
Signal
Enhanced-High Visibility/Active when Present
Red
Enhanced-High Visibility/Active when Present (if high compliance expected) OR Red (if low compliance expected)
Striped Crosswalk
No Treatment

DESCRIPTIONS OF TREATMENT TYPE

RED	ENHANCED-HIGH VISIBILITY/ACTIVE WHEN PRESENT	
	Active When Present	**Enhanced/High Visibility**
• Midblock Signal	• In Roadway Warning Lights	• In-Street Crossing Signs
		• High Visibility Signs/Markings
	• Passive/Pushbutton Flashing Beacons	• Pedestrian Refuge Islands
• Half Signal		• Raised Crosswalks
	• Pedestrian Crossing Flags	• Curb Extensions
		• Advanced Signage
• HAWK	• Rapid Rectangular Flashing Beacons	• Advanced Stop/Yield Lines
		• Constant Flashing Yellow Beacons