

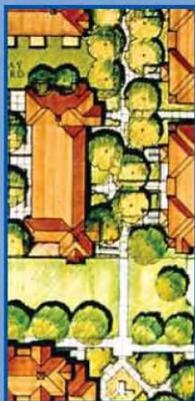


Atkinson Lane

Specific Plan and PUD

Environmental Impact Report Addendum

SCH # 2008082042



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Atkinson Lane Specific Plan and PUD

SCH# 2008082042

Lead Agency: County of Santa Cruz



Prepared by:

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April 2014



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APPENDICES

- Appendix J: California Emissions Estimator Model (CalEEMod) version 2011.1.1 datasheets, prepared for the Atkinson Lane Phase 1a Project, dated August 15, 2013.
- Appendix K: Atkinson Lane (Pippen) Offsite Drainage Assessment Memorandum, prepared by Rodney Trujillo, P.E., of Whitson Engineers, dated June 28, 2013.
- Appendix L: Letter from Tom Sharp, Senior Engineering Associate for the City of Watsonville to Rachel Fatoohi, Senior Civil Engineer, and Alyson Tom, Civil Engineer, for the Santa Cruz County Department of Public Works, dated May 29, 2013.
- Appendix M: Settlement Agreement between the Farm Bureau of Santa Cruz County, the County of Santa Cruz, and the City of Watsonville, dated January 20, 2011.
- Appendix N: Atkinson Lane Specific Plan Revised Traffic Impact Analysis, prepared by RBF Consulting, dated March 10, 2014.
- Appendix O: Update of Biological Surveys and Mitigation Measures conducted on the MidPen Housing Pippen Court Affordable Income Housing Project on Atkinson Lane in Watsonville, California, dated June 14, 2013.
- Appendix P: Amended Mitigation Monitoring and Reporting Program

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1.0 INTRODUCTION AND PURPOSE

1.1 Regional Location

The Atkinson planning area is located in Santa Cruz County adjacent to the eastern edge of the Watsonville City limits. The City of Watsonville is located in southern Santa Cruz County approximately 47 miles south of the City of San José. Neighboring communities within 25 miles of the planning area include the cities of Santa Cruz, Scotts Valley, and Capitola, which are respectively located 20 miles, 23 miles, and 14 miles north of the planning area, and the community of Castroville and City of Salinas, which are each respectively located approximately 11 miles to the southwest and 23 miles to the southeast. The regional location is shown in Figure 1-1: Regional Location.

1.2 Project Vicinity

The planning area consists of eleven parcels (Assessor's Parcel Numbers: 019-226-42 [52 Atkinson Lane – Mid-Peninsula Housing; within City], 019-226-43 [58 Atkinson Lane – Espino, Rogelio Guerrero; within City], 019-226-44 [72 Atkinson Lane – Bechtel, Elizabeth Debruhl; within City], 019-236-01 [78 Atkinson Lane – Lamb, Bruce R.; within City], 048-211-24 [Pacific Gas & Electric; within County], 048-211-25 [56 Atkinson Lane – Mid-Peninsula Housing; within County]; 048-221-09 [Lamb, Bruce R. Trustee; within County], 048-231-01 [Israel Zepeda Farms, Inc.; within County], 048-231-17 [Israel Zepeda Farms, Inc.; within County], 048-231-18 [127 Atkinson Lane – Israel Zepeda Farms, Inc.; within County], and 048-251-09 [Grimmer Orchards; within County]), which total approximately 65.8 acres. The planning area is located south of Corralitos Creek and approximately 800 feet northeast of Freedom Boulevard. Atkinson Lane borders the planning area to the northwest; Brookhaven Lane, Brewington Avenue and Paloma Way border the planning area to the south and southwest. Atkinson Lane, Brewington Avenue, and Wagner Avenue provide various access points to the project site. Freedom Boulevard is a four lane major arterial running north-south and is located approximately ¼ mile west of the planning area. Freedom Boulevard is the only major arterial in the vicinity of the planning area.

The northwest corner of the planning area is located within the Watsonville City limits and the remainder of the planning area is located in unincorporated Santa Cruz County. Approximately one half of the planning area is located within the City's Sphere of Influence (SOI) and the entire planning area is located within the City's 25-Year Urban Limit Line (ULL), which defines where development is projected to occur in the future. The project vicinity is shown on Figure 1-2: Project Vicinity and an aerial of the planning area is shown in Figure 1-3: City and County Project Sites and Jurisdictional Boundaries. The Assessor's Parcel Numbers are shown in Figure 1-4: Assessor's Parcel Numbers and Property Ownership.

1.3 Project Background

In March of 2009, the County of Santa Cruz (County) acting as lead agency and the City of Watsonville (City) prepared a Planned Unit Development (PUD) and Specific Plan for the Atkinson Lane future growth area, which consisted of an approximately 65.8 acre site located adjacent to the City of Watsonville city limits and within its voter-approved Urban Limit Line (hereinafter "planning area"). The PUD and Specific Plan were intended to serve two purposes: 1) to direct the development of a 16-acre portion of the planning area (hereinafter "County site") as a PUD according to the County's Regional Housing Needs Combining Zoning District; and 2) to serve as a Specific Plan to direct the development of the balance of the planning area upon annexation by the City. The County adopted the PUD and certified the Final EIR on June 9, 2009 for the 16-acre County Site. However, as a result of subsequent litigation, a Settlement Agreement was reached in 2011 between the Farm Bureau of Santa Cruz County,



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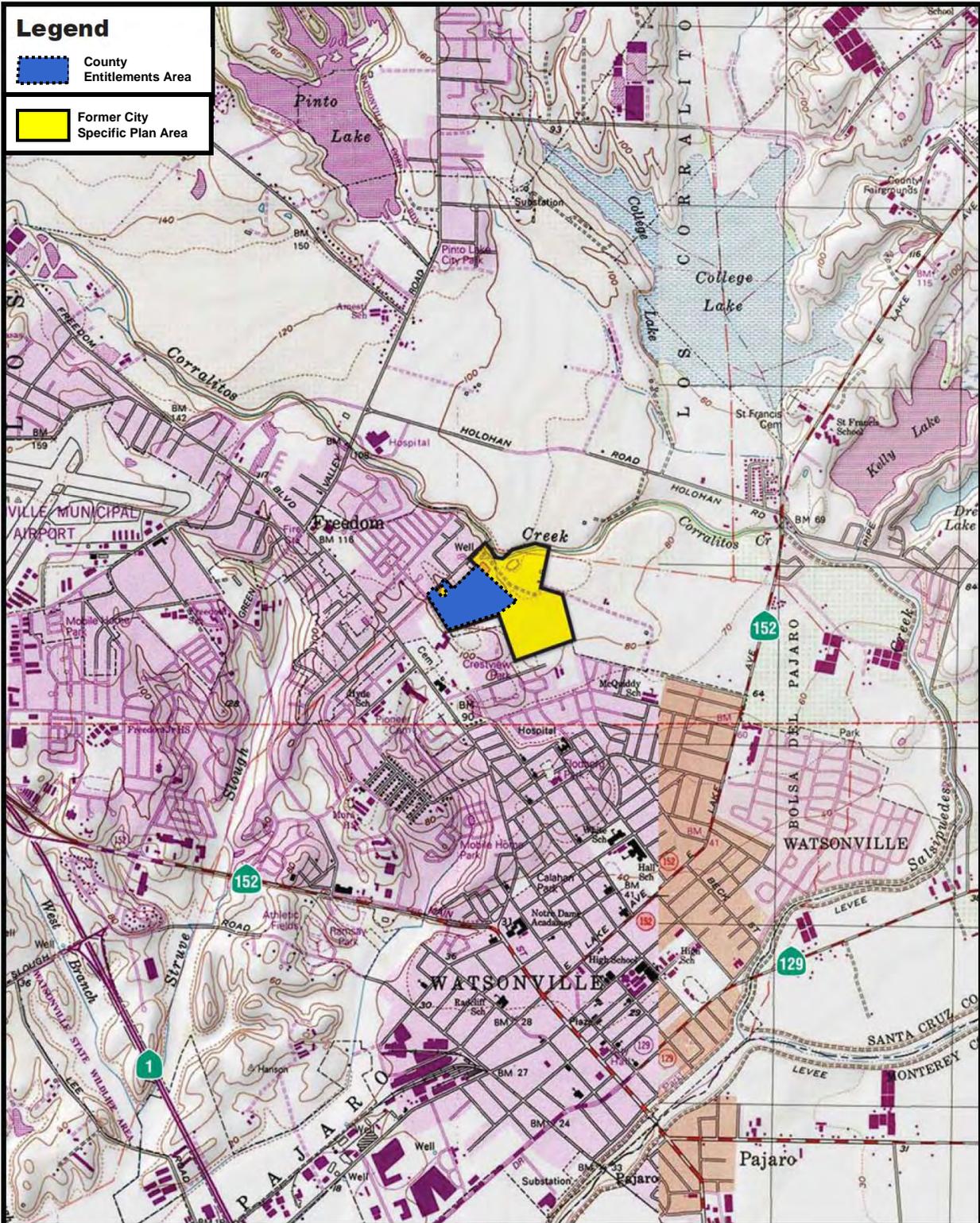
Source: ESRI (2007)



Figure 1-1
ATKINSON LANE SPECIFIC PLAN & PUD EIR
Regional Location



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Source: RBF Consulting (2008)

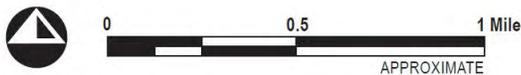


Figure 1-2
 ATKINSON LANE SPECIFIC PLAN & PUD EIR
Project Vicinity



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Atkinson Lane County Entitlements Area

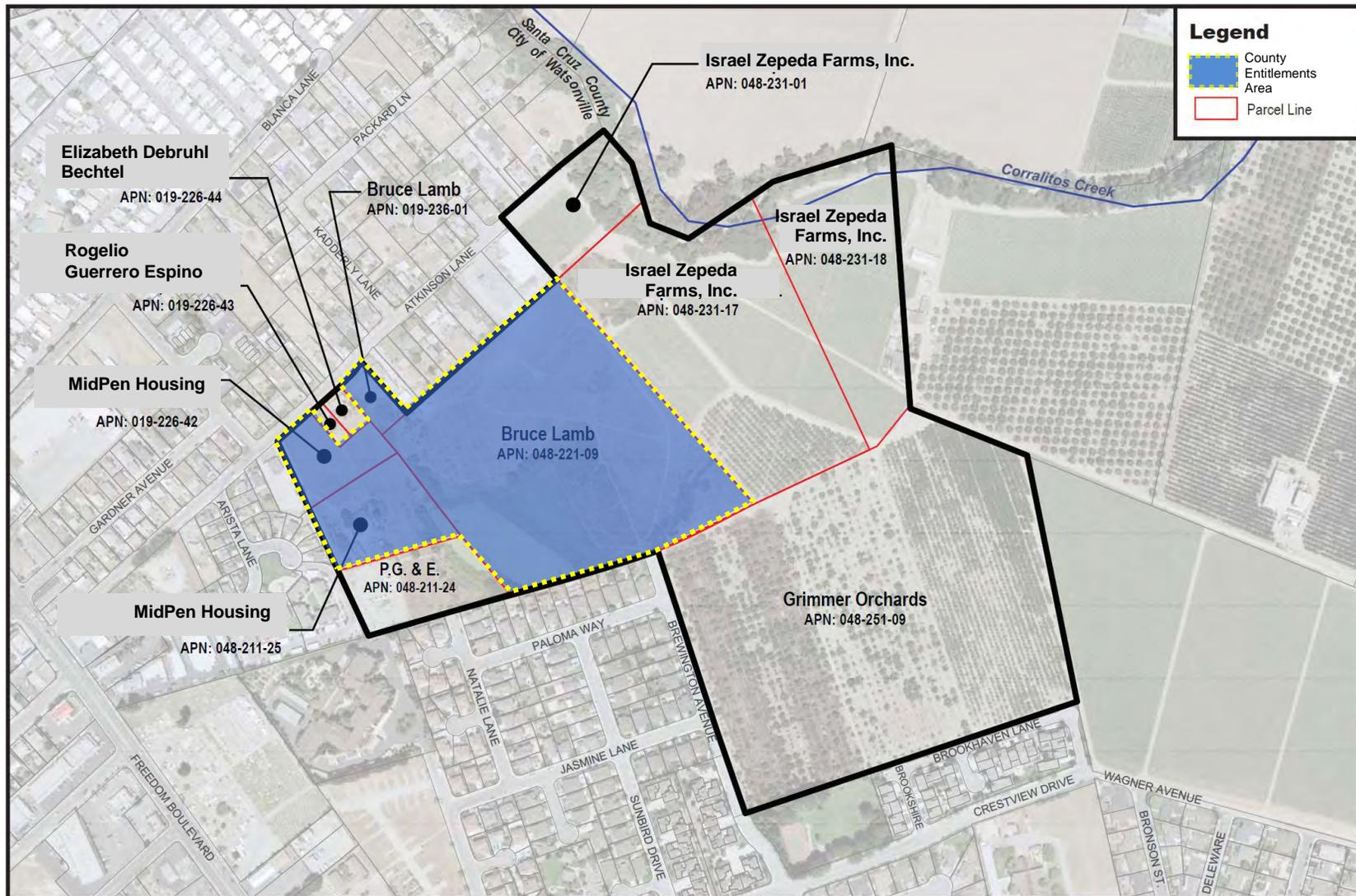
FIGURE 1-3



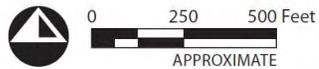
FIGURE 1-3



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Source: City of Watsonville (2007)



Assessors Parcel Numbers and Property Ownership

Figure 1-4

ATKINSON LANE SPECIFIC PLAN & PUD EIR



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the County of Santa Cruz, and the City of Watsonville (Appendix M). As a result of the Settlement Agreement, both the City and County agreed that the EIR would not be used in connection with any action or proposal to develop or annex any, all or portions of the Specific Plan Area not included within the County Entitlements, and the City agreed that nothing in the County Approvals includes approval of the Specific Plan, or the EIR covering the Specific Plan area, or any elements of the Specific Plan, or of the infrastructure serving such area. As a result, the City of Watsonville has not proceeded in adopting the Specific Plan. However, the Settlement Agreement does allow the City to rely upon the EIR and to approve development involving two parcels currently located within the City, as they are intended to be incorporated into the project authorized by the County Entitlements, as follows:

- (1) the approximately 1.3 acre parcel APN 019-226-42 now owned by MidPen Housing, and
- (2) the approximately 0.5 acre parcel APN 019-236-01 owned by Lamb, intended to provide secondary access to the project authorized by the County Entitlements.

As a result of the Settlement Agreement, the County agreed to accomplish a “Modification to the Approvals” as outlined above, and therefore this EIR Addendum is being prepared to address the revision to the project and to the originally anticipated Project Phasing described by the EIR, to instead reflect a “County Entitlements Area” and a “City Specific Plan Area”. The City and the County are allowed to rely upon the certified EIR and to approve developments within the defined County Entitlement Area. The City and County are not allowed to rely upon the certified EIR, and the City must prepare a new CEQA document and a new Specific Plan before any development would be allowed within the defined City Specific Plan Area. Each of these areas is defined to include the following Assessor’s Parcel Numbers (APNs):

COUNTY ENTITLEMENTS AREA

(within existing City of Watsonville Sphere of Influence)

019-226-42	52 Atkinson Lane	MidPen Housing parcel within City of Watsonville
019-236-01	78 Atkinson Lane	Lamb parcel within City
048-211-25	56 Atkinson Lane	MidPen Housing parcel within County
048-221-09	No Site Address	Lamb parcel within County

CITY SPECIFIC PLAN AREA

(only 048-231-01 within existing City Sphere of Influence;

all are within City Urban Limit Line as approved by voters in Measure U)

048-231-01	No Site Address	Zepeda parcels within County
048-231-17	No Site Address	Zepeda parcels within County
048-231-18	127 Atkinson Lane	Zepeda parcels within County
048-251-09	No Site Address	Grimmer parcel within County

The following two parcels are each small single family lots already developed with single family homes, which are located within the City of Watsonville and served with urban services. No change in zoning or inclusion in a Specific Plan had been or is anticipated:

019-226-43	58 Atkinson Lane	Espino parcel within City
019-226-44	72 Atkinson Lane	Bechtel parcel within City



1.4 Modification of Atkinson Project

As outlined above, development within the Atkinson planning area can only occur within the County Entitlements Area in the near term, with additional planning and CEQA review required prior to any action that would authorize development within the City Specific Plan Area. However, the City Specific Plan Area is located within the Urban Limit Line, and the city's project objective as stated in the EIR is assumed to remain valid: "Provide housing capacity to address the City's projected needs for the next three housing element cycles." Therefore, this Addendum presents more specific updated information related to near-term projects that are now being proposed or may be proposed in the future, within the County Entitlements Area. Information in the original EIR for the entirety of the Atkinson Planning Area is no longer all considered project-level analysis, because information regarding the City Specific Plan Area can be expected to be updated in the future when the City elects to prepare a new Specific Plan and CEQA document within its General Plan time horizon of 2030. However, the original information regarding the whole of the Atkinson project is considered to be relevant for the purpose of general context and information about what could occur in the future from the perspective of a General Plan level of analysis, particularly as that information relates to development within the County Entitlements Area.

This EIR Addendum is prepared in order to refine information about impacts and mitigation measures that would be required for project(s) within the County Entitlements Area, based upon the Settlement Agreement and current information and analysis that is updated from that contained in the 2009 EIR. This Addendum will be used along with the EIR to provide the CEQA compliance documentation for the Modification of the Approvals pursuant to the Settlement Agreement, as well as any other permits required to be acted upon by the County of Santa Cruz, for projects located within the County Entitlements Area.

1.5 Purpose of the EIR Addendum

The California Environmental Quality Act (CEQA) recognizes that between the date an environmental document is completed and the date the project is fully implemented, one or more of the following changes may occur: 1) the project may change; 2) the circumstances under which the project is undertaken may change; and/or 3) previously unknown information can arise (Section 21166). Before proceeding with a project, CEQA requires the Lead Agency to evaluate these changes to determine whether or not they affect the conclusion in the environmental document.

The CEQA Guidelines §15162 state that when an EIR has been certified or negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
 - a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;



- b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
- c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
- d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

CEQA Guidelines §15164 states that the lead agency or a responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in §15162 (see above) calling for preparation of a subsequent EIR have occurred.

Based on the proposed project description and knowledge of the project site (based on the environmental review prepared for the Atkinson Lane Specific Plan and PUD Project), the County has concluded that the proposed project would not result in any new impacts not previously disclosed in the Final Environmental Impact Report for the Atkinson Lane Specific Plan and PUD Project and would not result in a substantial increase in the magnitude of any significant environmental impacts previously identified in the EIR. In addition, the County has concluded that there are no new or newly feasible mitigation measures or alternatives that would substantially reduce significant effects of the project but which the project proponents decline to adopt. For these reasons, an addendum to Final Environmental Impact Report for the Atkinson Lane Specific Plan and PUD Project has been prepared for the proposed project.

This Addendum is not required to be circulated for public review, but will be part of the public record and attached to the Final Environmental Impact Report for the Atkinson Lane Specific Plan and PUD Project, pursuant to CEQA Guidelines §15164(c).



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2.0 DESCRIPTION OF MODIFICATIONS TO APPROVALS (MODIFIED PROJECT)

2.1 Removal of City site Specific Plan Area from the Currently Proposed Project

Due to litigation following certification of the Final EIR by the County of Santa Cruz, a Settlement Agreement was reached in 2011 between the Farm Bureau of Santa Cruz County, the County of Santa Cruz, and the City of Watsonville (Appendix M). As a result of the Settlement Agreement, both the City and County agreed that the EIR would not be used in connection with any action or proposal to develop or annex any, all or portions of the City Specific Plan Area not included within the County Entitlements, and the City agreed that nothing in the County Approvals includes approval of the Specific Plan, or an EIR covering the Specific Plan area, or any elements of the Specific Plan, or of the infrastructure. As a result, the City of Watsonville has not proceeded in adopting the Specific Plan for the remaining 45.4 gross developable acres contained as part of Phase 2 (City site). However, the Settlement Agreement does not apply to the following City parcels located within the City Specific Plan Area: APNs 019-236-01 (Lamb) and 019-226-42 (MidPen Housing). The City currently is able to authorize the development of these parcels through a Planned Development process rather than a Specific Plan due to the relatively small area within the City. The City is not proposing the prezone or annex lands within the County Entitlements Area. Table 2-1 below provides the assessor parcel numbers of the parcels removed under the modified project for Phase 2 of the City site. The Settlement Agreement only allows for the development of the County Entitlements Area. The following discussion describes the revised phasing plan.

Table 2-1: Modification of Project Description to include County Entitlements Area¹

Phase 1a	Assessor Parcel No.	Jurisdiction	Developable Acreage	Density Range/Acre	Proposed Units
Residential – High Density (R-HD)	048-211-25	County	1.3	20	26
Residential – High Density (R-HD)	019-226-42	City	0.9	17.8	16
Residential – Low Density (R-LD)	019-226-42	City	0.4	8-10	4
Total Phase 1a			2.6		46
Phase 1b	Assessor Parcel No.	Jurisdiction	Developable Acreage	Density Range/Acre	Proposed Units
Residential – High Density (R-HD)	048-221-09	County	8.7	20	174
Total Phase 1b			8.7		174
Total			11.3		220
Note:					
1 – APN 019-236-01 is proposed for use as secondary emergency access only for Phase 1b. The City Specific Plan Area has been removed from the currently proposed project consisting of the following four assessor parcels: 048-231-01, 048-231-17, 048-231-18, and 048-251-09. Phase 2 of the approved County Project has been incorporated into Phase 1b.					

2.2 Revised Project Description

A primary change to the project is the modification to the project description and phasing plan as shown in Table 2-1. The revised proposal would re-define the phasing to reflect the County Entitlements Area that is allowed to use the EIR and to be developed in accordance with the County-approved Planned Unit Development (PUD); and the City Specific Plan Area that is not allowed to use the existing EIR, with the City required to prepare a Specific Plan and a new CEQA environmental analysis before being able to consider approving any development within that area. Therefore, future development of the City Specific Plan Area is considered by this Addendum not to be part of the “proposed project” but rather as a possible longer-term land use scenario, with information relevant only at a General Plan level of detail reflecting Measure U and the City of Watsonville 2030 General Plan. This project modification therefore no longer



considers the development of up to 230 additional units on 23.2 net developable acres within APNs 048-231-01, 048-231-17, 048-231-18, and 048-251-09 as part of the proposed project. A subsequent CEQA review and discretionary approval by the City of Watsonville would be required prior to any development of the additional 230 units removed from consideration under the modified project description. Although the development of the additional 230 units would remain consistent with the City of Watsonville General Plan and Measure U, it is not considered a near-term project, but one that might be considered by the City of Watsonville at some point prior to 2030 as anticipated by the Watsonville General Plan.

Within the County jurisdiction, Phase 1a proposes to construct a total of 26 affordable housing units on 1.3 net developable acres (APN 048-211-25). A total of 20 units are proposed to be developed within the City jurisdiction on APN 019-226-42. A total of 16 units in the City's jurisdiction would be high density residential with the remaining four low density residential units fronting on Atkinson Lane within the City. This would result in a modification to the number of high density units constructed. An additional five high density units would be constructed, with an equal reduction in the number of low density units. As a result, the total number of units to be constructed would remain at 220 for Phases 1a and 1b combined.

Within the County Entitlements Area, Phase 1a consists of a 46-unit project currently proposed by MidPen Housing. The MidPen project application includes one City parcel and one County parcel within its proposed development site, with 26 affordable housing units on 1.3 net developable acres on County APN 048-211-25 and 20 units affordable units on City APN 019-226-42. On the City parcel, a total of 16 units would be high density residential with the remaining four low density residential units fronting on Atkinson Lane. This would result in a modification to the number of high density units constructed within the County Entitlements Area. An additional five high density units would be constructed, with an equal reduction in the number of low density units. Phase 1b is considered to consist of the remainder of the County Entitlements Area, within which application(s) for project development permit(s) may be filed with the County of Santa Cruz for projects consistent with the Settlement Agreement and Modification of the Approvals/Planned Unit Development (PUD).

Modification of Project Description regarding Future Annexation

The originally proposed Atkinson Lane project, which included the City Specific Plan Area, incorporated a permanent 200-foot agricultural buffer that would have been located entirely along the eastern edge of the planning area bordering adjacent agricultural uses located outside of the City's ULL. County APN 048-221-09 (County Lamb parcel) was anticipated to develop as a Phase 2 in conjunction with development of the City Specific Plan Area. The certified EIR states that "Upon development of the County site, an interim 200-foot agricultural buffer would be located within the County site prior to annexation and rezoning of the City site." The EIR also states that "Other than fencing, regional drainage facilities, and underground utilities, only landscape and related non-accessible open space components are allowed within the first 150 feet of the buffer. Within the remaining 50 feet of buffer, adjacent to the development area, uses such as public streets and roads, regional and local storm-drainage improvements and other underground utilities; and pedestrian and bicycle trails would be allowed".

However, under the terms of the Settlement Agreement, the County Lamb parcel is allowed to develop, and the City Specific Plan Area is not allowed to develop. Therefore, the Modification to the Approvals/PUD Amendment proposes to modify the description of the "interim agricultural buffer" on the County Lamb parcel, and to recognize that development within the County Entitlements Area may occur in a timeframe and manner that is not necessarily linked City of Watsonville actions to prezone and annex parcels within that Area.



The Settlement Agreement provides that the Modifications to the Approvals shall include specified language and provisions, including but not limited to the following: “The County will encourage and promote, to the extent feasible the maximum number of affordable housing opportunities for farmworkers that can be located on APN 048-221-09 (*County Lamb parcel*) and APN 048-211-25 (*County MidPen parcel*).” The Settlement Agreement also provides that “nothing in this section is intended to conflict with or supersede the goals relating to affordable housing in the PUD pursuant to the County Entitlements ...”. The Settlement Agreement also provides that the “County shall impose conditions through Modifications to the Approvals to ensure that the agricultural buffer established as part of the County Entitlements will not be used for public recreation, park purposes, trails, picnic areas, roads or sidewalks or other similar uses that would encourage public use of the buffer area, except for the construction and maintenance of the Brewington Avenue extension and other infrastructure needed to support the County project authorized by the County Entitlements.”

These terms are proposed to be incorporated into the PUD through the Modifications to the Approvals. The specific manner in which the County Lamb parcel would be proposed for development is not known at this time.



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3.0 ENVIRONMENTAL CHECKLIST AND DISCUSSION OF IMPACTS

This section, Section 3.0 Environmental Checklist, and Discussion of Impacts, describes any changes that have occurred in existing environmental conditions on and near the project area, as well as environmental impacts associated with the proposed project or the changed conditions. The environmental checklist, as recommended in the CEQA Guidelines, was used to compare the environmental impacts of the “Proposed Project” with those of the “Modified Project” (i.e., development approved in the 2009 Atkinson Lane Specific Plan and PUD Final EIR) and to identify whether the modified project would likely result in new significant environmental impacts.

As discussed in the certified EIR the proposed project was determined to have no impact with regard to the following resource area, and therefore have not been analyzed in this EIR.

- Energy
- Mineral Resources

The EIR certified by the County of Santa Cruz established that, with mitigation, the approved project would result in less-than significant impacts related to the following environmental issue areas:

- Aesthetics and Visual Character
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Utilities and Service Systems
- Transportation and Circulation

The certified EIR established that, with mitigation, the approved project would result in significant and unavoidable impacts related to the following environmental issue area:

- Agriculture and Forestry Resources (Phase 2 of the City site only)

The following area was not discussed in the certified EIR when prepared. A change in the CEQA statute and guidelines now requires that an analysis be included. This Addendum provides this analysis, along with its conclusion that the project does not involve a potentially significant impact on the environment.

- Greenhouse Gas Emissions

The following areas will be reevaluated to address the modifications outlined in Chapter 2.0.

3.1 Aesthetics and Visual Character

3.1.1 Removal of Phase 2 (City site) and Specific Plan from the Proposed Project

The removal of The City Specific Plan Area from the currently proposed project would result in the retention of 45.4 acres of agricultural land that was originally proposed by the project to be annexed into



the City for residential development, a park and associated infrastructure. Any future proposal by the City of Watsonville or property owners to pursue development within the City Specific Plan Area would require preparation of a new CEQA environmental review document and a new Specific Plan. The proposed project analyzed in the draft and final EIR concluded that impacts to aesthetics and visual character would be less than significant. As a result, the removal of the City Specific Plan Area from the currently proposed project would not result in a substantial change. No impacts would occur.

3.1.2 Revised Project Description

No impacts would occur. See discussion under 3.1.1.

3.2 Agricultural and Forestry Resources

3.2.1 Removal of City Specific Plan Area from the Proposed Project

(a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

With the removal of the City Specific Plan Area (including the Wagner Avenue extension) under the modified project, the conversion of 42.4 acres of Prime Farmland and 1.4 acres of Farmland of Statewide Importance to urban uses would not occur. As a result, this **significant and unavoidable** impact would be avoided under the modified project. Due to the removal of both the City Specific Plan Area and the Wagner Avenue extension from the proposed project, the text on pages 3.2-17 and 18 shall be deleted as follows:

~~**Impact 3.2-1: Future development within Phase 2 (City site) of the planning area would result in the conversion of approximately 42.4 acres of Prime Farmland and 1.4 acres of Farmland of Statewide Importance as designated on the California Department of Conservation Santa Cruz County Important Farmlands Map to urban uses. In addition, construction of the off-site improvements to Wagner Avenue would result in the conversion of an additional 0.8 acres of Important Farmland under the 36 foot right of way and 1.51 acres for the 52-foot right of way for a total maximum conversion of 45.31 acres of Important Farmland. This would be considered a significant impact.**~~

~~According to the California Department of Conservation Santa Cruz County Important Farmlands Map, the planning area contains approximately 6.7 acres of "Urban and Built Up Land," 42.4 acres of "Prime Farmland," 1.4 acres of "Farmland of Statewide Importance," and 16.2 acres of "Other" land (DOC 2006b). As shown in Figure 3.2-2: Farmland Mapping and Monitoring Program Designations, the Prime Farmland and Farmland of Statewide Importance is located in the eastern portion of the planning area outside of the City's existing SOI within Phase 2 (City site) of the proposed project. There would be no impact to Important Farmland within the City or County Phase 1 of the proposed project.~~

~~The 2005 City of Watsonville General Plan EIR recognized that approximately 580 acres of Prime Farmland located within the SOI would eventually be converted to urban uses. The City Council adopted a Statement of Overriding Considerations for the conversion of the Prime Farmland to urban use when it certified the EIR for the 2005 City of Watsonville General Plan. Following adoption of the 2005 City of Watsonville General Plan by the City in 1994, Measure U was passed by 60 percent of the voters in 2002. Measure U directs new growth to designated areas within and around the City of Watsonville in order to protect agricultural lands and environmentally sensitive areas, while providing the means for the City to address housing and job needs for the next 20 to 25 years.~~



~~Measure U established an urban limit line (ULL) along the northern boundary, which excludes land previously included east and west of East Lake Avenue, and directs growth into several unincorporated areas. The three primary areas of growth include the Atkinson Lane, Buena Vista, and Manabe Burgstrom (now Manabe Ow) Specific Plan areas. A western boundary west of Highway 1 was defined by Measure U to remain undeveloped.~~

~~Since approximately 43.8 acres of the planning area on Assessor's Parcel Numbers 048-231-17, 048-231-18, and 048-251-09 within the planning area are located outside of the existing SOI, the conversion of this Important Farmland was not considered in the 2005 City of Watsonville General Plan. The Watsonville Vista 2030 EIR evaluated the conversion of the Important Farmlands within the ULL, consistent with Measure U within the planning area and the City Council adopted a Statement of Overriding Considerations for the conversion in 2006. However, this section of the EIR does not rely on the Statement of Overriding Considerations that was previously adopted for the Watsonville Vista 2030 EIR. In addition, the off-site improvements to the proposed Wagner Avenue extension would result in the conversion of a maximum of an additional 1.51 acres of Prime Farmland in order to widen the roadway for a total maximum conversion of approximately 45.31 acres. Although, the planning area is designated as a future growth area in Measure U, the physical conversion of this Important Farmland was not considered in the 2005 City of Watsonville General Plan and therefore the conversion within the planning area would be considered a significant impact.~~

~~The County of Santa Cruz and the City of Watsonville contain no policies or implementation programs that require mitigation or offsets for the conversion of Important Farmland. Therefore, there are no feasible mitigation measures available to reduce the impact of agricultural land conversion to a less than significant level. However, if an agricultural compensation program is developed, future development within the planning area would be required to participate in order to address the conversion of prime farmland. Since conversion of Prime Farmland and Farmland of Statewide Importance cannot be reproduced elsewhere, this would be considered a **significant and unavoidable impact** under Phase 2 (City site) for which no feasible mitigation measures are available to reduce the impact to a less than significant level.~~

(b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

With the modification of the proposed project to remove the City Specific Plan Area from the currently proposed project and to only include development within the County Entitlements Area, no conversion of agricultural land to urban land would occur. In addition, no Williamson Act contract land is present in the project area. No impacts would occur with the project modification.

(c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No timberland resources are located within the project area. No impact would occur from the project modification.

(d) Result in the loss of forest land or conversion of forest land to non-forest use?

No forest land is located within the project area. No impact would occur to forest land from the proposed project modifications.

(e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?



The modified project would not result in any change to the level of impacts on Farmland from the proposed project outlined in the certified EIR. However, the following Mitigation Measures 3.2-2a and 3.2-2c shall be implemented for any development proposed on APN 048-221-09 (County Lamb parcel) within the County Entitlements Area. No significant changes would occur regarding impact to adjacent agricultural lands under the modified project.

MM 3.2-2a: ~~A 200-foot interim agricultural buffer shall be established, consistent with Policy 5.13.23 (Agricultural Buffers Required) in the Santa Cruz County General Plan and Section 16.50.095 in the Santa Cruz County Code project applicant(s) for development applications involving APN 048-221-09. shall demonstrate adequate land use separation in conjunction with Final Map consistent with the proposed Specific Plan and PUD for Phase 2 (County site) subject to review and approval by the County of Santa Cruz Planning Department. Final site plans shall include an interim 200-foot agricultural buffer within Phase 2 (County site) consistent with the conceptual land use plan for the proposed Specific Plan and PUD. The buffer distance shall be measured from the edge of the parcel to the nearest residential property line and shall include a six to eight foot barrier (e.g. vegetated fencing) adjacent to the agricultural uses and no part of the agricultural buffer shall be used for public recreation, park purposes, trails, picnic areas, road or sidewalks or other uses that would encourage public use of the buffer area, except for the construction and maintenance of the Brewington Avenue extension and other infrastructure needed to support housing project(s) authorized within the County Entitlements Area. Outdoor areas designed for intensive human use shall be restricted within the buffer zone.~~

Sidewalks and bicycle lanes shall be allowed on the western portion of the public streets located within the buffer, but restricted on the eastern portion of the street. ~~Upon annexation of the adjacent commercial agricultural use, the interim 200-foot agricultural buffer within the Phase 2 development area shall terminate.~~

MM 3.2-2c Consistent with Policy 5.13.31 (Agricultural Notification Recordation for Land Divisions) in the Santa Cruz County General Plan, project applicants within the planning area shall file a Right-to-Farm Notification Statement to run with the Title as disclosure and notice in deeds at the time of transfer or sale of all properties or projects within the planning area County Entitlements Area. The statement shall inform any future property owners of the continuation of agricultural activities, including agricultural processing, in the area and shall disclose the potential effects of agricultural activities on adjacent land uses to future residents.

With the removal of the City Specific Plan Area from the currently proposed project, and with future projects within the County Entitlements Area required to comply with existing County Code Section 16.50.095 (in accordance with recommended condition of approval above) no potentially significant impacts to existing agricultural uses resulting in compatibility conflicts from the placement of adjacent urban uses would occur. A 200-foot agricultural buffer was to be placed along the eastern boundary of the planning area within Phase 2 (City site) of the proposed project. However, due to the removal of the City Specific Plan Area, Mitigation Measure 3.2-2b shall be deleted as follows:

~~**MM 3.2-2b.** Consistent with the City of Watsonville Agricultural Buffer Policy, project applicants shall demonstrate adequate land use separation in conjunction with Final Map consistent with the proposed Specific Plan and PUD for Phase 2 (City site) subject to review and approval by the City of Watsonville Community Development Department. Final site plans shall include a 200-foot minimum land use buffer along~~



~~the eastern boundary of the planning area within Phase 2 (City site) of the proposed project consistent with the conceptual land use plan. The buffer distance shall be measured from the edge of the parcel to the nearest residential property line and shall include a six to eight foot barrier (e.g. vegetated fencing) adjacent to the commercial agricultural uses. Other than fencing, regional drainage facilities, and underground utilities, only landscape and related non accessible open space components are allowed within the first 150 feet of the buffer. Within the remaining 50 feet of buffer, adjacent to the proposed development area, uses such as public streets and roads, regional and local storm drainage improvements, and other underground utilities; and pedestrian and bicycle trails are allowed. Sidewalks and bicycle trails shall only be permitted in the buffer once a regional system has been developed adjacent to the planning area and a management plan has been developed with adjacent farm operators.~~

3.2.2 Revised Project Description

The modified project, consisting of future projects occurring only within the County Entitlements Area, would not result in any new impacts, or impacts of greater severity. See Section 3.2.1 for a complete discussion.

3.3 Air Quality

3.3.1 Removal of the City Specific Plan Area from the Proposed Project

With the removal of the City Specific Plan Area from the currently proposed project, air quality impacts associated with both the construction and operational phases of the project would be substantially reduced. The removal of the City Specific Plan Area would result in a reduction of approximately 230 units. Under the terms of a Settlement Agreement, additional discretionary review and approval would be required by the City, along with a new CEQA environmental review document, before the units associated with the originally-defined Phase 2 City site (now known as the City Specific Plan Area) could be developed. As a result, air quality impacts of the modified project would be even further reduced from those analyzed in the certified EIR.

(a) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

No violation of air quality standards would occur with implementation of the modified project. Mitigation Measures 3.3.1, 3.3-3, 3.7-3a and 3.7-3b would still be required. However, 3.7-3a and 3.7-3b would only be required for the development of APN 048-211-25 (the MidPen County parcel currently proposed for 26 units in the County Entitlements Area Phase 1a project). As a result, air quality impacts of the modified project would be even further reduced from those analyzed in the certified EIR.

(b) Conflict with or obstruct implementation of the applicable air quality plan?

No conflict would occur with implementation of the Air Quality Management Plan under the modified project. As a result, no impacts are anticipated.

(c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?



The North Central Coast Air Basin is currently in non-attainment under California standards for both PM₁₀ (particulate matter 10 microns in size) and ozone. However, the removal of the City Specific Plan Area would substantially reduce these criteria air pollutants.

(d) Expose sensitive receptors to substantial pollutant concentrations?

The modified project would significantly reduce the release of criteria pollutants over the proposed project.

(e) Create objectionable odors affecting a substantial number of people?

The modified project would significantly reduce the release of criteria pollutants over the proposed project.

3.3.2 Revised Project Description

The revised phasing plan of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.3.1 for a complete discussion.

3.4 Biological Resources

3.4.1 Removal of City Specific Plan Area from the Proposed Project

(a) 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 California Department of Fish and Wildlife, or U.S. Fish and Wildlife Service?

California Red-legged Frog

It was determined that protocol surveys were not required from correspondence as documented in an email from Douglas Cooper, Chief of the U.S. Fish and Wildlife Service Northern Division, on April 23, 2013 (see Appendix O). As a result the following text contained on page 3.4-26 of the Draft EIR has been deleted.

~~**Impact 3.4-2: The California red-legged frog (CRLF) is federally listed as 'Threatened' and considered a CDFG 'Species of Special Concern.' Although presence is unlikely, potential habitat for CRLF is present within the planning area and the planning area is located within dispersal distance of known CRLF localities. Project activities such as vegetation removal, grading, excavating, and vehicle and equipment travel may result in "take" of CRLF. This adverse direct impact is considered a potentially significant impact.**~~

~~Ecosystems West (2009a) and Mori (2008) concur that occurrence of CRLF in the planning area is unlikely, based on the presence of bullfrogs (CRLF predators) within aquatic habitat and the relative isolation due to urbanization of the planning area from known localities. However, based on the presence of suitable aquatic habitat and known CRLF localities within the dispersal distance of the planning area, USFWS (2008g) determined that occurrence is possible and recommends that protocol surveys be conducted (USFWS 2005). (Protocol-level surveys are valid for two years, unless determined otherwise on a case-by-case basis by the USFWS Ventura Office.)~~

CRLF may move into the planning area and occupy potential habitat. CRLF may occupy the freshwater marsh and riparian woodland habitats associated with the



irrigated agricultural basin and would be displaced, harmed, or killed by removal of these habitat areas. CRLF may move into the construction area from wetland features, riparian woodland, or grassland habitats within or adjacent to the planning area, during the course of project activities and be harmed. This would be considered a potentially significant impact. Implementation of the following mitigation measures would reduce impacts to CRLF to a less than significant level.

~~**MM 3.4-2a:** At the recommendation of the USFWS, project applicants shall conduct CRLF protocol level surveys within the planning area prior to issuance of the building permit. Surveys shall be conducted in accordance with the USFWS recommendations by an approved biologist and shall include a set of eight field surveys that shall be conducted between February and September in order to examine the site during the CRLF breeding, non-breeding, and dispersal seasons. If CRLF are observed in the planning area during protocol surveys, preconstruction surveys, inspections, or subsequent construction activities during all phases of the proposed project, project applicants shall cease all work within the planning area. Capturing, handling, moving, or harassing CRLF is considered a violation of the ESA. If CRLF are observed, the applicant shall initiate consultation with the USFWS and CDFG to determine the appropriate permitting action; a section 7 consultation and development of a Biological Opinion or a section 10a consultation and development of an HCP may be required. Project conditions may be developed in consultation with USFWS and CDFG to avoid “take” of CRLF that may occur within the planning area during construction activities. Project activities shall not resume until final federal approval of the proposed project is received.~~

MM 3.4-2b: Project applicants shall have a USFWS-approved biologist conduct CRLF preconstruction surveys a minimum of 48 hours prior to initiation of project activities. Pre-construction surveys shall consist of two days and two nights, spaced a week apart, with notification to the USFWS.

Western Pond Turtle

Western pond turtle (WPT; *Emys marmorata*) surveys were conducted on the following days: March 11, 2013; May 6 & 15, 2013; and June 5 & 29, 2013 by Bryan Mori Biological Consulting Services (Appendix O). Following a consultation with California Department of Fish and Wildlife (CDFW), it was determined that live trapping could not be effectively implemented without sufficient open water habitat that was presently absent, except for two small areas at the NW edge of the site near the willows. The only areas of open water were deemed undesirable due to their proximity to a homeless encampment exposing them to vandalism potentially resulting in harm to captured animals. As a result, only visual observations were conducted during surveys.

No WPT were observed on any of the survey dates. However, a large adult red-eared slider (*Trachemys scripta*) was observed in March during red-legged frog (*Rana draytoni*) surveys was not observed again. One adult bullfrog (*Rana catesbeiana*) was observed was observed on June 5, but none was seen on the June 29 survey.

The report prepared by Bryan Mori noted that in the early 1990s, the reservoir supported a vast area of open water habitat, with only a narrow fringe of emergent vegetation based on personal observation and historic aerial photography. Since the 1990s, perhaps influenced by land use changes in the surrounding area and/or water management, open water habitat receded, emergent vegetation spread throughout the pond, followed by pioneering willows, eventually creating the current bog-like



situation. In recent years, open water has been observed only as a narrow band around the margins of the bog. These changes likely altered the suitability and/or the function of the reservoir for WPT. The reservoir was likely more suitable for pond turtles, when it largely supported open water, with turtles perhaps using the reservoir as year-round habitat. In its present condition, however, the reservoir appears marginal as WPT habitat, due to the extent of vegetation and lack of open water. The absence of the pond slider observed at the site earlier in the year suggests the reservoir may presently only serve as seasonal habitat for WPT, if at all. A WPT has not been observed in the pond since 2008. Although it is still a possibility that WPT could occur within the pond, a viable WPT population is not expected to occur due to the lack of suitable habitat from the recent increase in emergent vegetation and lack of open water.

The following mitigation measures have been revised or deleted to reflect the updated findings from recent surveys conducted.

MM 3.4-3a ~~Based on the lack of suitable habitat within the onsite pond and the absence of a viable population of WPTs, the following shall be implemented. Prior to the construction of the Phase 1 (County site) project, a qualified herpetologist shall conduct three consecutive days of pond turtle trapping within the freshwater marsh to evaluate the existing turtle population and to determine its viability. If it is determined that a viable western pond turtle population is present, a Western Pond Turtle Habitat Enhancement Plan shall be prepared and implemented as described in MM 3.4 3b. If it is determined that no pond turtles are present, or that the existing population is no longer viable, During preconstruction surveys, all captured western pond turtles shall be permanently relocated under the direction of the qualified herpetologist in consultation with the CDFG CDFW. In addition, a Habitat Enhancement Plan shall be prepared by a qualified wetland ecologist, hydrologist and landscape architect that includes the following improvements to the wetland:~~

- (a) Removal of non-native vegetation;
- (b) Development of a wetland and upland planting plan to benefit wetland functions and values;
- (c) Revegetation of the wetland buffer with native riparian and upland species;
- (d) Development of a monitoring program and;
- (e) Development of success criteria for habitat enhancement.

~~MM 3.4 3b If it is determined that a viable western pond turtle population is present, a Habitat Enhancement Plan shall be prepared and implemented prior to the construction of Phase 1 for the western pond turtle by a qualified herpetologist, wetland ecologist, hydrologist, and landscape architect. The plan shall provide specific habitat enhancement strategies intended to improve breeding, basking, aestivating, and reduced predation potential. The plan shall also specify the location of the temporary holding area and care requirements for captured pond turtles. The habitat enhancement plan may include the following improvements:~~

- (a) ~~Removal of non-native species;~~
- (b) ~~Removal of the earthen berm dividing the freshwater marsh from the seasonal wetland to create additional freshwater marsh habitat;~~
- (c) ~~Eradication of bullfrogs from the pond to reduce predation and competition;~~
- (d) ~~Placement of logs (living downed willows) and rocks at strategic locations to improve basking opportunities that are protected from predators;~~



- ~~(e) Development of a wetland and upland planting plan;~~
- ~~(f) Revegetation of the wetland buffer with native riparian and upland species to provide greater opportunity for breeding and aestivation;~~
- ~~(g) Development of hydrologic requirements for freshwater marsh and western pond turtle;~~
- ~~(h) Development of a monitoring program and;~~
- ~~(i) Development of success criteria for habitat enhancement.~~

~~The Habitat Enhancement Plan shall be provided to the County of Santa Cruz Planning Department, and the City of Watsonville Community Development Department for review and approval in consultation with the CDFG prior to issuance of the building permit.~~

~~MM 3.4-3c — If the existing pond turtle population is determined to be viable as a result of data collection during trapping, all captured western pond turtles shall be temporarily relocated to a holding area until Phase 1 construction and habitat enhancement has been completed. Temporary relocation may be needed for up to two years. Upon completion of the construction and implementation of the Habitat Enhancement Plan, all relocated pond turtles shall be returned to the enhanced freshwater marsh within the planning area outside of the breeding season when the turtles are active. All turtle relocations efforts shall be coordinated with the CDFG.~~

~~MM 3.4-3g — Implementation of the Habitat Enhancement Plan shall occur during the construction of the Phase 1 portions of the project. During the Construction of project sites located within the County Entitlements Area the Phase 2 of the County site, exclusion fencing shall be placed around the eastern adjacent perimeter of the wetland buffer to preclude any potential turtles from entering the construction area. In addition, brightly colored temporary construction fencing shall also be placed along the eastern adjacent perimeter to keep out construction personnel and equipment.~~

~~MM 3.4-3l — Upon return to the enhanced freshwater marsh habitat, all relocated pond turtles shall be monitored annually for a period of three years to determine the overall success of the mitigation. Annual monitoring reports shall be prepared and provided to the County of Santa Cruz Planning Department, the City Watsonville Community Development Department, and the CDFG.~~

San Francisco dusky-footed woodrat

No impacts will occur to the riparian oak woodland surrounding the freshwater agricultural basin or within the northwest corner of the planning area near the terminus of Atkinson Lane with the removal of the City Specific Plan Area from the currently proposed project. In addition, the agricultural basin and its associated riparian vegetation have since been removed by the property owner. The two unoccupied single-family homes that were located on APN 048-211-25 have also been demolished. As a result, no suitable San Francisco dusky-footed woodrat habitat remains within the modified project area. Therefore, the following mitigation measure shall be deleted from the page 3.4-34 of the Draft EIR (page 283 of the Final EIR).

~~MM 3.4-6 — The County of Santa Cruz Planning Department and the City of Watsonville Community Development Department shall require that project applicants have a~~



~~qualified biologist examine the planning area for San Francisco dusky footed woodrats before and during any initial vegetation, woody debris, and/or tree removal, or other initial ground disturbing activities. If a woodrat nest/house structure is encountered in the area of disturbance, avoid disturbing the structure or evicting the individuals. Project applicants shall coordinate with CDFG to establish protective buffer widths around the structures and install exclusion zones around each structure before initiating tree/vegetation removal and ground disturbing activities. If a woodrat is incidentally encountered in the work area and does not voluntarily move out of the area, a biological monitor, with the appropriate CDFG permits, shall be on call during project activities to relocate the animal out of the construction area to the nearest safe location (as approved and authorized by CDFG). Woodrats shall not be handled without prior agency authorization from CDFG.~~

~~Implementation of these mitigation measures would reduce potential impacts to San Francisco dusky-footed woodrats to a less than significant level.~~

- (b) Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

Irrigated Agricultural Basin and Associated Coast Live Oak Riparian Habitat

No impacts would occur to the area that previously contained the agricultural basin with the removal of the City Specific Plan Area from the currently proposed project. As a result, the following mitigation measure shall be deleted from page 3.4-27 of the Draft EIR.

~~**MM 3.4-2e:** Prior to initiating construction activities within Phase 2 (City site), the project applicant(s) shall ensure that the irrigated agricultural basin is dry through the following processes:~~

- ~~• Discontinue pumping into the basin and cap the adjacent well to prevent leakage.~~
- ~~• Allow remaining water to evaporate naturally; do not de-water the basin.~~

The agricultural basin located in the northeastern portion of the planning area will not be impacted by development of projects within the County Entitlements Area. Therefore, the following text shall be deleted from page 3.4-35 of the Draft EIR (page 283 of the Final EIR) due to the removal of the City Specific Plan Area.

~~**Impact 3.4-8:** Phase 2 (City site) of the proposed project would remove the irrigated agricultural basin and associated freshwater marsh and coast live oak riparian tree canopy in the northwest corner of the planning area near the terminus of Atkinson Lane. These habitat types are considered 'sensitive' and provide nesting and foraging habitat for avian species. Removal of this the freshwater marsh and riparian vegetation would be considered a potentially significant impact.~~

~~The hydrology within the irrigated agricultural basin is artificial, resulting from flooding by mechanical pumps; in addition, this feature does not have a hydrologic connection to jurisdictional waters, and may be exempt from ACOE jurisdiction, pending verification of the wetland delineation by the ACOE. This feature is likely considered a water of the state of California, subject to regulation by Section 1600-1610 of the California Department of Fish and Game Code.~~



Although the wetland feature may not be jurisdictional under Section 404 of the CWA, the freshwater marsh and surrounding riparian woodland, as supported by the current hydrological regime, are considered sensitive habitats. Riparian woodland is recognized as a ‘high priority’ habitat type by the CNDDDB (CDFG 2003). Riparian woodland and freshwater marsh are recognized as sensitive habitats by CEQA and the City of Watsonville. In addition, City of Watsonville General Plan goals, policies, and implementation measures designate, protect, and restrict development on lands that provide important wildlife habitat, including freshwater marshes and riparian habitat. Removal of these features results in a permanent loss of habitat, which is considered a potentially significant impact. Implementation of the following mitigation measures would reduce this impact to a less than significant level.

Mitigation Measures

MM 3.4.8a — Project applicants within Phase 2 (City site) shall provide replacement wetland acreage that shall be created at a ratio of 2:1 acceptable to the City of Watsonville and the CDFG for removal of the agricultural basin in the northeastern portion of the planning area. Because the agricultural basin is man made and actively flooded by mechanical pumps, replacement wetlands shall not be required to support “in kind” freshwater marsh habitat. Created wetland habitat will be designed by a certified landscape architect and wetland specialist to function as wetlands, support wetland vegetation during the rainy season, and will be planted with native wetland vegetation typical of the Central California coast region (e.g., *Typha angustifolia*, *Scirpus californicus*, *Salix* spp., etc.) at the stormwater detention basin in the southern portion of the planning area within the expanded Crestview Park.

Long term monitoring of mitigation wetlands and existing wetlands within the planning area shall be conducted for a period of five years or until the time the established success criteria are met (see Table 3.4-3). Monitoring will be performed annually by a qualified botanist/wetland specialist to determine whether mitigation wetlands meet or exceed pre-established performance criteria. The success of wetland creation will be evaluated on the basis of density and diversity of native plant species at the wetland creation site. If excessive mortality occurs, plantings will be replaced at a 1:1 ratio. The wetland specialist will be responsible for selecting the species for replacement plantings. Recommendations for enhancement and continued long term success of created wetlands will be included in annual monitoring reports submitted to the City of Watsonville and CDFG.

Table 3.4-3: Success Criteria for Wetland Creation Site

<u>Year</u>	<u>Type of Criterion Used</u>	<u>Success Criterion</u>
1	Percent of Plants Surviving	90% Survival in Good or Fair Condition
2	Percent of Plants Surviving	80% Survival in Good or Fair Condition
3	Percent of Plants Surviving	75% Survival in Good or Fair Condition
4	Percent of Plants Surviving	70% Survival in Good or Fair Condition
5	Percent of Plants Surviving	65% Survival in Good or Fair Condition with 75% Vegetative Cover

With the removal of the City Specific Plan Area from the currently proposed project, and the removal of the agricultural pond and surrounding riparian vegetation within the northwest corner of the planning area near the terminus of Atkinson Lane by the property owner, this mitigation measure no



longer applies. Therefore, the following text shall be deleted from page 3.4-36 of the Draft EIR due to the removal of the City Specific Plan Area.

~~**MM 3.4-8b** For all oaks greater than 6 inches DBH or greater than 8 feet tall that are removed, project applicants within Phase 2 (City site) shall plant replacement oaks along the margins of the riparian buffer and ephemeral drainage in the western half of the planning area and within the designated agricultural buffer and along Corralitos Creek at a 3:1 ratio subject to review and approval by the City of Watsonville Community Development Department. A qualified biologist or restoration ecologist and landscape architect shall develop a planting plan that includes success criteria and conduct and/or oversee restoration and monitoring activities. The plan shall include, but shall be limited to, the following measures:~~

- ~~• Planting shall occur following completion of grading and construction activities. Replacement oaks will provide riparian habitat similar to impacted habitat around the irrigated agricultural basin.~~
- ~~• Enhance replacement oak habitat and existing habitat adjacent to the freshwater marsh/seasonal wetland and ephemeral drainage with local native species that have the same or similar vegetation structure as impacted habitat around the irrigated agricultural basin to provide replacement avian foraging and nesting habitat. If a Habitat Enhancement Plan is required by mitigation measure MM 3.4-3b, vegetation replacement shall be consistent with the Habitat Enhancement Plan.~~

(c) 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 or migratory wildlife nursery sites?

The modified project would minimize development through the removal of the City Specific Plan Area that proposed development adjacent to Corralitos Creek. This would substantially reduce impacts over the proposed project to the existing wildlife corridor along Corralitos Creek.

(d) Produce nighttime lighting that would substantially illuminate wildlife habitats?

The modified project would remove the City Specific Plan Area from the proposed project; and therefore, would generate less nighttime lighting than the proposed project.

(e) 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?

No change would occur from implementation of the modified project.

(f) Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?

No change would occur from implementation of the modified project. The County Entitlements Area would remain subject to applicable regulations.

(g) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?



The project area does not contain an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan. No impacts are anticipated.

3.4.2 Revised Project Description

(a) *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 California Department of Fish and Wildlife, or U.S. Fish and Wildlife Service?*

No impacts would occur to the area previously containing the agricultural basin by the removal of the City Specific Plan Area from the currently proposed project. As a result, Mitigation Measure 3.4-2c shall be deleted from page 3.4-27 of the Draft EIR as follows.

~~**MM 3.4-2c** Prior to initiating construction activities within Phase 2 (City site), the project applicant(s) shall ensure that the irrigated agricultural basin is dry through the following processes:~~

- ~~• Discontinue pumping into the basin and cap the adjacent well to prevent leakage~~
- ~~• Allow remaining water to evaporate naturally; do not de-water the basin.~~

No impacts will occur to the area previously containing the riparian oak woodland surrounding the freshwater agricultural basin or within the northwest corner of the planning area near the terminus of Atkinson Lane with the removal of the City Specific Plan Area from the currently proposed project. In addition, the two unoccupied single-family homes that were located on APN 048-211-25 have been demolished. As a result, no suitable San Francisco dusky-footed woodrat habitat remains within the modified project area. Therefore, Mitigation Measure 3.4-6 shall be deleted from the page 3.4-34 of the Draft EIR (page 283 of the Final EIR).

~~**MM 3.4-6** The County of Santa Cruz Planning Department and the City of Watsonville Community Development Department shall require that project applicants have a qualified biologist examine the planning area for San Francisco dusky footed woodrats before and during any initial vegetation, woody debris, and/or tree removal, or other initial ground disturbing activities. If a woodrat nest/house structure is encountered in the area of disturbance, avoid disturbing the structure or evicting the individuals. Project applicants shall coordinate with CDFG to establish protective buffer widths around the structures and install exclusion zones around each structure before initiating tree/vegetation removal and ground disturbing activities. If a woodrat is incidentally encountered in the work area and does not voluntarily move out of the area, a biological monitor, with the appropriate CDFG permits, shall be on call during project activities to relocate the animal out of the construction area to the nearest safe location (as approved and authorized by CDFG). Woodrats shall not be handled without prior agency authorization from CDFG.~~

(b) *Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Game/Wildlife or U.S. Fish and Wildlife Service?*

The agricultural basin located in the northeastern portion of the planning has subsequently been removed by the property owner, and the area will not be impacted by development of projects within the County Entitlements Area. Therefore, Mitigation Measure 3.4-8a shall be deleted from page 3.4-



35 of the Draft EIR (page 283 of the Final EIR) due to the removal of the City Specific Plan Area from the currently proposed project.

~~MM 3.4-8a~~ Project applicants within Phase 2 (City site) shall provide replacement wetland acreage that shall be created at a ratio of 2:1 acceptable to the City of Watsonville and the CDFG for removal of the agricultural basin in the northeastern portion of the planning area. Because the agricultural basin is man made and actively flooded by mechanical pumps, replacement wetlands shall not be required to support “in kind” freshwater marsh habitat. Created wetland habitat will be designed by a certified landscape architect and wetland specialist to function as wetlands, support wetland vegetation during the rainy season, and will be planted with native wetland vegetation typical of the Central California coast region (e.g., *Typha angustifolia*, *Scirpus californicus*, *Salix* spp., etc.) at the stormwater detention basin in the southern portion of the planning area within the expanded Crestview Park.

Long term monitoring of mitigation wetlands and existing wetlands within the planning area shall be conducted for a period of five years or until the time the established success criteria are met (see Table 3.4-3). Monitoring will be performed annually by a qualified botanist/wetland specialist to determine whether mitigation wetlands meet or exceed pre-established performance criteria. The success of wetland creation will be evaluated on the basis of density and diversity of native plant species at the wetland creation site. If excessive mortality occurs, plantings will be replaced at a 1:1 ratio. The wetland specialist will be responsible for selecting the species for replacement plantings. Recommendations for enhancement and continued long term success of created wetlands will be included in annual monitoring reports submitted to the City of Watsonville and CDFG.

Table 3.4-3: Success Criteria for Wetland Creation Site

<u>Year</u>	<u>Type of Criterion Used</u>	<u>Success Criterion</u>
1	Percent of Plants Surviving	90% Survival in Good or Fair Condition
2	Percent of Plants Surviving	80% Survival in Good or Fair Condition
3	Percent of Plants Surviving	75% Survival in Good or Fair Condition
4	Percent of Plants Surviving	70% Survival in Good or Fair Condition
5	Percent of Plants Surviving	65% Survival in Good or Fair Condition with 75% Vegetative Cover

With the removal of the City Specific Plan Area from the currently proposed project, no impacts would occur to the area previously containing the coast live oak riparian tree canopy around the freshwater agricultural basin within the northwest corner of the planning area near the terminus of Atkinson Lane. Therefore, Mitigation Measure 3.4-8b shall be deleted from page 3.4-36 of the Draft EIR due to the removal of the City Specific Plan Area.

~~MM 3.4-8b~~ For all oaks greater than 6 inches DBH or greater than 8 feet tall that are removed, project applicants within Phase 2 (City site) shall plant replacement oaks along the margins of the riparian buffer and ephemeral drainage in the western half of the planning area and within the designated agricultural buffer and along Corralitos Creek at a 3:1 ratio subject to review and approval by the City of Watsonville Community Development Department. A qualified biologist or restoration ecologist and landscape architect shall develop a planting plan that includes success criteria



~~and conduct and/or oversee restoration and monitoring activities. The plan shall include, but shall be limited to, the following measures:~~

- ~~• Planting shall occur following completion of grading and construction activities. Replacement oaks will provide riparian habitat similar to impacted habitat around the irrigated agricultural basin.~~
- ~~• Enhance replacement oak habitat and existing habitat adjacent to the freshwater marsh/seasonal wetland and ephemeral drainage with local native species that have the same or similar vegetation structure as impacted habitat around the irrigated agricultural basin to provide replacement avian foraging and nesting habitat. If a Habitat Enhancement Plan is required by mitigation measure MM 3.4.3b, vegetation replacement shall be consistent with the Habitat Enhancement Plan.~~

(c) 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 or migratory wildlife nursery sites?

No change is expected from the modified project.

(d) Produce nighttime lighting that would substantially illuminate wildlife habitats?

The modified project would eliminate the City Specific Plan Area from the currently proposed project; and therefore, would generate less nighttime lighting than the proposed project.

(e) 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?

No change would occur from implementation of the modified project.

(f) Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?

No change would occur from implementation of the modified project.

(g) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No change would occur from implementation of the modified project.

3.5 Cultural Resources

3.5.1 Removal of City Specific Plan Area from the Proposed Project

With the removal of the City Specific Plan Area under the modified project, ground disturbance associated with the construction phase of the project would be substantially reduced. The removal of the City Specific Plan Area from the currently proposed project would result in a reduction of the disturbance of approximately 45 acres. As a result, potential impacts to cultural resources associated with the modified project would be even further reduced from those analyzed in the certified EIR.

(a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?



No historic resources are located within the project area. No change would occur under the modified project.

(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?

Potential impacts to prehistoric resources would be reduced from those analyzed under the proposed project.

(c) Disturb any human remains, including those interred outside of formal cemeteries?

No impacts would occur. See discussion under Section 3.5.1(b) above.

(d) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No unique paleontological resources are known to occur within the project area. No impacts to unique paleontological resources from the proposed project or modified project are anticipated.

3.5.2 Revised Project Description

The revised project description and phasing of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.5.1 for a complete discussion.

3.6 Geology and Soils

3.6.1 Removal of City Specific Plan Area from the Proposed Project

(a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

(1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR with the exception of those identified in Section 3.6.1(a)(3&4) for the City Specific Plan Area, which would no longer occur in that area.

(2) Strong seismic ground shaking?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR with the exception of those identified in Section 3.6.1(a)(3&4) for the City Specific Plan Area, which would no longer occur in that area.

(3) Seismic-related ground failure, including liquefaction?

Impacts associated with geology and soils would remain unchanged under the modified project from the proposed project as analyzed in the certified EIR with the following exception. With the removal of the City Specific Plan Area from the currently proposed project, the potential for slope failure along the steep embankments of Corralitos Creek during strong seismic shaking would no longer be applicable. As a result, impacts associated with the modified project would be slightly reduced from those identified in the modified EIR. The following mitigation measure shall be revised as follows:

Impact 3.6-2: The potential for liquefaction to occur along the area ~~southern embankment of Corralitos Creek, the central area, and near the pond~~ in the western portion of the



site is high and consequently the potential for lateral spreading is high, which could result in potential structural damage and associated human safety hazards. This is considered a potentially significant impact.

MM 3.6-2: Project applicants shall consult with a qualified engineer to perform a quantitative evaluation of liquefaction and liquefaction-induced lateral spreading in conjunction with a design level geotechnical report for future development within the planning area. The evaluation shall be in accordance with the recommendations contained within the Feasibility Level Geotechnical Investigation and Engineering Geology Report prepared by Pacific Crest Engineering in March 2009. The design level geotechnical report shall also specify foundations and structural elements that are designed to resist forces and potential ground settlement generated by liquefaction and lateral spreading and shall incorporate the following into the final site plans, unless the additional analysis indicates it is not necessary:

- Development shall be set-back a minimum of 150 feet from the southern “top of bank” for Corralitos Creek and 50 feet from the delineated wetland boundary (Appendix D) for the pond located in the western portion of the planning area. The 50 foot setback should apply to the 100-year flood plain elevation or ordinary high water mark of the pond, and
- Development shall be constructed upon a structural mat foundation system; likely consisting of a 12-inch thick concrete slab, with one or two layers of reinforcing steel placed within the mat.

(4) Landslides?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR with the exception of those identified in Section 3.6.1(a)(3) for the City Specific Plan Area, which would no longer occur in that area. The following changes have been made to the text on page 3.6.14 of the Draft EIR.

~~**Impact 3.6-3: The potential for seismically induced landsliding is considered low. However, slope failures are possible along the steep embankments of Corralitos Creek during strong seismic shaking, which could present a risk. This is considered a potentially significant impact.**~~

~~The potential for seismically induced landsliding is considered low. However, slope failures are possible along the steep embankments of Corralitos Creek during strong seismic shaking, which could present a safety risk. This is considered a **potentially significant impact**. Implementation of mitigation measures **MM 3.6-1** and **MM 3.6-2**, which would require that development is set-back a minimum of 150 feet from the southern “top of bank” for Corralitos Creek would reduce this impact to a **less than significant level**. No additional mitigation measures are necessary.~~

(b) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR with the exception of those identified in Section 3.6.1(a) for the City Specific Plan Area, which would no longer occur in that area.



(c) Develop land with a slope exceeding 30%?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR with the exception of those identified in Section 3.5.1 for the City Specific Plan Area, which would no longer occur in that area.

(d) Result in substantial soil erosion or the loss of topsoil?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR with the exception of those identified in Section 3.6.1(a) for the City Specific Plan Area, which would no longer occur in that area.

(e) Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007), creating substantial risks to life or property?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR.

(f) Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems where sewers are not available?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR.

(g) Result in coastal cliff erosion?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR.

3.6.2 Revised Project Description

The revised project description and phasing of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.6.1 for a complete discussion.

3.7 Hazards and Hazardous Materials

3.7.1 Removal of City Specific Plan Area from the Proposed Project

(a) Create a significant hazard to the public or the environment as a result of the routine transport, use or disposal of hazardous materials?

Implementation of the modified project would not result in a change from those impacts identified in the certified EIR.

(b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

The demolition of three residential homes located on Assessor Parcel Numbers 019-226-43, 019-226-44, and 048-231-18 would no longer be required under the modified project with the removal of the City Specific Plan Area from the proposed project. The following modification shall be made to Mitigation Measure 3.7-3a:

MM 3.7-3a: Pursuant to Cal OSHA regulations, project applicants shall have each structure within the planning area within Assessor Parcel Numbers: ~~019-226-43, 019-226-44, 048-211-25, and 048-231-18~~ inspected by a qualified environmental specialist for the presence of ACMs and LBPs prior to obtaining a demolition permit from the County



of Santa Cruz Planning Department ~~and the City of Watsonville Community Development Department~~. If ACMs and LBPs are found during the investigations, project applicants within the planning area shall develop a remediation program to ensure that these materials are removed and disposed of by a licensed contractor in accordance with all federal, state and local laws and regulations, subject to approval by the MBUAPCD, ~~City of Watsonville~~, and the Santa Cruz County Environmental Health Department, as applicable. Any hazardous materials that are removed from the structures shall be disposed of at an approved landfill facility in accordance with federal, state and local laws and regulations.

The demolition of a residential home located on Assessor Parcel Number and 048-231-18 would no longer be required under the modified project with the removal of the City Specific Plan Area from the proposed project. The following modification shall be made to Mitigation Measure 3.7-3b:

MM 3.7-3b: Project applicants within the planning area shall have the interior of all on-site structures within Assessor Parcel Numbers: ~~019-226-43, 019-226-44, 048-211-25, and 048-231-18~~ visually inspected by a qualified environmental specialist to determine the presence of hazardous materials prior to obtaining a demolition permit from the County of Santa Cruz Planning Department ~~and the City of Watsonville Community Development Department~~. Should any hazardous materials be encountered within any of the structures, the material shall be tested and properly disposed of in accordance with federal, state, and local regulatory requirements. Any stained soils or surfaces underneath the removed materials shall be sampled. Subsequent testing shall indicate the appropriate level of remediation necessary and a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.

(c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The removal of the City Specific Plan Area from the proposed project would eliminate all proposed construction on Assessor Parcel Number 048-251-09 that was proposed to occur within one-quarter mile of the MacQuiddy Elementary School. No impacts from implementation of the modified project would occur.

(d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The potential presence of hazardous materials located within the boundaries of the City Specific Plan Area include above-ground storage tanks (ASTs) and a debris pile on APN 048-231-18, as well as evidence of a burn pit on Assessor Parcel Number 048-251-09. The removal of the City Specific Plan Area from the Modified Project would eliminate these impacts. As a result, the following mitigation measures included in the certified EIR shall be deleted and modified as follows.

~~**MM 3.7 4a.** The City of Watsonville Community Development Department shall ensure that project applicants remove the miscellaneous debris (i.e., stockpiled metal piping and 55 gallon drums, etc.) on APN 048-231-18 and APN 048-251-09 within Phase 2 (City site) of the planning area prior to construction activities at the project site. Once removed, a visual inspection of the areas beneath the miscellaneous debris shall be performed. If any stained soils are observed beneath the debris piles, the soil shall be sampled. In the event that subsequent testing indicates the presence of any~~



~~hazardous materials beyond acceptable thresholds, a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.~~

~~**MM 3.7 4b:** The City of Watsonville Community Development Department shall ensure that project applicants remove and properly dispose of the aboveground storage tanks on APN 048 231 18 within Phase 2 (City site) of the proposed project at an approved landfill facility prior to construction activities within the planning area. Once the ASTs are removed, a visual inspection of the areas beneath and around the removed ASTs shall be performed. If any stained soils are observed beneath the ASTs, the soil shall be sampled. In the event that subsequent testing indicates the presence of any hazardous materials beyond acceptable thresholds, a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.~~

~~**MM 3.7 4c:** The City of Watsonville Community Development Department shall ensure that project applicants sample and excavate stained soils located within agricultural equipment storage areas on and within on-site storage structures (located on bare soil) on APN 048 231 18 within Phase 2 (City site) of the proposed project to determine the extent of contamination prior to construction activities. If during soil removal, evidence of petroleum products appears to continue below the ground surface, sampling would be performed to characterize the extent of contamination and identify appropriate remedial measures in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.~~

MM 3.7-9: Prior to issuance of a grading permit for future development within the County Entitlements Area ~~planning area~~ on APNs ~~019-226-43, 019-226-44, 019-236-01, 048-231-01, 048-211-25, 019-226-42, and 048-221-09, 048-231-17, 048-231-18, and 048-251-09~~ during Phase 1 and Phase 2 of the ~~proposed~~ modified project, the project applicants shall retain a qualified hazardous materials professional to conduct a Phase II Soil Investigation in order to adequately test the surface soil and subsurface soil for pesticide residues in accordance with the Department of Toxic Substances and Control (DTSC) and CalEPA Guidance Manual Interim Guidance for Sampling Agricultural Fields for School Sites, Second Revision (DTSC and CalEPA 2004) to provide a uniform approach for evaluating former agricultural properties where pesticides have been applied. The soil sampling and testing program shall be subject to review and approval by the City of Watsonville and County of Santa Cruz. Soil sampling and testing shall include, but not be limited to the following in accordance with the DTSC and CalEPA guidance documents: sampling the freshwater marsh in the western portion of the planning area adjacent to the former agricultural areas of the planning area; sampling each area of a parcel which historically produced different agricultural crops; sampling of one surface soil sample from zero to six inches and one sub-surface sample from two to three feet with the minimum number of samples based on the size of the parcel; and analytical testing for these samples for pesticide residues, including but not limited to include DDT and its derivatives DDD and DDE, toxaphene, dieldrin, and aldrin.

In the event that subsequent testing indicates the presence of pesticide residues beyond acceptable thresholds, the potential health risks shall be evaluated and a work plan prepared in order to remediate the soil in accordance with all applicable federal,



state, and local regulations. All subsequent testing and remediation activities are subject to review and approval by the County of Santa Cruz Environmental Health Department and the City of Watsonville prior to issuance of a grading permit.

- (e) For a project located within 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 result in a safety hazard for people residing or working in the project area?*

Portions of assessor parcel numbers 019-226-42 and 048-211-25 (both owned by MidPen Housing and site of Phase 1a proposed project) fall into Zone 6 (Airport Traffic Pattern Zone). Mitigation Measure 3.7-10 will apply to a portion of those parcels. No change would occur under the modified project.

- (f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*

No private airstrip is located in the project area. No change would occur under the modified project.

- (g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

No change would occur under the modified project.

- (h) Expose people to electro-magnetic fields associated with electrical transmission lines?*

No change would occur under the modified project.

The removal of the City Specific Plan Area under the modified project would eliminate the need to underground the PG&E power lines that cross APNs 048-231-17 and 048-231-18 (Zepeda parcels). As a result, the following mitigation measure included in the certified EIR shall be deleted.

~~**MM 3.7-5:** — Prior to relocation of the transformers located within the planning area, the project applicants shall work with PG&E to identify the proper handling procedures regarding PCBs and relocate the power lines and transformers prior to development within the planning area in coordination with the City of Watsonville Community Development Department and the County of Santa Cruz Planning Department. The costs for relocation of the overhead power line shall be shared by project applicants within all phases of the proposed project.~~

- (i) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

No change would occur under the modified project.

3.7.2 Revised Project Description

The revised project description and phasing under the modified project would not result in any new impacts, or impacts of greater severity. See Section 2.2 for a complete discussion.

3.8 Hydrology and Water Quality

3.8.1 Removal of City Specific Plan Area from the Proposed Project

With the removal of the City Specific Plan Area from the proposed project, impacts on hydrology and water quality associated with both the construction and operational phases of the modified project would



be substantially reduced. The removal of the City Specific Plan Area would result in a reduction of approximately 230 units and approximately 45 acres of disturbance. As a result, hydrology and water quality impacts of the modified project would be even further reduced from those analyzed in the certified EIR.

(a) Place development within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No change would occur under the modified project.

(b) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No change would occur under the modified project.

(c) Be inundated by a seiche, tsunami, or mudflow?

No change would occur under the modified project.

(d) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

With the removal of the City Specific Plan Area from the proposed project, impacts on groundwater supplies associated with the operational phase of the project would be substantially reduced. The removal of the City Specific Plan Area would result in a reduction of approximately 230 units. As a result, water supply impacts of the modified project would be even further reduced from those analyzed in the certified EIR.

(e) Substantially degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion).

No change would occur under the modified project.

(f) Degrade septic system functioning?

No change would occur under the modified project.

(g) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding, on- or off-site?

The offsite drainage requirements of the County Entitlements Area were reanalyzed by Whitson Engineers at the request of Mid-Pen Housing to determine if there is still a need for the temporary detention basin as required by Mitigation Measure 3.8-1a. Whitson Engineers concluded that the overland release path shown on Figure 3.8-1 of the Draft EIR is representative of the agricultural field flow path but not the overland release from the onsite wetland. Based on the discussions with the City of Watsonville and a review by Whitson Engineers, it was concluded that runoff from the wetland area flows to the inlets at the north end of Brewington Avenue and not overland through the agricultural fields as described in the certified EIR (see Figure 3-1). The City of Watsonville concluded in their letter dated May 29, 2013, "The City of Watsonville Public Works Department has considered if the Drainage study being prepared for the Phippen Affordable Housing project at 56 Atkinson Lane would need to include an analysis of the storm drain facilities at the north end of Brewington Avenue, which is where the natural pond drains to when it overflows. The City has no history of capacity problems or flooding in this neighborhood. We note that the pond overflows



rarely and that the County's post construction requirements imposed on the project along with the affect of the pond which tends to retain runoff will adequately mitigate any changes to the runoff characteristics created by the project. For those reasons we don't believe the drainage study need include an analysis of the storm drain facilities located at the north end of Brewington Avenue." As a result, Mitigation Measure 3.8-1a has been revised as follows:

MM 3.8-1a: Future development within the County Entitlements Area Phase 1 of the Atkinson planning area shall identify, ~~with Tentative Map submittals,~~ a detailed final drainage plan and analysis demonstrating maintenance of the predevelopment 2-year, 2-hour release rate and storage as well as the 5-year predevelopment release rate while providing storage volume for the post development 25-year storm designed to control the rate and volume of stormwater runoff to pre-development conditions for a variety of storm event recurrences up to the 10 year storm consistent with the County of Santa Cruz performance standards or equivalent methods, and retaining the existing functions of storage, filtration, infiltration and evaporation of stormwater. The final drainage control plans shall include: detailed hydrologic modeling, existing facilities, soil and topographic data; erosion control and best management practices; descriptions of proposed flood control facilities; Low Impact Development (LID) techniques; compliance with waste discharge requirements; phasing and implementation; identification of the entity that is responsible for facility design and construction; Clean Water Program compliance; and facility maintenance to ensure for long-term vegetation maintenance and access. ~~As part of the final drainage plan, the culvert connecting the freshwater marsh to the temporary detention basin shall be designed to reduce the potential for flooding of existing and future development by passing the 100-year peak spill rate and controlling the surcharge elevation in the freshwater marsh/seasonal wetland.~~ All drainage improvements shall be subject to review and approval by the County of Santa Cruz Public Works Director and the City of Watsonville Public Works Director. County Public Works staff shall confirm that the onsite stormwater detention facilities have been constructed in accordance with approved plans.

Mitigation Measure 3.8-1b has been deleted as follows to reflect removal of the City Specific Plan Area from the currently proposed project. Measures applicable within the County Entitlements Area have been incorporated into Mitigation Measure 3.8-1a.

~~**MM 3.8-1b:** Future development within Phase 2 of the planning area shall identify, with Tentative Map submittals, a detailed final drainage plan designed to control the rate and volume of stormwater runoff to pre-development conditions for a variety of storm event recurrences up to the 25-year storm consistent with the conceptual stormwater plan in the proposed Specific Plan and PUD and the City of Watsonville Stormwater Management Plan performance standards, or equivalent measures. The final drainage control plans shall include: detailed hydrologic modeling that takes into account the soil and topographic data; erosion control and best management practices; descriptions of proposed flood control facilities; Low Impact Development (LID) techniques; compliance with waste discharge requirements; phasing and implementation; identification of the entity that is responsible for facility design and construction; Clean Water Program compliance; and facility maintenance to ensure for long term vegetation maintenance and access. All drainage improvements shall be subject to review and approval by the City of Watsonville Public Works Director.~~



~~Prior to final inspection, the project applicant (s) shall provide the City of Watsonville with certification from a registered Civil Engineer or licensed contractor that the stormwater detention facilities have been constructed in accordance with approved plans.~~

(h) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?

Please see discussion under 3.8.1(g) above for a complete discussion.

(i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

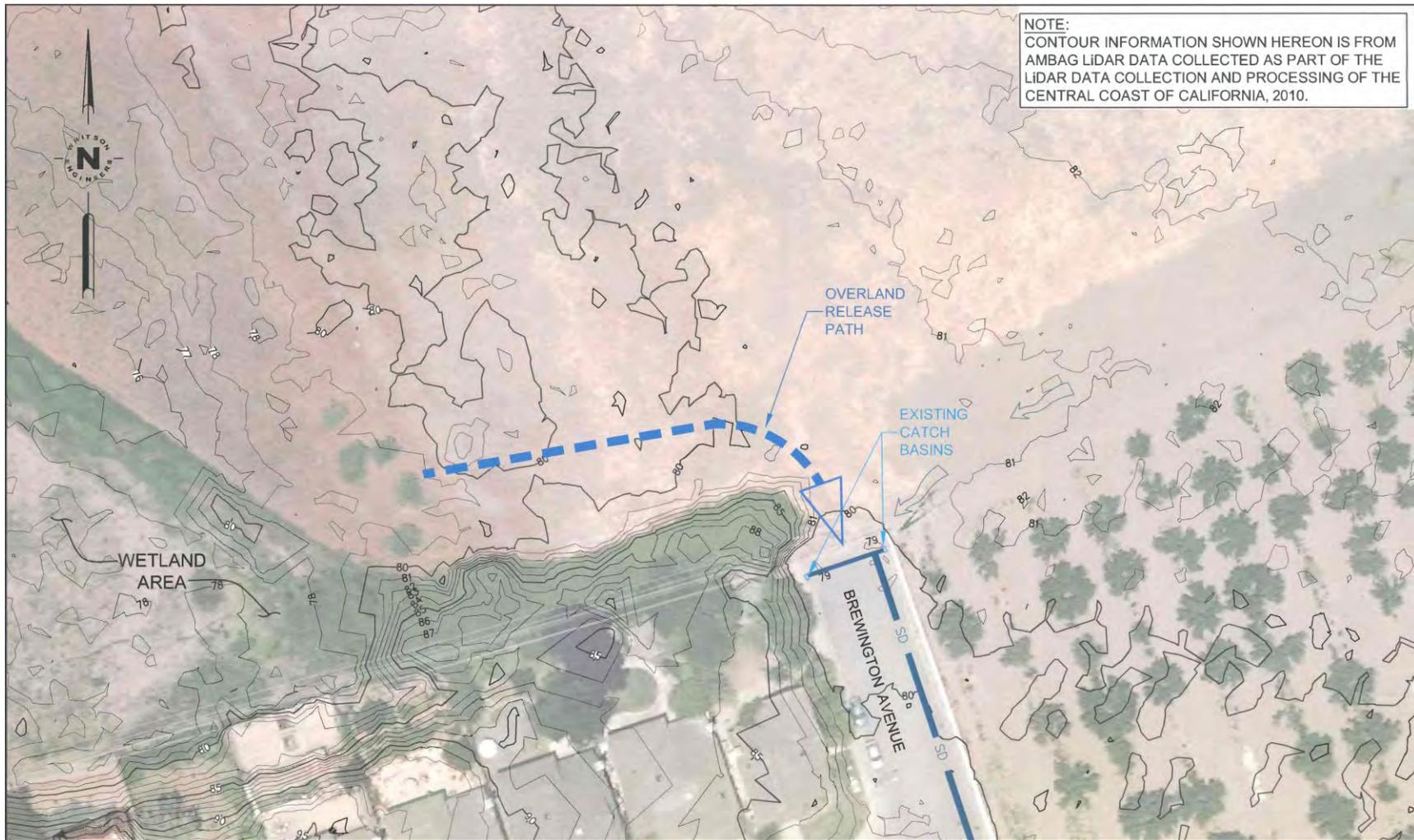
No change would occur under the modified project.

(j) Otherwise substantially degrade water quality?

The modified project would remove the City Specific Plan Area from the proposed project. As a result, surface water quality impacts associated with the modified project would be substantially reduced.

3.8.2 Revised Project Description

The revised project description and phasing of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.8.1 for a complete discussion.



Source: Whitson Engineers, June 28, 2013.

Existing Offsite Drainage

Figure 3-1



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3.9 Land Use and Planning

3.9.1 Removal of City Specific Plan Area from the Proposed Project

- (a) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

With the removal of the City Specific Plan Area from the proposed project, the **significant and unavoidable** impacts from the conversion of Important Farmland would no longer occur. As a result, this significant and unavoidable impact would be avoided under the modified project. Mitigation Measure 3.2-2a included in the certified EIR shall be revised. See Section 3.2.1 of the EIR Addendum for a complete discussion.

The removal of the City Specific Plan Area would also eliminate the need for a 200-foot agricultural buffer along the eastern boundary of the larger Atkinson planning area adjacent to Corralitos Creek. As a result, Mitigation Measure 3.2-2b included in the certified EIR shall be deleted. See Section 3.2-1 of this EIR Addendum for a complete discussion.

Revised Project Mitigation: The project mitigation shall be revised as follows:

Mitigation measure **MM 3.2-2a** in **Section 3.2, Agricultural Resources** requires incorporation of an agricultural buffer within APN 048-221-09 (County Lamb parcel), consistent with County Code Section 16.50.095.

- (b) Conflict with any applicable habitat conservation plan or natural community conservation plan?*

No change would occur under the modified project.

- (c) Physically divide an established community?*

No change would occur under the modified project.

3.9.2 Revised Project Description

The revised project description and phasing of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.9.1 for a complete discussion.

3.10 Noise

3.10.1 Removal of City Specific Plan Area from the Proposed Project

- (a) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

No change would occur under the modified project.

- (b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

See discussion in Section 3.10.1(d). No change would occur under the modified project.

- (c) Exposure of persons to or generation of noise levels in excess of standards established in the General Plan or noise ordinance, or applicable standards of other agencies?*

See discussion in Section 3.10.1(d). No change would occur under the modified project.



(d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

The removal of the City Specific Plan Area from the proposed project would reduce construction-related noise impacts on adjacent sensitive noise receptors on Brewington Avenue and Brookhaven Lane. However, the mitigation measures outlined in the certified EIR shall be implemented.

(e) For a project located within 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 change would occur under the modified project.

(f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No change would occur under the modified project.

3.10.2 Revised Project Description

The revised project description and phasing of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.10.1 for a complete discussion.

3.11 Population and Housing

3.11.1 Removal of City Specific Plan Area from the Proposed Project

The project evaluated for the proposed project in the certified EIR would generate approximately 1,679 persons, based on the California Department of Finance (DOF) 2008 forecast of 3.73 persons per unit. The modified project would generate approximately 829 persons, based on the California DOF 2013 forecast. This is a reduction of 850 persons. No impact is anticipated from the modified project. As a result, the following text changes have been made to the certified EIR:

3.11.3 Relevant Project Characteristics

The land use plan for the proposed ~~Specific Plan~~ Planned Development and PUD within the County Entitlements Area is comprised of approximately ~~34.713.9~~ 34.713.9 acres for residential uses for the construction of no more than ~~450220~~ 450220 units, including ~~10.510.9~~ 10.510.9 net-acres for “Residential-High Density” and ~~14.2~~ 14.2 net-acres for “Residential Medium Density;” ~~100.4~~ 100.4 net-acres for “Residential – Low Density;” and ~~3.5~~ 3.5 acres of parks for expansion of the adjacent Crestview Park. The proposed project would also include ~~3.1~~ 3.1 acres of a designated riparian area and a ~~1.6~~ 1.6 acre riparian buffer adjacent to Corralitos Creek, which would be designated “Environmental Management;” preservation of a ~~3.9~~ 3.9 acre existing wetland and incorporation of a ~~2.7~~ 2.7 acre wetland buffer, which would be designated as “Urban Open Space;” a ~~2.2~~ 2.2 acre PG&E substation, which would remain as a public facility; and ~~14.1~~ 14.1 acres for a 200-foot agricultural buffer located on the eastern boundary of the planning area adjacent to the existing agricultural fields. The proposed project also includes an interim agricultural buffer within Phase 1 (County site) that would be terminated once Phase 2 (City site) is rezoned. An agricultural buffer established in accordance with County Code Section 16.50.095 would be located over a portion of APN 048-221-09 (County Lamb parcel).

The total amount of residential development within the planning area would not exceed ~~450220~~ 450220 residential units. For the residential component, the proposed project would include a mix of housing types and densities that would meet a variety of the County’s and City’s future housing needs,



including the ~~City's~~ County's goal of making ~~50~~ at least 40 percent and up to 80 percent of the units available as affordable/workforce housing.

Approximately ~~10.5~~10.9 acres of the planning area is proposed to be designated as Residential – High Density (R-HD). This land use designation allows development of up to 20-units per acre in the County and 17.8-units per acre in the City. Development within the R-HD components of the proposed project would result in development of two- to three- story multi-family residential. The R-HD components of the planning area are expected to yield ~~240~~216 units.

~~Approximately 14.2 net acres of the planning area would be designated as Residential – Mixed Density (R-MD). The R-MD designation would allow a mix of unit types and densities ranging from 10 to 12 dwelling units per acre. Buildout is expected to average 11 units per acre. Allowed unit types would range from attached single family residences on relatively small lots to three or four unit clustered development. Given an average expected buildout density of 11 units per acre, the R-MD components of the planning area are expected to yield 156 units.~~

Approximately ~~100.4~~ net acres of the planning area is designated as Residential – Low Density (R-LD). The R-LD designation would allow a mix of densities ranging from 8 to 10 dwelling units per acre. ~~Buildout is expected to average 9 units per acre.~~ Allowed unit types include ~~detached single~~multi-family residences. Given an average expected buildout density of ~~9~~10 units per acre, the R-LD site is expected to yield ~~904~~ units.

Based on the 2013 California Department of Finance (DOF) forecast of ~~3,733.77~~ persons per ~~unit~~household, the proposed project would generate approximately ~~1,679,829~~ people.

3.11.2 Revised Project Description

No impact is anticipated. See Section 3.11.1.

3.12 Public Services, Utilities, and Recreation

3.12.1 Removal of City Specific Plan Area from the Proposed Project

Impacts would be reduced under the modified project by the removal of the City Specific Plan Area from the currently proposed project.

(a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, schools, parks or other recreational activities, Other public facilities; including the maintenance of roads?

The text in sections (3.1.3, 3.2.3, 3.3.3, 3.4.3, 3.5.3, 3.6.3, 3.7.3, 3.8.3, 3.9.3, 3.10.3, 3.11.3, 3.12.3, 3.13.3) of the Draft EIR has been revised as follows:

Impact 3.12-1 of the Project EIR has been revised as follows:

Increased Demand for Fire Protection Service

Impact 3.12-1: The proposed project would is estimated to generate approximately 1,679,829 people, which would subsequently increase the demand for fire protection services within the planning area. Future development within the planning area would be required to pay applicable fire impact fees at the time of issuance of the building permits. Future development will also be subject to a requirement to incorporate fire sprinklers into



structures. If City and County impact fees-revenues do not adequately fund fire protection facilities and services to the planning area this would be considered a potentially significant impact.

Buildout of the proposed project would include construction of a maximum of 450220 units, which would introduce approximately 1,679829 people within the planning area. ~~Prior to annexation by the City of Watsonville, the Phase 1 (County site) is estimated to generate approximately 90 residential units and an estimated population of approximately 336 people. The Phase 1 (County site) As per an MOU between the City and County, the County Entitlements Area would be served by the PVFPD station located at 562 Casserly Road Watsonville Fire Department and Fire Station #2 located at 372 Airport Boulevard. The PVFPD currently has a contract with the City of Watsonville Fire Department for services into the Atkinson Lane area based on a fee per call. The PVFPD assumes continuation of this arrangement and anticipates that it has sufficient capacity to provide service to Phase 1 (County site) prior to annexation.~~

~~Phase 1 (City site) and buildout of the planning area (after annexation), would be served by Watsonville Fire Department and Fire Station #2, which is located at 372 Airport Boulevard. As of 2006, Fire Station #2 had a reliability factor of 81 percent with a volume of approximately 1,347 total calls. In 2007, the station received approximately 2,171 calls, reducing its reliability factor below the threshold of 80 percent. Based on the projected population growth at buildout of the proposed Phase 1a City parcel project, approximately 1225 additional calls would be anticipated at Station #2, which is not expected to would affect the unit's utilization, availability, and reliability of the station (Personal Communication with Chief Bisbee, Watsonville Fire Department on October 30, 2008). The City of Watsonville Fire Department is in the process of planning an additional fire station that would be located at 1509 Freedom Boulevard. Once constructed, this station would become the primary station to serve the planning area and surrounding area. In order to maximize fire response capacity, it has been proposed by the County and City that all units to be constructed within the County Entitlements Area pay City Fire Impact Fees at the time of issuance of building permits, with the expectation that these would be applied toward costs of the new Freedom Boulevard fire station.~~

~~Future development within the planning area would be required to pay applicable fire impact fee at the time of issuance of the building permits. If City and County impact fees The City of Watsonville has stated concern that City fire personnel would most likely be providing ongoing services to developments within the County Entitlements Area, due to the locations of the County and City fire stations relative to the project. The City is concerned about this demand for municipal services by the project, because the City would not receive revenues from the project. Because this condition may lead to a potentially significant impact, the following Mitigation Measure would further ensure that do not adequately fund fire protection services to the planning area, this would be considered a **potentially significant impact**. Implementation of the following mitigation measure would ensure that impacts to fire protection services are reduced to a **less than significant level**.~~

Mitigation Measure

MM 3.12-1 To fund a potential gap in funding for municipal services, if deemed necessary the City of Watsonville and the County of Santa Cruz shall work cooperatively to define and implement the appropriate funding mechanism(s) (e.g. i.e., a municipal services mitigation payment-in-lieu-of-taxes [PILOT] agreement, establishment of a community facilities district [CFD], a Mello-Roos, etc.) to ensure that the proposed modified project pays its fair share to support municipal services.

Implementation of this mitigation measure would ensure that funding of additional services would be handled by future development through a funding mechanism in order to meet acceptable thresholds,



including the projects “fair share” of funding for construction, operation, and staffing of a new fire station for the City of Watsonville Fire Department, which would ensure result in a **less than significant impact** on fire protection services.

Impact 3.12-2 of the Project EIR has been revised as follows:

Increased Demand for Law Enforcement Service

Impact 3.12-2: The proposed project would generate approximately 4,679,829 people, which would increase demand for law enforcement services. Future development within the planning area would be required to pay applicable police impact fees at the time of issuance of the building permits. If City and County impact fees do not adequately fund law enforcement facilities and service to the planning area, this would be considered a potentially significant impact.

The proposed project would increase the population by approximately 4,679,829 people, which would likely result in an increased demand for law enforcement services. This demand on law enforcement services may result in an overall increase in response times.

~~Development within the Phase 1 (County site) would be served by the Pajaro Valley South Service Center of the County Sheriff’s office until the site is annexed to the City of Watsonville. The Phase 1 (County site) is located within Beat 10 and Beat 11 of the Sheriff’s office service area. The Pajaro Valley South Service Center is currently staffed with two deputies and volunteers. In 2008, the Pajaro Valley South Service Center responded to approximately 2,897 service calls, which represents approximately three percent of the total service calls received by the Sheriff’s office. The Pajaro Valley South Service Center has the third lowest percentage of service calls in the County. According to the County Sheriff’s office, Phase 1 (County site) is not anticipated to result in a short-term impact to the existing service in the area.~~

~~Once the planning area is annexed to the City of Watsonville, the Due to the City/County nature and location of the projects in the County Entitlements Area, developments proposed project would be served by the Watsonville Police Department. According to the Watsonville Police Department, the proposed project would be primarily would most likely be served by the Watsonville Police Department headquarters located at 215 Union Street, which is located approximately 1.7 miles from the planning area. The anticipated response time to the planning area from the headquarters would be six to seven minutes, almost twice as long as the Police Department’s response time goal. The slower response times to the planning area from the headquarters building are primarily due to traffic congestion on the primary routes to the planning area and vicinity. In addition to the headquarters, the Freedom Boulevard satellite station could serve the proposed project and would result in a reduced response time. In order to better serve the planning area, this station would require upgrade of the computer equipment and connectivity to the headquarters (Personal communication with Linda Peters, Administrative Service Manager, City of Watsonville Police Department. November 19, 2008).~~

The existing neighborhoods in the vicinity of the planning area currently experience a higher level of demand for law enforcement services. According to the Police Department, the number of crimes in the vicinity of the planning area are nearly twice as high as in comparable neighborhoods than in other areas of the City. The number of police calls-for-service and self-initiated police activities are three times higher than the comparison neighborhoods. ~~The proposed project would potentially double the amount of service calls in the area due to the density of the population within the planning area (Personal communication with Linda Peters, Administrative Service Manager and Manny Solano, Deputy, City of Watsonville Police Department. November 19, 2008).~~



The 2005 City of Watsonville General Plan requires a police officer to population ratio of one officer to 600 people in order to maintain acceptable service levels and police response time. In addition, one civilian staff is required per three officers. Based on those requirements, ~~three no additional~~ sworn officers ~~and one~~ civilian staff would be required to serve Phase 1a of the proposed project. However, one additional sworn officer would be required with the implementation of Phase 1b. Future development within the planning area would be required to pay applicable ~~police-city public facilities~~ impact fees at the time of issuance of the building permits. If City and County impact fees do not adequately fund police facilities and service capability to the planning area, this would be considered **a potentially significant impact**. However, implementation of mitigation measure **MM 3.12-1** would ensure that funding of additional law enforcement facilities and services capabilities would be handled through a funding mechanism established by the City and County in order to meet acceptable thresholds, ~~including the projects “fair share” of funding of providing three additional sworn officers and one civilian staff member at the City of Watsonville Police Department in order to serve the planning area under project buildout.~~ Therefore, implementation of this mitigation measure would ensure that the proposed project would result in a **less than significant impact** on law enforcement services.

The City of Watsonville has stated concern that city police personnel would be called upon to provide ongoing services to developments within the County Entitlements Area, but the City would not receive revenues from the project. Because this condition may lead to a potentially significant impact, the following Mitigation Measure would further ensure that impacts to police protection services are less than significant.

MM 3.12-1 To fund a potential gap in funding for municipal services, if deemed necessary the City of Watsonville and the County of Santa Cruz shall work cooperatively to define and implement the appropriate funding mechanism(s) (i.e., municipal services mitigation payment) to ensure that development within the County Entitlements Area pays its fair share to support municipal services.

Impact 3.12-3 of the Project EIR has been revised as follows:

Increased Demand for Educational Facilities

Impact 3.12-3: The proposed project would generate approximately ~~4,679,829~~ **923,455** people, ~~923,455~~ of which would be school-aged children, increasing the demand on school services within the Pajaro Valley Unified School District (PVUSD). While there is sufficient existing capacity to meet the needs of middle and high school children, the elementary schools are currently over capacity. However, future development within the planning area would be required to pay development fees to the PVUSD. The project applicant's fees would be determined at the time of the building permit issuance and would reflect the most current fee amount requested by the PVUSD. Payment of development impact fees would reduce the impact to the PVUSD to a less than significant level.

The proposed project would generate approximately ~~4,679,829~~ persons. As shown in **Table 3.12-8: Proposed project Student Generation**, the proposed project would generate approximately ~~923,455~~ school-age children.

The planning area would be served by the following schools: elementary – Ann Soldo, H.A. Hyde, and Mac Quiddy; middle – Cesar E. Chavez, E.A. Hall, and Lake View; and high school – Pajaro Valley High and Watsonville High. As shown in **Table 3.12-9: Proposed Project School Impact**, the PVUSD middle and high schools have a sufficient existing capacity to meet the needs of school children generated by the proposed project. However, the elementary schools which would be



servicing the planning area currently operate at or over capacity. The proposed project would generate approximately ~~539~~266 elementary school children. This would significantly increase demand for elementary level schools in the planning area, which currently operate over capacity (Personal communication with Richard Mullikin, PVUSD, December 2008).

Table 3.12-8: Proposed Project Student Generation

School Type	Generation Rate	Proposed Project Population	Projected Students Generated by the Project
Elementary	0.321	<u>1,679,829</u>	539 <u>266</u>
Middle	0.085		<u>143</u> <u>70</u>
High School	0.144		<u>241</u> <u>119</u>
Total			<u>923</u> <u>455</u>
Notes:			
1 Population is based on the Department of Finance rate of 3-733.77 persons per housing unit household multiplied by the 450 <u>220</u> units proposed by the proposed project.			

Source: PVUSD 2008.

Upon initiation of the preparation of the Specific Plan and PUD, the City Council and the County of Santa Cruz Board of Supervisors appointed a 17 member Technical Advisory Committee (TAC) to provide technical assistance in the formulation of the Plan. One of the major issues addressed by the TAC was whether the planning area should accommodate a new elementary school. The PVUSD was represented on the TAC and formed a subcommittee the purpose of which was to address the impacts of the proposed project on the PVUSD and to provide a thorough level of analysis to determine whether the planning area is an appropriate location for a school.

Table 3.12-9: Proposed Project School Impact

Grade Level	2008 Capacity (Number of Students)	Proposed Project Need (Number of Students)	Capacity with Proposed Project
Elementary	-109	539 <u>266</u>	648 <u>375</u>
Middle	397	<u>143</u> <u>70</u>	<u>254</u> <u>327</u>
High Schools	930	<u>191</u> <u>95</u>	<u>739</u> <u>835</u>
Notes:			
The enrollment data for 2007/2008 school year differ between the Master Plan and information posted on the District's website as part of the School Fact Sheets for the same year.			
1 Elementary schools – H.A. Hyde, Ann Soldo, MacQuiddy			
2 Middle Schools – Cesar Chavez, Lakeview, E.A. Hall			
3 High Schools – Pajaro Valley, Watsonville High			

Source: PVUSD Facility Master Plan 2008.

The subcommittee concluded that the planning area is not large enough to accommodate a school and therefore a school was not proposed within the planning area. However, both the City of Watsonville and the County of Santa Cruz would continue to work cooperatively with the PVUSD to find suitable locations for future school facilities. This would be expected to occur in conjunction with City of Watsonville preparation of a Specific Plan for the area, or a General Plan Update.

In addition, future development within the planning area would be required by law to pay development impact fees at the time of the building permit issuance. The PVUSD currently charges development fees in the amount of ~~\$4.43~~\$4.78 per square foot of residential development, 0.47 for commercial and/or senior housing developments, and 0.10 per square foot for parking and ~~0.30~~ for storage. These fees are used by the PVUSD to mitigate impacts associated with long-term operation and maintenance of school facilities. The project applicant's fees would be determined at the time of



the building permit issuance and would reflect the most current fee amount requested by the PVUSD. Project applicants within the planning area would also be required to pay any additional applicable fees, if the PVUSD implements additional funding measures, including those described in the Facilities Master Plan (refer to the Environmental Setting section). Pursuant to Section 65996(3)(h) of the California Government Code, payment of these fees “is deemed to be full and complete mitigation of impacts of any legislative or adjudicative act, or both, involving but not limited to, the planning, use, or development of real property, or any change in government organization or reorganization.” Any environmental impacts resulting from the construction of new schools would be analyzed by the PVUSD prior to construction. Therefore, the increased demand on the PVUSD is considered a **less than significant impact** on school services.

Impact 3.12-4 of the Project EIR has been revised as follows:

Increased Demand for Parks and Recreation Facilities

Impact 3.12-4: The proposed project would increase a demand for parks in the area that is currently considered underserved. However, the proposed project would provide an additional 3.5 acre park adjacent to Crestview Park, and payment of applicable fees for parks and recreational uses. If City and County impact fees do not adequately fund park and recreation facilities and services capability, this would be considered a potentially significant impact.

The planning area is located adjacent to an area of the City which is recognized as underserved and is located more than one-quarter mile from a park of over 5 acres in size or school. There are two parks in the proposed project’s vicinity: Arista Park and Crestview Park. Arista Park is a 0.3 acre pocket park within a quarter mile of the planning area. Crestview Park is a 2.1 acre neighborhood park within one half mile of the planning area, ~~which is considered small for a neighborhood park.~~ The nearest County park to the planning area is the Pinto Lake Park, which is located approximately two miles north of the planning area, along Green Valley Road. The park is approximately 294 acres in size. The County manages a 216 acre portion in the northern portion of the park and the City of Watsonville manages a 78 acre portion of the park.

The projected population of ~~1,679,829~~ people generated by the proposed project would increase the use of these parks, which could ~~accelerate physical deterioration of place added stress on~~ these facilities. ~~However, the proposed project includes development of 3.5 acres of parkland adjacent to Crestview Park to allow the City of Watsonville to expand the existing park to a total of 5.5 acres. This expansion would have a positive benefit of providing an adequately sized neighborhood park in the area that is currently considered underserved.~~

The City of Watsonville General Plan standard is five acres of parks per 1,000 residents, which is comprised of two acres for neighborhood and pocket parks and three acres for community parks. Section 3-6.604 of the City’s municipal code requires dedication of five acres of parkland per 1,000 residents. Based on this requirement, population generated by the proposed project would require approximately ~~5,574.1~~ acres of parks. ~~In addition to dedicating 3.5 acres of parkland, t~~The City of Watsonville has a recreation and parks facilities fee of \$1,667 per each three bedroom dwelling unit and the County of Santa Cruz has a parks dedication fee of \$1,000 per single family dwelling unit and \$750 per multi-family dwelling unit. Future development within the planning area would be required to pay applicable recreation and parks facilities fees at the time of issuance of the building permits. Given the location of the County Entitlements Area, the City and County have agreed that future development of Phase 1a will pay parks impact fees to the City of Watsonville for the 20 units located in the City, and to the County for the 26 units located in the County. All future development under Phase 1b located within the County shall pay parks impact fees to the County. The payment of these



~~parks impact fees will reduce the impact on parks to a less than significant level. Development within Phase 1 (County site) would be required to dedicate park fees to the City. If City and County impact fees do not adequately fund park and recreation uses, this would be considered a **potentially significant impact**. Additionally, However, implementation of mitigation measure MM 3.12-1 would ensure that funding of additional services would be handled through by a funding mechanism implemented by the City and County in order to meet acceptable thresholds, including the projects "fair share" of funding parks and recreation facilities with buildout of the proposed project. Therefore, implementation of this mitigation measure would ensure that the proposed project would result in have a less than significant impact on parks and recreation.~~

Impact 3.12-5 of the Project EIR has been revised as follows:

Increased Demand for Library Services

Impact 3.12-5: ~~The proposed project would generate approximately 1,679,829 people, which would increase demand for library services. The proposed project would result in an increase in expenditures as a result of increased service level demands. If City impact fees do not adequately fund library facilities and service capability, this would be considered a potentially significant impact.~~

~~The proposed project would generate approximately 1,679,829 people that would have to be served by library services provided by the City of Watsonville, to include the Main Library located at 275 Main Street, as well as by the Freedom Branch located at 2021 Freedom Boulevard, approximately 2.1 and 1.1 miles from the County Entitlements Area, respectively, with buildout of the proposed project. The City of Watsonville General Plan stated that adequate library services is comprised of approximately 0.6 square feet of facilities per person and one library staff per 2,000 residents. ~~The City's population is projected to be 51,903 in 2010 and 54,857 in 2015. Based on these assumptions, approximately 31,141 to 32,914 square feet of library facilities and 26 to 27.5 staff members would be required to serve the proposed project and the City's population upon buildout of the proposed project.~~~~

The Watsonville Public Library is currently located in a 42,000 square foot facility and has a staff of approximately 50 people. The library facility has excess capacity to serve the population of the City of Watsonville, including the proposed project. Therefore, the proposed project would not require a construction of new facilities. Watsonville property taxes fund the Santa Cruz County library system, however the City provides local funding for library and literacy services at the Watsonville libraries, which are independent of the County Library system.

~~The proposed project would result in increased service level demands with an increase in population. If City impact fees for library service do not adequately fund library services, this would be considered a **potentially significant impact**. However, implementation of mitigation measure MM 3.12-1 would ensure that funding of additional services is handled through funding mechanism implemented by the City and County in order to meet acceptable thresholds, including the projects "fair share" of funding library facilities with buildout of the proposed project. Therefore, implementation of this mitigation measure would ensure that the proposed project would result in has a less than significant impact on library facilities.~~

Impact 3.12-6 of the Project EIR has been revised as follows:

Increased Wastewater Demand

Impact 3.12-6: ~~The proposed project would generate approximately 480,000,88,000 gallons a day of wastewater, increasing the demand on the Watsonville Wastewater Treatment Plant~~



(WWTP). However, the existing service provider has an adequate capacity to meet this demand. Therefore, this would be considered a less than significant impact.

The proposed project, development within the County Entitlements Area, would generate up to ~~180,000~~88,000 gallons per day of wastewater, which is based on ~~450~~220 units x 400 gallons per unit per day). The Watsonville WWTP, which would serve the proposed project, has the capacity to treat 12.1 million gallons per day. However, the WWTP treats on average seven million gallons of wastewater from residential, commercial and industrial sources. The wastewater contribution of the proposed project to the WWTP would represent approximately ~~1.40~~7 percent of the total daily capacity of wastewater that can be treated at the wastewater treatment plant.

As the proposed project is located on mostly vacant ~~or agricultural~~ land, the City's wastewater collection system would require expansion into the planning area (**Figure 2-15: Conceptual Water and Sewer Plan**). The existing sewer infrastructure system that provides service to the development in the vicinity of the planning area is sized appropriately to extend into the planning area. The infrastructure and facilities constructed as part of the proposed project would operate through a gravity system and consist of six and eight-inch service laterals and associated manholes and clean-outs. As the WWTP has an adequate capacity to serve the proposed project, the proposed project would not have a significant impact on the existing wastewater treatment plant. Future development within the planning area would be required to pay the sanitary sewer connection fee per unit to the City of Watsonville in order for the City to serve the proposed project. Therefore, the proposed project would have a **less than significant impact** on wastewater infrastructure and services.

Impact 3.12-7 of the Project EIR has been revised as follows:

Increased Water Demand

Impact 3.12-7: Implementation of the proposed project would result in construction of on-site infrastructure and potable water demand of approximately ~~40~~743 acre feet of water per year. Phase 1a would demand approximately 8.49 AFY, and development within the remainder of the County Entitlements Area (Phase 1b) would demand approximately 34.8 AFY. Implementation of the proposed project would convert ~~land currently vacant land and in agricultural production, rural residential uses, and fallow agricultural land~~ to primarily residential uses. ~~The proposed conversion would result in an overall reduction of water use within the planning area by approximately 57.88 AFY in comparison to the historical water use within the planning area. However Phase 1 (County site) would not convert existing agricultural fields to urban use and therefore would result in a short-term increase in water use over existing conditions prior to buildout of the planning area. Future development on Phase 1(County site) and the remainder of within the County Entitlements Area planning area would be required to pay the City's water connection fee, which is used in part to retrofit water fixtures (e.g. toilets, showerheads, etc.) within the City and would reduce the impact of future development on the groundwater basin, which would ensure that the proposed project would have a less than significant impact on water supply and the groundwater basin. The Settlement Agreement requires a 1.2 gallon offset for every new gallon of water used in the project authorized by the County Entitlement, with applicants for new water service from the City of Watsonville required to meet the offset by retrofitting existing developed property within the City of Watsonville's water service area. Additionally, the Affordable Housing Operator will be required to generate a water management plan:~~

Applicant shall submit a management plan to the City of Watsonville Water Department for its review and approval detailing how it will monitor domestic water consumption by



the tenants in terms of targeted per-capita consumption rates, how it will inform and educate tenants regarding the targeted per capita water consumption rates and ways to reduce consumption in order to meet the rates. The Applicant shall report to the City every three months the performance of the project with meeting per capita water consumption rates.

The majority of the planning area is currently in agricultural production as strawberries and apple orchards on Assessor Parcel Number 048 251 09, which is owned by Grimmer Orchards and on Assessor Parcel Numbers 048 231 17, and 048 231 18, which is owned by Israel Zepeda Farms, Inc. In addition to the agricultural uses within the planning area there are also four existing single family homes, which consume water typical of similar residential uses in the City of Watsonville. The total existing water use within the planning area is approximately 113 acre feet per year as shown in **Table 3.12-7: Existing Water Demand.**

The proposed ~~Specific Plan~~PD and PUD would convert the existing ~~agricultural, fallow agricultural, undeveloped,~~ and rural residential uses to urban uses. A water demand analysis was performed by RBF Consulting for the proposed PD and PUD. As shown in **Table 3.12-10: Projected Water Demand** below, the analysis estimates that ~~development buildout~~ of the County Entitlements Area ~~proposed Specific Plan~~ would generate a water demand of approximately ~~10743~~ acre feet of potable water every year. ~~This demand is approximately 6 AFY less than historic water demand of approximately 113 AFY within the planning area. However, Phase 1 (County site) would result in a water demand of approximately 23 AFY which would result in a demand of approximately 22 AFY over the existing water use within this portion of the planning area.~~

The PVWMD is continuing to implement the Basin Plan in order to address the long-term impact of the groundwater basin, including completion of several water supply and distribution projects, including 20 miles of a distribution pipeline and a Recycled Water Facility with the City of Watsonville, which ~~will provide~~ 4,000 acre feet of new, drought proof, reliable irrigation supply to the coast. The PVWMD is also currently beginning a rate re-establishment process so that the Basin Plan can be implemented.

Implementation of the proposed project would result in an increase in the amount of impervious surfaces within the planning area. However, ~~since the proposed project would result in a reduction in the overall amount of water use within the planning area over existing conditions,~~ the proposed project would not substantially deplete groundwater supplies or interfere with groundwater recharge to the extent that it would result in lowering of the groundwater table. In addition, future development within the County Entitlements Area ~~on Phase 1 (County site)~~ would be required a 1.2 gallon offset for every new gallon of water used in the project authorized by the County Entitlements. This requirement shall be required to meet the 1.2 required offset by retrofitting existing developed property within the City of Watsonville's water service area. Applicants for new service shall bear those costs associated with the retrofit and pay any associated fees set by the City to reimburse administrative and inspection costs in accordance with any procedures for implementing this program. Impacts would be reduced under the modified project with the removal of the City Specific Plan Area from the proposed project and implementation of the above mitigation measures.

Development within the County Entitlement Area and the remainder of the planning area would be required to pay the City's groundwater impact fee, which is currently set at ~~\$347.56~~\$382.87 per bedroom and is used to retrofit water fixtures (e.g. toilets, showerheads, etc.) within the City. The water retrofit program, which is funded by the groundwater impact fees results in a savings of 748 gallons of water per month, would offset approximately 70 to 100 percent of the water consumption of new homes within the planning area. With implementation of the City's groundwater impact fee



and 1.2 gallon offset program, the impact of the currently proposed project on water supply would be considered **less than significant** ~~under buildout of the proposed Specific Plan and PUD and for implementation of the Phase 1 (County site).~~ Cumulative impacts to the overdraft conditions in the Pajaro Valley groundwater basin are addressed in **Section 4: CEQA Considerations**.

Table 3.12-10: Projected Water Demand

Land Use ^{1,2}	Net Acreage/ Units	Demand Factors	Ultimate Projected Water Demand
Phase 1a			
Residential – High Density (County)	9026 units 4.51.3 net acres	0.2 AFY/unit ³	18.052 AFY
Residential – High Density (City)	1016 units 1.00.9 net acres	0.2 AFY/unit ³	2.0032 AFY
Residential – Low Density (City)	94 units 1.00.4 net acres	0.322 AFY/unit ⁴	2.90129 AFY
Subtotal			22.90969 AFY
Phase 1b			
<u>Residential – High Density (County)</u>	<u>63 units</u> <u>3.2 acres</u>	<u>0.2 AFY/unit³</u>	<u>12.6 AFY</u>
Phase 2			
Park	3.5 acres	1.300 AFY/acre ⁵	4.55 AFY
Stormwater Swales	1.3 acres	1.300 AFY/acre ⁵	1.69 AFY
Residential – High Density (County)	11011 units 5.5 acres	0.2 AFY/unit ³	22.0222 AFY
Residential – Medium Density (City)	150 units 14.2 acres	0.2 AFY/unit³	30.00 AFY
Residential – Low Density (City)	81 units 9.0 acres	0.322 AFY/unit⁴	26.08 AFY
Subtotal			74.32222 AFY
Total Project			107.22348 AFY
Notes:			
<ol style="list-style-type: none"> 1. Landscaping within the PD is proposed to be drought tolerant and therefore was not included in the long-term water demand estimates. 2. The PG&E parcel, riparian area and buffer, <u>and</u> freshwater marsh and buffer, and agricultural buffer were not included in the projected long-term water demand as they would not require a long-term water supply. 3. Demand factors were provided by the City of Watsonville per the Atkinson Lane Water Supply Assessment Memorandum, dated December 16, 2008. 4. Demand factors were determined by dividing water deliveries to single family homes (3,868 AFY) by the number of family accounts (11,920 accounts) for 2005 as shown in Table 11 in the UWMP. This demand factor should represent a conservative water demand estimate since single family homes (low density residential) typically have larger lots (higher landscaping demand) and higher occupancy compared to low, medium, and high density homes based on the City of Watsonville General Plan. 5. Demand factors determined by dividing deliveries to landscaping/agricultural accounts in 2005 (405 AF, UWMP) by the developed landscaping/agriculture area in 200 (311 acres in the City of Watsonville General Plan). 			

Impact 3.12-8 of the Project EIR has been revised as follows:

Water Infrastructure

Impact 3.12-8: Implementation of the proposed project would result in construction of on-site water infrastructure in order to serve the proposed project. If City and County impact fees



do not adequately fund water infrastructure improvements, this is considered a potentially significant impact.

New facilities would have to be extended into the planning area in order to provide potable water for ~~developments within the County Entitlements Area the proposed Specific Plan and PUD.~~ The potable water distribution system is expected to consist of eight and ten inch water mains, six inch service laterals, and various valves and fittings. As shown on **Figure 3.12-3: Conceptual Water and Sewer Plan**, water mains would be located in conjunction with the proposed roadway system and would tie into the existing infrastructure in four locations. These locations include the existing six-inch main along Atkinson Lane at two locations, and the eight-inch main along Brewington Avenue,~~and the 16-inch main along Wagner Avenue.~~

Future development within the ~~County Entitlements Area~~ ~~planning area~~ would be required to pay applicable City development impact fees at the time of issuance of the building permits. If deemed necessary to fund municipal services, the County and the City will enter into an agreement to fund infrastructure costs for the proposed project not covered by City or County impact fees and taxes. Funding of additional services would be handled through levies on future development in order to meet acceptable thresholds as required by mitigation measure **MM 3.12-1**. Therefore, implementation of this mitigation measure would ensure that the proposed project has ~~would result in~~ a **less than significant impact** on water infrastructure costs.

Impact 3.12-9 of the Project EIR has been revised as follows:

Stormwater Runoff

Impact 3.12-9: The proposed project would require expansion of stormwater facilities on-site, the construction of which could cause significant environmental effects. Future development within the planning area would be required to pay applicable impact fees at the time of issuance of the building permits. If City and County impact fees do not adequately fund stormwater infrastructure, this would be considered a potentially significant impact.

Proposed development of the planning area would require expansion of the City's stormwater management system. Currently, a 12-inch pipe discharges runoff from approximately 23 acres of residential development north of the proposed project into the freshwater marsh located in the western portion of the planning area. Stormwater runoff flows into two existing catch basins located at the end of Brewington Avenue (see Figure 3.7-1) where the stormwater would be conveyed overland to the Crestview Park detention basin (Appendix K). The detention basin has approximately four acre-feet of detention volume. The existing detention basin would have adequate capacity to collect stormwater runoff from a 100-year storm event for the Phases 1a MidPen Housing project, as well as the remainder of the County Entitlements Area,~~(City and County sites), 1b (County site), and 2 (County site; Appendix L).~~

~~The conceptual storm drainage plan for the proposed Specific Plan addresses stormwater treatment for phases 1 and 2 of the proposed project. The conceptual plan for Phase 1 would utilize the freshwater marsh and temporary detention basin to mitigate the increase of stormwater runoff from the planning area. The temporary detention basin would require a 0.7 acre-foot surface capacity and approximately 0.2 acres of surface area and would be located within the temporary agricultural buffer to the east of the wetland and east of the extension of Brewington Avenue (Figure 2-15: Conceptual Stormwater Plan - Phase 1). A weir outlet structure would capture and convey the overflow from~~



~~the wetland to a culvert that would continue conveyance under the Brewington Avenue extension and into the temporary detention basin. The weir outlet and culvert would be designed to accommodate a 100-year peak spill rate.~~

~~The conceptual drainage plan for Phase 2 would include removal of the temporary detention basin and construction of a new, expanded detention basin at Crestview Park (Figure 2-16: Conceptual Stormwater Plan – Project Buildout). Storm drain pipes of varying sizes would convey stormwater from the proposed project to the Crestview Park detention basin. An approximately five-acre detention basin would be required to provide sufficient storage to contain a 100-year storm event. While some of the park may flood on a more regular basis, the entire park will be unusable during large, infrequent storm events when the park would function to attenuate the peak flow rate of the storm water runoff. The outlet controls would be sized to allow rapid recovery of the park space. The Crestview Park detention basin design would incorporate an underdrain system, gravel trenches, and perforated pipes to accelerate infiltration and drying to increase the usability of the park during the wet season. The analysis of storm water detention for the proposed Specific Plan PD and PUD is conceptual in nature, however the proposed design features would provide detention of surface water runoff in order to ensure that post-development runoff does not exceed pre-development runoff as required by mitigation measures incorporated herein.~~

~~Future development would be required to pay applicable impact fees at the time of development. The City of Watsonville currently charges a storm drainage impact fee based on \$6,045.16/\$6,660.38 per acre for high density residential uses and an impervious area impact of \$0.40 per square foot for both single family and multi-family dwelling units. If payment of impact fees do not adequately fund stormwater infrastructure, this would be considered a **potentially significant impact**. However, Additionally, implementation of mitigation measure MM 3.12-1 would ensure that funding of additional services would be handled through a funding mechanism established by the City and County paid for by future development in order to meet acceptable thresholds, including the projects “fair share” of funding for ongoing operation of stormwater infrastructure ~~with buildout of future development within the planning area~~. Therefore, ~~implementation of this mitigation measure would ensure that the proposed project would have result in~~ a **less than significant impact** on stormwater infrastructure and services.~~

(b) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

See discussion for 3.12-9 above. Impacts would be reduced under the modified project with the removal of the City Specific Plan Area from the currently proposed project, and by the elimination of the temporary detention basin.

(c) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area.

The project would connect to an existing municipal water supply. The City of Watsonville Policy 1 relating to “Outside City of Watsonville Water Connections,” states “Water connections and extensions may be provided to an existing parcel (vacant or otherwise) located within a County Sanitation District which, under the current Santa Cruz County General Plan and Zoning, may be further divided provided that:

- a. The project has a net density of at least 12 dwelling units per acre; and



- b. The project is consistent with City of Watsonville housing goals and policies including Watsonville Municipal Code Chapter 14-46 (inclusive of percentage of inclusionary units, income restrictions, sales price restrictions and length of affordability covenants).

The proposed project meets all of these requirements. However, a LAFCO annexation into the water service area would be required for the extraterritorial water service (new service outside City limits) from the City of Watsonville Public Works and Utilities Department. California Government code §56133 directs cities and special districts to receive written approval from LAFCO to provide new or extended services by contract or agreement outside their jurisdictional boundaries.

(d) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area from the currently proposed project.

(e) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area. In addition, as included on page 298 of the Final EIR, Mitigation Measure 4.3 requires that the City's groundwater impact fee program for the project area be modified to ensure that project water demand is fully offset (at a ratio of 1.2:1) either by comparing pre-development water demand to post development water demand or by participating in a water offset program with fixture and landscaping replacements in the City's water service area or, a combination of both.

(f) Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area.

(g) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area. For example, the certified EIR concludes that 1,004 tons of solid waste per year would be generated. Under the modified project, impacts would now calculate to 103 tons/year for Phase 1a, and 491 for the balance of development in the County Entitlements Area, for a total of 594 tons/year. This results in a reduction of 410 tons/year from the certified EIR.

(h) Comply with federal, state, and local statutes and regulations related to solid waste?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area.

(i) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area.

(j) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?



Impacts would be reduced under the modified project with the removal of the City Specific Plan Area.

3.12.2 Revised Project Description

The revised project description and phasing of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.12.1 for a complete discussion.

3.13 Transportation and Circulation

A revised traffic study was prepared, dated March 3, 2014 by RBF, to address the modified project and to update the original study prepared by RBF Consulting in 2009 (Appendix N). Due to the decrease in dwelling units and associated project trip generation, the revised traffic impact analysis evaluated only intersections that were previously identified to require project mitigation measures. The remaining study intersections would continue to have no impacts or impacts that are considered less than significant as described in the project EIR; and therefore were not re-analyzed in the revised traffic study.

3.13.1 Project Trip Generation for the Existing and Modified Projects

The proposed project evaluated in the certified EIR consisted of 220 apartments, 118 condominium/townhomes, and 160 single-family detached homes. The ultimate build out (using updated 2012 trip generation rates) of the project analyzed in the certified EIR was forecast to generate 3,672 daily trips; with 284 trips (61 in, 223 out) occurring during the AM peak hour and 358 trips (231 in, 127 out) occurring during the PM peak hour (see Table 3-1).

In comparison to the existing project analyzed in the certified EIR, the modified project, including the combined development of Phase 1a and Phase 1b as analyzed under Existing plus Background plus Project conditions, would result in 279 fewer residential dwelling units and would result in 171 fewer AM peak hour trips and 221 fewer PM peak hour trips as compared to the approved project (Table 3-1).

3.13.2 Removal of City Specific Plan Area from the Proposed Project

The removal of the City Specific Plan Area under the modified project would result in the following changes to the project EIR. All of the revised impacts below are considered to be reduced in magnitude from the original analysis. All other traffic impacts not discussed would remain unchanged.

East Lake Avenue (Highway 152)/Holohan Road

Revised Project Impact: Substantially reduced impact from that which was identified in the approved Atkinson Lane Specific Plan and EIR, which is as follows:

The East Lake Avenue (Highway 152)/Holohan Road intersection would continue to operate at LOS D and LOS E during the AM and PM peak hours, respectively. The proposed project would increase the volume to capacity ratio for this intersection ~~to by 4.9~~ 2.4 percent in the PM peak hour. Since the addition of the project traffic increases the volume to capacity ratio by more than one percent for the PM peak hour impacts to this intersection are considered potentially significant per the County of Santa Cruz significance criteria. The County of Santa Cruz and Caltrans are currently evaluating improvements at the intersection, which include the reconfiguration of the eastbound approach to include a dedicated eastbound left-turn lane, a shared eastbound left-turn lane, a shared eastbound left-turn/through lane and a dedicated right-turn lane. The northerly leg would be widened to include two receiving lanes. Implementation of the following mitigation measure would improve the level of service at this intersection to a less than significant level.



MM 3.13-5 Prior to occupancy of the proposed project, project applicants within the County Entitlements Area ~~planning area~~ shall pay their proportional fair share towards improving the eastbound approach on Holohan Road at the East Lake Avenue (Highway 152)/Holohan Road intersection to include a dedicated eastbound left-turn lane, a shared eastbound left-turn lane, a shared eastbound left-turn/through lane and a dedicated right-turn lane. The estimated cost of this improvement is \$1,225,100 ~~4.5 million dollars~~. Phase 1a (MidPen Housing project) of the modified project would pay a fair share contribution of 0.40 percent of the estimated improvement cost (\$4,900), while developments within the remainder of the County Entitlements Area would pay an estimated 1.75 percent (\$21,439) of the estimated improvement cost as its percent fair share contribution (see Table 3.13-3). To fund this improvement, project applicants shall pay the Pajaro Valley Planning Area traffic impact fee to the County of Santa Cruz towards construction of this planned improvement in the County’s Capital Improvement Program (CIP). Payment of impact fees to the County will cover the above fair share contribution levels as well as meet other impact fees purposes.

With the addition of the proposed improvements the intersection delay and operation would improve to LOS D during the AM peak period and LOS C during the PM peak period, which would be within County standards. Therefore, this is considered a less than significant impact.

Table 3.13-3: Project Fair Share Contributions¹

<u>Intersection</u>	<u>Phase 1a Only</u>		<u>Phase 1b Only</u>		<u>Phase 1a + 1b</u>	
<u>East Lake Avenue (Highway 152) Holohan Rd</u>	<u>0.40%</u>	<u>\$4,900</u>	<u>1.75%</u>	<u>\$21,439</u>	<u>2.16%</u>	<u>\$26,339</u>
<u>Highway 1 NB Ramps at Harkins Slough Rd</u>	<u>0.18%</u>	<u>\$764</u>	<u>0.66%</u>	<u>\$2,803</u>	<u>0.84%</u>	<u>\$3,567</u>
<u>Airport Boulevard at Freedom Boulevard</u>	<u>0.98%</u>	<u>\$8,380</u>	<u>3.50%</u>	<u>\$29,928</u>	<u>4.48%</u>	<u>\$38,308</u>
<u>Highway 1 NB Ramps at Larkin Valley Road</u>	<u>0.81%</u>	<u>\$8,335</u>	<u>2.77%</u>	<u>\$28,504</u>	<u>3.58%</u>	<u>\$36,839</u>
<u>Freedom Boulevard at Crestview Drive</u>	<u>0%</u>	<u>\$0</u>	<u>100%</u>	<u>\$16,300</u>	<u>100%</u>	<u>\$16,300</u>
<u>Brewington Avenue north of Crestview Drive</u>	<u>0%</u>	<u>\$0</u>	<u>100%</u>	<u>\$130,700</u>	<u>100%</u>	<u>\$130,700</u>
<u>Totals</u>		<u>\$22,379</u>		<u>\$229,674</u>		<u>\$252,053</u>

Note: 1 - Construction costs recalculated based on the March 2013 National Highway Construction Cost Index.
Source: RBF Consulting, March 2014 and County of Santa Cruz 2014.

Highway 1 Northbound Ramps at Harkins Slough Road

Revised Project Impact: Substantially reduced impact from that which was identified in the approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Highway 1 NB Ramps/Harkins Slough Road ramp terminal intersection would continue to operate at LOS F and LOS A during the AM and PM peak hours, respectively. The worst approach would continue to operate at LOS F and LOS B during the AM and PM peak hours, respectively. Development of projects within the County Entitlements Area under Phases 1a and 1b, and Phase 2 (County site) of the modified project would result in a less than significant impact under the County’s adopted significance criteria, but a significant impact using Caltrans criteria (any increase in trips at LOS E or F would be significant). ~~The addition of the project traffic would increase the volume to capacity ratio by 2.5 percent in the AM peak hour, which is more than one percent at the worst approach that is operating at LOS F. Therefore, impacts to this intersection are considered potentially significant under the County of Santa Cruz significance criteria.~~ Implementation of the following mitigation measure would reduce this impact to a less than significant level.



Revised Project Mitigation: The project mitigation shall be revised as follows:

MM 3.13-6 Prior to occupancy of the proposed project, project applicants within the County Entitlements Area ~~planning area~~ shall pay their proportional fair share towards installation of a traffic signal at the Highway 1 NB Ramps/Harkin Slough Road and the Highway 1 SB Ramps/Harkin Slough Road intersections. This signal shall be coordinated/interconnected with the intersection of Harkins Slough Road/Green Valley Road due to the close spacing of these intersections and the potential overflow of queues and the new signal at the southbound ramp terminal. The estimated cost of this improvement is approximately ~~\$424,700~~ ~~520,000~~ dollars. Phase 1a (MidPen Housing project) of the modified The proposed project would shall pay a fair share contribution of 0.182-36 percent (\$764) of the estimated improvement cost, while developments within the remainder of the County Entitlements Area would pay an estimated 0.66 percent (\$2,803) of the estimated improvement cost as its percent fair share contribution which is \$12,272 (see Table 3.13-3). The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours. To fund this improvement, project applicants shall pay applicable traffic impact fees to the City of Watsonville towards construction of this improvement prior to issuance of building permits. Payment of traffic impact fees to the City and County will cover these fair share contribution levels as well as meet other impact fee purposes. ~~The City of Watsonville is updating their fee program and fee ordinance and will adopt the program prior to implementation of the first phase of the proposed project.~~ The City of Watsonville shall coordinate with Caltrans on improvements to this intersection.

Airport Boulevard at Freedom Boulevard

Revised Project Impact: Substantially reduced impact from that which was identified in the approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Airport Boulevard/Freedom Boulevard intersection would continue to operate at LOS E in both the AM and PM peak hours. The addition of the modified project generated traffic increases the volume to capacity ratio by ~~9.4-2.20~~ percent in the AM peak hour and ~~6.1~~ 1.97 percent in the PM peak hour, which is more than one percent during both the AM and PM peak hours. Therefore, impacts to this intersection are considered **potentially significant** in accordance with the County of Santa Cruz significance criteria. Implementation of the following mitigation measure would reduce this impact to a **less than significant level**.

Revised Project Mitigation: The project mitigation shall be revised as follows:

MM 3.13-7 Prior to occupancy of the proposed project, project applicants within the planning area shall pay their proportional fair share towards installation of a second through and right-turn lane on the Airport Boulevard approach from Highway 1 and a second left-turn lane on Freedom Boulevard at the Airport Boulevard/Freedom Boulevard intersection. The receiving leg on Airport Boulevard shall be widened in order to accommodate the additional through-lanes. The estimated cost of these improvements is approximately ~~\$855,100~~ ~~1,047,000~~ dollars. Phase 1a of the modified project would pay a fair share contribution of 0.987-57 percent (\$8,380) of the estimated improvement cost, which is \$79,257 while developments within the remainder of the County Entitlements Area Phase 1b would pay an estimated 3.50 percent (\$29,929) of the estimated improvement cost as the fair share contribution. The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours.



Table 3-1: Project Trip Generation for the Existing and Modified Projects

	Project Size	Weekday Daily Trips ¹	AM Peak Hour			PM Peak Hour		
			Total Peak Hour	% of ADT	In / Out	Total Peak Hour	% of ADT	In / Out
Existing Project ²								
Apartments	220 Units	1,463	112	8%	22 / 90	136	9%	89 / 47
Condominiums/Townhomes (per unit)	118 Units	686	52	8%	9 / 43	61	9%	41 / 20
Single Family Detached Housing	160 Units	1,523	120	8%	30 / 90	160	11%	101 / 59
Existing Project Total	498 Units	3,672	284		61 / 223	358	10%	231 / 127
Modified Project ²								
Phase 1a								
Apartments	42 Units	279	21	8%	4 / 17	26	9%	17 / 9
Single-family Detached Housing	4 Units	38	3	8%	1 / 2	4	11%	3 / 1
Subtotal Phase 1a	46 Units	317	24		5 / 19	30	9%	20 / 10
Phase 1b								
Apartments	173 Units	1,150	88	8%	18 / 70	107	9%	70 / 37
Subtotal Phase 1b	173 Units	1,150	88		18 / 70	107	9%	70 / 37
Phase 1a + 1b								
Subtotal Phase 1a + 1b	219 Units	1,468	113	8%	23 / 90	137	9%	90 / 47
Notes:								
1. Trip generation rates published by Institute of Transportation Engineers, "Trip Generation," 9 th Edition, 2012.								
2. The average trip generation rate to calculate the project trip generation.								
Source: RBF Consulting, 2014.								



~~The City of Watsonville is updating their fee program and fee ordinance and will adopt the program prior to implementation of the first phase of the proposed project. To fund this improvement, project applicants shall pay applicable traffic impact fees to the City of Watsonville towards construction of this improvement prior to issuance of building permits. Payment of traffic impact fees to the City (20 units) and to the County (26 units) will cover these fair share contribution levels as well as meet other impact fee purposes.~~

Highway 1 Northbound Ramps at Larkin Valley Road

Revised Project Impact: Substantially reduced impact from that which was identified in the approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Highway 1 NB Ramps/Larkin Valley Road ramp terminal intersection would continue to operate at overall LOS E and LOS F in the AM and PM peak hours, respectively. The worst approach would continue to operate at LOS F during both the AM and PM peak hours. ~~The addition of the project traffic increases the volume/capacity ratio by 19.4 percent in the AM peak hour and 31.0 percent in the PM peak hour, which is more than a one percent increase to the volume to capacity ratio per the County of Santa Cruz significance criteria. Development of projects within the County Entitlements Area under the modified project would result in significant impact using Caltrans requirements.~~ Therefore, impacts to this intersection would be considered potentially significant. Implementation of the following mitigation measure would improve the level of service to this intersection to an acceptable level of service. The close spacing of this intersection to the Airport Boulevard/Larkin Valley Road intersection would require both intersections to be upgraded.

Revised Project Mitigation: The project mitigation shall be revised as follows:

MM 3.13-8 Prior to occupancy of the ~~proposed~~ modified project, project applicants within the County Entitlements Area ~~planning area~~ shall pay their proportional fair share towards installation of two roundabouts (one at the northbound hook ramp terminal and one at the Airport Boulevard/Larkin Valley intersection) at the Highway 1 NB Ramps/Larkin Valley Road Intersection. Since the ramp terminal and the intersection of Airport Boulevard/Larkin Valley Road are closely spaced, improvements shall take both intersection operations into consideration when constructing the proposed improvements. The estimated cost of these improvements is ~~\$1,029,000~~ 1,260,000 dollars. Phase 1a (MidPen Housing project) of the modified ~~The~~ project would pay a fair share contribution of ~~0.818-70~~ 0.818-70 percent (\$8,335) of the estimated improvement cost, while developments within the remainder of the County Entitlements Area Phase 1b would pay an estimated 2.77 percent (\$28,504) of the estimated improvement cost ~~which is \$109,620 as the fair share contributions.~~ The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours. To fund this improvement, project applicants shall pay applicable traffic impact fees ~~to the City of Watsonville~~ towards construction of this improvement. This obligation will be met through payment of traffic impact fees to the City (20 units in Phase 1a), and a portion of the County's impact fees received by the County (\$130 per unit) shall be paid to the City by the County. ~~The City of Watsonville is updating their fee program and will adopt the program prior to implementation of the first phase of the proposed project.~~ The City of Watsonville shall coordinate with Caltrans and prepare a Project Study Report for improvements to this intersection.



Freedom Boulevard at Crestview Drive

Revised Project Impact: Same as identified in the approved Atkinson Lane Specific Plan and EIR, which is as follows:

At the intersection of Freedom Boulevard/Crestview Drive existing conditions field observation revealed that the southbound left turn lane overflows during the PM peak hour, which creates an operational deficiency along Freedom Boulevard as it would cause additional backups or would disrupt free flow in the through lane. This impact is considered to be significant with the implementation of Phases 1a and additional future project (Phase 1b) within the County Entitlements Area. The southbound left turn queue from Freedom onto Crestview would continue to overflow into the through lane and the addition of the revised project traffic would exacerbate adverse ~~safety~~ operational conditions. Left turn vehicles spill back into the through lane and vehicles traveling straight through the intersection would have to change lanes or stop behind the back of the queue. Implementation of the following mitigation measure would ensure that the proposed project has a **less than significant impact** at this intersection by eliminating hazardous conditions.

Revised Project Mitigation: The project mitigation shall be revised as follows:

MM 3.13-11a The first project applicant on APNs 019-236-01 and 048-221-09 (Lamb properties), 048-251-09, 048-231-17 or 048-231-18, shall design, fund and implement the southbound left-turn pocket from Freedom Boulevard to Crestview Drive to lengthen the pocket by at least 2550-feet. The existing storage length is 150 feet and the SimTraffic analysis indicated a 95% queue of 175 feet. The estimated cost of this improvement is \$16,300 ~~20,000~~ and shall be funded by the first applicant for development on APN 048-221-09 (Lamb) within the planning area. This improvement shall be either installed by the first applicant prior to occupancy of any portion of these parcels or satisfied through a payment of that amount directly to the City of Watsonville. ~~A cost share agreement will be developed by both the City and the County to ensure that these improvements are fully implemented.~~

~~**MM 3.13-11b** All project applicants shall contribute their fair share toward the installation of traffic improvements in MM 3.13-11a through the collection of TIA fees and/or any other cost sharing agreement.~~

Brewington Avenue, Atkinson Lane, and Garner Avenue Road Segments

The development of APN 048-221-09 (County Lamb parcel within the County Entitlements Area) under the modified project, would result in fewer impacts than the original Atkinson project to area roadways. No significant impacts would be expected to occur for Atkinson Lane, east of Freedom Boulevard, and Gardner Avenue, east of Freedom Boulevard. Although reduced, impacts on Brewington Avenue north of Crestview Drive would remain significant requiring mitigation.

~~**MM 3.13-12a:** Prior to occupancy of any project on APNs 048-211-25, 019-226-42, 019-226-44, 019-236-01, or 048-231-01, project applicants shall develop and implement a traffic calming plan on: 1) Atkinson Lane, east of Freedom Boulevard; and 2) Gardner Avenue, east of Freedom Boulevard, along the streets that are affected by the proposed project. The estimated cost of this improvement is \$200,000. ~~A cost share agreement will be developed by both the City and the County to ensure that these improvements are fully implemented.~~~~

MM 3.13-12b: Prior to occupancy of any project development on APNs 048-221-09 and 019-236-01 (Lamb), 048-251-09, 048-231-17, or 048-231-18, project applicants shall develop and



implement a traffic calming plan on Brewington Avenue north of Crestview Drive; along the streets that are affected by the proposed project. The estimated cost of this improvement is \$130,700 ~~160,000~~. A cost share agreement will be developed by both the City and the County to ensure that these improvements are fully implemented. This improvement shall be installed by the first applicant prior to final occupancy of any portion of these parcels, or satisfied through payment of that amount directly to the City of Watsonville under an approach that may involve a reimbursement agreement, as other future development on the Lamb property may be required to pay their fair shares and reimburse the first applicant.

3.13.3 Revised Project Description

(a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

The development of Phase 1a and Phase 1b of the County Entitlements Area was evaluated separately in the revised traffic study prepared by RBF (Appendix N). Table 3-2 summarizes the existing plus background plus project impacts for each of those phases for the modified project. Impacts and mitigation measures would remain unchanged for Phase 1a with one exception. Traffic impacts requiring calming measures on Gardner Avenue and Atkinson Lane east of Freedom Boulevard would no longer occur under the modified project. As a result, Mitigation Measure 3.13-12a will be deleted. Under Phase 1b, all impacts and mitigation would remain the same with the exception of the elimination of traffic calming measures Gardner Avenue and Atkinson Lane east of Freedom Boulevard. Please see the revised impact and mitigation discussion provided above under Section 3.13.1.

Table 3-2: Existing Plus Background Plus Project Impacts by Phase for Intersection Levels of Service and Road Segments for the Modified Project

Phase	Intersections and Segments	Significant Impact ¹	Mitigation Measure	Less Than Significant with Mitigation
1a	East Lake Avenue (Highway 152) Holohan Road	Yes	MM 3.13-5	Yes
	Highway 1 NB Ramps at Harkins Slough Road	Yes	MM 3.13-6	Yes
	Airport Boulevard at Freedom Boulevard	Yes	MM 3.13-7	Yes
	Highway 1 NB Ramps at Larkin Valley Road	Yes	MM 3.13-8	Yes
	Freedom Boulevard at Crestview Drive	No	None	N/A
	Gardner Avenue and Atkinson Lane east of Freedom Blvd.	No	3-13-12a	N/A
	Brewington Avenue north of Crestview Drive	No	None	N/A
1b	East Lake Avenue (Highway 152) Holohan Road	Yes	MM 3.13-5	Yes
	Highway 1 NB Ramps at Harkins Slough Road	Yes	MM 3.13-6	Yes
	Airport Boulevard at Freedom Boulevard	Yes	MM 3.13-7	Yes
	Highway 1 NB Ramps at Larkin Valley Road	Yes	MM 3.13-8	Yes
	Freedom Boulevard at Crestview Drive	Yes	MM 3.13-11a&b	Yes
	Gardner Avenue and Atkinson Lane east of Freedom Blvd.	No	3-13-12a	N/A
	Brewington Avenue north of Crestview Drive	Yes	MM 3.13-12b	Yes
Notes:				
(1) Assumes that Phase 1b would not be constructed prior to Phase 1a.				
N/A – Not Applicable				



(b) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No change would occur under the modified project.

(c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No change would occur under the modified project.

(d) Result in inadequate emergency access?

No change would occur under the modified project.

(e) Cause an increase in parking demand which cannot be accommodated by existing parking facilities?

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area.

(f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No change would occur under the modified project.

(g) Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the County General Plan for designated intersections, roads or highways?

The revised project build out, including the combined development of all phases or projects that can be accommodated within the County Entitlements Area, as analyzed under Cumulative plus Project conditions would result in 171 fewer AM peak hour trips and 221 fewer PM peak hour trips as compared to the approved project.

Traffic impacts requiring calming measure under the existing project on Gardner Avenue and Atkinson Lane east of Freedom Boulevard would no longer occur under the modified project. As a result, Mitigation Measure 3.13-12a is proposed for deletion (see Section 3.13.2 for a complete discussion). All other impacts and mitigation measures would remain the same under the modified project. Table 3-3 provides a summary of project impacts and mitigation measures for Cumulative plus build out conditions under the modified project.

Table 3-3: Cumulative Plus Buildout Impacts for Intersection Levels of Service and Road Segments for the Modified Project

Intersections and Road Segments	Significant Impact	Mitigation Measure	Less Than Significant with Mitigation
East Lake Avenue at Holohan Road	Yes	MM 3.13-5	Yes
Highway 1 NB Ramps at Harkins Slough Road	Yes	MM 3.13-6	Yes
Airport Boulevard at Freedom Boulevard	Yes	MM 3.13-7	Yes
Highway 1 NB Ramps at Larkin Valley Road	Yes	MM 3.13-8	Yes
Gardner Avenue and Atkinson Lane east of Freedom Boulevard	No	3.13-12a	N/A
East Lake Avenue at Wagner Avenue	Yes	MM 4-1	Yes
Brewington Avenue north of Crestview Drive	Yes	MM 4-2	Yes



3.14 Greenhouse Gas Emissions

The Draft and Final EIR prepared for this project and certified by the Board of Supervisors on June 9, 2009 included a cumulative analysis of the effects of greenhouse gas emissions and climate change, but did not include an analysis of project level effects. The requirement to analyze greenhouse gas emissions under CEQA became mandatory beginning on March 18, 2010. As a result, the following analysis has been included in this Addendum to the EIR.

3.14.1 Removal of City Specific Plan Area from the Proposed Project

(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction Emissions

Temporary impacts would result from the construction of Phase 1a (MidPen Housing project. GHGs would be emitted by off-road and on-road construction equipment and worker vehicles. Construction emissions were calculated using the California Emissions Estimator Model (CalEEMod) version 2011.1.1. The CalEEMod datasheets are contained as Appendix J. The proposed MidPen Project would be constructed over a period of approximately two years. Site development is expected to begin in 2014 with project completion in 2016. The results of the CalEEMod calculations for GHGs from the MidPen Phase 1a Project construction are shown in Table 3-4. The total construction GHG emissions for Phase 1a are estimated at approximately 917 metric tons of CO₂ equivalent (MTCO₂e).

Using a qualitative approach to emissions generated during the construction phases for development of the remainder of the County Entitlements Area, a total of 4,366 MTCO₂e would be generated for Phase 1b. The removal of the City Specific Plan Area from the project analyzed in the EIR would eliminate approximately 184 units from future development, thereby reducing greenhouse gas emissions by an estimated 3,670 metric tons per year of construction. As a result, impacts would be less than significant.

Table 3-4: Estimated Annual Greenhouse Gas Emissions from Construction

<u>Year</u>	<u>Emissions in MTCO₂e</u>
2014	286
2015	433
2016	198
Total	917

Note: MTCO₂e: metric tons of CO₂ equivalent

Operational Emissions

Operational GHG emissions for Phase 1a of the proposed Project were calculated in accordance with the methodologies described above using CalEEMod version 2011.1.1. Mobile source input for trip generation was taken from the Project’s traffic impact analysis prepared by RBF Consulting (Appendix C). The results of the calculations are shown in Table 3-5; CalEEMod data sheets are included in Appendix J. Phase 1a of the proposed project would result in an estimated annual operational GHG emissions of approximately 458 MTCO₂e per year.

Using a qualitative approach to emissions generated during the operational phases for development of the remainder of the County Entitlements Area, a total of 2,185 MTCO₂e per year would be generated. The removal of the City Entitlements Area from the project analyzed in the EIR would eliminate approximately 184 units from future development, thereby reducing greenhouse gas emissions by an estimated 1,833 metric tons per operational year. As a result, impacts would be less than significant.

**Table 3-5: Estimated Annual Greenhouse Gas Emissions from Operations**

Category	Emissions in MTCO₂e
Area	0.58
Energy	87.41
Mobile	353.43
Waste	9.08
Water	7.74
Total	458.24
Note: MTCO ₂ e: metric tons of CO ₂ equivalent	

(b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The County Board of Supervisors approved the County of Santa Cruz Climate Action Strategy (CAS) on February 26, 2013. The County's analysis demonstrated that the County has already achieved GHG reduction goals for 2020 and 2035. A variety of other measures demonstrate that it is feasible for the County to also meet 2050 goals, even with projected land use developments occurring throughout the unincorporated area. The CAS showed that measures related to building development play a minor role in GHG reduction, and new codes or measures related to new buildings are not an appreciable part of the Strategy. The County has not yet adopted thresholds of significance for project-generated greenhouse gas emissions, and there is no requirement that it do so. The County also monitors activity of the Monterey Bay Unified Air Pollution Control District (MBUAPCD) for possible guidance in developing such thresholds. The MBUAPCD Board of Directors received an informational report on the status of developing greenhouse gas emissions thresholds for evaluating projects under CEQA (MBUAPCD, 2013). Although no action was taken, staff recommended further review of a greenhouse gas threshold of 2,000 metric tons of CO₂e per year for individual land-use projects or compliance with an adopted greenhouse gas reduction plan/climate action plan.

The City of Watsonville is also currently working on completing its Climate Action Plan; and therefore, has not adopted thresholds of significance for greenhouse gas emissions.

Based on calculations generated using CalEEMod version 2011.1.1, the modified project would generate approximately 450 MTCO₂e for Phase 1a annually, while the balance of the County Entitlements Area would generate approximately 2,185 MTCO₂e within an unknown number of individual projects. Although the total annual greenhouse gas emissions within the entire County Entitlements Area are estimated to be approximately 2,600 MTCO₂e, this level would not be considered significant because the project would be in compliance with the County of Santa Cruz CAS. In addition, approximately 200 MTCO₂e of this total would be generated within the jurisdiction of the City of Watsonville. Finally, the removal of the City Specific Plan Area under the modified project would reduce the emissions of the proposed project by approximately 50 percent. As a result, no significant impacts are anticipated.

3.14.2 Revised Project Description

The revised phasing plan of the modified project would not result in any new impacts, or impacts of greater severity. See Section 3.14.1 for a complete discussion.



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The following sections contained in Chapter 4.0 of the Project EIR have been revised as follows:

4.0 CEQA Considerations

This section of the Draft EIR discusses long-term implications of the proposed project as required by CEQA. The topics discussed include significant irreversible commitment of resources, growth-inducing impacts, and significant and unavoidable environmental effects, and effects found not to be significant. Cumulative impacts and alternatives to the proposed project are also discussed herein.

4.1 Significant and Unavoidable Environmental Effects

For the purpose of this section, unavoidable adverse impacts are those effects of the proposed project that would significantly affect either natural systems or other community resources, and cannot be mitigated to a less-than-significant level. The proposed ~~Specific Plan~~PD and PUD within the County Entitlements Area, if implemented, would not result in any ~~the following~~ significant and unavoidable project impacts, ~~under project conditions:~~

- ~~• Agricultural Resources—Phase 2 (City site)~~

4.5.3 Cumulative Impact Analysis

Agricultural Resources

According to the California Farmland Conversion Report 2002-2004 published by the California Department of Conservation, Division of Land Resource Protection (DLRP, 2006a), 669 acres of prime farmland was converted in Santa Cruz County to urban uses between 2002 and 2004. The proposed project would not contribute to the on-going conversion of Important Farmlands in Santa Cruz County by ~~resulting in the conversion of approximately 45.31 acres of Important Farmland associated with implementation of the proposed Specific Plan~~PD and PUD within the County Entitlements Area.

~~The planning area was designated as one of three primary growth areas under Measure U, which directs new growth to designated areas within and around the City of Watsonville in order to protect agricultural lands and environmentally sensitive areas, while providing the means for the City to address housing and job needs for the next 20 to 25 years. Measure U established an urban limit line (ULL) along the northern boundary, excludes land previously included east and west of East Lake Avenue, and directs growth into several unincorporated areas. A western boundary west of Highway 1 was defined by Measure U to remain undeveloped. The proposed project is a component of Measure U, which was planned to limit the conversion of agricultural land to these three areas in order to preserve other Prime Farmlands.~~

~~Approximately 242 acres of Important Farmland would be converted under Measure U, including the 45.31 acres that is located within Phase 2 (City site) within the planning area. No Important Farmland is located within Phase 1 of the proposed project. A number of general plan policies in the City of Watsonville General Plan and County of Santa Cruz General Plan would limit the conversion of Important Farmlands. However, the physical conversion of this Important Farmland to urban uses would reduce the amount of valuable farmland available for crop production and would therefore contribute to the depletion of a valuable natural resource in the City of Watsonville and surrounding area.~~

Conclusion: Implementation of the proposed project would not result in a significant cumulative impact to agricultural resources. ~~The City of Watsonville and the County of Santa Cruz General Plan contain no policies or implementation programs, which require mitigation of offsets for the conversion of agricultural land and there is not an established agricultural compensation program in the City of Watsonville or Santa Cruz County. Therefore, there are no feasible mitigation measures available to reduce the cumulative impact to a less than significant level. Although~~



~~there is no feasible mitigation measure available to reduce the impact to a less than significant level, future development shall contribute and participate towards any agricultural preservation program, agricultural mitigation fee or similar mitigation program as adopted and recognized by the City of Watsonville in place at the time of annexation to the City. However, since there is no guarantee that such a program would fully mitigate the loss of agricultural land within the Phase 2 (City site) of the proposed project; therefore, this impact remains a **significant and unavoidable cumulative impact.**~~

Water Supply

The water supply for the City of Watsonville and surrounding unincorporated Santa Cruz County is drawn solely from surface water and the Pajaro Valley Groundwater basin, which as a whole is currently experiencing overdraft conditions and seawater intrusion. Implementation of the ~~proposed~~modified project, in combination with foreseeable future growth would increase the cumulative demand for groundwater resources. ~~However, there would be a substantial reduction from that of the originally proposed Atkinson project due to removal of the City Specific Plan Area from the currently proposed project.~~ The City of Watsonville, as the water purveyor for the proposed project, is able to meet its water demands through the use of surface water and groundwater. The existing water system has sufficient capacity to provide water to the proposed project and the necessary infrastructure to serve the proposed project. The ~~PVWMA~~D is continuing to implement ~~their~~its Basin Plan in order to address the long-term ~~impact status~~ of the groundwater basin, including completion of several water supply and distribution projects, and including 20 miles of a distribution pipeline and a Recycled Water Facility with the City of Watsonville, which ~~will provide~~s 4,000 acre feet of new, drought proof, reliable irrigation supply to the coast. The ~~PVWMA~~D is also currently beginning a rate re-establishment process so that the Basin Plan can be implemented.

Conclusion: Implementation of the ~~proposed~~modified project would result in a significant increase in the amount of impervious surfaces at the project site. ~~However, it would be a substantial reduction from the originally proposed Atkinson project due to removal of the City Specific Plan Area from the currently proposed project.~~ ~~However, since the proposed project would result in a reduction in the amount of water use within the planning area over existing conditions, the proposed project would not substantially contribute to a depletion of groundwater supplies or interfere with groundwater recharge to the extent that it would result in lowering of the groundwater table.~~ Future development within the County Entitlements Area would be required a 1.2 gallon offset for every new gallon of water used in the project authorized by the County Entitlements. This requirement shall be required to meet the 1.2 required offset by retrofitting existing developed property within the City of Watsonville's water service area. Applicants for new service would bear those costs associated with the retrofit and pay any associated fees set by the City to reimburse administrative and inspection costs in accordance with any procedures for implementing this program.

In addition, ~~all~~ future development within the County Entitlements Area on Phase 1 (County site) and the remainder of the planning area would be required to pay the City's groundwater impact fee, which is currently set at ~~\$347.56~~\$382.87 per bedroom and is used to retrofit water fixtures (e.g. toilets, showerheads, etc.) within the City. The water retrofit program, ~~which is funded by the groundwater impact fees~~ results in a savings of 748 gallons of water per month, would offset approximately 70 to 100 percent of the water consumption of new homes within the planning area and would reduce future development's impact on the groundwater basin. However, the ~~proposed~~modified project in combination with reasonably foreseeable future growth would result in an incremental increase of water use that would continue to contribute to the depletion of water supply within the Pajaro Valley Groundwater basin, which



is currently in overdraft condition. The following mitigation measure would ensure that the proposed project does not contribute to cumulative impacts to the groundwater basin.

Mitigation Measure

MM 4-3 The City's groundwater impact fee program shall apply to all future development within the County Entitlements Area. In addition, future development shall be required to for the project area shall be modified to ensure that project water demand is fully offset (at a ratio of 1.2:1) either by comparing pre-development water demand to post development water demand or by participating in a water offset program with fixture and landscaping replacements in the City's water service area or, a combination of both. The project applicants shall be responsible for working with the City, or their designee, in developing an offset program that achieves the water saving objectives and shall bear the costs associated with the offset program including any additional replacement of plumbing fixtures and landscaping retrofits identified in the City water service area to meet the stated goals. Pre-development water demand shall be accounted for on a per parcel basis.

Impacts would be reduced under the modified project with the removal of the City Specific Plan Area and implementation of the above mitigation measures.

Transportation and Circulation

Cumulative traffic was evaluated with and without the ~~proposed~~ modified project using the 2030 AMBAG model. The methodology used to obtain the traffic volumes consisted of using the difference between the 2000/2008 volumes and the 2030 volumes to determine annual growth. The 2008 traffic volumes were then exponentially grown to 2030 using the annual growth rate calculated from the model/traffic counts. ~~The extension of Wagner Avenue as part of the proposed project would generate traffic from Freedom Boulevard and Martinelli Street for cumulative conditions. This is mainly due to congested conditions occurring further east on Freedom Boulevard closer to downtown.~~

Cumulative Without Modified Project Analysis

Intersections

All of the study intersections would operate at acceptable levels of service with the exception of the following intersections. The majority of intersections studied require significant improvements to operate at acceptable conditions, which may require right-of-way acquisition. The following section shows changes to the impacts identified by the 2008 EIR, based on the Modified Project and updated traffic study.

- **East Lake Avenue/Wagner Avenue** intersection is anticipated to operate at an overall LOS D during the AM peak hour and LOS C during the PM peak hour. This intersection has a worst approach LOS of F during both the AM and PM peak hours. The volumes do not meet signal warrants for the peak hours. The installation of a traffic signal would improve the LOS to acceptable conditions during both peak periods (i.e. LOS A) during the AM and LOS B during the PM peak period.
- **Freedom Boulevard/Crestview Drive.** The existing queue length is 150 feet and the SimTraffic analysis indicates a 95th percentile queue of ~~485~~175 feet. The volumes would increase by approximately by 10 to 15 percent on the eastbound left for cumulative conditions and subsequently the queue could increase as well. However, the simulation indicates that the 95th percentile queue would remain at ~~485~~175 feet with modified signal timing. An overall eastbound left turn pocket length of ~~200~~190 feet would suffice for cumulative conditions.



- **East Lake Avenue/Holohan Road** intersection is anticipated to operate at LOS E in the AM peak hour and LOS F in the PM peak hour. With the addition of a dedicated eastbound right-turn lane and a shared eastbound left-turn lane on Holohan Road as required by MM-4-4, the intersection would operate at LOS D during the AM peak hour and LOS D during the PM peak hour.
- **Green Valley Road/Holohan Road** intersection is anticipated to operate at LOS E during both the AM and PM peak hours. The addition of an exclusive southbound right-turn lane would improve the LOS to C during the AM peak hour and E during the PM peak hour. Additional improvements on all the approaches would require significant ROW acquisition to retain acceptable levels of service.
- **Green Valley Road/Main Street** intersection is anticipated to operate at LOS F in the AM and PM peak hours. Additional improvements at the intersection are infeasible and would not improve the delay at this intersection.
- **Highway 1 NB Ramps/Harkins Slough Road** ramp terminal intersection is anticipated to operate at LOS F in the AM peak hour and LOS A in the PM peak hour. The worst approach is forecast to operate at LOS F in the AM peak hour and LOS E in the PM peak hour. The city plans to construct ramps to the north on Highway 1 at this location.
- **The Highway 1 SB Ramps/Harkins Slough Road** ramp terminal intersection is anticipated to operate at LOS F during both the AM and PM peak hours. Signalizing both the northbound and southbound ramp intersections would improve the signal operation to an acceptable level of service. The close spacing of the two intersections and the intersection of Harkins Slough Road and Green Valley Road would require that the signal timing be coordinated/interconnected and the bridge widened.
- **Airport Boulevard/Freedom Boulevard** intersection is anticipated to operate at LOS F in the AM peak hour and LOS E in the PM peak hour. Similar to the improvements identified for project conditions, the planned widening of Airport Boulevard and reconfiguring of the intersection to include the following geometry, would improve the LOS to D during both analysis peak hours. Install a second through and shared right-turn lane on the Airport Boulevard approach from Highway 1 and a second right-turn lane on Freedom Boulevard at the Airport Boulevard/Freedom Boulevard Intersection. The receiving leg on Airport Boulevard shall be widened in order to accommodate the two through-lanes. These improvements may result in additional right of way.
- **Highway 1 NB Ramps/Highway 129 – Riverside Drive** ramp terminal intersection is anticipated to operate at an overall LOS A in the AM and PM peak hour. The worst approach is forecast to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. The worst approach is measured on the NB off ramp. Highway 1 SB Ramps/Highway 129 – Riverside Drive ramp terminal intersection is anticipated to operate at an overall LOS F in the AM and PM peak hours. The worst approach is forecast to operate at LOS E in both the AM and PM peak hours. Signalization of the ramps would improve the LOS to acceptable conditions.
- **Airport Boulevard/Ranport Road** intersection is anticipated to operate at LOS B in both the AM and PM peak hours. The worst approach is forecast to operate at LOS F in both the AM and PM peak hours. The eastbound volume at the intersection would continue to remain low and no improvements are recommended for cumulative conditions.



- **Highway 1 NB Ramps/Larkin Valley Road** ramp terminal intersection is anticipated to operating at LOS F in both the AM and PM peak hours. This intersection is closely spaced to the Airport Boulevard/Larkin Valley Road intersection and therefore improvements would need to take both intersections into consideration. Coordinated signals operations would not mitigate the impact and queues spill back through both intersections as indicated by the SimTraffic analysis. The provision of two roundabouts (one at the northbound hook ramp terminal, and one at the Airport Boulevard/Larkin Valley intersection) indicate adequate operations and the LOS would improve to acceptable levels (LOS A).

Segments

The City of Watsonville and Santa Cruz County criteria for roadway segment operations was used to evaluate the street segments in the vicinity of the project site. The criteria are consistent with the methodologies outlined in the HCM and based on thresholds of peak hour traffic volumes and roadway facility type. The roadway segments and ramps along Highway 1 were analyzed using HCS software. All of the study street segments would operate at acceptable levels of service, except for Highway 1 between Main Street (Highway 152) and Larkin Valley Road, which would operate at LOS E during the PM peak hour. The freeway would have to be widened to six lanes in order to improve the LOS to acceptable levels of service.

Cumulative Plus Modified Project Conditions – Intersections and Roadway Segments

All of the study intersections and segments would continue to operate at the same levels of service with the addition of the ~~proposed~~ modified project under cumulative conditions. However, the delays would increase due to the addition of the project trips, except for the intersection of Airport Boulevard and Freedom Boulevard, where the LOS would further decrease from E to F in the PM peak hour. Thus, intersections that would operate at an acceptable LOS would continue to do so with the addition of the modified project traffic and intersections operating at adverse levels of service would also continue to do so. The ~~proposed~~ modified project does not cause any intersection to deteriorate from acceptable LOS to unacceptable LOS for cumulative conditions. The County of Santa Cruz one percent threshold of significance criteria was used to identify significant cumulative project impacts. Along Highway 1, the ~~proposed~~ modified project would add less than one percent to the cumulative traffic volumes and the addition of project traffic and therefore is considered less than significant impact for the two highway study segments north of Highway 152 (Main Street).

Mitigation measures **MM 3.13-5** through **MM 3.13-8** that are incorporated herein under modified project conditions ~~that~~ would mitigate the cumulative impacts to the East Lake Avenue/Holohan Road; Airport Boulevard/Freedom Boulevard, Highway 1 NB and SB Ramps/Harkins Slough Road, and Highway 1 NB Ramps/Larkin Valley Road intersections to a **less than significant level**.

However, under cumulative conditions, the volume to capacity ratio at the East Lake Avenue/Wagner Avenue intersection would increase by more than one percent and therefore, the ~~proposed~~ modified project would result in a cumulative impact to this intersection, which is considered a potentially significant cumulative impact. This impact was identified in the 2008 EIR as potentially significant, and even under the modified project it remains potentially significant. Implementation of the following mitigation measure would reduce this impact to a **less than significant level**.

Mitigation Measure

MM 4-1 Project applicants within the County Entitlements Area ~~planning area~~ shall pay their proportionate fair share of ~~\$81,250~~ towards installation of a traffic signal at the East Lake Avenue/Wagner Avenue intersection prior to occupancy of any development within the proposed modified project area. This obligation will be met through payment of impact



fees to the City of Watsonville by the units located on City parcels (i.e., 20 units in Phase 1a), and a portion of the County's impact fees received by the County (\$664 per unit) shall be paid to the City by the County for a total of \$132,700 towards the installation of the signal. The estimated cost of this improvement is \$265,400 ~~325,000~~. ~~The City of Watsonville is updating their fee program and fee ordinance and will adopt the program prior to issuance of a building permit. The City of Watsonville plans to install a signal at the intersection of East Lake Avenue and Wagner Avenue.~~ The City of Watsonville shall coordinate with Caltrans to approve design and installation of the signal.

Payment of the proportional fair share towards installation of the traffic signal would satisfy the cumulative impacts associated with the ~~proposed~~ modified project and would reduce the cumulative impact at this intersection to a **less than significant level**.

Cumulative Plus Modified Project Conditions – Increase in Potential Traffic Hazards

The development of APN 048-221-09 (County Lamb parcel within the County Entitlements Area) under the modified project, would result in fewer traffic trips than the original Atkinson project to Brewington Avenue south of Crestview Drive. As a result of the updated Traffic Impact Analysis (Appendix N), Mitigation Measure 4-2 has been deleted as follows.

~~In addition to mitigation measure MM 3.13-1112b, the proposed project would contribute to a cumulative significant impact to hazardous conditions on Brewington Avenue south of Crestview Drive as a result of increased traffic from the proposed project. The following mitigation measure would reduce this impact to a less than significant level.~~

~~**MM 4-2** — Project applicants within the planning area shall pay their proportionate fair share contribution towards a traffic calming plan on Brewington Avenue south of Crestview Drive, which is updating its impact fee program. The estimated cost of this improvement is \$500,000. A cost share program will be developed by both the City and the County to ensure these improvements are fully implemented.~~

~~Payment of the proportional fair share towards a traffic calming plan on Brewington Avenue would reduce this impact to a **less than significant level**.~~



5.0 CONCLUSION

Section 15162 of the CEQA Guidelines states, “When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

- (a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:
 - (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
 - (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
 - (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
 - (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.”

5.1 No Substantial Change in the Project

Although the modified project would involve substantial changes to the project, the proposed modifications would result in reduced impacts to the environment. The ~~City City’s Phase 2 site and Specific Plan Area~~ would be removed as per the 2011 Settlement Agreement between the County of Santa Cruz, Santa Cruz County Farm Bureau, and the City of Watsonville (Appendix M). This modification would no longer propose the future development of up to 230 additional units on 23.2 acres within APNs 048-231-01, 048-231-17, 048-231-18, and 048-251-09. This would eliminate a significant and unavoidable impact to agricultural resources, and reduce impacts to aesthetics and visual character, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services and utilities, transportation and circulation, cumulative traffic, and cumulative impact to groundwater depletion.



5.2 No Substantial Changes in Circumstances

Although the original EIR was certified in 2009, due to national and area economic conditions there has not been any substantial change to the baseline conditions that existed at the time the 2009 EIR was prepared, and no modified project would involve substantial changes with respect to the circumstances under which the project would be undertaken are known that would lead to new or substantially more severe impacts. Rather, impacts would be reduced due to the removal of the City Specific Plan Area from the currently proposed project City's Phase 2 site and Specific Plan as per the 2011 Settlement Agreement. The the proposed modifications would result in reduced impacts to the environment as compared to the approved project (see discussion under Section 5.1 above). No new significant effects or a substantial increase in the severity of previously identified significant effects would occur.

5.3 No New Information of Substantial Importance

Impacts associated with the proposed project modifications would not result in a new significant impact or substantial increase in the severity of previously identified impacts per the Atkinson Lane Specific Plan and PUD 2009 Final EIR. There are no substantial changes to the circumstances under which the modified project will be undertaken, and no new information of substantial importance, which was not known and could not have been known when the Final EIR was certified ~~and the Addendum was approved~~, and that have since been identified. Therefore, the proposed project modifications do not meet the standards for a subsequent or Supplemental EIR as provided pursuant to CEQA Guidelines, Section 15162. As such, this Addendum to the Final EIR satisfies CEQA requirements for the proposed Project modifications.



6.0 REPORT PREPARATION

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Monterey Bay Unified Air Pollution Control District Board of Directors Agenda Item No. 19, Meeting Date, February 20, 2013. Receive an Informational Report on the Status of Developing Greenhouse Gas Emissions Thresholds for Evaluating Projects Under the California Environmental Quality Act (CEQA) and Provide Direction to Staff on Next Steps.

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State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011- 2013. Sacramento, California, May 2013.



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Appendix J

California Emissions Estimator Model (CalEEMod) version 2011.1.1 datasheets,
prepared for the Atkinson Lane Phase 1a Project, dated August 15, 2013.



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Atkinson Lane Phase 1a
Santa Cruz County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Apartments Low Rise	46	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Utility Company	Pacific Gas & Electric Company
Climate Zone	4	Precipitation Freq (Days)	61		

1.3 User Entered Comments

Project Characteristics -

Land Use - This is the actual developable acreage of the two parcels due to environmental constraints.

Construction Phase - A two year construction window seemed more realistic for this site than a one year window that was set as a default.

Off-road Equipment -

Demolition -

Grading -

Woodstoves - None of the units are proposed to have fireplaces.

Solid Waste - Buena Vista Landfill captures approximately 99% of the landfill gas generated through a landfill gas collection system.

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

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					
2014	0.38	2.45	1.87	0.00	0.21	0.14	0.34	0.02	0.14	0.16	0.00	285.67	285.67	0.03	0.00	286.28
2015	0.61	3.32	2.90	0.01	0.05	0.20	0.25	0.00	0.20	0.20	0.00	432.28	432.28	0.05	0.00	433.32
2016	0.98	1.46	1.33	0.00	0.02	0.09	0.11	0.00	0.09	0.09	0.00	197.94	197.94	0.02	0.00	198.38
Total	1.97	7.23	6.10	0.01	0.28	0.43	0.70	0.02	0.43	0.45	0.00	915.89	915.89	0.10	0.00	917.98

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					
2014	0.38	2.45	1.87	0.00	0.09	0.14	0.23	0.01	0.14	0.15	0.00	285.67	285.67	0.03	0.00	286.28
2015	0.61	3.32	2.90	0.01	0.03	0.20	0.23	0.00	0.20	0.20	0.00	432.28	432.28	0.05	0.00	433.32
2016	0.98	1.46	1.33	0.00	0.01	0.09	0.10	0.00	0.09	0.09	0.00	197.94	197.94	0.02	0.00	198.38
Total	1.97	7.23	6.10	0.01	0.13	0.43	0.56	0.01	0.43	0.44	0.00	915.89	915.89	0.10	0.00	917.98

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	0.26	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.58
Energy	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	86.87	86.87	0.00	0.00	87.41
Mobile	0.38	0.55	3.49	0.00	0.42	0.02	0.44	0.02	0.02	0.04	0.00	353.39	353.39	0.02	0.00	353.82
Waste						0.00	0.00		0.00	0.00	4.38	0.00	4.38	0.22	0.00	9.08
Water						0.00	0.00		0.00	0.00	0.00	6.68	6.68	0.09	0.00	9.34
Total	0.64	0.58	3.85	0.00	0.42	0.02	0.44	0.02	0.02	0.04	4.38	447.50	451.88	0.33	0.00	460.23

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	0.26	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.58
Energy	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	86.87	86.87	0.00	0.00	87.41
Mobile	0.38	0.55	3.49	0.00	0.42	0.02	0.44	0.02	0.02	0.04	0.00	353.00	353.00	0.02	0.00	353.43
Waste						0.00	0.00		0.00	0.00	4.38	0.00	4.38	0.22	0.00	9.08
Water						0.00	0.00		0.00	0.00	0.00	5.61	5.61	0.07	0.00	7.74
Total	0.64	0.58	3.85	0.00	0.42	0.02	0.44	0.02	0.02	0.04	4.38	446.04	450.42	0.31	0.00	458.24

2.3 Vegetation

Vegetation

	ROG	NOx	CO	SO2	CO2e
Category	tons				MT
New Trees					4.96
Vegetation Land Change					-8.62
Total					-3.66

3.0 Construction Detail

3.1 Mitigation Measures Construction

- Use Soil Stabilizer
- Replace Ground Cover
- Water Exposed Area
- Reduce Vehicle Speed on Unpaved Roads
- Clean Paved Roads

3.2 Demolition - 2014

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					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.11	0.83	0.53	0.00		0.05	0.05		0.05	0.05	0.00	82.32	82.32	0.01	0.00	82.51
Total	0.11	0.83	0.53	0.00	0.00	0.05	0.05	0.00	0.05	0.05	0.00	82.32	82.32	0.01	0.00	82.51

3.2 Demolition - 2014

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.00	0.00	0.39
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45	2.45	0.00	0.00	2.46
Total	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.84	2.84	0.00	0.00	2.85

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					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.11	0.83	0.53	0.00		0.05	0.05		0.05	0.05	0.00	82.32	82.32	0.01	0.00	82.51
Total	0.11	0.83	0.53	0.00	0.00	0.05	0.05	0.00	0.05	0.05	0.00	82.32	82.32	0.01	0.00	82.51

3.2 Demolition - 2014

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.00	0.00	0.39
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45	2.45	0.00	0.00	2.46
Total	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.84	2.84	0.00	0.00	2.85

3.3 Site Preparation - 2014

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					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.10	0.05	0.00		0.00	0.00		0.00	0.00	0.00	10.66	10.66	0.00	0.00	10.68
Total	0.01	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.66	10.66	0.00	0.00	10.68

3.3 Site Preparation - 2014

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20

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					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.10	0.05	0.00		0.00	0.00		0.00	0.00	0.00	10.66	10.66	0.00	0.00	10.68
Total	0.01	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.66	10.66	0.00	0.00	10.68

3.3 Site Preparation - 2014

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00	0.20

3.4 Grading - 2014

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					0.04	0.00	0.04	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.21	0.13	0.00		0.01	0.01		0.01	0.01	0.00	20.83	20.83	0.00	0.00	20.87
Total	0.03	0.21	0.13	0.00	0.04	0.01	0.05	0.02	0.01	0.03	0.00	20.83	20.83	0.00	0.00	20.87

3.4 Grading - 2014

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	0.03	0.28	0.26	0.00	0.14	0.01	0.15	0.00	0.01	0.01	0.00	43.91	43.91	0.00	0.00	43.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.49	0.00	0.00	0.49
Total	0.03	0.28	0.27	0.00	0.14	0.01	0.15	0.00	0.01	0.01	0.00	44.40	44.40	0.00	0.00	44.43

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					0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.21	0.13	0.00		0.01	0.01		0.01	0.01	0.00	20.83	20.83	0.00	0.00	20.87
Total	0.03	0.21	0.13	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.00	20.83	20.83	0.00	0.00	20.87

3.4 Grading - 2014

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	0.03	0.28	0.26	0.00	0.07	0.01	0.08	0.00	0.01	0.01	0.00	43.91	43.91	0.00	0.00	43.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.49	0.00	0.00	0.49
Total	0.03	0.28	0.27	0.00	0.07	0.01	0.08	0.00	0.01	0.01	0.00	44.40	44.40	0.00	0.00	44.43

3.5 Building Construction - 2014

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	0.18	1.00	0.72	0.00		0.06	0.06		0.06	0.06	0.00	109.96	109.96	0.01	0.00	110.26
Total	0.18	1.00	0.72	0.00		0.06	0.06		0.06	0.06	0.00	109.96	109.96	0.01	0.00	110.26

3.5 Building Construction - 2014

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.34	4.34	0.00	0.00	4.34
Worker	0.01	0.01	0.11	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	10.12	10.12	0.00	0.00	10.14
Total	0.01	0.04	0.14	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	14.46	14.46	0.00	0.00	14.48

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	0.18	1.00	0.72	0.00		0.06	0.06		0.06	0.06	0.00	109.96	109.96	0.01	0.00	110.26
Total	0.18	1.00	0.72	0.00		0.06	0.06		0.06	0.06	0.00	109.96	109.96	0.01	0.00	110.26

3.5 Building Construction - 2014

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.34	4.34	0.00	0.00	4.34
Worker	0.01	0.01	0.11	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	10.12	10.12	0.00	0.00	10.14
Total	0.01	0.04	0.14	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	14.46	14.46	0.00	0.00	14.48

3.5 Building Construction - 2015

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	0.57	3.20	2.45	0.00		0.20	0.20		0.20	0.20	0.00	382.66	382.66	0.05	0.00	383.62
Total	0.57	3.20	2.45	0.00		0.20	0.20		0.20	0.20	0.00	382.66	382.66	0.05	0.00	383.62

3.5 Building Construction - 2015

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.08	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	15.18	15.18	0.00	0.00	15.19
Worker	0.04	0.04	0.35	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	34.45	34.45	0.00	0.00	34.51
Total	0.05	0.12	0.45	0.00	0.05	0.00	0.06	0.00	0.00	0.00	0.00	49.63	49.63	0.00	0.00	49.70

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	0.57	3.20	2.45	0.00		0.20	0.20		0.20	0.20	0.00	382.66	382.66	0.05	0.00	383.62
Total	0.57	3.20	2.45	0.00		0.20	0.20		0.20	0.20	0.00	382.66	382.66	0.05	0.00	383.62

3.5 Building Construction - 2015

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.08	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	15.18	15.18	0.00	0.00	15.19
Worker	0.04	0.04	0.35	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.00	34.45	34.45	0.00	0.00	34.51
Total	0.05	0.12	0.45	0.00	0.02	0.00	0.04	0.00	0.00	0.00	0.00	49.63	49.63	0.00	0.00	49.70

3.5 Building Construction - 2016

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	0.21	1.17	0.96	0.00		0.07	0.07		0.07	0.07	0.00	152.48	152.48	0.02	0.00	152.83
Total	0.21	1.17	0.96	0.00		0.07	0.07		0.07	0.07	0.00	152.48	152.48	0.02	0.00	152.83

3.5 Building Construction - 2016

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.07	6.07	0.00	0.00	6.08
Worker	0.01	0.01	0.13	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	13.41	13.41	0.00	0.00	13.43
Total	0.01	0.04	0.17	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	19.48	19.48	0.00	0.00	19.51

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	0.21	1.17	0.96	0.00		0.07	0.07		0.07	0.07	0.00	152.48	152.48	0.02	0.00	152.83
Total	0.21	1.17	0.96	0.00		0.07	0.07		0.07	0.07	0.00	152.48	152.48	0.02	0.00	152.83

3.5 Building Construction - 2016

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.07	6.07	0.00	0.00	6.08
Worker	0.01	0.01	0.13	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	13.41	13.41	0.00	0.00	13.43
Total	0.01	0.04	0.17	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	19.48	19.48	0.00	0.00	19.51

3.6 Paving - 2016

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	0.03	0.21	0.16	0.00		0.02	0.02		0.02	0.02	0.00	21.71	21.71	0.00	0.00	21.76
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.03	0.21	0.16	0.00		0.02	0.02		0.02	0.02	0.00	21.71	21.71	0.00	0.00	21.76

3.6 Paving - 2016

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	1.17	0.00	0.00	1.17
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	1.17	0.00	0.00	1.17

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	0.03	0.21	0.16	0.00		0.02	0.02		0.02	0.02	0.00	21.71	21.71	0.00	0.00	21.76
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.03	0.21	0.16	0.00		0.02	0.02		0.02	0.02	0.00	21.71	21.71	0.00	0.00	21.76

3.6 Paving - 2016

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	1.17	0.00	0.00	1.17
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	1.17	0.00	0.00	1.17

3.7 Architectural Coating - 2016

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	0.72					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	0.72	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56

3.7 Architectural Coating - 2016

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.00	0.00	0.55
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.00	0.00	0.55

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	0.72					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	0.72	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56

3.7 Architectural Coating - 2016

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.00	0.00	0.55
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.55	0.00	0.00	0.55

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density

	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	0.38	0.55	3.49	0.00	0.42	0.02	0.44	0.02	0.02	0.04	0.00	353.00	353.00	0.02	0.00	353.43
Unmitigated	0.38	0.55	3.49	0.00	0.42	0.02	0.44	0.02	0.02	0.04	0.00	353.39	353.39	0.02	0.00	353.82
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	303.14	329.36	279.22	874,259	873,261
Total	303.14	329.36	279.22	874,259	873,261

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
Apartments Low Rise	10.80	7.30	7.50	44.00	18.80	37.20

5.0 Energy Detail

5.1 Mitigation Measures Energy

	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						0.00	0.00		0.00	0.00	0.00	48.62	48.62	0.00	0.00	48.93
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	48.62	48.62	0.00	0.00	48.93
NaturalGas Mitigated	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	38.25	38.25	0.00	0.00	38.48
NaturalGas Unmitigated	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	38.25	38.25	0.00	0.00	38.48
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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	tons/yr										MT/yr					
Apartments Low Rise	716707	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	38.25	38.25	0.00	0.00	38.48
Total		0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	38.25	38.25	0.00	0.00	38.48

5.2 Energy by Land Use - NaturalGas

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	tons/yr										MT/yr					
Apartments Low Rise	716707	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	38.25	38.25	0.00	0.00	38.48
Total		0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	38.25	38.25	0.00	0.00	38.48

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	167135					48.62	0.00	0.00	48.93
Total						48.62	0.00	0.00	48.93

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	167135					48.62	0.00	0.00	48.93
Total						48.62	0.00	0.00	48.93

6.0 Area Detail

6.1 Mitigation Measures Area

- Use Low VOC Paint - Residential Interior
- Use Low VOC Paint - 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	0.26	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.58
Unmitigated	0.26	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.58
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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	0.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.01	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.58
Total	0.26	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.58

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	0.07					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.18					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.01	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.00	0.58
Total	0.26	0.00	0.35	0.00		0.00	0.00		0.00	0.00	0.00	0.56	0.56	0.00	0.00	0.00	0.58

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

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					5.61	0.07	0.00	7.74
Unmitigated					6.68	0.09	0.00	9.34
Total	NA							

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	2.99709 / 1.88947					6.68	0.09	0.00	9.34
Total						6.68	0.09	0.00	9.34

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	2.39767 / 1.77421					5.61	0.07	0.00	7.74
Total						5.61	0.07	0.00	7.74

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					4.38	0.22	0.00	9.08
Unmitigated					4.38	0.22	0.00	9.08
Total	NA							

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	21.16					4.38	0.22	0.00	9.08
Total						4.38	0.22	0.00	9.08

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	21.16					4.38	0.22	0.00	9.08
Total						4.38	0.22	0.00	9.08

9.0 Vegetation

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons				MT			
Unmitigated					-3.66	0.00	0.00	-3.66
Total	NA							

9.1 Vegetation Land Change

Vegetation Type

	Initial/Final	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	Acres	tons				MT			
Grassland	2 / 0					-8.62	0.00	0.00	-8.62
Total						-8.62	0.00	0.00	-8.62

9.1 Net New Trees

Species Class

	Number of Trees	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
		tons				MT			
Miscellaneous	7					4.96	0.00	0.00	4.96
Total						4.96	0.00	0.00	4.96



Appendix K

Atkinson Lane (Pippen) Offsite Drainage Assessment Memorandum,
prepared by Rodney Trujillo, P.E., of Whitson Engineers,
dated June 28, 2013.



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MEMORANDUM

DATE: June 28, 2013

TO: Cynthia Iwanaga – MidPen Housing Corporation

FROM: Rodney Trujillo, P.E.

Cc: Todd Sexauer – County of Santa Cruz

SUBJECT: Atkinson Lane (Pippen) Offsite Drainage Assessment

RBF consulting prepared a Drainage Analysis for the City of Watsonville in March of 2008 outlining Stormwater Constraints and Opportunities for the Atkinson Lane specific plan entitled, "Atkinson Lane Specific Plan Stormwater Constraints and Opportunities". The Existing Conditions portion of their memorandum (Page 2) as well as Exhibit 1 (see Attachment 1) of their analysis assume that runoff from the wetland area drains overland towards the Crestview detention basin through the neighboring agricultural fields.

Based upon our review of the subject area, we believe this assumption does not accurately represent the current conditions if the wetland were to overflow. Our belief is that the site runoff from the wetland area would drain to the existing catch basins at the end of Brewington Avenue. It does not flow overland across the agriculture fields as outlined in the RBF analysis, unless the area at the end of Brewington lane was bermed at the time of their study, preventing flow to the inlets. The catch basins convey the collected runoff via a storm drain main which outlets into the Crestview detention basin. Figures 1 and 2 are photos of the subject area showing the grade relationship between the agricultural field and Brewington Avenue. The figures demonstrate that the inlets at the north end of Brewington Avenue are lower than the adjacent property grades and that there are no barriers precluding stormwater from reaching the inlets.



Figure 1: Agricultural fields sloping towards Brewington Avenue



Figure 2: Agricultural Fields at Higher Elevation than the Inlets Brewington Avenue

We also confirmed the overland release path by analyzing the 2010 AMBAG LiDAR topography data for the subject area. Attachment 3 contains an Offsite Drainage Exhibit showing the overland release path and LiDAR topography. The Project Report for LiDAR Data Collection and Processing for the Central Coast of California, 2010, indicates that the topography for the project site has a vertical accuracy of +/- 1.2 foot at the 95% confidence level. While the topographic data modeled has a vertical accuracy of +/- 1.2 foot, a 1 foot contour interval is displayed in the Offsite Drainage Exhibit for clarity.

The City of Watsonville, has documented with the letter included as Attachment 2 that they do not have history of capacity problems or flooding in this neighborhood and are not requiring additional analysis of the storm drain facilities at the north end of Brewington Avenue.

Conclusions:

The overland release path shown on the RBF Exhibit (Attachment 1) is representative of the agricultural field flow path but not the overland release from the wetland. Based on our discussions with the City of Watsonville, review of existing topographic information, and our visit to the project site, it is our opinion that runoff from the wetland area flows to the inlets at the north end of Brewington Avenue and not overland through the agriculture fields.

This project is part of Phase 1 of the Planned Unit Development (PUD) for the Atkinson Lane Project. The PUD conditions of approval require the developers of Phase 1 to construct offsite drainage improvements to mitigate increases in stormwater runoff from the Phase 1 Development area. These conditions are based on conclusions in the RBF drainage analysis that assume the wetland releases overland through the agricultural fields. However, this basis is not representative of the current site conditions that indicate overland release occurs via the inlets at the north end of Brewington Avenue.

In light of this information, we recommend that the conditions of approval relating to stormwater management be revised to eliminate requirements for offsite drainage improvements. It is recommended that increases in runoff for the development project be mitigated onsite in accordance with the County of Santa Cruz Department of Public Works Drainage Division requirements.

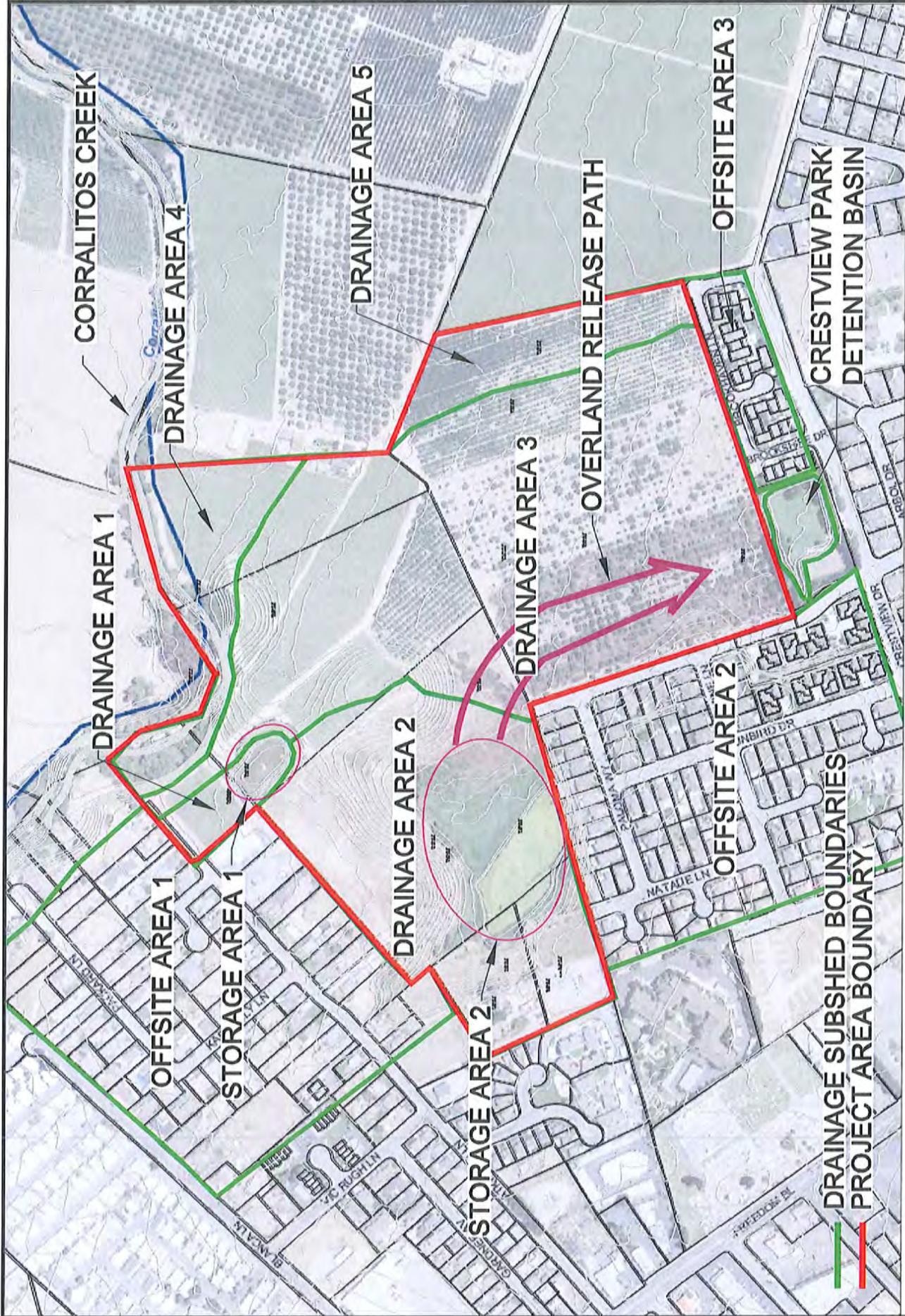


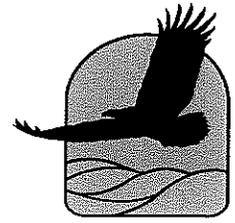
EXHIBIT 1
EXISTING CONDITIONS DRAINAGE AREAS



PLANNING • DESIGN • CONSTRUCTION
201 ARENA BOULEVARD, SUITE 250
SACRAMENTO, CALIFORNIA 95834-2300
916.923.1113 • FAX 916.923.1137 • WWW.RBF.COM

CITY OF WATSONVILLE

"Opportunity through diversity; unity through cooperation"



May 29, 2013

Rachel Fatoohi, Senior Civil Engineer
Alyson Tom, Civil Engineer
Santa Cruz County Department of Public Works
701 Ocean Street
Santa Cruz, California

Dear Ms. Fatoohi and Ms. Tom:

The City of Watsonville Public Works Department has considered if the drainage study being prepared for the Phippen Affordable Housing project at 56 Atkinson Lane would need to include an analysis of the storm drain facilities at the north end of Brewington Avenue, which is where the natural pond drains to when it overflows. The City has no history of capacity problems or flooding in this neighborhood. We note that the pond overflows rarely and that the County's post construction requirements imposed on the project along with the affect of the pond which tends to retain runoff will adequately mitigate any changes to the runoff characteristics created by the project. For those reason we don't believe the drainage study need include an analysis of the storm drain facilities located at the north end of Brewington Avenue.

Please call me if you have any question.

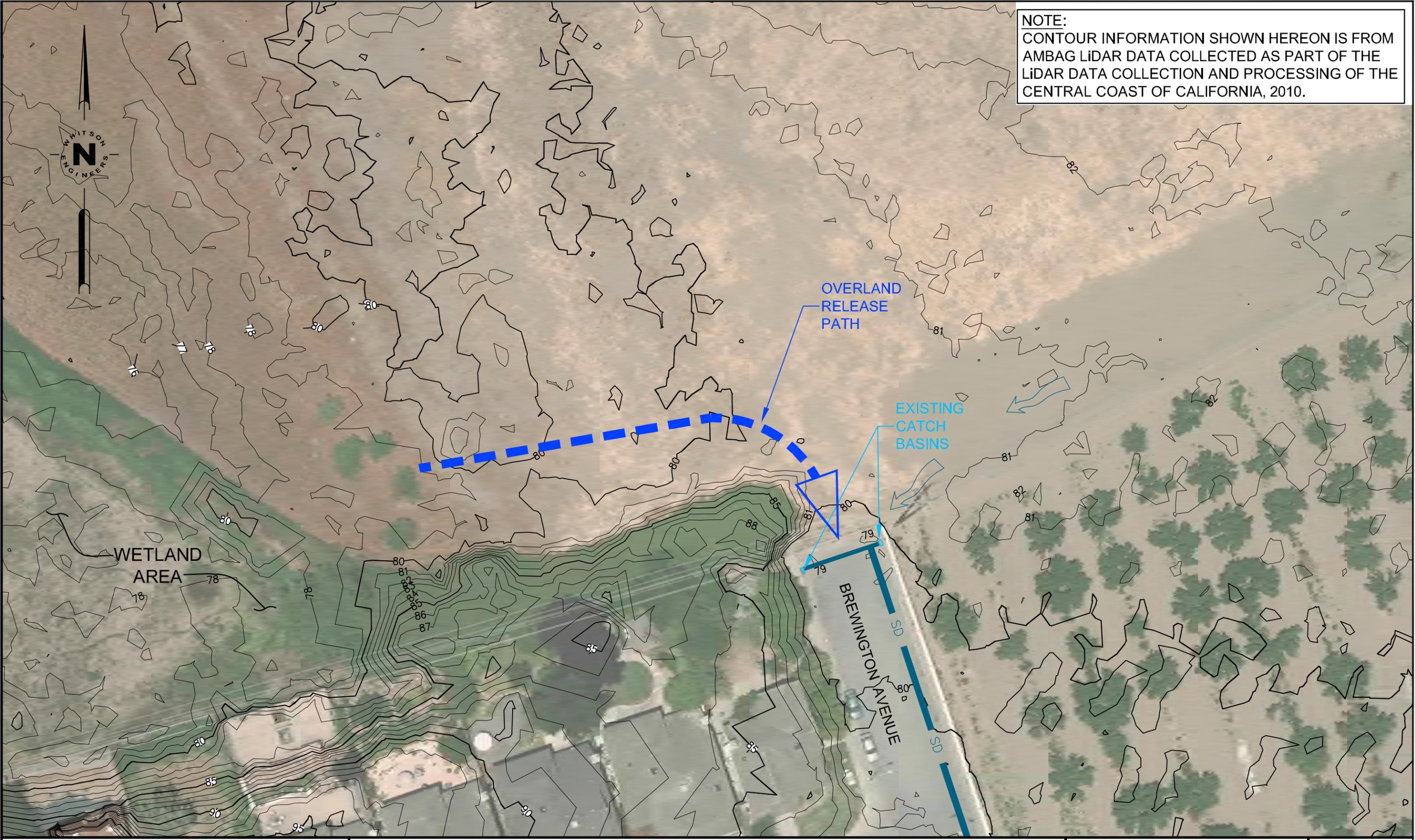
Sincerely,

A handwritten signature in cursive script that reads "Tom Sharp".

Tom Sharp
Senior Engineering Associate

Cc: Cynthia Iwanaga, Mid Peninsula Housing
City Engineer

NOTE:
 CONTOUR INFORMATION SHOWN HEREON IS FROM
 AMBAG LIDAR DATA COLLECTED AS PART OF THE
 LIDAR DATA COLLECTION AND PROCESSING OF THE
 CENTRAL COAST OF CALIFORNIA, 2010.



WE WHITSON ENGINEERS
 2425 Porter Street ■ Suite 2 ■ Soquel, CA 95073
 831 464-9363 ■ Fax 831 464-2316
 CIVIL ENGINEERING ■ LAND SURVEYING ■ PROJECT MANAGEMENT

PIPPIN LANE / ATKINSON LANE

WATSONVILLE CALIFORNIA

ATTACHMENT 3: OFFSITE DRAINAGE EXHIBIT

DRAWING PATH: T:\Monterey Projects\2962\CIVIL\Watershed.dwg

DATE:	JUNE 26, 2013
SCALE:	1" = 40'
DRAWN:	RMT
CHECKED:	RPW
PROJECT No.:	2962.00

SHEET
1
 OF 1



Appendix L

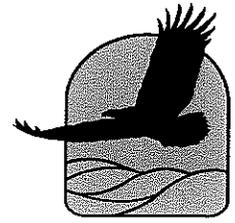
Letter from Tom Sharp, Senior Engineering Associate for the City of Watsonville to Rachel Fatoohi, Senior Civil Engineer, and Alyson Tom, Civil Engineer, for the Santa Cruz County Department of Public Works, dated May 29, 2013.



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CITY OF WATSONVILLE

"Opportunity through diversity; unity through cooperation"



May 29, 2013

Rachel Fatoohi, Senior Civil Engineer
Alyson Tom, Civil Engineer
Santa Cruz County Department of Public Works
701 Ocean Street
Santa Cruz, California

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Please call me if you have any question.

Sincerely,

A handwritten signature in cursive script that reads "Tom Sharp".

Tom Sharp
Senior Engineering Associate

Cc: Cynthia Iwanaga, Mid Peninsula Housing
City Engineer



Appendix M

Settle Agreement between the Farm Bureau of Santa Cruz County, the County of Santa Cruz,
and the City of Watsonville, dated January 20, 2011.



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SETTLEMENT AGREEMENT

THIS SETTLEMENT AGREEMENT (“Agreement”) is made and entered into by and among the Farm Bureau of Santa Cruz County (“Farm Bureau”), the County of Santa Cruz (“County”), and the City of Watsonville (“City”). The foregoing shall be referred to herein collectively as the “Parties.” “County” includes the Santa Cruz County Board of Supervisors (“Board”), and “City” includes the City Council of the City of Watsonville (“Council”).

RECITALS

A. Farm Bureau is a California nonprofit corporation consisting of individuals dedicated to the promotion and protection of agriculture in Santa Cruz County.

B. County is a political subdivision of the State of California with responsibility, among other things, for regulating land uses on properties located within the unincorporated portions of Santa Cruz County. The Board of Supervisors of Santa Cruz County (“Board”) is the governing body of County.

C. City is a charter city located within the County of Santa Cruz with responsibility, among other things, for regulating land uses on properties located within the city limits of the City of Watsonville. The City Council of the City of Watsonville (“Council”) is the governing body of City.

D. On or about June 9, 2009, over the objection of Farm Bureau, County took action to certify an Environmental Impact Report (“EIR”) for a project called the “Atkinson Lane Specific Plan and PUD” (the “Project”). County acted as “Lead Agency” for this Project, pursuant to the California Environmental Quality Act (“CEQA”—Public Resources Code Section 21000, *et seq.*). The Project analyzed in the EIR generally includes (1) a Planned Unit Development (“PUD”) and related entitlements approved by the County, which was proposed on lands located

mostly within the unincorporated area of Santa Cruz County; and (2) a proposed Specific Plan to be approved by the City at a future date for lands currently located in the unincorporated portions of Santa Cruz County but proposed for annexation by City. (See Map attached hereto as Exhibit A).

E. In addition to certifying the EIR, the County's actions on or about June 9, 2009 included, *inter alia*, the following: (1) approval of a PUD Permit, Development Permit, Riparian Exception, and CEQA Findings for a residential development proposed to occur mostly on lands located within the unincorporated portion of Santa Cruz County; (2) adoption of a Resolution approving General Plan Amendments and a Riparian Exception for said project; (3) adoption of an Ordinance rezoning APN 048-211-25 and APN 048-221-09 to RM-2-R, for properties located within the unincorporated portions of Santa Cruz County; and (4) adoption of an ordinance approving a PUD (collectively the "County Entitlements").

F. In addition to the approval of the County Entitlements on or about June 9, 2009 the County also adopted a Resolution certifying the adequacy of an EIR for the Project. As certified by the Board, the EIR was intended to encompass environmental review for both the County Entitlements and also the environmental review of a proposed future Specific Plan and potential annexation to be considered by the City at a future time. The actions taken by the County as described in Recital E and F above are hereinafter referred to as the "County Approvals," which include the County Entitlements and certification of the EIR.

G. On or about July 8, 2009, Farm Bureau filed a Petition for a Writ of Mandate (the "Petition") against the County, the Board, the City, and the Council, and named a number of individual property owners as Real Parties In Interest. The Petition was filed in the Santa Cruz County Superior Court, and was designated as Case No. CV 164486. By stipulation of the

Parties, on or about September 25, 2009, the individual property owners were dismissed as Real Parties in Interest.

H. Among other things, the Farm Bureau's Petition challenged the County's June 9, 2009 certification of the EIR, and the County's approval of the County Entitlements. In its Petition, the Farm Bureau asked the Court to direct the County properly to carry out the County's responsibilities as a Lead Agency under CEQA, and to mandate that the County set aside all of its actions taken on the basis of the EIR. Farm Bureau alleged, *inter alia*, that that evaluation and analysis was inadequate and that the County failed to proceed in a manner required by law.

I. The Parties have concluded that it would be desirable and in the best interests of the Parties to settle all issues related to Case No. CV 164486 on the terms set forth herein. By this Agreement, the Parties intend fully and completely to resolve any and all of the disputes between the Parties relating to Case No. CV 164486, including but not limited to the County's action(s) on the County Approvals, and County and City's compliance with CEQA.

TERMS OF AGREEMENT

Accordingly, in consideration of the mutual promises contained herein, the Parties agree as follows:

1. The County will pay to Farm Bureau, through its attorneys Wittwer & Parkin, LLP, the sum of sixty-thousand dollars (\$60,000) for reimbursement of its reasonable attorneys' fees incurred. The check shall be made payable to Wittwer & Parkin, LLP, and shall be paid within 15 days of the "Effective Date" of this Agreement, as defined in Paragraph 12, below.

2. At County expense, and as soon as reasonably possible, the County shall take all actions, including necessary legal actions, for the County formally to consider modifying the County Entitlements consistent with this Agreement (the "Modifications to the Approvals").

The County may accomplish the Modification to the Approvals by using, including but not limited to, the following mechanisms: minor modification of the County Entitlements as authorized by the County Entitlements and/or incorporation into the required design review permit for development consistent with the County Entitlements. The Modifications to the Approvals shall include the following language and provisions:

- a) The County will encourage and promote, to the extent feasible the maximum number of affordable housing opportunities for farm workers that can be located on APN 048-221-09 and APN 048-221-25. To achieve this objective, the County will give preference to development proposals on APN 048-221-09 and APN 048-221-25 that maximize the availability of outside funding sources for development projects that provide significant affordable housing opportunities for farm workers. In an effort to maximize outside funding sources, the County and/or its development partner will pursue all available funding opportunities, including funds from the Farm Bureau or its affiliates for farm worker housing. In addition, the County staff will confer with the Farm Bureau through its attorneys Wittwer & Parkin LLP about the Farm Bureau's available funding prior to considering an application to the County for a development proposal on APN 048-221-09 and APN 048-221-25. To the extent that the County controls ownership of APN 048-221-09 and APN 048-221-25 or provides funding for affordable housing on APN 048-221-09 and APN 048-221-25, the County will maximize the availability of outside funding sources (including funds raised by the Farm Bureau and its affiliates), to support the construction of affordable housing opportunities for farm workers on APN 048-221-09 and APN 048-221-25 to the maximum extent

feasible. Nothing in this section is intended to conflict with or supersede the goals relating to affordable housing in the PUD pursuant to the County Entitlements as stated in the Memorandum of Understanding between the City and the County dated June 12, 2007.

- b) County shall adopt Modifications to the Approvals that ~~prohibit the County from constructing or approving any road or utility stub outs that can be easily used for future development in the areas to be incorporated into the city limits of the City of Watsonville covered by the Specific Plan as contemplated in the EIR, and which are not part of the project authorized by the County Entitlements, or that would give credence to any argument that development of the Specific Plan Area was envisioned by and should be considered as part of the project authorized by the County Entitlements. The County further agrees that all utility connections and road access are independent of the Specific Plan Area, and that it shall not take any action with respect to development pursuant to the County Entitlements that would necessitate or encourage the development of a Wagner Avenue extension. This paragraph shall not apply to use of APN 019-236-01 for secondary access purposes (and Exhibit B, attached hereto, illustrates generally how APN 019-236-01 may be utilized for secondary access purposes). APN 019-236-01 shall not be used for primary access to the project authorized by the County Entitlements consistent with the EIR and shall only be used for secondary access if the project authorized by the County Entitlements completes the proposed extension of Brewington Avenue up to and including the roundabout depicted within the County project site on Figure 2-18 of the EIR. (This reference~~

to the roundabout is for illustrative purposes only and is not intended to modify this subparagraph's requirement that the County shall adopt Modifications to the Approvals that prohibit the County from constructing or approving any road or utility stub outs that can be easily used for future development.)

c) County shall impose conditions through Modifications to the Approvals to ensure that the agricultural buffer established as part of the County Entitlements will not be used for public recreation, park purposes, trails, picnic areas, roads or sidewalks or other similar uses that would encourage public use of the buffer area, except for the construction and maintenance of the Brewington Avenue extension and other infrastructure needed to support the County project authorized by the County Entitlements. Except as provided herein, the buffer area shall be used exclusively to protect adjacent agricultural operations as long as adjacent properties remain undeveloped for urban or suburban uses.

d) The Modifications to the Approvals shall require a 1.2 gallon offset for every new gallon of water used in the the project authorized by the County Entitlements.

With respect to the project authorized by the County Entitlements only, the development of agricultural land shall not to be used as an offset because of reduced irrigation, with respect to water offsets All applicants for new water service from the City of Watsonville related to the project authorized by the County Entitlements shall be required to meet the 1.2 required offset by retrofitting existing developed property within the City of Watsonville's water service area. Applicants for new service shall bear those costs associated with the retrofit and pay any associated fees set by the City to reimburse administrative

and inspection costs in accordance with any procedures for implementing this program. Nothing herein prevents the Farm Bureau from asserting during future administrative proceedings, if any, that these offset provisions should apply to the City's proposed Specific Plan Area.

3. County hereby recognizes the provisions of Measure J that provide that it shall be the policy of County that prime agricultural lands and lands that are economically productive when used for agriculture shall be preserved for agricultural use. (Santa Cruz County Code § 17.01.030 (a)).

4. County hereby declares that County development consistent with the County Entitlements is and was not dependent on development of the City's Specific Plan Area. County further hereby agrees that it will not use the County Approvals to argue in any correspondence, administrative proceeding or court of law that the City's Specific Plan Area should be developed and that other than what was set forth in the prior Atkinson Lane Memorandum of Understanding between the City and the County dated June 12, 2007, that there are not or was not any County-City agreement or approval for development of the Specific Plan Area. This paragraph shall not apply to: (1) the approximately 1.3 acre piece of land already within the City of Watsonville (APN No.: 019-226-042) intended to be incorporated into the project authorized by the County Entitlements; and (2) the approximately 0.5 acre piece of land already within the City of Watsonville intended to provide secondary access to the project authorized by the County Entitlements (APN No. 019-236-001).

5. Both County and City agree that the EIR shall not be used in connection with any action or proposal to develop or annex any, all or portions of the Specific Plan Area not included within the County Entitlements, and City agrees that nothing in the County Approvals includes

approval of the Specific Plan, or an EIR covering the Specific Plan area, or any element of the Specific Plan, or of the infrastructure therefor. For any future proposal for annexation, approval of a Specific Plan, and development of an area contemplated to be subject to the Specific Plan, City will prepare a new environmental document, presumably a new EIR specific to the annexation, Specific Plan and/or development that is proposed in the future without relying on the EIR certified by the County as part of the County Approvals, including, but not limited to, reliance on the EIR certified by the County. Furthermore, the City will fully comply with all legally required applicable CEQA procedures including but not limited to Notice of Preparation, Public Review and Comment on a Draft EIR, and Responses to Comments. This section shall not apply to: (1) the approximately 1.3 acre piece of land already within the City of Watsonville (APN No.: 019-226-042) intended to be included within the site of the project authorized by the County Entitlements; and (2) the approximately 0.5 acre piece of land already within the City of Watsonville intended to provide secondary access to the project authorized by the County Entitlements (APN No. 019-236-001).

6. Following County's payment to Farm Bureau as referenced in paragraph 1, and if the County adopts the necessary Modifications to the Approvals as indicated in paragraph 2 above, Farm Bureau will dismiss with prejudice the Petition filed against the County, the Board, the City and the Council in Case No. CV 164486 within 10 calendar days after the County has completed its actions pursuant to Paragraph 2. In the event that Farm Bureau has not been paid pursuant to Paragraph 1, or if the County does not approve the Modifications to the Approvals as specified in Paragraph 2, then consideration of Case Number CV 164486 shall be placed back on the Court's calendar for consideration of the merits of the case, and in the event Farm Bureau is ultimately awarded attorneys' fees in such litigation, any payments made pursuant to this

Agreement will be credited against any such fee award. In such event that the Modifications to the Approvals are not approved, with the exception of credits of payments made pursuant to paragraph 1, this Agreement is hereby terminated and the parties are restored to their respective positions as if this Agreement had never been executed.

7. Upon dismissal with prejudice pursuant to Paragraph 6 above, each and every party to this Agreement hereby releases, disposes, and forever discharges each and every other party, including its officers, managers, partners, directors, board of supervisors, city council, trustees, agents, employees, representatives, attorneys, insurers, departments, divisions, subdivisions, sections, offices, successors and assigns, and each of them, from any and all claims, complaints, demands, causes of action, obligations, damages, costs, expenses, liens, attorneys' fees, warranties, rights and liabilities of any nature whatsoever, whether known or unknown, suspected or not suspected to exist, claimed or not claimed, that have arisen in connection with the Petition in Case Number CV 164486. This release applies to all of the events and/or actions alleged to have occurred in the Petition and to any cause of action or claim in any forum based on such allegations. In addition, Farm Bureau waives its right legally to challenge: (1) the County's approval of a design review permit for a project authorized by the County Entitlements, provided the approval is consistent with this Agreement; (2) use of APN No. 019-236-01 for secondary access to serve the project authorized by the County Entitlements; and (3) City approval of a development project on APN 019-226-42 that is consistent with the County Approvals. Except as provided herein, nothing herein prohibits Farm Bureau from: (1) challenging any subsequent change to the County Approvals (other than such minor modifications contemplated by this Agreement) challenged in this action not consistent with this

Agreement; (2) any future City approval, except as provided herein; (3) enforcing the terms of this Agreement; or (4) any revised County project that is inconsistent with this Agreement.

8. Upon dismissal with prejudice pursuant to Paragraph 6 above, each of the parties also expressly waives all "unknown claims" against each other party and those persons and entities mentioned in the previous paragraph as to the facts and circumstances concerning the claims set forth in the Petition, and expressly waives its rights under Civil Code section 1542 as to all claims arising out of the operative facts which form the basis for the Petition. Section 1542 reads as follows:

A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor.

Upon dismissal with prejudice pursuant to Paragraph 6 above, each of the parties hereby completely and unequivocally waives as against each other party the provisions of Civil Code section 1542 as it applies to the facts set forth in the Petition in case number CV 164486.

9. This Agreement is a compromise settlement of disputed claims and by executing this Agreement no party admits any wrongdoing, liability or fault in relation to the matters alleged in the pleadings in case number CV 164486 or identified in the Recitals herein, and no party admits that Farm Bureau is entitled to any recovery, and likewise Farm Bureau does not concede that it is not entitled to any recovery, arising from the allegations in the pleadings in case number CV 164486. County agrees to not use the terms of this Agreement in any other court proceeding against the County by third parties concerning rezonings, general plan amendments, and planned unit developments under its Housing Element Rezoning Program.

10. In entering into this Agreement, each party represents that it has read all of the terms of this Agreement and that the terms of this Agreement are fully understood and voluntarily accepted by each party.

11. The Parties acknowledge that each party has reviewed this Agreement and that the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Agreement.

12. The effective date of this Agreement shall be date by which it is signed by the last of the Parties signing ("Effective Date").

13. This Agreement sets forth the entire understanding of the Parties in connection with the subject matter herein. None of the Parties have made any statement, representation or warranty in connection with this Agreement that has been an inducement for the others to enter into this Agreement, except as is expressly set forth in this Agreement. It is expressly understood and agreed that this Agreement may not be altered, amended, modified or otherwise changed in any respect whatsoever except by a writing duly executed by authorized representatives of the Parties hereto. The Parties agree that they will make no claim at any time or place that this Agreement has been orally altered or modified or otherwise changed by oral communication of any kind or character.

14. The Parties each represent and warrant that they fully understand that if the facts with respect to which this Agreement is executed should be found hereafter to be different from the facts now believed to be true by any party, each of them expressly accepts and assumes the risk of such possible differences in facts and agrees that this Agreement shall be and remain effective notwithstanding such differences in facts.

15. The Parties agree that except as provided in Paragraph 1, above, they will each bear their own attorney fees and costs arising from the litigation of case number CV 164486, and all related administrative proceedings.

16. This Agreement shall be governed by the laws of the State of California. Venue shall be in the County of Santa Cruz.

17. In the event any portion of this Agreement is deemed to be unenforceable, or is in conflict with applicable law, the remainder of this Agreement shall be enforced and shall remain in full force and effect, unless the portion unenforceable is a material consideration to a party to this Agreement.

18. Any party to this Agreement may enforce the Agreement by filing a motion pursuant to Code of Civil Procedure Section 664.6 or under any other procedure permitted by law. The prevailing party in any such enforcement action shall be entitled to attorney fees and costs.

19. Farm Bureau agrees that except as provided in Paragraph 1, above, it is fully and solely responsible for satisfaction of any and all liens or claims for reimbursement or subrogation of expenses incurred by it or on its behalf related to any of its claims as alleged in the Petition in case number CV 164486. Upon dismissal with prejudice pursuant to Paragraph 6 above, Farm Bureau releases, holds harmless, and agrees to indemnify the County of Santa Cruz, and the City of Watsonville, and all of their agents, offices, officers, members, successors and assigns, managers, partners, directors, board of supervisors, city council, trustees, agents, employees, representatives, attorneys, insurers, departments, divisions, subdivisions, sections, offices, and each of them from any and all claims for reimbursement and/or subrogation related to any of the claims alleged in its Petition up to the time of its dismissal.

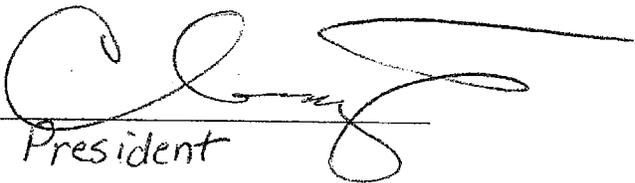
20. All Parties agree to cooperate fully and to execute any and all documents, and to take all additional actions that may be necessary or reasonably appropriate to give full force and effect to the basic terms and intent of this Agreement, and which are not inconsistent with its terms.

21. By their signatures below, the Parties herein acknowledge that they have read the terms of this Agreement, understand the terms thereof, and are agreed thereto.

22. The individuals whose signatures appear hereinbelow represent, warrant and guarantee that they have the authority to execute this Agreement on behalf of those entities on whose behalf they purport to execute this document. Farm Bureau agrees and represents that the person signing on behalf of Farm Bureau below is authorized to execute this agreement on behalf of Farm Bureau of Santa Cruz County and that such nonprofit corporation agrees to be bound by this Agreement.

FARM BUREAU OF SANTA CRUZ COUNTY

DATED: _____

By: 
President

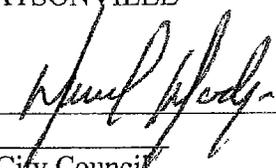
DATED: 2/14/11

COUNTY OF SANTA CRUZ


By: Mark Stone
Its: Chair, Board of Supervisors

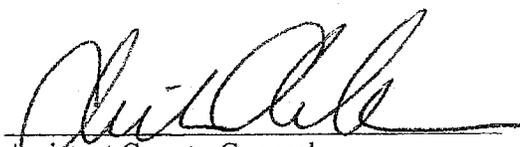
DATED: _____

CITY OF WATSONVILLE


By: _____
Its: Mayor, City Council

Approved as to form:

DATED: 1/20/11


Assistant County Counsel
Attorney for the County of Santa Cruz

Approved as to form:

DATED: _____

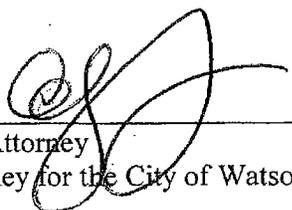
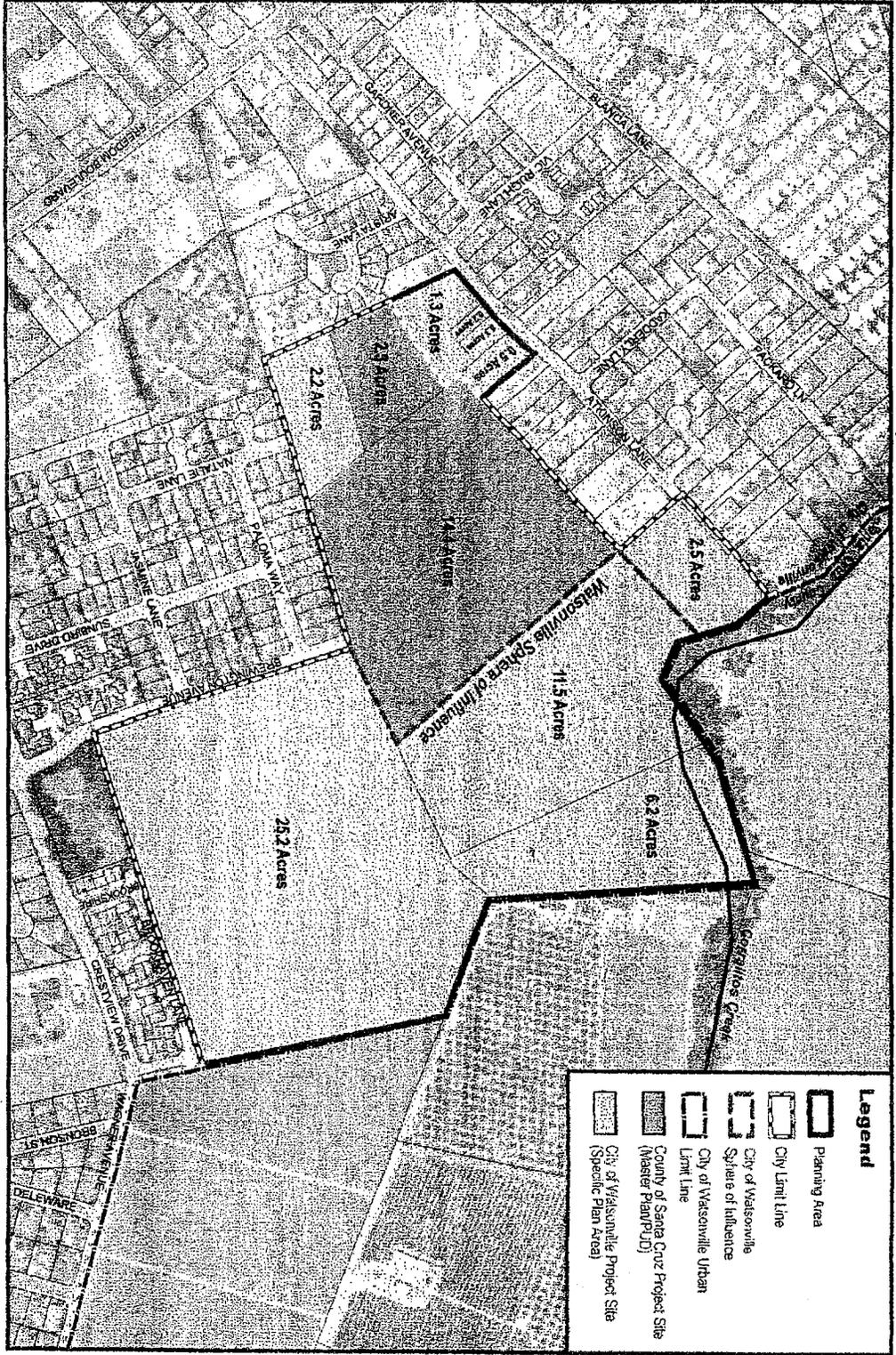

City Attorney
Attorney for the City of Watsonville

EXHIBIT "A": Map of City/County Project

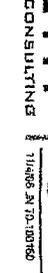
EXHIBIT "B": Depiction of Secondary Access for County Project

EXHIBIT "A"



Source City of Watsonville (2007)

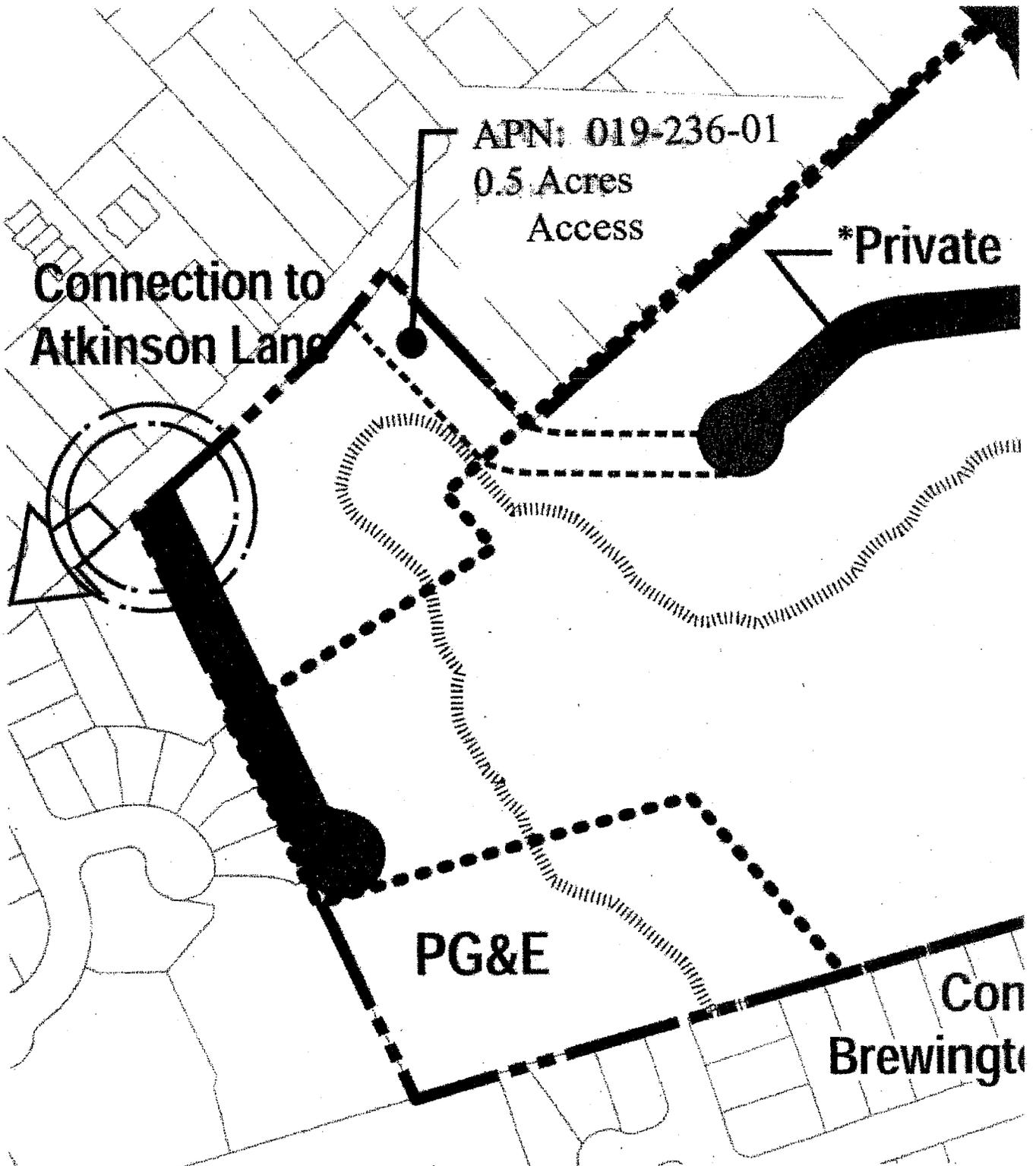
0 500 1000 Feet
APPROXIMATE



ATKINSON LANE SPECIFIC PLAN & PUD EIR

City and County Project Sites and Jurisdictional Boundaries

EXHIBIT "B"





Appendix N

Atkinson Lane Specific Plan Revised Traffic Impact Analysis,
prepared by RBF Consulting, dated March 10, 2014.



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A Baker Company

MEMORANDUM

To: Cynthia Iwanaga, Mid-Pen Housing Project Manager

From: Nathan Schmidt, RBF Consulting

Date: March 10, 2014

Subject: Atkinson Lane Specific Plan Revised Traffic Impact Analysis

This technical memorandum presents the findings and recommendations of the revised traffic impact analysis to evaluate the potential impacts associated with changes to the *Atkinson Lane Specific Plan and EIR* (RBF Consulting, March 2009), which was approved by the County of Santa Cruz in May 2009 (hereinafter referred to as the “approved project”). The revised Atkinson Lane Specific Plan / Master Plan (herein after referred to as the “revised project”) proposes a modified project phasing plan that would develop the project site in three separate phases. The revised project proposes to decrease the number of dwelling units from 498 residential units to 219 residential units and will generate fewer trips in the AM and PM peak hour.

1 Project Understanding

1.1 Revised Phasing Plan

A primary change to the project is the modification to the project phasing plan as shown in [Table 1: Build-out Phasing Modifications](#). The revised project would be constructed in two phases, Phase 1a and Phase 1b. In addition, the City’s Phase 2 site and Specific Plan would be eliminated as per the 2011 settlement agreement between the County of Santa Cruz, Santa Cruz County Farm Bureau, and the City of Watsonville. This modification would eliminate the future development of up to 237 additional units on 23.2 acres within APNs 048-231-01, 048-231-17, 048-231-18, and 048-251-09. Within the County jurisdiction, Phase 1a proposes to construct a total of 26 affordable housing units on 1.3 acres (APN 048-211-25). A total of 20 units are proposed to be developed within the City jurisdiction on APN 019-226-42. A total of 16 units would be high density residential with the remaining four low density residential units fronting on Atkinson Lane. This would result in a modification to the number of high density units constructed. An additional five high density units would be constructed, with an equal reduction in the number of low density units. Phase 1b includes 173 additional high density residential units, identical to the approved Atkinson Lane Specific Plan and EIR. As a result, 219 total units would be constructed at project buildout (Phase 1a + Phase 1b conditions).

Table 1: Build-out Phasing Modifications

Phase 1a	Assessor Parcel No.	Jurisdiction	Developable Acreage	Density Range/Acre	Proposed Units
Residential – High Density (R-HD)	048-211-25	County	1.3	20	26
Residential – High Density (R-HD)	019-226-42	City	0.9	17.8	16
Residential – Low Density (R-LD)	019-226-42	City	0.4	8-10	4
Total Phase 1a			2.6		46
Phase 1b	Assessor Parcel No.	Jurisdiction	Developable Acreage	Density Range/Acre	Proposed Units
Residential – High Density (R-HD)	019-226-42	County	8.7	20	173
Total Phase 1b			8.7		
Total Allowable Phase 1a + 1b Units			11.3		219

Due to the decrease in dwelling units and thus project trip generation, this revised traffic impact analysis evaluated only intersections that were previously identified to require project mitigation measures. The remaining study intersections would continue to have no impacts or impacts that are considered less than significant as described in the EIR, and are not re-analyzed in this amended study.

Therefore, traffic operations were analyzed for the following six study intersections:

3. Freedom Boulevard / Crestview Drive
5. East Lake Avenue / Wagner Avenue
6. East Lake Avenue / Holohan Road
9. SR-1 Northbound Off-Ramp / Harkins Slough Road
11. Freedom Boulevard / Airport Boulevard
17. SR-1 Northbound Ramps / Larkin Valley Road

These intersections were analyzed for the following project scenarios:

- Existing plus Background plus Project Conditions (Project Phase 1a + Phase 1b)
- Cumulative plus Project Conditions (Project Phase 1a + Phase 1b)

1.2 Existing Conditions Analysis

The existing conditions analysis presented in the Atkinson EIR traffic impact analysis included traffic counts that were conducted during the AM and PM peak in April 2008. To verify their accuracy, these traffic counts were compared to 2012 traffic data collected by Caltrans at the interchange of Highway 1 / Larkin Valley Road. As shown in [Table 2: Traffic Volumes Growth \(2007-2012\) at Highway 1 / Larkin Valley Ramps](#) the 2012 traffic counts were found to be 4% lower than the 2008 traffic volumes, and therefore the 2008 counts are still considered valid for analysis purposes. The existing AM and PM peak hour traffic volumes at each of the study intersections are shown in [Exhibit 1: Existing Peak Hour Traffic Volumes](#).

Table 2: Traffic Volumes Growth (2007-2012) at Highway 1 / Larkin Valley Ramps

Highway 1 / Larkin Valley Rd Ramp Location:	Average Daily Traffic			% Growth 2008 – 2012
	2007	2008	2012	
Northbound Off-Ramp	1,400	1,400	1,300	-7 %
Southbound Off-Ramp	1,400	1,400	1,200	-14 %
Northbound On-Ramp	4,450	4,400	4,300	-2 %
Total	9,257	9,208	8,812	-4%

Source: Caltrans Traffic Data Branch <http://traffic-counts.dot.ca.gov> (Retrieved 8/12/13)

2 Existing Plus Background Plus Revised Project Conditions (Phase 1a + 1b)

2.1 Approved Project Land Uses / Trip Generation

The approved project consists of 220 Apartments, 118 Condominium / Townhomes, and 160 Single-Family Detached Homes. The ultimate build out of the approved project was forecast to generate 3,672 daily trips; with 284 trips (61 in, 223 out) occurring during the AM peak hour and 358 trips (231 in, 127 out) occurring during the PM peak hour.

2.2 Revised Project Conditions

The revised project proposes a modified project phasing plan that would develop the project site in two phases; Phase 1a and Phase 1b. [Exhibit 2: Revised Project Land Uses and Trip Generation](#) provides a summary of the revised project land use assumptions by each project phase. Phase 1a would accommodate a maximum of 42 Apartments and 4 Single-Family Dwelling Units. Phase 1b would accommodate a maximum of 173 Apartments.

Site access will be provided as analyzed in the approved project EIR, with the following exceptions under the revised project conditions:

- The proposed Wagner Avenue extension to East Lake Avenue would not be constructed.
- The proposed roadway connections from the project site to Brookhaven Lane to Atkinson Lane would not be constructed.
- Primary access for Phase 1a would occur from Atkinson Lane.
- Primary access for Phase 1b would occur from new access roads off Brewington Avenue and Atkinson Lane.

2.3 Revised Project Trip Generation

Consistent with the prior traffic analysis, trip generation rates from the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (ITE 2013)* were utilized to calculate trips forecast to be generated by the revised project land uses as shown in [Exhibit 2: Revised Project Land Uses and Trip Generation](#). In comparison to the approved project, the revised project, including the combined development of Phase 1a

and Phase 1b would result in 279 fewer residential dwelling units and would result in 171 fewer AM peak hour trips and 221 fewer PM peak hour trips as compared to the approved project.

2.4 Revised Project Trip Distribution and Assignment

Project trip distribution and assignment was determined in the same manner as in the approved project traffic analysis report. In the vicinity of the project, the project trip assignment was adjusted to reflect the revised project roadway network including deletion of the proposed Wagner Avenue extension to East Lake Avenue. The revised project trip assignments are shown separately for each of the project phases in [Exhibit 3: Revised Project Phase 1a Trip Assignment](#) and [Exhibit 4 Revised Project Phase 1b Trip Assignment](#).

2.5 Existing plus Background plus Revised Project Conditions (Phase 1a + Phase 1b) Intersection Operations

The revised project trips including the combined trip generation from Phase 1a and Phase 1b were added to the Existing and Background traffic volumes as provided in the approved project traffic analysis report and are shown in [Exhibit 5 Existing plus Background plus Revised Project Phase 1a + Phase 1b Traffic volumes](#). Traffic analyses were performed for the weekday AM and PM peak hours at each of the study intersections and the results of the analyses are summarized in [Exhibit 6: Intersection Level of Service Summary](#). The LOS calculation sheets are included in [Appendix A](#).

All of the six study intersections analyzed as part of this revised traffic study would continue to operate at an unacceptable level of service as described below:

Intersection #3: Freedom Boulevard / Crestview Drive:

Revised Project Impact: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

At the intersection of Freedom Boulevard / Crestview Drive existing conditions field observation revealed that the southbound left turn lane overflows during the PM peak hour. The southbound left turn queue from Freedom Boulevard onto Crestview Drive would continue to overflow into the through lane and the addition of the revised project traffic would exacerbate adverse operational conditions. Left turn vehicles spill back into the through lane and vehicles traveling straight through the intersection would have to change lanes or stop behind the back of the queue. The project adds traffic to the left turn and shall mitigate this impact.

Revised Project Mitigation: The project mitigation shall be revised as follows:

The project will mitigate its impact at the intersection of Freedom Boulevard / Crestview Drive by lengthening the southbound left turn pocket by at least 25 feet. The existing storage length is 150 feet and the SimTraffic analysis indicated a 95% queue of 175 feet.

Intersection #5: East Lake Avenue / Wagner Avenue:

Revised Project Impact: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The East Lake Avenue / Wagner Avenue intersection is anticipated to operate at LOS A in both the AM and PM peak hours and has a worst approach LOS of F and D in the AM and PM peak hours, respectively. The volumes do not meet California Manual on Uniform Traffic Control Devices (CA-MUTCD) signal warrants for the peak hour.

The County of Santa Cruz significance standards were used to identify impacts. The addition of project traffic does not decrease the LOS from acceptable to unacceptable during the PM peak hour and during the AM peak hour the v/c ratio does not increase. Also, the intersection does not satisfy the CA-MUTCD signal warrants. Thus the revised project would not have a significant impact at this intersection.

The CA-MUTCD Peak Hour Signal Warrant worksheets are included in [Appendix B](#).

Revised Project Mitigation: No Mitigation required. Same as identified in the Approved Atkinson Lane Specific Plan and EIR.

Intersection #6: East Lake Avenue (Highway 152) / Holohan Road

Revised Project Impact: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The East Lake Avenue (Highway 152) / Holohan Road intersection is anticipated to operate at LOS D in the AM peak hour and LOS E in the PM peak hour. Per Caltrans standards, the project would result in a significant impact. The project would be required to mitigate its impact and improve the intersection to at least Existing Plus Background operating conditions, which is the baseline for evaluating the project impacts.

Revised Project Mitigation: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The intersection of East Lake Avenue / Holohan Road is constrained by the creek to the south, and buildings/right-of-way to the north and south. Feasible improvements opportunities are thus restricted. To improve LOS to acceptable conditions the following improvements would have to be provided: Reconstruct the eastbound approach on Holohan Road to include a dedicated eastbound right turn lane and convert the eastbound shared through/right lane to a shared through/left lane. The receiving northerly leg on Eastlake Avenue would have to be widened to accommodate two lanes to receive the dual eastbound turning movements. With this improvement, the intersection operation would improve to an acceptable LOS D during the AM peak hour and LOS C during the PM peak period. This improvement would require relocation of utilities and signal equipment and may require right-of-way acquisition. The project would mitigate its impact through payment of traffic impact fees. The County and Caltrans are currently conducting a PSR at this study intersection.

As shown in Table 3, the proposed project under Phase 1a + 1b conditions shall pay a fair share contribution of 2.16 percent of the estimated improvement cost. The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours.

Intersection #9: Highway 1 NB Ramps / Harkins Slough Road

Revised Project Impact: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Highway 1 NB Ramps / Harkins Slough Road ramp terminal intersection is anticipated to operate at LOS F in the AM peak hour and LOS A in the PM peak hour. The worst approach is forecast to operate at LOS F in the AM peak hour and LOS B in the PM peak hour. In terms of the Caltrans requirements the project would result in a significant impact. The project will be required to mitigate its impact and improve the intersection to at least Existing Plus Background operating conditions.

Revised Project Mitigation: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The installation of a signal at the intersection of Highway 1 NB Ramps / Harkins Slough Road would improve the LOS to acceptable condition. Peak hour signal warrants are met. The signal would be coordinated and interconnected with the signal at the intersection of Harkins Slough Road / Green Valley Road and the installation of a new signal at the Southbound Ramp terminal due to the close spacing between and overflow/spillback of queues. The project would mitigate its impact through payment of traffic impact fees. Caltrans and the City would have to prepare a Project Study Report (PSR) for the improvements.

As shown in Table 3, the proposed project under Phase 1a + 1b conditions shall pay a fair share contribution of 0.84 percent of the estimated improvement cost. The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours.

Intersection #11: Airport Boulevard / Freedom Boulevard

Revised Project Impact: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Airport Boulevard / Freedom Boulevard intersection is anticipated to operate at LOS E in both the AM and PM peak hours. The County of Santa Cruz significance standards are used to identify impacts at this intersection. The addition of project traffic increases the critical v/c ratio by more than 1% and thus the project causes a significant impact at the intersection.

Revised Project Mitigation: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Airport Boulevard / Freedom Boulevard intersection is anticipated to operate at LOS E in both the AM and PM peak hours. Improvements at the intersection would require right-of-way acquisition and probably the loss of the Class 2 bike lanes which may not be feasible.

Improvements have been identified for improving the LOS to acceptable conditions. The feasibility of these improvements would be established if a concept design is prepared. With the addition of a second through and shared right turn lane on the Airport approach from Highway 1 and a second left turn lane on Freedom Boulevard from the downtown the LOS would improve to D during both the AM and PM peak hours. The receiving leg on Airport Boulevard would have to be widened to accommodate the two through lanes. As mitigation, the project would pay a fair share contribution of the traffic impact fees towards the improvements.

As shown in Table 3, the proposed project under Phase 1a + 1b conditions shall pay a fair share contribution of 4.48 percent of the estimated improvement cost. The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours.

Intersection #17: Highway 1 NB Ramps / Larkin Valley Road

Revised Project Impact: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Highway 1 NB Ramps / Larkin Valley Road ramp terminal intersection is anticipated to operate at overall LOS E in the AM peak hour and LOS F in the PM peak hour. The worst approach is forecast to operate at LOS F in both the AM and PM peak hours. In terms of the Caltrans requirements the project would result in a significant impact. The project would be required to mitigate its impact and improve the intersection to at least Existing Plus Background operating conditions.

Revised Project Mitigation: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The Highway 1 NB Ramps / Larkin Valley Road ramp terminal and the intersection of Airport Boulevard / Larkin Valley Road are closely spaced. Thus require improvements should add less both intersection operations. Coordinated signal operations would not adequately mitigate the impact, as queues would continue to spill back through both intersections as indicated by the SimTraffic analysis. The provision of two roundabouts (one at the northbound hook ramp terminal and one at the Airport Boulevard/Larkin Valley intersection) will provide adequate traffic operations and the LOS would improve to an acceptable level (LOS A). The project would be required to mitigate its impact and pay a fair share contribution towards the improvement at the intersections through payment of traffic impact fees.

As shown in Table 3, the proposed project under Phase 1a + 1b conditions shall pay a fair share contribution of 3.58 percent of the estimated improvement cost. The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours.

The LOS calculation sheets for mitigated intersection conditions are included in [Appendix A](#).

Table 3: Project Fair Share Calculations

Intersections:	Project Phase		
	Phase 1a Only	Phase 1b Only	Phase 1a + 1b (Buildout)
#6: East Lake / Holohan	0.40 %	1.75 %	2.16 %
#9: Highway 1 NB Ramps/ Harkins Slough	0.18 %	0.66 %	0.84 %
#11: Airport / Freedom	0.98 %	3.50 %	4.48 %
#17: Highway 1 NB Ramps / Larkin Valley	0.81 %	2.77 %	3.58 %

Source: RBF Consulting 3/10/14

2.6 Individual Phase 1a and Phase 1b Site Development Analysis

This revised traffic impact analysis also analyzed the potential impacts of the individual development of Phase 1a and Phase 1b. The individual development of Phase 1a and Phase 1b was evaluated separately to determine project impacts using the County of Santa Cruz significance criteria of 1% for an increase in the v/c for critical movements. The LOS worksheets are attached in [Appendix A](#) and the v/c ratios are indicated in [Exhibit 7: Critical Movement V/C Ratio Increase](#).

Existing plus Background plus Project Phase 1a Only Impacts

The following intersections were determined to be *impacted* by the individual development of Phase 1a:

- Intersection #9: Highway 1 NB Ramps / Harkins Slough Road
- Intersection #17: Highway 1 NB Ramps / Larkin Valley Road

The individual development of Phase 1a would result in *no impact* to the following study intersections:

- Intersection #3: Freedom Boulevard and Crestview Drive
- Intersection #11: Airport Boulevard and Freedom Boulevard

All of the improvements identified for Existing plus Background plus Revised Project conditions would be required for Phase 1a except at the intersection of Freedom Boulevard / Crestview Drive and Airport Boulevard and Freedom Boulevard. Under Phase 1a, the primary project access would occur from Atkinson Lane and would not add project trips to the critical southbound left turn movement at the intersection of Freedom Boulevard and Crestview Drive.

The Airport Boulevard / Freedom Boulevard is anticipated to operate at LOS E in both the AM and PM peak hours. However the addition of project Phase 1a traffic will not increase the critical v/c ratio by more than 1% (See [Exhibit 7: Critical Movement V/C Ratio Increase](#)), and thus the project will not cause a significant impact at this intersection.

The proposed project under Phase 1a only shall pay a fair share contribution as indicated per intersection in table 3 above. The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours.

Existing plus Background plus Project Phase 1b Only Impacts

The following intersections were determined to be *impacted* by the individual development of Phase 1b.

- Intersection #3: Freedom Boulevard / Crestview Drive
- Intersection #9: Highway 1 NB Ramps / Harkins Slough Road
- Intersection #17: Highway 1 NB Ramps / Larkin Valley Road
- Intersection #11: Airport Boulevard and Freedom Boulevard

All of the improvements identified for Existing plus Background plus Revised Project conditions would be required for Phase 1b.

The Airport Boulevard / Freedom Boulevard is anticipated to operate at LOS E in both the AM and PM peak hours and the addition of project Phase 1b traffic will increase the critical v/c ratio by more than 1% (See [Exhibit 7: Critical Movement V/C Ratio Increase](#)), and thus the project will cause a significant impact at this intersection.

The proposed project under Phase 1b only shall pay a fair share contribution as indicated per intersection in table 3 above. The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours.

3 Cumulative Conditions Analysis

3.1 Cumulative plus Project Build-out (Phase 1a + Phase 1b) Traffic Volumes

The revised project traffic for the combined development of Phase 1a and Phase 1b was added to the cumulative without Wagner traffic volumes and analyzed. [Exhibit 8: Cumulative plus Revised Project Build-out \(Phase 1a + 1b\) Traffic Volumes](#) indicates the peak hour intersection turning volumes at the study intersections.

3.2 Cumulative plus Project Build-out (Phase 1a + 1b) Intersection Operations

All of the study intersections would continue to operate at the same levels of service as indicated in the Approved Atkinson Lane Specific Plan and EIR cumulative conditions analysis and only delays would increase due to the addition of the project trips.

The LOS calculation sheets for Cumulative plus Project Build-out conditions are included in [Appendix A](#).

3.3 Cumulative plus Project Build-out Conditions Intersection Mitigations

The same improvements identified in the Approved Atkinson Lane Specific Plan and EIR would be required for Cumulative plus Project conditions at the following intersections:

- Intersection #6: East Lake Avenue / Holohan Road
- Intersection #9: Highway 1 NB Ramps / Harkins Slough Road
- Intersection #11: Airport Boulevard / Freedom Boulevard
- Intersection #17: Highway 1 NB Ramps / Larkin Valley Road

Intersection #5: East Lake Avenue / Wagner Avenue

Revised Project Mitigation: Same as identified in the Approved Atkinson Lane Specific Plan and EIR, which is as follows:

The project would have a significant cumulative impact at intersection #5: East Lake Avenue / Wagner Avenue, where the addition of project traffic would increase the volume-to-capacity (v/c) ratio by more than 1% during the PM peak hour.

The installation of a signal at the intersection of East Lake Avenue / Wagner Avenue would mitigate the project impact for cumulative conditions. Payment of the City traffic impact fee would mitigate the project cumulative impact at this intersection. This mitigation is the same as identified in the Approved Atkinson Lane Specific Plan and EIR for Cumulative plus Project conditions. The City of Watsonville plans to install a signal at the intersection of East Lake Avenue and Wagner Avenue. The project will have to pay a fair share towards the installation of the signal through payment of traffic impact fees.

The LOS calculation sheets for mitigated intersection conditions are included in [Appendix A](#).

4 TIRE Index Analysis

A TIRE index analysis was performed in the approved Atkinson Lane Specific Plan and EIR to determine if the increase in traffic due to the addition of the project to the local roadway may affect the quality of life to the residents in the vicinity of the project. The TIRE analysis was updated to reflect the revised project trip generation and site access locations. As previously described primary access for Phase 1a would occur on Atkinson Lane while primary access for Phase 1b would occur from an extension off Brewington Avenue. A TIRE index analysis was performed on the roadway segments of Atkinson Lane east of Freedom Boulevard, Gardner Avenue east of Freedom Boulevard, and Brewington Avenue north of Crestview Drive. [Exhibit 9: TIRE \(Traffic Infusion on Residential Environments\)](#) provides the revised project TIRE index values. The results of the revised TIRE analysis are summarized below:

1. **Phase 1a Only Conditions:** The individual development of Project Phase 1a only will not increase the TIRE index by more than 0.1 on the study roadway segments. It should be noted that Phase 1a would only be accessible from Atkinson Lane and would result in zero net new trips to the segment of Brewington Avenue north of Crestview Drive. According to the TIRE index, it is unlikely that residents along the roadway segments would notice this small increase in traffic as a result of the individual development of Project Phase 1a.
2. **Phase 1b Only Conditions:** The individual development of Project Phase 1b only will increase the TIRE index on Atkinson Lane east of Freedom and Gardner Avenue East of Freedom by less than 0.1. The residents along these two segments would not notice this small increase in traffic as a result of the individual development of Project Phase 1b.

Project Phase 1b would increase the TIRE index on the segment of Brewington Avenue north of Crestview Drive by 0.6. Thus the addition of the Project Phase 1b traffic onto the neighborhood streets is a significant impact. The development of Project Phase 1b would trigger the need to develop and implement a traffic calming plan in the neighborhood along the segment of Brewington Avenue north of Crestview Drive.

3. **Phase 1a + Phase 1b Conditions:** The combined development of Project Phase 1a + Phase 1b would not increase the TIRE index by more than 0.1 on the segments of Atkinson Lane east of Freedom and on Gardner Avenue east of Freedom. The combined development of Phase 1a + Phase 1b would increase the TIRE index by 0.6 on Brewington Avenue north of Crestview and would require mitigation as required for Phase 1b only conditions (as described above).
4. **Cumulative + Project Phase 1a + Phase 1b:** The implementation of Project Phase 1a + Phase 1b would not increase the TIRE index by more than 0.1 on the segments of Atkinson Lane east of Freedom and on Gardner Avenue east of Freedom under Cumulative plus Project conditions. Cumulative plus Phase 1a + Phase 1b would increase the TIRE index by 0.5 on Brewington Avenue north of Crestview and would trigger the need to develop and implement a traffic calming plan in the neighborhood along the roadway segment of Brewington Avenue north of Crestview Drive.

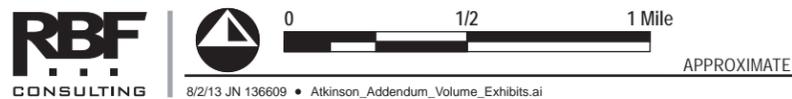


LEGEND

- x** Intersection Analyzed
- XX/XX = AM/PM Peak Hour Trips

<p>FREEDOM / CRESTVIEW</p> <p>FREEDOM BLVD</p> <p>CRESTVIEW DR</p> <p>900 / 1114 86 / 234</p> <p>113 / 183 52 / 43</p> <p>860 / 981 34 / 39</p>	<p>E. LAKE / WAGNER</p> <p>EAST LAKE AVE</p> <p>WAGNER AVE</p> <p>3 / 10 475 / 683 26 / 22</p> <p>69 / 23 7 / 1 116 / 68</p> <p>2 / 8 0 / 0 8 / 9</p> <p>3 / 15 497 / 531 138 / 96</p>	<p>E. LAKE / HOLOHAN - COLLEGE</p> <p>EAST LAKE AVE</p> <p>HOLOHAN RD</p> <p>COLLEGE DR</p> <p>265 / 293 341 / 277 26 / 14</p> <p>54 / 16 158 / 164 129 / 98</p> <p>372 / 171 113 / 169 159 / 315</p> <p>254 / 289 325 / 154 50 / 106</p>	<p>SR 1 NB RAMP / HARKINS SLOUGH</p> <p>HARKINS SLOUGH RD</p> <p>0 / 0 873 / 427</p> <p>0 / 0 496 / 128</p> <p>213 / 43 262 / 449</p>
<p>FREEDOM / AIRPORT</p> <p>FREEDOM BLVD</p> <p>AIRPORT BLVD</p> <p>251 / 145 464 / 477 285 / 253</p> <p>171 / 144 500 / 422 41 / 96</p> <p>204 / 299 603 / 580 118 / 202</p> <p>248 / 274 375 / 380 25 / 135</p>	<p>HWY 1 NB RAMPS / LARKIN</p> <p>HWY 1 NB RAMPS</p> <p>LARKIN VALLEY RD</p> <p>17 / 58 558 / 667</p> <p>57 / 55 28 / 11</p> <p>28 / 43 319 / 207</p>		

Source: RBF Consulting (2013)



REVISED ATKINSON LANE SPECIFIC PLAN TIA

Existing Peak Hour Volumes

	PROJECT SIZE	WEEKDAY DAILY TRIPS	TOTAL PEAK HOUR	AM PEAK HOUR						PM PEAK HOUR		
				% OF ADT	%			TOTAL PEAK HOUR	% OF ADT	%		
					IN	/	OUT			IN	/	OUT
ORIGINAL PROJECT ²												
Apartments	220 Units	1,463	112	8%	22	/	90	136	9%	89	/	47
Condominiums/Townhomes (per unit)	118 Units	686	52	8%	9	/	43	61	9%	41	/	20
Single-Family Detached Housing	160 Units	1,523	120	8%	30	/	90	160	11%	101	/	59
<i>Original Project Total</i>	498 Units	3,672	284		61		223	358	10%	231		127
REVISED PROJECT ²												
Phase 1a												
Apartments	42 Units	279	21	8%	4	/	17	26	9%	17	/	9
Single-Family Detached Housing	4 Units	38	3	8%	1	/	2	4	11%	3	/	1
<i>Subtotal Phase 1a</i>	46 Units	317	24		5		19	30	9%	20		10
Phase 1b												
Apartments	173 Units	1,150	88	8%	18	/	70	107	9%	70	/	37
<i>Subtotal Phase 1b</i>	173 Units	1,150	88		18		70	107	9%	70		37
Phase 1a + 1b												
<i>Phase 1a + Phase 1b Total</i>	219 Units	1,468	113	8%	23	/	90	137	9%	90	/	47

Notes:

1. Trip generation rates published by Institute of Transportation Engineers, "Trip Generation," 9th Edition, 2012.
2. The average trip generation rate to calculate the project trip generation.



LEGEND

- x** Intersection Analyzed
- XX/XX = AM/PM Peak Hour Trips

<p>FREEDOM / CRESTVIEW</p> <p>FREEDOM BLVD</p> <p>CRESTVIEW DR</p> <p>5/3 0/0</p> <p>0/0 0/0</p> <p>1/5 0/0</p>	<p>E. LAKE / WAGNER</p> <p>EAST LAKE AVE</p> <p>WAGNER AVE</p> <p>0/0 0/1 0/0</p> <p>0/0 0/0 0/0</p> <p>0/0 1/1 0/0</p>	<p>E. LAKE / HOLOHAN - COLLEGE</p> <p>EAST LAKE AVE</p> <p>HOLOHAN RD</p> <p>COLLEGE DR</p> <p>0/0 0/1 0/0</p> <p>0/0 0/0 0/0</p> <p>0/0 1/1 0/0</p>	<p>SR 1 NB RAMP / HARKINS SLOUGH</p> <p>HARKINS SLOUGH RD</p> <p>1/1</p> <p>0/0</p> <p>0/0 0/1</p> <p>SR 1 NB OFF RAMP</p>
<p>FREEDOM / AIRPORT</p> <p>FREEDOM BLVD</p> <p>AIRPORT BLVD</p> <p>0/0 0/1 0/0</p> <p>0/0 0/0 0/0</p> <p>0/0 0/0 1/4</p> <p>4/2 1/1 0/0</p>	<p>HWY 1 NB RAMPS / LARKIN</p> <p>HWY 1 NB RAMPS</p> <p>LARKIN VALLEY RD</p> <p>0/0 3/2</p> <p>0/0 0/0</p>		

Source: RBF Consulting (2013)



APPROXIMATE

REVISED ATKINSON LANE SPECIFIC PLAN TIA

Revised Project Phase 1a Trip Assignment



LEGEND

- x** Intersection Analyzed
- XX/XX = AM/PM Peak Hour Trips

<p>FREEDOM / CRESTVIEW</p> <p>FREEDOM BLVD</p> <p>CRESTVIEW DR</p> <p>0/0 0/1</p> <p>1/1</p> <p>18/10</p> <p>0/0 5/18</p> <p>3</p>	<p>E. LAKE / WAGNER</p> <p>EAST LAKE AVE</p> <p>WAGNER AVE</p> <p>0/0 1/4 0/0</p> <p>0/0 0/0 0/0</p> <p>0/0 4/3 0/0</p> <p>5</p>	<p>E. LAKE / HOLOHAN - COLLEGE</p> <p>EAST LAKE AVE</p> <p>HOLOHAN RD</p> <p>COLLEGE DR</p> <p>0/0 1/4 0/0</p> <p>0/0 0/0 0/1</p> <p>0/0 0/0 0/0</p> <p>0/0 4/2 1/0</p> <p>6</p>	<p>SR 1 NB RAMP / HARKINS SLOUGH</p> <p>HARKINS SLOUGH RD</p> <p>0/0 4/2</p> <p>0/0 0/0</p> <p>0/0 1/4</p> <p>SR 1 NB OFF RAMP</p> <p>9</p>
<p>FREEDOM / AIRPORT</p> <p>FREEDOM BLVD</p> <p>AIRPORT BLVD</p> <p>0/0 1/4 0/0</p> <p>0/0 0/0 0/0</p> <p>0/0 14/7 4/2 0/0</p> <p>11</p>	<p>HWY 1 NB RAMPS / LARKIN</p> <p>HWY 1 NB RAMPS</p> <p>LARKIN VALLEY RD</p> <p>0/0 11/6</p> <p>0/0 0/0</p> <p>17</p>		

Source: RBF Consulting (2013)



APPROXIMATE

REVISED ATKINSON LANE SPECIFIC PLAN TIA

Revised Project Phase 1b Trip Assignment

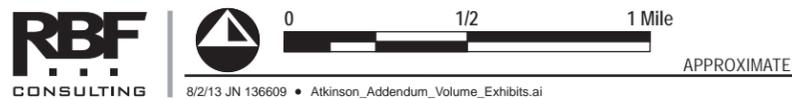


LEGEND

- x Intersection Analyzed
- XX/XX = AM/PM Peak Hour Trips

<p>FREEDOM / CRESTVIEW</p> <p>FREEDOM BLVD</p> <p>CRESTVIEW DR</p> <p>979 / 1164 86 / 235</p> <p>114 / 184 70 / 53</p> <p>895 / 1068 39 / 157</p> <p style="text-align: center;">3</p>	<p>E. LAKE / WAGNER</p> <p>EAST LAKE AVE</p> <p>WAGNER AVE</p> <p>3 / 10 487 / 697 26 / 22</p> <p>69 / 23 7 / 1 116 / 68</p> <p>2 / 8 0 / 0 8 / 9</p> <p>3 / 15 506 / 550 138 / 96</p> <p style="text-align: center;">5</p>	<p>E. LAKE / HOLOHAN - COLLEGE</p> <p>EAST LAKE AVE</p> <p>HOLOHAN RD</p> <p>COLLEGE DR</p> <p>268 / 295 351 / 290 26 / 14</p> <p>54 / 16 159 / 165 131 / 101</p> <p>374 / 175 113 / 170 159 / 315</p> <p>254 / 289 333 / 169 32 / 109</p> <p style="text-align: center;">6</p>	<p>SR 1 NB RAMP / HARKINS SLOUGH</p> <p>HARKINS SLOUGH RD</p> <p>0 / 0 879 / 431</p> <p>0 / 0 496 / 128</p> <p>213 / 43 264 / 456</p> <p style="text-align: center;">9</p>
<p>FREEDOM / AIRPORT</p> <p>FREEDOM BLVD</p> <p>AIRPORT BLVD</p> <p>256 / 148 485 / 499 287 / 256</p> <p>173 / 147 510 / 431 45 / 100</p> <p>206 / 304 609 / 592 128 / 237</p> <p>283 / 290 388 / 409 27 / 141</p> <p style="text-align: center;">11</p>	<p>HWY 1 NB RAMPS / LARKIN</p> <p>HWY 1 NB RAMPS</p> <p>LARKIN VALLEY RD</p> <p>17 / 58 580 / 693</p> <p>57 / 55 28 / 11</p> <p>28 / 43 328 / 209</p> <p style="text-align: center;">17</p>		

Source: RBF Consulting (2013)



REVISED ATKINSON LANE SPECIFIC PLAN TIA

Existing + Revised Project Phase 1a + 1b Volumes

N-S Street	E-W Street	Existing Operational Lane Configuration	Existing Intersection Control	LOS Threshold	Existing Condition		Existing + Background		Existing + Background + Project Phase 1a + 1b		Cumulative		Cumulative + Project Buildout Phase 1a + 1b												
					AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour											
					Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS									
3	Freedom Boulevard	Crestview Drive	NB 1-T, 1-T/R SB 2-T, 1-L WB 1-L, 1-R	Signal	Watsonville LOS D	9.2	A	11.0	B	9.1	A	11.4	B	9.5	A	11.8	B	9.2	A	12.1	B	9.7	A	18.0	B
						Southbound Left Queue Overflow Observed in Field				Lengthen SBL by 25 ft.				Analysis Indicates Southbound Left Queue Overflow											
5	East Lake Avenue	Wagner Avenue	NB 1-L, 1-T, 1-R SB 1-L, 1-T/R EB 1-L/T/R	Stop Sign (EB & WB) (Worst Approach)	Santa Cruz Cnty. LOS C/D	7.4	A	2.5	A	7.6	A	2.6	A	7.6	A	2.6	A	24.6	C	6.7	A	24.8	C	6.8	A
						49.3	E	33.0	D	51.2	F	34.0	D	52.0	F	34.3	D	267.9	F	99.4	F	272.2	F	101.7	F
Signal Not Warranted for Existing and Project Conditions						Signal						Signal													
6	East Lake Avenue	Holoan Road	NB 1-L, 1-T/R SB 1-L, 1-T, 1-R EB 1-L, 1-T/R	Signal	Santa Cruz Cnty. LOS C/D	45.2	D	69.1	E	45.9	D	71.4	E	43.0	D	69.3	E	68.3	E	107.8	F	68.3	E	107.5	F
						Reconstruct EB to L, L/T, R				Reconstruct EB to L, L/T, R				Reconstruct EB to L, L/T, R											
Signal Not Warranted for Existing and Project Conditions						Signal				Signal															
9	Hwy 1 NB Off Ramp	Harkins Slough Road	NB 1-L, 1-R EB 1-T WB 1-T	Stop Sign (EB & WB) (Worst Approach)	Caltrans LOS C/D	108.2	F	6.4	A	108.4	F	6.4	A	109.4	F	6.5	A	*	F	8.1	A	*	F	8.2	A
						420.0	F	13.6	B	420.3	F	13.6	B	424.9	F	13.7	B	*	F	42.4	E	*	F	42.5	E
Signalize and widen for LT						Signalize and widen for LT				Signalize and widen for LT															
11	Airport Boulevard	Freedom Boulevard	NB 2-L, 1-T, 1-R SB 1-L, 2-T, 1-R EB 1-L, 1-T, 1-T/R	Signal	Watsonville LOS D	61.3	E	57.8	E	66.1	E	62.2	E	68.8	E	63.1	E	85.5	F	78.4	E	89.1	F	79.5	E
						Add WL, NT/R				Add WL, NT/R				Add WL, NT/R											
17	Hwy 1 NB Ramps	Larkin Valley Road	NB 1-L, 2-T, 1-R SB 1-L, 2-T, 1-R EB 1-L, 2-T, 1-R	Stop Sign (EB & NB) (Worst Approach)	Caltrans LOS C/D	36.1	E	82.9	F	38.5	E	636.5	F	42.2	E	632.2	F	*	F	*	F	*	F	*	F
						317.8	F	1093.2	F	350.4	F	*	F	399.9	F	*	F	*	F	*	F	*	F	*	F
Roundabout						Roundabout				Roundabout															
Signal Not Warranted for Existing and Project Conditions						Signal				Signal															

- NOTES:
- NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
 - Analysis performed using 2000 Highway Capacity Manual methodologies.
 - Overall level of service standard for the City of Watsonville and Santa Cruz County is LOS D. Overall level of service standard for Caltrans is the
 - Intersection improvements are highlighted.
 - The overall delay for some intersections actually decreases with the addition of background and project trips. The reduction in delay occurs because the "intersection delay" is the weighted average of all approaches. When traffic volumes increase for an approach that has a free movement (zero delay), the "intersection delay" decreases. This can be seen at intersections 1 and 3 during the Existing and Existing plus Background conditions.
 - The asterisk (*) indicates that the delay was beyond the capabilities of Synchro.
 - The eastbound approach has 10 or fewer vehicles in the peak hours and improvements would be infeasible
 - Roundabout LOS performed using Traffix and SimTraffic used for simulation

N-S Street E-W Street		Existing Conditions														Cumulative Conditions					
		Existing + Bkgrd		Existing + Background + Project Phase 1a + Phase 1b		% Increase		Existing + Background + Project Phase 1a		% Increase		Existing + Background + Project Phase 1b		% Increase		Cumulative		Cumulative + Project Phase 1a + 1b		% Increase	
		AM V/C	PM V/C	AM V/C	PM V/C	AM %	PM %	AM V/C	PM V/C	AM %	PM %	AM V/C	PM V/C	AM %	PM %	AM V/C	PM V/C	AM V/C	PM V/C	AM %	PM %
5	East Lake Avenue Wagner Avenue	0.80	NA	0.80	NA	0.0%	NA	0.80	NA	0.0%	NA	0.80	NA	0.0%	NA	1.37	0.80	1.37	0.81	0.0%	1.3%
6	East Lake Avenue Holohan Road	1.69	1.64	1.70	1.68	0.6%	2.4%	1.69	1.65	0.0%	0.6%	1.69	1.66	0.0%	1.2%	1.9	1.78	1.91	1.79	0.5%	0.6%
9	Hwy 1 NB Off Ramp Harkins Slough	2.80	NA	2.82	NA	0.7%	NA	2.80	NA	0.0%	NA	2.81	NA	0.4%	NA	8.3	0.79	8.32	0.80	0.2%	1.3%
11	Airport Boulevard Freedom Boulevard	2.13	1.96	2.20	1.97	3.3%	0.5%	2.14	1.96	0.5%	0.0%	2.18	1.97	2.3%	0.5%	2.41	2.27	2.49	2.30	3.3%	1.3%
17	NB Ramps Larkin Valley	1.39	3.32	1.49	3.66	7.2%	10.2%	1.41	3.40	1.4%	2.4%	1.44	3.50	3.6%	5.4%	7.59	1.17	7.69	1.21	1.3%	3.4%

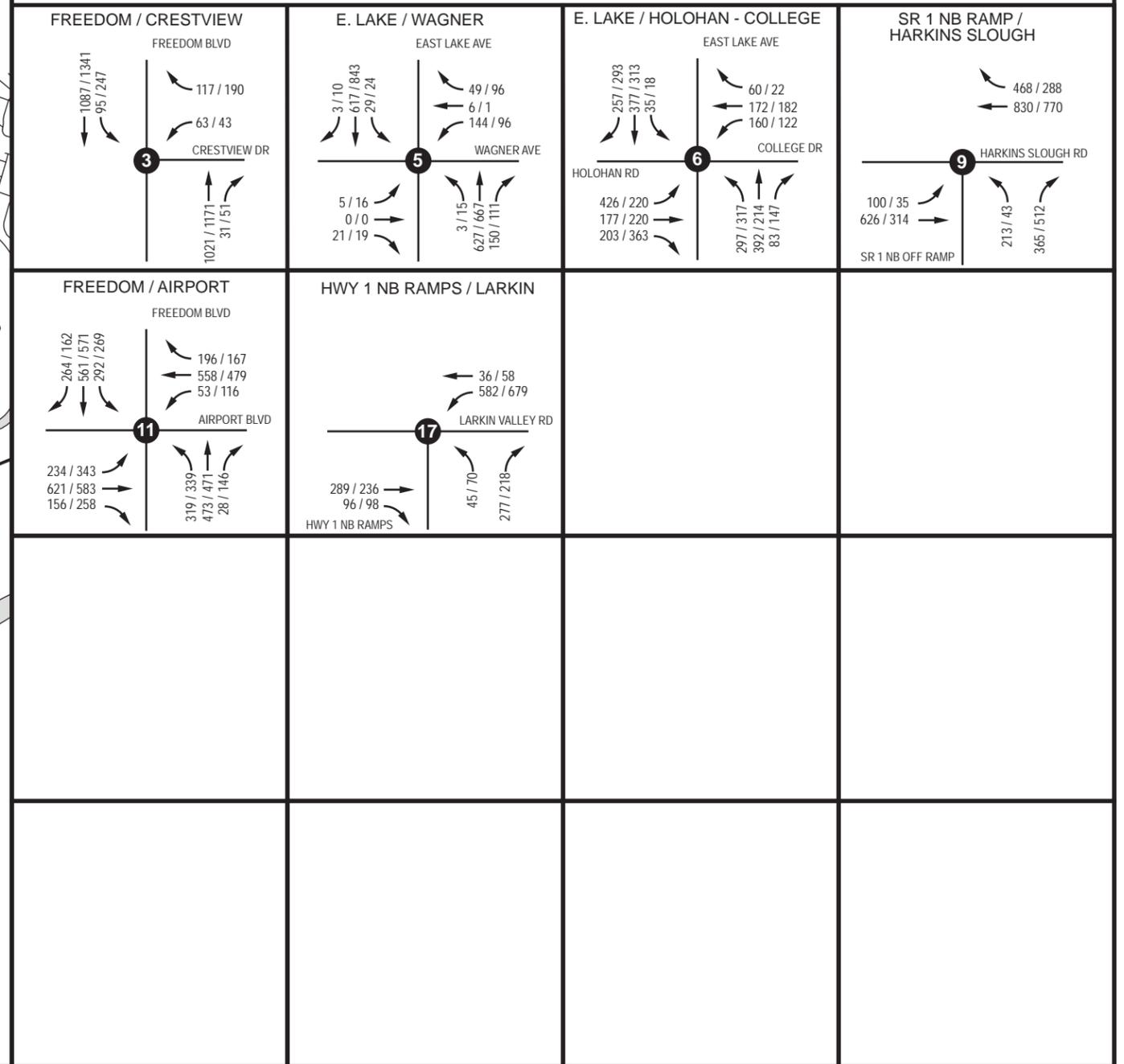
Notes:

- 1 Only LOS E or worse v/c ratios apply to the significance criteria
- 2 v/c ratios in the table is the sum of the v/c ratios for the critical movements i.e sum of highest left and thru for protected phasing, highest v/c for split phasing and the sum of the highest permitted phasing.
- 3 The highest v/c ratio is indicated for unsignalized intersections

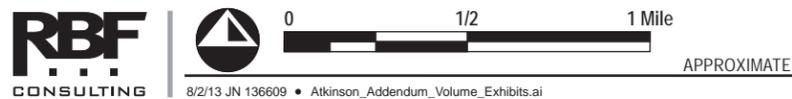


LEGEND

- x Intersection Analyzed
- XX/XX = AM/PM Peak Hour Trips



Source: RBF Consulting (2013)



REVISED ATKINSON LANE SPECIFIC PLAN TIA

Cumulative + Revised Project Buildout (Phase 1a + 1b) Volumes

Location	Existing		Existing + Background		Existing + Background + Project 1a Only		Existing + Background + Project 1b Only		Existing + Background + Project 1a + 1b		Cumulative		Cumulative + Project Buildout (Phase 1a + 1b)	
	Volume	TIRE Index	Volume	TIRE Index	Volume	TIRE Index	Volume	TIRE Index	Volume	TIRE Index	Volume	TIRE Index	Volume	TIRE Index
Brewington Avenue North of Crestview	360	2.6	360	2.6	360	2.6	1,511	3.2	1,511	3.2	460	2.7	1,611	3.2
Atkinson Lane East of Freedom	910	3.0	910	3.0	1,060	3.0	910	3.0	1,060	3.0	910	3.0	1,060	3.0
Gardner Avenue East of Freedom	2,780	3.4	2,780	3.4	2,947	3.5	2,780	3.4	2,947	3.5	3,040	3.5	3,207	3.6

*Cells Highlighted in Gray Indicate increase in index of 0.10 or more which would result in a noticeable traffic increase

APPENDIX A

Intersection Level of Service Calculation Worksheets

HCM Signalized Intersection Capacity Analysis
3: Crestview & Freedom

Ext + Bkgrd + Proj Ph1a+1b
AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↷	↷	↶	↷
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1652	1419	3507		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1652	1419	3507		1770	3539
Volume (vph)	70	114	895	39	86	979
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	80	131	1029	45	99	1125
RTOR Reduction (vph)	0	113	4	0	0	0
Lane Group Flow (vph)	80	18	1070	0	99	1125
Conf. Peds. (#/hr)	39	22		21	21	
Conf. Bikes (#/hr)				1		
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	9.6	9.6	41.9		5.2	51.1
Effective Green, g (s)	9.6	9.6	41.9		5.2	51.1
Actuated g/C Ratio	0.14	0.14	0.61		0.08	0.74
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	231	198	2139		134	2632
v/s Ratio Prot	0.05		c0.31		c0.06	0.32
v/s Ratio Perm		0.09				
v/c Ratio	0.35	0.09	0.50		0.74	0.43
Uniform Delay, d1	26.7	25.8	7.5		31.1	3.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.2	0.8		19.0	0.5
Delay (s)	27.6	26.0	8.4		50.1	3.8
Level of Service	C	C	A		D	A
Approach Delay (s)	26.6		8.4			7.6
Approach LOS	C		A			A
Intersection Summary						
HCM Average Control Delay			9.5		HCM Level of Service	A
HCM Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			68.7		Sum of lost time (s)	12.0
Intersection Capacity Utilization			49.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis
5: Wagner & East Lake

Ext + Bkgrd + Proj Ph1a+1b
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Volume (veh/h)	2	0	8	116	7	69	3	506	138	26	487	3
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	3	0	10	147	9	87	4	641	175	33	616	4
Pedestrians		2			9			6				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			1			1				
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh		0			0							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1426	1518	626	1356	1345	650	622			824		
vC1, stage 1 conf vol	686	686		657	657							
vC2, stage 2 conf vol	740	832		698	688							
vCu, unblocked vol	1426	1518	626	1356	1345	650	622			824		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	98	20	96	81	100			96		
cM capacity (veh/h)	144	168	481	183	198	466	957			800		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	13	147	96	4	641	175	33	620				
Volume Left	3	147	0	4	0	0	33	0				
Volume Right	10	0	87	0	0	175	0	4				
cSH	328	183	414	957	1700	1700	800	1700				
Volume to Capacity	0.04	0.80	0.23	0.00	0.38	0.10	0.04	0.36				
Queue Length (ft)	3	137	22	0	0	0	3	0				
Control Delay (s)	16.4	75.3	16.3	8.8	0.0	0.0	9.7	0.0				
Lane LOS	C	F	C	A			A					
Approach Delay (s)	16.4	52.0		0.0			0.5					
Approach LOS	C	F										
Intersection Summary												
Average Delay				7.6								
Intersection Capacity Utilization			46.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Ext + Bkgrd + Proj Ph1a+1b
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1678		1770	1772		1770	1818		1770	1863	1564
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1678		1770	1772		1770	1818		1770	1863	1564
Volume (vph)	374	113	159	131	159	54	254	333	52	26	351	268
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	407	123	173	142	173	59	276	362	57	28	382	291
RTOR Reduction (vph)	0	56	0	0	14	0	0	6	0	0	0	111
Lane Group Flow (vph)	407	240	0	142	218	0	276	413	0	28	382	180
Conf. Peds. (#/hr)	8					8	1		2	2		1
Conf. Bikes (#/hr)			1			1						2
Turn Type	Split			Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases												6
Actuated Green, G (s)	21.4	21.4		14.1	14.1		15.4	36.3		1.5	22.4	43.8
Effective Green, g (s)	21.4	21.4		14.1	14.1		15.4	36.3		1.5	22.4	43.8
Actuated g/C Ratio	0.24	0.24		0.16	0.16		0.17	0.41		0.02	0.25	0.49
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	424	402		279	280		305	739		30	467	837
v/s Ratio Prot	c0.23	0.18		0.08	c0.13		c0.16	0.23		0.02	c0.21	0.08
v/s Ratio Perm												0.10
v/c Ratio	0.96	0.60		0.51	0.78		0.90	0.56		0.93	0.82	0.22
Uniform Delay, d1	33.5	30.1		34.4	36.1		36.2	20.4		43.9	31.5	13.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	33.0	2.4		1.5	12.7		28.4	3.0		135.3	14.7	0.1
Delay (s)	66.6	32.5		35.9	48.8		64.6	23.4		179.2	46.2	13.1
Level of Service	E	C		D	D		E	C		F	D	B
Approach Delay (s)		52.2			43.9			39.8			37.8	
Approach LOS		D			D			D			D	

Intersection Summary

HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	89.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 9: Harkins Slough & SR-1 NB Off Ramp

Ext + Bkgrd + Proj Ph1a+1b
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	496	0	0	879	213	264
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	628	0	0	1113	270	334
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			628		1741	629
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			628		1741	629
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	31
cM capacity (veh/h)			954		96	482

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	628	1113	270	334
Volume Left	0	0	270	0
Volume Right	0	0	0	334
cSH	1700	1700	96	482
Volume to Capacity	0.37	0.65	2.82	0.69
Queue Length (ft)	0	0	642	132
Control Delay (s)	0.0	0.0	917.3	27.7
Lane LOS			F	D
Approach Delay (s)	0.0	0.0	424.9	
Approach LOS			F	

Intersection Summary			
Average Delay		109.4	
Intersection Capacity Utilization		64.8%	ICU Level of Service C
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
11: Freedom & Airport

Ext + Bkgrd + Proj Ph1a+1b
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3329		1770	3495		3433	1863	1554	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3329		1770	3495		3433	1863	1554	1770	3539	1583
Volume (vph)	287	485	256	283	388	27	206	609	128	45	510	173
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	319	539	284	314	431	30	229	677	142	50	567	192
RTOR Reduction (vph)	0	57	0	0	4	0	0	0	29	0	0	55
Lane Group Flow (vph)	319	766	0	314	457	0	229	677	113	50	567	137
Conf. Peds. (#/hr)	4		4	4		4			3	3		
Conf. Bikes (#/hr)			3			4						
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	7		8	4	
Permitted Phases									7			4
Actuated Green, G (s)	26.0	27.0		18.0	19.0		12.9	43.0	43.0	16.0	46.1	46.1
Effective Green, g (s)	26.0	27.0		18.0	19.0		12.9	43.0	43.0	16.0	46.1	46.1
Actuated g/C Ratio	0.22	0.22		0.15	0.16		0.11	0.36	0.36	0.13	0.38	0.38
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	384	749		266	553		369	668	557	236	1360	608
v/s Ratio Prot	0.18	c0.25		c0.18	0.13		0.07	c0.36		0.03	c0.16	
v/s Ratio Perm									0.09			0.12
v/c Ratio	0.83	1.02		1.18	0.83		0.62	1.01	0.20	0.21	0.42	0.22
Uniform Delay, d1	44.9	46.5		51.0	48.9		51.2	38.5	26.6	46.4	27.1	24.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.5	38.6		113.0	9.8		3.2	38.2	0.2	2.0	0.2	0.2
Delay (s)	63.4	85.1		164.0	58.7		54.4	76.7	26.8	48.4	27.3	25.1
Level of Service	E	F		F	E		D	E	C	D	C	C
Approach Delay (s)		79.1			101.4			65.1			28.1	
Approach LOS		E			F			E			C	
Intersection Summary												
HCM Average Control Delay			68.8			HCM Level of Service			E			
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			86.1%			ICU Level of Service		E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 17: Larkin Valley & HWY 1 NB Ramps

Ext + Bkgrd + Proj Ph1a+1b
 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Volume (veh/h)	580	17	28	328	57	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	630	18	30	357	62	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)	306					
pX, platoon unblocked						
vC, conflicting volume	0		1279	0	1285	1270
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1279	0	1285	1270
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	61		70	67	0	70
cM capacity (veh/h)	1623		101	1085	52	103
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	649	30	357	92		
Volume Left	630	0	0	62		
Volume Right	18	0	357	0		
cSH	1623	101	1085	62		
Volume to Capacity	0.39	0.30	0.33	1.49		
Queue Length (ft)	47	28	36	202		
Control Delay (s)	8.5	55.0	9.9	399.9		
Lane LOS	A	F	A	F		
Approach Delay (s)	8.5	13.5		399.9		
Approach LOS		B		F		
Intersection Summary						
Average Delay			42.2			
Intersection Capacity Utilization			51.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
3: Crestview & Freedom

Ext + Bkgrd + Proj Ph 1a+1b
PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1652	1454	3506		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1652	1454	3506		1770	3539
Volume (vph)	53	184	1068	57	235	1164
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	194	1124	60	247	1225
RTOR Reduction (vph)	0	170	5	0	0	0
Lane Group Flow (vph)	56	24	1179	0	247	1225
Confl. Peds. (#/hr)		4		10	10	
Confl. Bikes (#/hr)				2		
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	6.5	6.5	23.7		10.4	38.1
Effective Green, g (s)	6.5	6.5	23.7		10.4	38.1
Actuated g/C Ratio	0.12	0.12	0.45		0.20	0.72
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	204	180	1580		350	2563
v/s Ratio Prot	0.03		c0.34		c0.14	0.35
v/s Ratio Perm		0.13				
v/c Ratio	0.27	0.13	0.75		0.71	0.48
Uniform Delay, d1	20.9	20.5	12.0		19.7	3.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.3	3.3		6.4	0.6
Delay (s)	21.6	20.9	15.2		26.0	3.7
Level of Service	C	C	B		C	A
Approach Delay (s)	21.0		15.2			7.4
Approach LOS	C		B			A
Intersection Summary						
HCM Average Control Delay			11.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.79			
Actuated Cycle Length (s)			52.6		Sum of lost time (s)	12.0
Intersection Capacity Utilization			59.0%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
5: Wagner & East Lake

Ext + Bkgrd + Proj Ph 1a+1b
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Volume (veh/h)	9	0	9	68	1	23	15	550	96	22	697	13
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
Hourly flow rate (vph)	10	0	10	72	1	24	16	585	102	23	741	14
Pedestrians		8			12			1			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh		0			0							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1446	1534	757	1428	1439	598	763			699		
vC1, stage 1 conf vol	803	803		629	629							
vC2, stage 2 conf vol	643	731		799	810							
vCu, unblocked vol	1446	1534	757	1428	1439	598	763			699		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	98	57	99	95	98			97		
cM capacity (veh/h)	164	169	404	168	180	497	844			888		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	19	72	26	16	585	102	23	755				
Volume Left	10	72	0	16	0	0	23	0				
Volume Right	10	0	24	0	0	102	0	14				
cSH	233	168	463	844	1700	1700	888	1700				
Volume to Capacity	0.08	0.43	0.06	0.02	0.34	0.06	0.03	0.44				
Queue Length (ft)	7	49	4	1	0	0	2	0				
Control Delay (s)	21.8	41.8	13.2	9.3	0.0	0.0	9.2	0.0				
Lane LOS	C	E	B	A			A					
Approach Delay (s)	21.8	34.3		0.2			0.3					
Approach LOS	C	D										
Intersection Summary												
Average Delay				2.6								
Intersection Capacity Utilization			52.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Ext + Bkgrd + Proj Ph 1a+1b
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.90		1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1681		1770	1829		1770	1733		1770	1863	1561
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1681		1770	1829		1770	1733		1770	1863	1561
Volume (vph)	175	170	315	101	165	16	289	169	109	14	290	295
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	192	187	346	111	181	18	318	186	120	15	319	324
RTOR Reduction (vph)	0	74	0	0	4	0	0	21	0	0	0	121
Lane Group Flow (vph)	192	459	0	111	195	0	318	285	0	15	319	203
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)							3			5		3
Turn Type	Split			Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases												6
Actuated Green, G (s)	19.0	19.0		13.9	13.9		15.0	37.9		1.5	24.4	43.4
Effective Green, g (s)	19.0	19.0		13.9	13.9		15.0	37.9		1.5	24.4	43.4
Actuated g/C Ratio	0.22	0.22		0.16	0.16		0.17	0.43		0.02	0.28	0.49
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	381	362		279	288		301	744		30	515	838
v/s Ratio Prot	0.11	c0.32		0.06	c0.11		c0.18	0.18		0.01	c0.17	0.08
v/s Ratio Perm												0.12
v/c Ratio	0.50	1.27		0.40	0.68		1.06	0.38		0.50	0.62	0.24
Uniform Delay, d1	30.5	34.6		33.4	35.1		36.6	17.2		43.0	27.9	13.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	141.0		0.9	6.2		67.5	1.5		12.5	5.5	0.2
Delay (s)	31.6	175.6		34.4	41.2		104.2	18.7		55.5	33.4	13.1
Level of Service	C	F		C	D		F	B		E	C	B
Approach Delay (s)		137.5			38.8			62.3			23.9	
Approach LOS		F			D			E			C	
Intersection Summary												
HCM Average Control Delay			71.8			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			88.3			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			78.5%			ICU Level of Service		D				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 9: Harkins Slough & SR-1 NB Off Ramp

Ext + Bkgrd + Proj Ph 1a+1b
 PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	128	0	0	431	43	456
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	139	0	0	468	47	496
Pedestrians	1			3		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			139			142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			139			142
tC, single (s)			4.1			6.2
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			100			45
cM capacity (veh/h)			1444			903
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	139	468	47	496		
Volume Left	0	0	47	0		
Volume Right	0	0	0	496		
cSH	1700	1700	458	903		
Volume to Capacity	0.08	0.28	0.10	0.55		
Queue Length (ft)	0	0	8	85		
Control Delay (s)	0.0	0.0	13.7	13.7		
Lane LOS			B	B		
Approach Delay (s)	0.0	0.0	13.7			
Approach LOS			B			
Intersection Summary						
Average Delay			6.5			
Intersection Capacity Utilization			42.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Ext + Bkgrd + Proj Ph 1a+1b
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1533	1770	3539	1556	1770	3345		1770	3400	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1863	1533	1770	3539	1556	1770	3345		1770	3400	
Volume (vph)	304	592	237	100	431	147	290	409	141	256	499	148
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	313	610	244	103	444	152	299	422	145	264	514	153
RTOR Reduction (vph)	0	0	74	0	0	75	0	38	0	0	31	0
Lane Group Flow (vph)	313	610	170	103	444	77	299	529	0	264	636	0
Confl. Peds. (#/hr)	3		12	12		3	5		17	17		5
Confl. Bikes (#/hr)												2
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	13.0	26.0	26.0	16.0	29.0	29.0	16.0	16.0		16.0	16.0	
Effective Green, g (s)	13.0	26.0	26.0	16.0	29.0	29.0	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.14	0.29	0.29	0.18	0.32	0.32	0.18	0.18		0.18	0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	496	538	443	315	1140	501	315	595		315	604	
v/s Ratio Prot	0.09	c0.33		0.06	c0.13		c0.17	0.17		0.15	c0.20	
v/s Ratio Perm			0.16			0.10						
v/c Ratio	0.63	1.13	0.38	0.33	0.39	0.15	0.95	0.89		0.84	1.05	
Uniform Delay, d1	36.2	32.0	25.6	32.3	23.6	21.8	36.6	36.1		35.7	37.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	81.2	0.6	2.8	0.2	0.1	39.3	15.1		22.6	51.2	
Delay (s)	38.9	113.2	26.1	35.1	23.9	21.9	75.9	51.2		58.3	88.2	
Level of Service	D	F	C	D	C	C	E	D		E	F	
Approach Delay (s)		75.1			25.1			59.7			79.7	
Approach LOS		E			C			E			E	
Intersection Summary												
HCM Average Control Delay			63.1				HCM Level of Service			E		
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			84.7%				ICU Level of Service		E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 17: Larkin Valley & HWY 1 NB Ramps

Ext + Bkgrd + Proj Ph 1a+1b
 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Volume (veh/h)	693	58	43	209	55	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	753	63	47	227	60	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)	306					
pX, platoon unblocked						
vC, conflicting volume	0		1570	0	1561	1538
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1570	0	1561	1538
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	54		21	79	0	81
cM capacity (veh/h)	1623		59	1085	17	62
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	816	47	227	72		
Volume Left	753	0	0	60		
Volume Right	63	0	227	0		
cSH	1623	59	1085	20		
Volume to Capacity	0.46	0.79	0.21	3.66		
Queue Length (ft)	63	87	20	Err		
Control Delay (s)	8.8	172.3	9.2	Err		
Lane LOS	A	F	A	F		
Approach Delay (s)	8.8	37.0		Err		
Approach LOS		E		F		
Intersection Summary						
Average Delay		632.2				
Intersection Capacity Utilization		58.9%		ICU Level of Service	B	
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis
3: Crestview & Freedom

Cumulative + Project
AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1652	1420	3517		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1652	1420	3517		1770	3539
Volume (vph)	64	117	1021	31	95	1087
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	74	134	1174	36	109	1249
RTOR Reduction (vph)	0	115	3	0	0	0
Lane Group Flow (vph)	74	19	1207	0	109	1249
Conf. Peds. (#/hr)	39	22		21	21	
Conf. Bikes (#/hr)				1		
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	9.5	9.5	38.0		7.0	49.0
Effective Green, g (s)	9.5	9.5	38.0		7.0	49.0
Actuated g/C Ratio	0.14	0.14	0.57		0.11	0.74
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	236	203	2010		186	2608
v/s Ratio Prot	0.04		c0.34		c0.06	0.35
v/s Ratio Perm		0.09				
v/c Ratio	0.31	0.09	0.60		0.59	0.48
Uniform Delay, d1	25.6	24.8	9.3		28.4	3.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.8	0.2	1.3		4.7	0.6
Delay (s)	26.3	25.0	10.6		33.0	4.2
Level of Service	C	C	B		C	A
Approach Delay (s)	25.5		10.6			6.5
Approach LOS	C		B			A
Intersection Summary						
HCM Average Control Delay			9.7		HCM Level of Service	A
HCM Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			66.5		Sum of lost time (s)	12.0
Intersection Capacity Utilization			53.2%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
5: Wagner & East Lake

Cumulative + Project
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 		 	 	 	 	 	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	0	21	144	6	49	3	628	150	29	617	3
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	0	27	182	8	62	4	795	190	37	781	4
Pedestrians		2			9			6				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			1			1				
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage (veh)		0			0							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1727	1860	791	1699	1672	804	787			994		
vC1, stage 1 conf vol	858	858		812	812							
vC2, stage 2 conf vol	868	1001		887	860							
vCu, unblocked vol	1727	1860	791	1699	1672	804	787			994		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	93	0	95	84	100			95		
cM capacity (veh/h)	114	129	387	132	155	380	831			691		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	33	182	70	4	795	190	37	785				
Volume Left	6	182	0	4	0	0	37	0				
Volume Right	27	0	62	0	0	190	0	4				
cSH	265	132	328	831	1700	1700	691	1700				
Volume to Capacity	0.12	1.38	0.21	0.00	0.47	0.11	0.05	0.46				
Queue Length (ft)	10	299	20	0	0	0	4	0				
Control Delay (s)	20.5	272.1	18.9	9.4	0.0	0.0	10.5	0.0				
Lane LOS	C	F	C	A			B					
Approach Delay (s)	20.5	202.1		0.0			0.5					
Approach LOS	C	F										
Intersection Summary												
Average Delay				24.8								
Intersection Capacity Utilization			54.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Cumulative + Project
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1693		1770	1770		1770	1806		1770	1863	1563
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1693		1770	1770		1770	1806		1770	1863	1563
Volume (vph)	426	177	203	160	172	60	297	391	82	35	377	257
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	463	192	221	174	187	65	323	425	89	38	410	279
RTOR Reduction (vph)	0	46	0	0	15	0	0	7	0	0	0	124
Lane Group Flow (vph)	463	367	0	174	237	0	323	507	0	38	410	155
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)			1			1						2
Turn Type	Split			Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases												6
Actuated Green, G (s)	19.0	19.0		15.6	15.6		16.0	33.2		4.5	21.7	40.7
Effective Green, g (s)	19.0	19.0		15.6	15.6		16.0	33.2		4.5	21.7	40.7
Actuated g/C Ratio	0.22	0.22		0.18	0.18		0.18	0.38		0.05	0.25	0.46
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	381	364		313	313		321	679		90	458	791
v/s Ratio Prot	c0.26	0.24		0.10	c0.14		c0.18	0.28		0.02	c0.22	0.08
v/s Ratio Perm												0.10
v/c Ratio	1.22	1.01		0.56	0.76		1.01	0.75		0.42	0.90	0.20
Uniform Delay, d1	34.6	34.6		33.2	34.6		36.1	23.9		40.6	32.2	14.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	118.6	49.6		2.1	10.0		51.8	7.3		3.2	22.7	0.1
Delay (s)	153.3	84.2		35.3	44.6		88.0	31.2		43.8	54.9	14.2
Level of Service	F	F		D	D		F	C		D	D	B
Approach Delay (s)		120.7			40.8			53.1			38.7	
Approach LOS		F			D			D			D	
Intersection Summary												
HCM Average Control Delay			68.3			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			88.3			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			86.2%			ICU Level of Service		E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
9: Harkins Slough &

Cumulative + Project
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control	Free		Free		Stop		Stop						
Grade	0%		0%		0%		0%						
Volume (veh/h)	100	626	0	0	831	468	213	0	365	0	0	0	
Peak Hour Factor	0.92	0.79	0.79	0.79	0.79	0.92	0.79	0.92	0.79	0.92	0.92	0.92	
Hourly flow rate (vph)	109	792	0	0	1052	509	270	0	462	0	0	0	
Pedestrians					1								
Lane Width (ft)					12.0								
Walking Speed (ft/s)					4.0								
Percent Blockage					0								
Right turn flare (veh)													
Median type						None				None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	1561			792			2062	2570	793	2525	2062	1052	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1561			792			2062	2570	793	2525	2062	1052	
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	74			100			0	100	0	0	100	100	
cM capacity (veh/h)	424			828			32	19	388	0	41	275	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2							
Volume Total	109	792	1052	509	270	462							
Volume Left	109	0	0	0	270	0							
Volume Right	0	0	0	509	0	462							
cSH	424	1700	1700	1700	32	388							
Volume to Capacity	0.26	0.47	0.62	0.30	8.34	1.19							
Queue Length (ft)	25	0	0	0	Err	464							
Control Delay (s)	16.4	0.0	0.0	0.0	Err	139.7							
Lane LOS	C				F	F							
Approach Delay (s)	2.0			0.0	3773.0								
Approach LOS					F								
Intersection Summary													
Average Delay			865.0										
Intersection Capacity Utilization			71.1%	ICU Level of Service	C								
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Cumulative + Project
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1554	1770	3539	1583	1770	3501		1770	3344	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1863	1554	1770	3539	1583	1770	3501		1770	3344	
Volume (vph)	234	621	155	53	558	196	319	473	28	292	561	264
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	690	172	59	620	218	354	526	31	324	623	293
RTOR Reduction (vph)	0	0	35	0	0	59	0	3	0	0	47	0
Lane Group Flow (vph)	260	690	137	59	620	159	354	554	0	324	870	0
Conf. Peds. (#/hr)			3	3			4		4	4		4
Conf. Bikes (#/hr)									4			3
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	13.8	43.0	43.0	16.0	45.2	45.2	18.0	19.0		26.0	27.0	
Effective Green, g (s)	13.8	43.0	43.0	16.0	45.2	45.2	18.0	19.0		26.0	27.0	
Actuated g/C Ratio	0.12	0.36	0.36	0.13	0.38	0.38	0.15	0.16		0.22	0.22	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	395	668	557	236	1333	596	266	554		384	752	
v/s Ratio Prot	0.08	c0.37		0.03	c0.18		c0.20	0.16		0.18	c0.27	
v/s Ratio Perm			0.11			0.14						
v/c Ratio	0.66	1.03	0.25	0.25	0.47	0.27	1.33	1.00		0.84	1.16	
Uniform Delay, d1	50.8	38.5	27.1	46.6	28.3	25.9	51.0	50.5		45.1	46.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.9	43.6	0.2	2.5	0.3	0.2	172.4	37.8		19.8	85.0	
Delay (s)	54.8	82.1	27.3	49.1	28.5	26.2	223.4	88.3		64.8	131.5	
Level of Service	D	F	C	D	C	C	F	F		E	F	
Approach Delay (s)		67.4			29.3			140.8			114.1	
Approach LOS		E			C			F			F	
Intersection Summary												
HCM Average Control Delay			89.1				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			91.1%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 17: Larkin Valley & HWY 1 NB Ramps

Cumulative + Project
 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Volume (veh/h)	582	36	45	277	289	96
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	633	39	49	301	314	104
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)	306					
pX, platoon unblocked						
vC, conflicting volume	0		1304	0	1309	1285
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1304	0	1309	1285
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	61		50	72	0	0
cM capacity (veh/h)	1623		98	1085	43	100
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	672	49	301	418		
Volume Left	633	0	0	314		
Volume Right	39	0	301	0		
cSH	1623	98	1085	50		
Volume to Capacity	0.39	0.50	0.28	8.34		
Queue Length (ft)	47	55	28	Err		
Control Delay (s)	8.3	74.0	9.6	Err		
Lane LOS	A	F	A	F		
Approach Delay (s)	8.3	18.6		Err		
Approach LOS		C		F		
Intersection Summary						
Average Delay		2913.8				
Intersection Capacity Utilization		68.8%		ICU Level of Service	C	
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis
3: Crestview & Freedom

Cumulative + Project
PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1652	1454	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1652	1454	3511		1770	3539
Volume (vph)	43	189	1171	52	247	1341
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	199	1233	55	260	1412
RTOR Reduction (vph)	0	173	4	0	0	0
Lane Group Flow (vph)	45	26	1284	0	260	1412
Conf. Peds. (#/hr)		4		10	10	
Conf. Bikes (#/hr)				2		
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.0	7.0	27.1		7.0	38.1
Effective Green, g (s)	7.0	7.0	27.1		7.0	38.1
Actuated g/C Ratio	0.13	0.13	0.51		0.13	0.72
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	218	192	1792		233	2539
v/s Ratio Prot	0.03		c0.37		c0.15	0.40
v/s Ratio Perm		0.14				
v/c Ratio	0.21	0.14	0.72		1.12	0.56
Uniform Delay, d1	20.6	20.4	10.0		23.1	3.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.3	2.5		93.6	0.9
Delay (s)	21.0	20.7	12.5		116.6	4.4
Level of Service	C	C	B		F	A
Approach Delay (s)	20.8		12.5			21.9
Approach LOS	C		B			C
Intersection Summary						
HCM Average Control Delay			18.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.84			
Actuated Cycle Length (s)			53.1		Sum of lost time (s)	12.0
Intersection Capacity Utilization			62.3%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
5: Wagner & East Lake

Cumulative + Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Volume (veh/h)	16	0	19	96	1	96	15	667	111	24	844	10
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
Hourly flow rate (vph)	17	0	20	102	1	102	16	710	118	26	898	11
Pedestrians		8			12			1			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh		0			0							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1807	1834	912	1724	1721	723	917			840		
vC1, stage 1 conf vol	962	962		753	753							
vC2, stage 2 conf vol	845	872		970	968							
vCu, unblocked vol	1807	1834	912	1724	1721	723	917			840		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	94	19	99	76	98			97		
cM capacity (veh/h)	104	135	329	126	145	422	739			787		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	37	102	103	16	710	118	26	909				
Volume Left	17	102	0	16	0	0	26	0				
Volume Right	20	0	102	0	0	118	0	11				
cSH	166	126	414	739	1700	1700	787	1700				
Volume to Capacity	0.22	0.81	0.25	0.02	0.42	0.07	0.03	0.53				
Queue Length (ft)	21	122	24	2	0	0	3	0				
Control Delay (s)	32.9	101.7	16.6	10.0	0.0	0.0	9.7	0.0				
Lane LOS	D	F	C	A			A					
Approach Delay (s)	32.9	58.9		0.2			0.3					
Approach LOS	D	F										
Intersection Summary												
Average Delay			6.8									
Intersection Capacity Utilization		62.0%		ICU Level of Service	B							
Analysis Period (min)		15										

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Cumulative + Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1666		1770	1823		1770	1728		1770	1863	1562
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1666		1770	1823		1770	1728		1770	1863	1562
Volume (vph)	220	220	363	121	182	22	317	214	147	18	321	293
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	239	395	132	198	24	345	233	160	20	349	318
RTOR Reduction (vph)	0	66	0	0	5	0	0	24	0	0	0	112
Lane Group Flow (vph)	239	568	0	132	217	0	345	369	0	20	349	206
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)			1				3			5		3
Turn Type	Split			Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases												6
Actuated Green, G (s)	19.0	19.0		14.8	14.8		16.0	35.6		2.9	22.5	41.5
Effective Green, g (s)	19.0	19.0		14.8	14.8		16.0	35.6		2.9	22.5	41.5
Actuated g/C Ratio	0.22	0.22		0.17	0.17		0.18	0.40		0.03	0.25	0.47
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	381	358		297	306		321	697		58	475	805
v/s Ratio Prot	0.14	c0.38		0.07	c0.12		c0.19	0.23		0.01	c0.19	0.09
v/s Ratio Perm												0.12
v/c Ratio	0.63	1.59		0.44	0.71		1.07	0.53		0.34	0.73	0.26
Uniform Delay, d1	31.4	34.6		33.1	34.7		36.1	20.0		41.8	30.2	14.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	277.0		1.1	7.3		71.5	2.9		3.6	9.7	0.2
Delay (s)	34.7	311.7		34.1	42.1		107.7	22.9		45.3	39.9	14.3
Level of Service	C	F		C	D		F	C		D	D	B
Approach Delay (s)		235.8			39.1			62.5			28.2	
Approach LOS		F			D			E			C	
Intersection Summary												
HCM Average Control Delay			107.5			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.08									
Actuated Cycle Length (s)			88.3			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			88.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
9: Harkins Slough &

Cumulative + Project
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control	Free				Free				Stop		Stop		
Grade	0%				0%				0%		0%		
Volume (veh/h)	35	314	0	0	770	288	43	0	513	0	0	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	38	341	0	0	837	313	47	0	558	0	0	0	
Pedestrians					1								
Lane Width (ft)					12.0								
Walking Speed (ft/s)					4.0								
Percent Blockage					0								
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	1150			341			1254	1567	342	1813	1254	837	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1150			341			1254	1567	342	1813	1254	837	
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	94			100			67	100	20	100	100	100	
cM capacity (veh/h)	608			1218			141	104	700	12	161	367	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2							
Volume Total	38	341	837	313	47	558							
Volume Left	38	0	0	0	47	0							
Volume Right	0	0	0	313	0	558							
cSH	608	1700	1700	1700	141	700							
Volume to Capacity	0.06	0.20	0.49	0.18	0.33	0.80							
Queue Length (ft)	5	0	0	0	33	202							
Control Delay (s)	11.3	0.0	0.0	0.0	42.5	27.2							
Lane LOS	B					E	D						
Approach Delay (s)	1.1			0.0			28.4						
Approach LOS					D								
Intersection Summary													
Average Delay			8.2										
Intersection Capacity Utilization			55.1%		ICU Level of Service		B						
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Cumulative + Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 		 	 		 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1534	1770	3539	1557	1770	3383		1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1863	1534	1770	3539	1557	1770	3383		1770	3390	
Volume (vph)	343	583	258	116	479	167	340	471	146	269	572	162
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	354	601	266	120	494	172	351	486	151	277	590	167
RTOR Reduction (vph)	0	0	85	0	0	79	0	34	0	0	30	0
Lane Group Flow (vph)	354	601	181	120	494	93	351	603	0	277	727	0
Confl. Peds. (#/hr)	3		12	12		3	17		5	5		17
Confl. Bikes (#/hr)									2			3
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	13.5	23.0	23.0	16.0	25.5	25.5	16.0	16.0		16.0	16.0	
Effective Green, g (s)	13.5	23.0	23.0	16.0	25.5	25.5	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.16	0.26	0.26	0.18	0.29	0.29	0.18	0.18		0.18	0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	533	493	406	326	1037	456	326	622		326	623	
v/s Ratio Prot	0.10	c0.32		0.07	c0.14		c0.20	0.19		0.16	c0.22	
v/s Ratio Perm			0.17			0.11						
v/c Ratio	0.66	1.22	0.45	0.37	0.48	0.20	1.08	0.97		0.85	1.17	
Uniform Delay, d1	34.6	32.0	26.7	31.1	25.3	23.1	35.5	35.3		34.3	35.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	115.9	0.8	3.2	0.3	0.2	71.8	28.1		23.2	91.5	
Delay (s)	37.7	147.9	27.5	34.3	25.6	23.3	107.3	63.3		57.6	127.0	
Level of Service	D	F	C	C	C	C	F	E		E	F	
Approach Delay (s)		89.7			26.4			79.0			108.4	
Approach LOS		F			C			E			F	
Intersection Summary												
HCM Average Control Delay			79.5				HCM Level of Service			E		
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			87.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			90.6%				ICU Level of Service		E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 17: Larkin Valley & HWY 1 NB Ramps

Cumulative + Project
 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Volume (veh/h)	679	58	70	218	236	98
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	715	61	74	229	248	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)	306					
pX, platoon unblocked						
vC, conflicting volume	0		1491	0	1497	1460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1491	0	1497	1460
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	56		0	79	0	0
cM capacity (veh/h)	1623		69	1085	0	72
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	776	74	229	352		
Volume Left	715	0	0	248		
Volume Right	61	0	229	0		
cSH	1623	69	1085	0		
Volume to Capacity	0.44	1.06	0.21	Err		
Queue Length (ft)	58	139	20	Err		
Control Delay (s)	8.6	230.2	9.2	Err		
Lane LOS	A	F	A	F		
Approach Delay (s)	8.6	62.9		Err		
Approach LOS		F		F		
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			72.7%		ICU Level of Service	C
Analysis Period (min)			15			

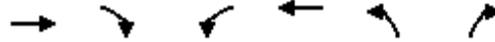
HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Ext + Bkgrd + Proj Ph1a+1b - Mitigated
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1549	1770	1771		1770	1820		1770	1863	1543
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1549	1770	1771		1770	1820		1770	1863	1543
Volume (vph)	374	113	159	131	159	54	254	333	51	26	351	268
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	407	123	173	142	173	59	276	362	55	28	382	291
RTOR Reduction (vph)	0	0	132	0	14	0	0	5	0	0	0	147
Lane Group Flow (vph)	407	123	41	142	218	0	276	412	0	28	382	144
Conf. Peds. (#/hr)	8					8	1		2	2		1
Conf. Bikes (#/hr)			1			1						2
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	21.6	21.6	21.6	14.2	14.2		15.0	35.4		3.1	23.5	23.5
Effective Green, g (s)	21.6	21.6	21.6	14.2	14.2		15.0	35.4		3.1	23.5	23.5
Actuated g/C Ratio	0.24	0.24	0.24	0.16	0.16		0.17	0.39		0.03	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	423	446	371	278	278		294	713		61	485	402
v/s Ratio Prot	c0.23	0.07		0.08	c0.13		c0.16	0.23		0.02	c0.21	
v/s Ratio Perm			0.11									0.19
v/c Ratio	0.96	0.28	0.11	0.51	0.78		0.94	0.58		0.46	0.79	0.36
Uniform Delay, d1	33.9	28.0	26.8	34.9	36.6		37.2	21.6		42.8	31.1	27.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	33.9	0.3	0.1	1.6	13.4		36.1	3.4		5.4	12.2	2.5
Delay (s)	67.8	28.3	27.0	36.5	50.0		73.3	25.0		48.2	43.3	29.7
Level of Service	E	C	C	D	D		E	C		D	D	C
Approach Delay (s)		50.9			44.8			44.2			37.8	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM Average Control Delay			44.4	HCM Level of Service				D				
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			90.3	Sum of lost time (s)				16.0				
Intersection Capacity Utilization			78.8%	ICU Level of Service				D				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 9: Harkins Slough & SR-1 NB Off Ramp

Ext + Bkgrd + Proj Ph1a+1b - Mitigated
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	1.00			1.00	1.00	1.00
Frbp, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	496	0	0	879	213	264
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	628	0	0	1113	270	334
RTOR Reduction (vph)	0	0	0	0	0	247
Lane Group Flow (vph)	628	0	0	1113	270	87
Confl. Peds. (#/hr)						1
Turn Type						Prot
Protected Phases	4			8	2	2
Permitted Phases						
Actuated Green, G (s)	39.1			39.1	13.1	13.1
Effective Green, g (s)	39.1			39.1	13.1	13.1
Actuated g/C Ratio	0.65			0.65	0.22	0.22
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1210			1210	385	344
v/s Ratio Prot	0.34			c0.60	0.15	c0.21
v/s Ratio Perm						
v/c Ratio	0.52			0.92	0.70	0.25
Uniform Delay, d1	5.6			9.2	21.7	19.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			11.2	5.7	0.4
Delay (s)	6.0			20.3	27.4	19.9
Level of Service	A			C	C	B
Approach Delay (s)	6.0			20.3	23.3	
Approach LOS	A			C	C	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
11: Freedom & Airport

Ext + Bkgrd + Proj Ph1a+1b - Mitigated
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 		 	 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95		1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3331		3433	3496		3433	3437		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3331		3433	3496		3433	3437		1770	3539	1583
Volume (vph)	287	485	256	283	388	27	206	609	128	45	510	173
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	319	539	284	314	431	30	229	677	142	50	567	192
RTOR Reduction (vph)	0	76	0	0	6	0	0	20	0	0	0	72
Lane Group Flow (vph)	319	747	0	314	455	0	229	799	0	50	567	120
Conf. Peds. (#/hr)	4		4	4		4			3	3		
Conf. Bikes (#/hr)			3			4						
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	7		8	4	
Permitted Phases												4
Actuated Green, G (s)	20.0	21.0		16.0	17.0		11.0	21.0		16.0	26.0	26.0
Effective Green, g (s)	20.0	21.0		16.0	17.0		11.0	21.0		16.0	26.0	26.0
Actuated g/C Ratio	0.22	0.23		0.18	0.19		0.12	0.23		0.18	0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	393	777		610	660		420	802		315	1022	457
v/s Ratio Prot	c0.18	c0.25		0.09	0.13		0.07	c0.24		0.03	c0.16	
v/s Ratio Perm												0.12
v/c Ratio	0.81	0.96		0.51	0.69		0.55	1.00		0.16	0.55	0.26
Uniform Delay, d1	33.2	34.1		33.5	34.0		37.1	34.5		31.3	27.1	24.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.5	23.2		3.1	3.0		1.4	30.7		1.1	0.7	0.3
Delay (s)	49.7	57.3		36.6	37.1		38.6	65.1		32.4	27.8	24.9
Level of Service	D	E		D	D		D	E		C	C	C
Approach Delay (s)		55.2			36.9			59.3			27.4	
Approach LOS		E			D			E			C	
Intersection Summary												
HCM Average Control Delay			46.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			67.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Ext + Bkgrd + Proj Ph 1a+1b Mitigated
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1766	1583	1770	1833		1770	1733		1770	1863	1558
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1766	1583	1770	1833		1770	1733		1770	1863	1558
Volume (vph)	175	170	315	101	165	16	289	169	109	14	290	295
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	192	187	346	111	181	18	318	186	120	15	319	324
RTOR Reduction (vph)	0	0	291	0	4	0	0	21	0	0	0	121
Lane Group Flow (vph)	185	194	55	111	195	0	318	285	0	15	319	203
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)							3			5		3
Turn Type	Split		Perm	Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4									6
Actuated Green, G (s)	13.4	13.4	13.4	12.8	12.8		18.0	41.3		1.4	24.7	38.1
Effective Green, g (s)	13.4	13.4	13.4	12.8	12.8		18.0	41.3		1.4	24.7	38.1
Actuated g/C Ratio	0.16	0.16	0.16	0.15	0.15		0.21	0.49		0.02	0.29	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	265	279	250	267	276		375	843		29	542	773
v/s Ratio Prot	0.11	0.11		0.06	c0.11		c0.18	0.18		0.01	c0.17	0.07
v/s Ratio Perm			0.22									0.14
v/c Ratio	0.70	0.70	0.22	0.42	0.71		0.85	0.34		0.52	0.59	0.26
Uniform Delay, d1	33.8	33.8	31.2	32.7	34.3		32.1	13.4		41.4	25.8	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.8	7.3	0.4	1.1	8.0		16.1	1.1		14.7	4.6	0.2
Delay (s)	41.6	41.1	31.6	33.7	42.2		48.3	14.5		56.1	30.4	14.8
Level of Service	D	D	C	C	D		D	B		E	C	B
Approach Delay (s)		36.7			39.2			31.7			23.3	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			31.9			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			84.9			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			64.5%			ICU Level of Service		C				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 9: Harkins Slough & SR-1 NB Off Ramp

Ext + Bkgrd + Proj Ph 1a+1b Mitigated
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	1.00			1.00	1.00	1.00
Frbp, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	128	0	0	431	43	456
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	0	0	468	47	496
RTOR Reduction (vph)	0	0	0	0	0	342
Lane Group Flow (vph)	139	0	0	468	47	154
Confl. Peds. (#/hr)					1	3
Turn Type						Prot
Protected Phases	4			8	2	2
Permitted Phases						
Actuated Green, G (s)	11.6			11.6	8.8	8.8
Effective Green, g (s)	11.6			11.6	8.8	8.8
Actuated g/C Ratio	0.41			0.41	0.31	0.31
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	761			761	548	491
v/s Ratio Prot	0.07			c0.25	0.03	c0.31
v/s Ratio Perm						
v/c Ratio	0.18			0.61	0.09	0.31
Uniform Delay, d1	5.4			6.6	6.9	7.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			1.5	0.1	0.4
Delay (s)	5.5			8.1	7.0	7.9
Level of Service	A			A	A	A
Approach Delay (s)	5.5			8.1	7.8	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	28.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Ext + Bkgrd + Proj Ph 1a+1b Mitigated
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3390	1397	1770	3539	1557	1770	3348		1770	3400	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3390	1397	1770	3539	1557	1770	3348		1770	3400	
Volume (vph)	304	592	237	100	431	147	290	409	141	256	499	148
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	313	610	244	103	444	152	299	422	145	264	514	153
RTOR Reduction (vph)	0	0	142	0	0	79	0	37	0	0	31	0
Lane Group Flow (vph)	313	610	102	103	444	73	299	530	0	264	636	0
Confl. Peds. (#/hr)	3		12	12		3	5		17	17		5
Confl. Bikes (#/hr)												2
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	12.7	20.9	20.9	16.0	24.2	24.2	16.0	16.0		16.0	16.0	
Effective Green, g (s)	12.7	20.9	20.9	16.0	24.2	24.2	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.15	0.25	0.25	0.19	0.29	0.29	0.19	0.19		0.19	0.19	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	514	835	344	334	1009	444	334	631		334	641	
v/s Ratio Prot	0.09	c0.18		0.06	c0.13		c0.17	0.17		0.15	c0.20	
v/s Ratio Perm			0.17			0.10						
v/c Ratio	0.61	0.73	0.30	0.31	0.44	0.17	0.90	0.84		0.79	0.99	
Uniform Delay, d1	33.8	29.4	26.0	29.7	24.8	22.8	33.6	33.2		32.9	34.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	3.3	0.5	2.4	0.3	0.2	28.6	9.6		17.2	33.5	
Delay (s)	35.8	32.7	26.5	32.1	25.1	22.9	62.3	42.8		50.0	67.9	
Level of Service	D	C	C	C	C	C	E	D		D	E	
Approach Delay (s)		32.3			25.7			49.5			62.8	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM Average Control Delay			42.8			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			84.9	Sum of lost time (s)			12.0					
Intersection Capacity Utilization			72.6%	ICU Level of Service			C					
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: Crestview & Freedom

Cumulative + Project
AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.96	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1652	1420	3517		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1652	1420	3517		1770	3539
Volume (vph)	64	117	1021	31	95	1087
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	74	134	1174	36	109	1249
RTOR Reduction (vph)	0	115	3	0	0	0
Lane Group Flow (vph)	74	19	1207	0	109	1249
Conf. Peds. (#/hr)	39	22		21	21	
Conf. Bikes (#/hr)				1		
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	9.5	9.5	38.0		7.0	49.0
Effective Green, g (s)	9.5	9.5	38.0		7.0	49.0
Actuated g/C Ratio	0.14	0.14	0.57		0.11	0.74
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	236	203	2010		186	2608
v/s Ratio Prot	0.04		c0.34		c0.06	0.35
v/s Ratio Perm		0.09				
v/c Ratio	0.31	0.09	0.60		0.59	0.48
Uniform Delay, d1	25.6	24.8	9.3		28.4	3.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.8	0.2	1.3		4.7	0.6
Delay (s)	26.3	25.0	10.6		33.0	4.2
Level of Service	C	C	B		C	A
Approach Delay (s)	25.5		10.6			6.5
Approach LOS	C		B			A
Intersection Summary						
HCM Average Control Delay			9.7		HCM Level of Service	A
HCM Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			66.5		Sum of lost time (s)	12.0
Intersection Capacity Utilization			53.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis
5: Wagner & East Lake

Cumulative + Project
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 		 	 	 	 	 	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	0	21	144	6	49	3	628	150	29	617	3
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	0	27	182	8	62	4	795	190	37	781	4
Pedestrians		2			9			6				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			1			1				
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh		0			0							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1727	1860	791	1699	1672	804	787			994		
vC1, stage 1 conf vol	858	858		812	812							
vC2, stage 2 conf vol	868	1001		887	860							
vCu, unblocked vol	1727	1860	791	1699	1672	804	787			994		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	93	0	95	84	100			95		
cM capacity (veh/h)	114	129	387	132	155	380	831			691		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	33	182	70	4	795	190	37	785				
Volume Left	6	182	0	4	0	0	37	0				
Volume Right	27	0	62	0	0	190	0	4				
cSH	265	132	328	831	1700	1700	691	1700				
Volume to Capacity	0.12	1.38	0.21	0.00	0.47	0.11	0.05	0.46				
Queue Length (ft)	10	299	20	0	0	0	4	0				
Control Delay (s)	20.5	272.1	18.9	9.4	0.0	0.0	10.5	0.0				
Lane LOS	C	F	C	A			B					
Approach Delay (s)	20.5	202.1		0.0			0.5					
Approach LOS	C	F										
Intersection Summary												
Average Delay			24.8									
Intersection Capacity Utilization			54.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Cumulative + Project
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1693		1770	1770		1770	1806		1770	1863	1563
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1693		1770	1770		1770	1806		1770	1863	1563
Volume (vph)	426	177	203	160	172	60	297	391	82	35	377	257
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	463	192	221	174	187	65	323	425	89	38	410	279
RTOR Reduction (vph)	0	46	0	0	15	0	0	7	0	0	0	124
Lane Group Flow (vph)	463	367	0	174	237	0	323	507	0	38	410	155
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)			1			1						2
Turn Type	Split			Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases												6
Actuated Green, G (s)	19.0	19.0		15.6	15.6		16.0	33.2		4.5	21.7	40.7
Effective Green, g (s)	19.0	19.0		15.6	15.6		16.0	33.2		4.5	21.7	40.7
Actuated g/C Ratio	0.22	0.22		0.18	0.18		0.18	0.38		0.05	0.25	0.46
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	381	364		313	313		321	679		90	458	791
v/s Ratio Prot	c0.26	0.24		0.10	c0.14		c0.18	0.28		0.02	c0.22	0.08
v/s Ratio Perm												0.10
v/c Ratio	1.22	1.01		0.56	0.76		1.01	0.75		0.42	0.90	0.20
Uniform Delay, d1	34.6	34.6		33.2	34.6		36.1	23.9		40.6	32.2	14.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	118.6	49.6		2.1	10.0		51.8	7.3		3.2	22.7	0.1
Delay (s)	153.3	84.2		35.3	44.6		88.0	31.2		43.8	54.9	14.2
Level of Service	F	F		D	D		F	C		D	D	B
Approach Delay (s)		120.7			40.8			53.1			38.7	
Approach LOS		F			D			D			D	
Intersection Summary												
HCM Average Control Delay			68.3			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			88.3			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			86.2%			ICU Level of Service		E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
9: Harkins Slough &

Cumulative + Project
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control	Free		Free		Stop		Stop						
Grade	0%		0%		0%		0%						
Volume (veh/h)	100	626	0	0	831	468	213	0	365	0	0	0	
Peak Hour Factor	0.92	0.79	0.79	0.79	0.79	0.92	0.79	0.92	0.79	0.92	0.92	0.92	
Hourly flow rate (vph)	109	792	0	0	1052	509	270	0	462	0	0	0	
Pedestrians					1								
Lane Width (ft)					12.0								
Walking Speed (ft/s)					4.0								
Percent Blockage					0								
Right turn flare (veh)													
Median type						None				None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	1561			792			2062	2570	793	2525	2062	1052	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1561			792			2062	2570	793	2525	2062	1052	
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	74			100			0	100	0	0	100	100	
cM capacity (veh/h)	424			828			32	19	388	0	41	275	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2							
Volume Total	109	792	1052	509	270	462							
Volume Left	109	0	0	0	270	0							
Volume Right	0	0	0	509	0	462							
cSH	424	1700	1700	1700	32	388							
Volume to Capacity	0.26	0.47	0.62	0.30	8.34	1.19							
Queue Length (ft)	25	0	0	0	Err	464							
Control Delay (s)	16.4	0.0	0.0	0.0	Err	139.7							
Lane LOS	C				F	F							
Approach Delay (s)	2.0			0.0	3773.0								
Approach LOS					F								
Intersection Summary													
Average Delay			865.0										
Intersection Capacity Utilization			71.1%	ICU Level of Service	C								
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Cumulative + Project
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1554	1770	3539	1583	1770	3501		1770	3344	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1863	1554	1770	3539	1583	1770	3501		1770	3344	
Volume (vph)	234	621	155	53	558	196	319	473	28	292	561	264
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	690	172	59	620	218	354	526	31	324	623	293
RTOR Reduction (vph)	0	0	35	0	0	59	0	3	0	0	47	0
Lane Group Flow (vph)	260	690	137	59	620	159	354	554	0	324	870	0
Conf. Peds. (#/hr)			3	3			4		4	4		4
Conf. Bikes (#/hr)									4			3
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	13.8	43.0	43.0	16.0	45.2	45.2	18.0	19.0		26.0	27.0	
Effective Green, g (s)	13.8	43.0	43.0	16.0	45.2	45.2	18.0	19.0		26.0	27.0	
Actuated g/C Ratio	0.12	0.36	0.36	0.13	0.38	0.38	0.15	0.16		0.22	0.22	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	395	668	557	236	1333	596	266	554		384	752	
v/s Ratio Prot	0.08	c0.37		0.03	c0.18		c0.20	0.16		0.18	c0.27	
v/s Ratio Perm			0.11			0.14						
v/c Ratio	0.66	1.03	0.25	0.25	0.47	0.27	1.33	1.00		0.84	1.16	
Uniform Delay, d1	50.8	38.5	27.1	46.6	28.3	25.9	51.0	50.5		45.1	46.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.9	43.6	0.2	2.5	0.3	0.2	172.4	37.8		19.8	85.0	
Delay (s)	54.8	82.1	27.3	49.1	28.5	26.2	223.4	88.3		64.8	131.5	
Level of Service	D	F	C	D	C	C	F	F		E	F	
Approach Delay (s)		67.4			29.3			140.8			114.1	
Approach LOS		E			C			F			F	
Intersection Summary												
HCM Average Control Delay			89.1				HCM Level of Service			F		
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			91.1%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 17: Larkin Valley & HWY 1 NB Ramps

Cumulative + Project
 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Volume (veh/h)	582	36	45	277	289	96
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	633	39	49	301	314	104
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)	306					
pX, platoon unblocked						
vC, conflicting volume	0		1304	0	1309	1285
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1304	0	1309	1285
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	61		50	72	0	0
cM capacity (veh/h)	1623		98	1085	43	100
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	672	49	301	418		
Volume Left	633	0	0	314		
Volume Right	39	0	301	0		
cSH	1623	98	1085	50		
Volume to Capacity	0.39	0.50	0.28	8.34		
Queue Length (ft)	47	55	28	Err		
Control Delay (s)	8.3	74.0	9.6	Err		
Lane LOS	A	F	A	F		
Approach Delay (s)	8.3	18.6		Err		
Approach LOS		C		F		
Intersection Summary						
Average Delay		2913.8				
Intersection Capacity Utilization		68.8%		ICU Level of Service	C	
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis
3: Crestview & Freedom

Cumulative + Project
PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frbp, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1652	1454	3511		1770	3539
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1652	1454	3511		1770	3539
Volume (vph)	43	189	1171	52	247	1341
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	199	1233	55	260	1412
RTOR Reduction (vph)	0	173	4	0	0	0
Lane Group Flow (vph)	45	26	1284	0	260	1412
Conf. Peds. (#/hr)		4		10	10	
Conf. Bikes (#/hr)				2		
Turn Type		Perm			Prot	
Protected Phases	8		2		1	6
Permitted Phases		8				
Actuated Green, G (s)	7.0	7.0	27.1		7.0	38.1
Effective Green, g (s)	7.0	7.0	27.1		7.0	38.1
Actuated g/C Ratio	0.13	0.13	0.51		0.13	0.72
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	218	192	1792		233	2539
v/s Ratio Prot	0.03		c0.37		c0.15	0.40
v/s Ratio Perm		0.14				
v/c Ratio	0.21	0.14	0.72		1.12	0.56
Uniform Delay, d1	20.6	20.4	10.0		23.1	3.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.3	2.5		93.6	0.9
Delay (s)	21.0	20.7	12.5		116.6	4.4
Level of Service	C	C	B		F	A
Approach Delay (s)	20.8		12.5			21.9
Approach LOS	C		B			C
Intersection Summary						
HCM Average Control Delay			18.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.84			
Actuated Cycle Length (s)			53.1		Sum of lost time (s)	12.0
Intersection Capacity Utilization			62.3%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
5: Wagner & East Lake

Cumulative + Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Volume (veh/h)	16	0	19	96	1	96	15	667	111	24	844	10
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
Hourly flow rate (vph)	17	0	20	102	1	102	16	710	118	26	898	11
Pedestrians		8			12			1			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh		0			0							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1807	1834	912	1724	1721	723	917			840		
vC1, stage 1 conf vol	962	962		753	753							
vC2, stage 2 conf vol	845	872		970	968							
vCu, unblocked vol	1807	1834	912	1724	1721	723	917			840		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	94	19	99	76	98			97		
cM capacity (veh/h)	104	135	329	126	145	422	739			787		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	37	102	103	16	710	118	26	909				
Volume Left	17	102	0	16	0	0	26	0				
Volume Right	20	0	102	0	0	118	0	11				
cSH	166	126	414	739	1700	1700	787	1700				
Volume to Capacity	0.22	0.81	0.25	0.02	0.42	0.07	0.03	0.53				
Queue Length (ft)	21	122	24	2	0	0	3	0				
Control Delay (s)	32.9	101.7	16.6	10.0	0.0	0.0	9.7	0.0				
Lane LOS	D	F	C	A			A					
Approach Delay (s)	32.9	58.9		0.2			0.3					
Approach LOS	D	F										
Intersection Summary												
Average Delay			6.8									
Intersection Capacity Utilization		62.0%		ICU Level of Service	B							
Analysis Period (min)		15										

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Cumulative + Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1666		1770	1823		1770	1728		1770	1863	1562
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1666		1770	1823		1770	1728		1770	1863	1562
Volume (vph)	220	220	363	121	182	22	317	214	147	18	321	293
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	239	395	132	198	24	345	233	160	20	349	318
RTOR Reduction (vph)	0	66	0	0	5	0	0	24	0	0	0	112
Lane Group Flow (vph)	239	568	0	132	217	0	345	369	0	20	349	206
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)			1				3			5		3
Turn Type	Split			Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases												6
Actuated Green, G (s)	19.0	19.0		14.8	14.8		16.0	35.6		2.9	22.5	41.5
Effective Green, g (s)	19.0	19.0		14.8	14.8		16.0	35.6		2.9	22.5	41.5
Actuated g/C Ratio	0.22	0.22		0.17	0.17		0.18	0.40		0.03	0.25	0.47
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	381	358		297	306		321	697		58	475	805
v/s Ratio Prot	0.14	c0.38		0.07	c0.12		c0.19	0.23		0.01	c0.19	0.09
v/s Ratio Perm												0.12
v/c Ratio	0.63	1.59		0.44	0.71		1.07	0.53		0.34	0.73	0.26
Uniform Delay, d1	31.4	34.6		33.1	34.7		36.1	20.0		41.8	30.2	14.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	277.0		1.1	7.3		71.5	2.9		3.6	9.7	0.2
Delay (s)	34.7	311.7		34.1	42.1		107.7	22.9		45.3	39.9	14.3
Level of Service	C	F		C	D		F	C		D	D	B
Approach Delay (s)		235.8			39.1			62.5			28.2	
Approach LOS		F			D			E			C	
Intersection Summary												
HCM Average Control Delay			107.5				HCM Level of Service				F	
HCM Volume to Capacity ratio			1.08									
Actuated Cycle Length (s)			88.3				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			88.3%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
9: Harkins Slough &

Cumulative + Project
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control	Free		Free		Stop		Stop						
Grade	0%		0%		0%		0%						
Volume (veh/h)	35	314	0	0	770	288	43	0	513	0	0	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	38	341	0	0	837	313	47	0	558	0	0	0	
Pedestrians					1								
Lane Width (ft)					12.0								
Walking Speed (ft/s)					4.0								
Percent Blockage					0								
Right turn flare (veh)													
Median type						None				None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	1150			341			1254	1567	342	1813	1254	837	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1150			341			1254	1567	342	1813	1254	837	
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	94			100			67	100	20	100	100	100	
cM capacity (veh/h)	608			1218			141	104	700	12	161	367	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2							
Volume Total	38	341	837	313	47	558							
Volume Left	38	0	0	0	47	0							
Volume Right	0	0	0	313	0	558							
cSH	608	1700	1700	1700	141	700							
Volume to Capacity	0.06	0.20	0.49	0.18	0.33	0.80							
Queue Length (ft)	5	0	0	0	33	202							
Control Delay (s)	11.3	0.0	0.0	0.0	42.5	27.2							
Lane LOS	B				E	D							
Approach Delay (s)	1.1			0.0			28.4						
Approach LOS					D								
Intersection Summary													
Average Delay			8.2										
Intersection Capacity Utilization			55.1%		ICU Level of Service		B						
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Cumulative + Project
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 		 	 		 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1534	1770	3539	1557	1770	3383		1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1863	1534	1770	3539	1557	1770	3383		1770	3390	
Volume (vph)	343	583	258	116	479	167	340	471	146	269	572	162
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	354	601	266	120	494	172	351	486	151	277	590	167
RTOR Reduction (vph)	0	0	85	0	0	79	0	34	0	0	30	0
Lane Group Flow (vph)	354	601	181	120	494	93	351	603	0	277	727	0
Confl. Peds. (#/hr)	3		12	12		3	17		5	5		17
Confl. Bikes (#/hr)									2			3
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	13.5	23.0	23.0	16.0	25.5	25.5	16.0	16.0		16.0	16.0	
Effective Green, g (s)	13.5	23.0	23.0	16.0	25.5	25.5	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.16	0.26	0.26	0.18	0.29	0.29	0.18	0.18		0.18	0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	533	493	406	326	1037	456	326	622		326	623	
v/s Ratio Prot	0.10	c0.32		0.07	c0.14		c0.20	0.19		0.16	c0.22	
v/s Ratio Perm			0.17			0.11						
v/c Ratio	0.66	1.22	0.45	0.37	0.48	0.20	1.08	0.97		0.85	1.17	
Uniform Delay, d1	34.6	32.0	26.7	31.1	25.3	23.1	35.5	35.3		34.3	35.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	115.9	0.8	3.2	0.3	0.2	71.8	28.1		23.2	91.5	
Delay (s)	37.7	147.9	27.5	34.3	25.6	23.3	107.3	63.3		57.6	127.0	
Level of Service	D	F	C	C	C	C	F	E		E	F	
Approach Delay (s)		89.7			26.4			79.0			108.4	
Approach LOS		F			C			E			F	
Intersection Summary												
HCM Average Control Delay			79.5			HCM Level of Service			E			
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			87.0	Sum of lost time (s)			12.0					
Intersection Capacity Utilization			90.6%	ICU Level of Service			E					
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 17: Larkin Valley & HWY 1 NB Ramps

Cumulative + Project
 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Volume (veh/h)	679	58	70	218	236	98
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	715	61	74	229	248	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)	306					
pX, platoon unblocked						
vC, conflicting volume	0		1491	0	1497	1460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1491	0	1497	1460
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	56		0	79	0	0
cM capacity (veh/h)	1623		69	1085	0	72
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	776	74	229	352		
Volume Left	715	0	0	248		
Volume Right	61	0	229	0		
cSH	1623	69	1085	0		
Volume to Capacity	0.44	1.06	0.21	Err		
Queue Length (ft)	58	139	20	Err		
Control Delay (s)	8.6	230.2	9.2	Err		
Lane LOS	A	F	A	F		
Approach Delay (s)	8.6	62.9		Err		
Approach LOS		F		F		
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			72.7%		ICU Level of Service	C
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Ext + Bkgrd + Proj Ph1a+1b - Mitigated
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1722	1548	1770	1780		1770	1820		1770	1863	1559
Flt Permitted	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1722	1548	1770	1780		1770	1820		1770	1863	1559
Volume (vph)	374	113	159	131	159	54	254	333	51	26	351	268
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	407	123	173	142	173	59	276	362	55	28	382	291
RTOR Reduction (vph)	0	0	142	0	14	0	0	6	0	0	0	115
Lane Group Flow (vph)	258	272	31	142	218	0	276	411	0	28	382	176
Confl. Peds. (#/hr)	8						8	1		2	2	1
Confl. Bikes (#/hr)			1			1						2
Turn Type	Split		Perm	Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4									6
Actuated Green, G (s)	15.9	15.9	15.9	14.0	14.0		15.9	39.5		3.0	26.6	42.5
Effective Green, g (s)	15.9	15.9	15.9	14.0	14.0		15.9	39.5		3.0	26.6	42.5
Actuated g/C Ratio	0.18	0.18	0.18	0.16	0.16		0.18	0.45		0.03	0.30	0.48
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	302	310	278	280	282		318	813		60	561	820
v/s Ratio Prot	0.15	c0.16		0.08	c0.13		c0.16	0.23		0.02	c0.21	0.06
v/s Ratio Perm			0.11									0.12
v/c Ratio	0.85	0.88	0.11	0.51	0.77		0.87	0.51		0.47	0.68	0.21
Uniform Delay, d1	35.1	35.3	30.3	34.0	35.7		35.2	17.5		41.9	27.2	13.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	20.3	23.2	0.2	1.4	12.3		21.3	2.2		5.6	6.5	0.1
Delay (s)	55.4	58.5	30.5	35.5	48.0		56.5	19.7		47.6	33.7	13.4
Level of Service	E	E	C	D	D		E	B		D	C	B
Approach Delay (s)		50.5			43.2			34.4			25.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	88.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 9: Harkins Slough & SR-1 NB Off Ramp

Ext + Bkgrd + Proj Ph1a+1b - Mitigated
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	1.00			1.00	1.00	1.00
Frbp, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	496	0	0	879	213	264
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	628	0	0	1113	270	334
RTOR Reduction (vph)	0	0	0	0	0	247
Lane Group Flow (vph)	628	0	0	1113	270	87
Confl. Peds. (#/hr)						1
Turn Type						Prot
Protected Phases	4			8	2	2
Permitted Phases						
Actuated Green, G (s)	39.1			39.1	13.1	13.1
Effective Green, g (s)	39.1			39.1	13.1	13.1
Actuated g/C Ratio	0.65			0.65	0.22	0.22
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1210			1210	385	344
v/s Ratio Prot	0.34			c0.60	0.15	c0.21
v/s Ratio Perm						
v/c Ratio	0.52			0.92	0.70	0.25
Uniform Delay, d1	5.6			9.2	21.7	19.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			11.2	5.7	0.4
Delay (s)	6.0			20.3	27.4	19.9
Level of Service	A			C	C	B
Approach Delay (s)	6.0			20.3	23.3	
Approach LOS	A			C	C	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
11: Freedom & Airport

Ext + Bkgrd + Proj Ph1a+1b - Mitigated
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 		 	 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95		1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3331		3433	3496		3433	3437		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3331		3433	3496		3433	3437		1770	3539	1583
Volume (vph)	287	485	256	283	388	27	206	609	128	45	510	173
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	319	539	284	314	431	30	229	677	142	50	567	192
RTOR Reduction (vph)	0	76	0	0	6	0	0	20	0	0	0	72
Lane Group Flow (vph)	319	747	0	314	455	0	229	799	0	50	567	120
Conf. Peds. (#/hr)	4		4	4		4			3	3		
Conf. Bikes (#/hr)			3			4						
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	5	2		1	6		3	7		8	4	
Permitted Phases												4
Actuated Green, G (s)	20.0	21.0		16.0	17.0		11.0	21.0		16.0	26.0	26.0
Effective Green, g (s)	20.0	21.0		16.0	17.0		11.0	21.0		16.0	26.0	26.0
Actuated g/C Ratio	0.22	0.23		0.18	0.19		0.12	0.23		0.18	0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	393	777		610	660		420	802		315	1022	457
v/s Ratio Prot	c0.18	c0.25		0.09	0.13		0.07	c0.24		0.03	c0.16	
v/s Ratio Perm												0.12
v/c Ratio	0.81	0.96		0.51	0.69		0.55	1.00		0.16	0.55	0.26
Uniform Delay, d1	33.2	34.1		33.5	34.0		37.1	34.5		31.3	27.1	24.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.5	23.2		3.1	3.0		1.4	30.7		1.1	0.7	0.3
Delay (s)	49.7	57.3		36.6	37.1		38.6	65.1		32.4	27.8	24.9
Level of Service	D	E		D	D		D	E		C	C	C
Approach Delay (s)		55.2			36.9			59.3			27.4	
Approach LOS		E			D			E			C	
Intersection Summary												
HCM Average Control Delay			46.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			67.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY

Site: Hwy 1 NB / Larkin Valley - E+B
+P AM

#17: Highway 1 NB Ramps / Larkin Valley Road
Existing + Background + Project Mitigation
AM Peak Hour

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph	
South: Hwy 1 NB Ramps												
3	L	30	2.0	0.372	7.4	LOS A	1.9	47.3	0.23	0.76	26.0	
18	R	357	2.0	0.372	7.4	LOS A	1.9	47.3	0.23	0.56	28.0	
Approach		387	2.0	0.372	7.4	LOS A	1.9	47.3	0.23	0.57	27.8	
East: Larkin Valley Rd												
1	L	623	2.0	0.597	11.2	LOS B	4.6	115.7	0.23	0.66	24.3	
6	T	18	2.0	0.597	11.2	LOS B	4.6	115.7	0.23	0.44	26.2	
Approach		641	2.0	0.597	11.2	LOS B	4.6	115.7	0.23	0.65	24.3	
West: Larkin Valley Rd												
2	T	62	2.0	0.157	8.1	LOS A	0.5	13.6	0.56	0.78	28.0	
12	R	30	2.0	0.157	8.1	LOS A	0.5	13.6	0.56	0.83	27.7	
Approach		92	2.0	0.157	8.1	LOS A	0.5	13.6	0.56	0.80	27.9	
All Vehicles		1121	2.0	0.597	9.6	LOS A	4.6	115.7	0.26	0.64	25.7	

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Model used. Geometric Delay not included.

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Ext + Bkgrd + Proj Ph 1a+1b Mitigated
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1766	1583	1770	1833		1770	1733		1770	1863	1558
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1766	1583	1770	1833		1770	1733		1770	1863	1558
Volume (vph)	175	170	315	101	165	16	289	169	109	14	290	295
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	192	187	346	111	181	18	318	186	120	15	319	324
RTOR Reduction (vph)	0	0	291	0	4	0	0	21	0	0	0	121
Lane Group Flow (vph)	185	194	55	111	195	0	318	285	0	15	319	203
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)							3			5		3
Turn Type	Split		Perm	Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4									6
Actuated Green, G (s)	13.4	13.4	13.4	12.8	12.8		18.0	41.3		1.4	24.7	38.1
Effective Green, g (s)	13.4	13.4	13.4	12.8	12.8		18.0	41.3		1.4	24.7	38.1
Actuated g/C Ratio	0.16	0.16	0.16	0.15	0.15		0.21	0.49		0.02	0.29	0.45
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	265	279	250	267	276		375	843		29	542	773
v/s Ratio Prot	0.11	0.11		0.06	c0.11		c0.18	0.18		0.01	c0.17	0.07
v/s Ratio Perm			0.22									0.14
v/c Ratio	0.70	0.70	0.22	0.42	0.71		0.85	0.34		0.52	0.59	0.26
Uniform Delay, d1	33.8	33.8	31.2	32.7	34.3		32.1	13.4		41.4	25.8	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.8	7.3	0.4	1.1	8.0		16.1	1.1		14.7	4.6	0.2
Delay (s)	41.6	41.1	31.6	33.7	42.2		48.3	14.5		56.1	30.4	14.8
Level of Service	D	D	C	C	D		D	B		E	C	B
Approach Delay (s)		36.7			39.2			31.7			23.3	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			31.9			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			84.9			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			64.5%			ICU Level of Service		C				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 9: Harkins Slough & SR-1 NB Off Ramp

Ext + Bkgrd + Proj Ph 1a+1b Mitigated
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	1.00			1.00	1.00	1.00
Frbp, ped/bikes	1.00			1.00	1.00	1.00
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	128	0	0	431	43	456
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	0	0	468	47	496
RTOR Reduction (vph)	0	0	0	0	0	342
Lane Group Flow (vph)	139	0	0	468	47	154
Confl. Peds. (#/hr)					1	3
Turn Type						Prot
Protected Phases	4			8	2	2
Permitted Phases						
Actuated Green, G (s)	11.6			11.6	8.8	8.8
Effective Green, g (s)	11.6			11.6	8.8	8.8
Actuated g/C Ratio	0.41			0.41	0.31	0.31
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	761			761	548	491
v/s Ratio Prot	0.07			c0.25	0.03	c0.31
v/s Ratio Perm						
v/c Ratio	0.18			0.61	0.09	0.31
Uniform Delay, d1	5.4			6.6	6.9	7.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			1.5	0.1	0.4
Delay (s)	5.5			8.1	7.0	7.9
Level of Service	A			A	A	A
Approach Delay (s)	5.5			8.1	7.8	
Approach LOS	A			A	A	

Intersection Summary

HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	28.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Ext + Bkgrd + Proj Ph 1a+1b Mitigated
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3390	1397	1770	3539	1557	1770	3348		1770	3400	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3390	1397	1770	3539	1557	1770	3348		1770	3400	
Volume (vph)	304	592	237	100	431	147	290	409	141	256	499	148
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	313	610	244	103	444	152	299	422	145	264	514	153
RTOR Reduction (vph)	0	0	142	0	0	79	0	37	0	0	31	0
Lane Group Flow (vph)	313	610	102	103	444	73	299	530	0	264	636	0
Confl. Peds. (#/hr)	3		12	12		3	5		17	17		5
Confl. Bikes (#/hr)												2
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	12.7	20.9	20.9	16.0	24.2	24.2	16.0	16.0		16.0	16.0	
Effective Green, g (s)	12.7	20.9	20.9	16.0	24.2	24.2	16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.15	0.25	0.25	0.19	0.29	0.29	0.19	0.19		0.19	0.19	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	514	835	344	334	1009	444	334	631		334	641	
v/s Ratio Prot	0.09	c0.18		0.06	c0.13		c0.17	0.17		0.15	c0.20	
v/s Ratio Perm			0.17			0.10						
v/c Ratio	0.61	0.73	0.30	0.31	0.44	0.17	0.90	0.84		0.79	0.99	
Uniform Delay, d1	33.8	29.4	26.0	29.7	24.8	22.8	33.6	33.2		32.9	34.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	3.3	0.5	2.4	0.3	0.2	28.6	9.6		17.2	33.5	
Delay (s)	35.8	32.7	26.5	32.1	25.1	22.9	62.3	42.8		50.0	67.9	
Level of Service	D	C	C	C	C	C	E	D		D	E	
Approach Delay (s)		32.3			25.7			49.5			62.8	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM Average Control Delay			42.8				HCM Level of Service			D		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			84.9				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			72.6%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY

Site: Hwy 1 NB / Larkin Valley - E+B
+P PM

#17: Highway 1 NB Ramps / Larkin Valley Road
Existing + Background + Project Mitigation
PM Peak Hour

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph	
South: Hwy 1 NB Ramps												
3	L	47	2.0	0.263	6.0	LOS A	1.1	29.0	0.20	0.76	26.7	
18	R	227	2.0	0.263	6.0	LOS A	1.1	29.0	0.20	0.55	28.8	
Approach		274	2.0	0.263	6.0	LOS A	1.1	29.0	0.20	0.59	28.4	
East: Larkin Valley Rd												
1	L	749	2.0	0.769	17.6	LOS C	9.0	228.6	0.46	0.62	21.9	
6	T	63	2.0	0.769	17.6	LOS C	9.0	228.6	0.46	0.46	23.2	
Approach		812	2.0	0.769	17.6	LOS C	9.0	228.6	0.46	0.61	22.0	
West: Larkin Valley Rd												
2	T	60	2.0	0.139	8.8	LOS A	0.5	11.7	0.58	0.80	27.6	
12	R	12	2.0	0.139	8.8	LOS A	0.5	11.7	0.58	0.84	27.4	
Approach		72	2.0	0.139	8.8	LOS A	0.5	11.7	0.58	0.81	27.6	
All Vehicles		1158	2.0	0.769	14.3	LOS B	9.0	228.6	0.41	0.61	23.5	

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Model used. Geometric Delay not included.

HCM Signalized Intersection Capacity Analysis
5: Wagner & East Lake

Cumulative + Project Mitigated
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes		0.98		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		0.89		1.00	0.87		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1602		1752	1615		1768	1863	1548	1766	1861	
Flt Permitted		0.96		0.74	1.00		0.24	1.00	1.00	0.24	1.00	
Satd. Flow (perm)		1552		1357	1615		451	1863	1548	439	1861	
Volume (vph)	5	0	21	144	6	49	3	628	150	29	617	3
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	6	0	27	182	8	62	4	795	190	37	781	4
RTOR Reduction (vph)	0	21	0	0	48	0	0	0	71	0	0	0
Lane Group Flow (vph)	0	12	0	182	22	0	4	795	119	37	785	0
Conf. Peds. (#/hr)			6	6			2		9	9		2
Conf. Bikes (#/hr)									3			
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2		6	
Actuated Green, G (s)		12.4		12.4	12.4		34.4	34.4	34.4	34.4	34.4	
Effective Green, g (s)		12.4		12.4	12.4		34.4	34.4	34.4	34.4	34.4	
Actuated g/C Ratio		0.23		0.23	0.23		0.63	0.63	0.63	0.63	0.63	
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		351		307	365		283	1169	972	276	1168	
v/s Ratio Prot					0.04			c0.43			0.42	
v/s Ratio Perm		0.02		c0.13			0.01		0.12	0.08		
v/c Ratio		0.03		0.59	0.06		0.01	0.68	0.12	0.13	0.67	
Uniform Delay, d1		16.5		18.9	16.6		3.8	6.6	4.1	4.1	6.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.0		3.1	0.1		0.0	1.6	0.1	0.2	1.5	
Delay (s)		16.6		22.0	16.7		3.9	8.3	4.2	4.4	8.1	
Level of Service		B		C	B		A	A	A	A	A	
Approach Delay (s)		16.6			20.5			7.5			7.9	
Approach LOS		B			C			A			A	
Intersection Summary												
HCM Average Control Delay			9.4				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			54.8				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			54.4%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Cumulative + Project Mitigated
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1732	1549	1770	1778		1770	1806		1770	1863	1561
Flt Permitted	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1732	1549	1770	1778		1770	1806		1770	1863	1561
Volume (vph)	426	177	203	160	172	60	297	391	82	35	377	257
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	463	192	221	174	187	65	323	425	89	38	410	279
RTOR Reduction (vph)	0	0	177	0	14	0	0	8	0	0	0	99
Lane Group Flow (vph)	319	336	44	174	238	0	323	506	0	38	410	180
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)			1			1						2
Turn Type	Split		Perm	Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4									6
Actuated Green, G (s)	18.0	18.0	18.0	14.7	14.7		17.0	37.1		4.6	24.7	42.7
Effective Green, g (s)	18.0	18.0	18.0	14.7	14.7		17.0	37.1		4.6	24.7	42.7
Actuated g/C Ratio	0.20	0.20	0.20	0.16	0.16		0.19	0.41		0.05	0.27	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	335	345	308	288	289		333	741		90	509	806
v/s Ratio Prot	0.19	c0.19		0.10	c0.14		c0.18	0.28		0.02	c0.22	0.07
v/s Ratio Perm			0.14									0.11
v/c Ratio	0.95	0.97	0.14	0.60	0.82		0.97	0.68		0.42	0.81	0.22
Uniform Delay, d1	35.8	36.0	29.8	35.1	36.6		36.4	21.8		41.6	30.6	14.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	36.5	41.2	0.2	3.6	17.0		40.7	5.1		3.2	12.8	0.1
Delay (s)	72.3	77.1	30.1	38.7	53.6		77.2	26.9		44.8	43.4	14.2
Level of Service	E	E	C	D	D		E	C		D	D	B
Approach Delay (s)		63.5			47.5			46.3			32.3	
Approach LOS		E			D			D			C	
Intersection Summary												
HCM Average Control Delay			48.2			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			90.4			Sum of lost time (s)		16.0				
Intersection Capacity Utilization			79.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
9: Harkins Slough &

Cumulative + Project Mitigated
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00		1.00			
Frbp, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1770	1863			1863	1583	1770		1583			
Flt Permitted	0.09	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	176	1863			1863	1583	1770		1583			
Volume (vph)	100	626	0	0	831	468	213	0	365	0	0	0
Peak-hour factor, PHF	0.92	0.79	0.79	0.79	0.79	0.92	0.79	0.92	0.79	0.92	0.92	0.92
Adj. Flow (vph)	109	792	0	0	1052	509	270	0	462	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	179	0	0	182	0	0	0
Lane Group Flow (vph)	109	792	0	0	1052	330	270	0	280	0	0	0
Conf. Peds. (#/hr)									1			
Turn Type	Perm					Perm	custom		custom			
Protected Phases		4				8				2		
Permitted Phases	4						8	2				
Actuated Green, G (s)	44.6	44.6			44.6	44.6	16.1		16.1			
Effective Green, g (s)	44.6	44.6			44.6	44.6	16.1		16.1			
Actuated g/C Ratio	0.65	0.65			0.65	0.65	0.23		0.23			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	114	1209			1209	1028	415		371			
v/s Ratio Prot		0.43			0.56				c0.29			
v/s Ratio Perm	c0.62					0.32	0.15					
v/c Ratio	0.96	0.66			0.87	0.32	0.65		0.75			
Uniform Delay, d1	11.1	7.4			9.7	5.3	23.8		24.5			
Progression Factor	1.00	1.00			1.00	1.00	1.00		1.00			
Incremental Delay, d2	69.8	1.3			7.1	0.2	3.6		8.4			
Delay (s)	80.9	8.6			16.8	5.5	27.4		32.9			
Level of Service	F	A			B	A	C		C			
Approach Delay (s)		17.4			13.1			30.9			0.0	
Approach LOS		B			B			C			A	
Intersection Summary												
HCM Average Control Delay			18.4				HCM Level of Service				B	
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			68.7				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			71.1%				ICU Level of Service				C	
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Cumulative + Project Mitigated
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 	 	 	 		 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1555	1770	3539	1583	3433	3501		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1555	1770	3539	1583	3433	3501		1770	3539	1583
Volume (vph)	234	621	155	53	558	196	319	473	28	292	561	264
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	260	690	172	59	620	218	354	526	31	324	623	293
RTOR Reduction (vph)	0	0	33	0	0	62	0	3	0	0	0	293
Lane Group Flow (vph)	260	690	139	59	620	156	354	554	0	324	623	0
Conf. Peds. (#/hr)			3	3			4		4	4		4
Conf. Bikes (#/hr)									4			3
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		NA
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases			7			4						
Actuated Green, G (s)	13.3	44.5	44.5	9.1	40.3	40.3	16.0	19.8		23.0	26.8	0.0
Effective Green, g (s)	13.3	44.5	44.5	9.1	40.3	40.3	16.0	19.8		23.0	26.8	0.0
Actuated g/C Ratio	0.12	0.40	0.40	0.08	0.36	0.36	0.14	0.18		0.20	0.24	0.00
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	406	738	616	143	1269	568	489	617		362	844	0
v/s Ratio Prot	0.08	c0.37		0.03	c0.18		0.10	c0.16		c0.18	0.18	
v/s Ratio Perm			0.11			0.14						
v/c Ratio	0.64	0.93	0.23	0.41	0.49	0.28	0.72	0.90		0.90	0.74	0.00
Uniform Delay, d1	47.3	32.6	22.5	49.1	28.0	25.7	46.1	45.3		43.5	39.6	56.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.4	18.9	0.2	1.9	0.3	0.3	9.0	15.7		27.0	3.4	0.0
Delay (s)	50.7	51.5	22.7	51.0	28.3	25.9	55.1	61.0		70.5	43.0	56.2
Level of Service	D	D	C	D	C	C	E	E		E	D	E
Approach Delay (s)		46.9			29.2			58.7			53.3	
Approach LOS		D			C			E			D	
Intersection Summary												
HCM Average Control Delay			47.6			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			112.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			79.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY

Site: Hwy 1 NB / Larkin Valley - C + P AM

#17: Highway 1 NB Ramps / Larkin Valley Road
 Cumulative plus Project: Mitigation
 AM Peak Hour

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph	
South: Hwy 1 NB Ramps												
3	L	49	2.0	0.435	10.1	LOS B	2.1	52.8	0.54	0.88	24.9	
18	R	301	2.0	0.435	10.1	LOS B	2.1	52.8	0.54	0.76	26.5	
Approach		350	2.0	0.435	10.1	LOS B	2.1	52.8	0.54	0.78	26.2	
East: Larkin Valley Rd												
1	L	633	2.0	0.637	12.4	LOS B	5.2	131.5	0.33	0.65	23.8	
6	T	39	2.0	0.637	12.4	LOS B	5.2	131.5	0.33	0.46	25.5	
Approach		672	2.0	0.637	12.4	LOS B	5.2	131.5	0.33	0.64	23.9	
West: Larkin Valley Rd												
2	T	314	2.0	0.720	24.1	LOS C	5.0	127.7	0.81	1.05	21.1	
12	R	104	2.0	0.720	24.1	LOS C	5.0	127.7	0.81	1.07	21.0	
Approach		418	2.0	0.720	24.1	LOS C	5.0	127.7	0.81	1.06	21.0	
All Vehicles		1440	2.0	0.720	15.2	LOS C	5.2	131.5	0.52	0.79	23.5	

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Model used. Geometric Delay not included.

HCM Signalized Intersection Capacity Analysis
5: Wagner & East Lake

Cumulative + Project Mitigated
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Frbp, ped/bikes		0.98		1.00	0.98		1.00	1.00	0.97	1.00	1.00		
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Frt		0.93		1.00	0.85		1.00	1.00	0.85	1.00	1.00		
Flt Protected		0.98		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		1660		1766	1551		1765	1863	1537	1762	1859		
Flt Permitted		0.85		0.73	1.00		0.24	1.00	1.00	0.33	1.00		
Satd. Flow (perm)		1451		1363	1551		441	1863	1537	619	1859		
Volume (vph)	16	0	19	96	1	96	15	667	111	24	838	10	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	17	0	20	102	1	102	16	710	118	26	891	11	
RTOR Reduction (vph)	0	17	0	0	87	0	0	0	31	0	1	0	
Lane Group Flow (vph)	0	20	0	102	16	0	16	710	87	26	901	0	
Conf. Peds. (#/hr)	1		1	1		1	8		12	12		8	
Conf. Bikes (#/hr)			3						8				
Turn Type	Perm			Perm			Perm		Perm	Perm			
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2		2		6		
Actuated Green, G (s)		10.2		10.2	10.2		50.7	50.7	50.7	50.7	50.7		
Effective Green, g (s)		10.2		10.2	10.2		50.7	50.7	50.7	50.7	50.7		
Actuated g/C Ratio		0.15		0.15	0.15		0.74	0.74	0.74	0.74	0.74		
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0		
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)		215		202	230		325	1371	1131	455	1368		
v/s Ratio Prot					0.07			0.38			c0.49		
v/s Ratio Perm		0.03		c0.07			0.04		0.08	0.04			
v/c Ratio		0.09		0.50	0.07		0.05	0.52	0.08	0.06	0.66		
Uniform Delay, d1		25.4		27.0	25.3		2.5	3.9	2.5	2.5	4.7		
Progression Factor		1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		0.2		2.0	0.1		0.3	1.4	0.1	0.2	2.5		
Delay (s)		25.5		29.0	25.4		2.8	5.3	2.7	2.7	7.2		
Level of Service		C		C	C		A	A	A	A	A		
Approach Delay (s)		25.5			27.2			4.9			7.0		
Approach LOS		C			C			A			A		
Intersection Summary													
HCM Average Control Delay			8.5									HCM Level of Service	A
HCM Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			68.9									Sum of lost time (s)	8.0
Intersection Capacity Utilization			61.6%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
6: Holohan & East Lake

Cumulative + Project Mitigated
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1767	1548	1770	1827		1770	1728		1770	1863	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1767	1548	1770	1827		1770	1728		1770	1863	1561
Volume (vph)	220	220	363	122	182	22	317	214	147	18	312	293
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	239	395	133	198	24	345	233	160	20	339	318
RTOR Reduction (vph)	0	0	323	0	6	0	0	26	0	0	0	117
Lane Group Flow (vph)	233	245	72	133	216	0	345	367	0	20	339	201
Conf. Peds. (#/hr)	8						8	1		2	2	1
Conf. Bikes (#/hr)			1				3			5		3
Turn Type	Split		Perm	Split			Prot			Prot		pm+ov
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4									6
Actuated Green, G (s)	14.3	14.3	14.3	13.1	13.1		16.1	31.9		2.8	18.6	32.9
Effective Green, g (s)	14.3	14.3	14.3	13.1	13.1		16.1	31.9		2.8	18.6	32.9
Actuated g/C Ratio	0.18	0.18	0.18	0.17	0.17		0.21	0.41		0.04	0.24	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	308	324	283	297	306		365	706		63	444	738
v/s Ratio Prot	0.14	0.14		0.08	c0.12		c0.19	0.23		0.01	c0.18	0.08
v/s Ratio Perm			0.26									0.12
v/c Ratio	0.76	0.76	0.26	0.45	0.71		0.95	0.52		0.32	0.76	0.27
Uniform Delay, d1	30.2	30.2	27.3	29.2	30.7		30.6	17.3		36.7	27.7	14.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.1	9.7	0.5	1.1	7.2		32.9	2.7		2.9	11.8	0.2
Delay (s)	40.4	39.9	27.8	30.3	37.9		63.5	20.1		39.6	39.5	15.0
Level of Service	D	D	C	C	D		E	C		D	D	B
Approach Delay (s)		34.6			35.1			40.4			28.0	
Approach LOS		C			D			D			C	
Intersection Summary												
HCM Average Control Delay			34.6				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			78.1				Sum of lost time (s)		16.0			
Intersection Capacity Utilization			70.7%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
9: Harkins Slough &

Cumulative + Project Mitigated
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00		1.00				
Frbp, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85	1.00		0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (prot)	1770	1863			1863	1583	1770		1583				
Flt Permitted	0.19	1.00			1.00	1.00	0.95		1.00				
Satd. Flow (perm)	346	1863			1863	1583	1770		1583				
Volume (vph)	35	314	0	0	770	288	43	0	513	0	0	0	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	38	341	0	0	837	313	47	0	558	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	132	0	0	387	0	0	0	
Lane Group Flow (vph)	38	341	0	0	837	181	47	0	171	0	0	0	
Conf. Peds. (#/hr)									1				
Turn Type	Perm						Permcustom		custom				
Protected Phases		4				8					2		
Permitted Phases	4						8	2					
Actuated Green, G (s)	24.0	24.0			24.0	24.0	9.6		9.6				
Effective Green, g (s)	24.0	24.0			24.0	24.0	9.6		9.6				
Actuated g/C Ratio	0.58	0.58			0.58	0.58	0.23		0.23				
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0				
Lane Grp Cap (vph)	200	1075			1075	913	408		365				
v/s Ratio Prot		0.18			c0.45				c0.35				
v/s Ratio Perm	0.11					0.20	0.03						
v/c Ratio	0.19	0.32			0.78	0.20	0.12		0.47				
Uniform Delay, d1	4.2	4.6			6.8	4.2	12.6		13.8				
Progression Factor	1.00	1.00			1.00	1.00	1.00		1.00				
Incremental Delay, d2	0.5	0.2			3.6	0.1	0.1		1.0				
Delay (s)	4.6	4.7			10.4	4.3	12.8		14.8				
Level of Service	A	A			B	A	B		B				
Approach Delay (s)		4.7			8.7			14.6			0.0		
Approach LOS		A			A			B			A		
Intersection Summary													
HCM Average Control Delay			9.7									HCM Level of Service	A
HCM Volume to Capacity ratio			0.99										
Actuated Cycle Length (s)			41.6									Sum of lost time (s)	8.0
Intersection Capacity Utilization			55.1%									ICU Level of Service	B
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
11: Airport & Freedom

Cumulative + Project Mitigated
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.97	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3343		1770	3539	1556	3433	3383		1770	3390	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3343		1770	3539	1556	3433	3383		1770	3390	
Volume (vph)	343	583	258	116	479	167	340	471	146	269	572	162
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	354	601	266	120	494	172	351	486	151	277	590	167
RTOR Reduction (vph)	0	56	0	0	0	77	0	33	0	0	29	0
Lane Group Flow (vph)	354	811	0	120	494	95	351	604	0	277	728	0
Confl. Peds. (#/hr)	3		12	12		3	17		5	5		17
Confl. Bikes (#/hr)									2			3
Turn Type	Prot			Prot		Perm	Prot			Prot		
Protected Phases	3	7		8	4		1	6		5	2	
Permitted Phases					4							
Actuated Green, G (s)	13.8	22.0		16.0	24.2	24.2	16.0	20.0		16.0	20.0	
Effective Green, g (s)	13.8	22.0		16.0	24.2	24.2	16.0	20.0		16.0	20.0	
Actuated g/C Ratio	0.15	0.24		0.18	0.27	0.27	0.18	0.22		0.18	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	526	817		315	952	418	610	752		315	753	
v/s Ratio Prot	0.10	c0.26		0.07	c0.14		0.10	0.19		c0.16	c0.22	
v/s Ratio Perm					0.11							
v/c Ratio	0.67	0.99		0.38	0.52	0.23	0.58	0.80		0.88	0.97	
Uniform Delay, d1	36.0	33.9		32.6	28.0	25.6	33.9	33.1		36.1	34.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	29.5		3.5	0.5	0.3	3.9	6.2		27.6	24.7	
Delay (s)	39.4	63.5		36.1	28.4	25.9	37.8	39.4		63.7	59.3	
Level of Service	D	E		D	C	C	D	D		E	E	
Approach Delay (s)		56.5			29.1			38.8			60.5	
Approach LOS		E			C			D			E	
Intersection Summary												
HCM Average Control Delay			47.8				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			77.2%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

MOVEMENT SUMMARY

Site: Hwy 1 NB / Larkin Valley - C +
P PM

#17: Highway 1 NB Ramps / Larkin Valley Road
Cumulative plus Project: Mitigation
PM Peak Hour

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph	
South: Hwy 1 NB Ramps												
3	L	76	2.0	0.367	8.5	LOS A	1.6	41.8	0.47	0.82	25.6	
18	R	237	2.0	0.367	8.5	LOS A	1.6	41.8	0.47	0.69	27.3	
Approach		313	2.0	0.367	8.5	LOS A	1.6	41.8	0.47	0.72	26.8	
East: Larkin Valley Rd												
1	L	738	2.0	0.781	18.7	LOS C	8.8	224.2	0.59	0.64	21.5	
6	T	63	2.0	0.781	18.7	LOS C	8.8	224.2	0.59	0.52	22.7	
Approach		801	2.0	0.781	18.7	LOS C	8.8	224.2	0.59	0.63	21.6	
West: Larkin Valley Rd												
2	T	257	2.0	0.696	24.7	LOS C	4.3	110.2	0.80	1.04	20.9	
12	R	107	2.0	0.696	24.7	LOS C	4.3	110.2	0.80	1.06	20.8	
Approach		363	2.0	0.696	24.7	LOS C	4.3	110.2	0.80	1.05	20.8	
All Vehicles		1477	2.0	0.781	18.0	LOS C	8.8	224.2	0.62	0.75	22.3	

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Model used. Geometric Delay not included.

APPENDIX B

CA-MUTCD Peak Hour Signal Warrants

**EXISTING + BACKGROUND + REVISED PROJECT CONDITIONS - PEAK HOUR VOLUME WARRANT
(URBAN CONDITIONS)**

General Information

Description Intersection 5: East Lake Ave / Wagner Ave - AM Peak Hour
 Major Approach Street Name East Lake
 Minor Approach Street Name Wagner Ave

Geometry

Number of Approach Legs 4
 Number of Major Approach Lanes 3
 Number of Minor Approach Lanes 2

Volumes and Delay

Major Approach Volumes (Both Directions) 1177
 Minor Approach Volume (One Direction Only) 192
 Total Entering Volume 1379
 Minor Approach Delay per Vehicle 52

SIGNAL WARRANT NOT SATISFIED

**WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied)**

PART A SATISFIED YES NO
 (All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for 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**
 YES NO
 Total Delay (Vehicle Hours) 2.77

2. The volume on the same minor street approach (one direction only equal or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; **AND**
 YES NO
 Total Minor Approach Volume 192

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.
 YES NO
 Total Entering Volume 1379

PART B SATISFIED YES NO

APPROACH LANES	Hour		
	One	2 or More	
Both Approaches - Major Street		✓	1177
Higher Approach - Minor Street		✓	192

The plotted point falls above the curve in Figure 4C-3. YES NO

OR. The plotted point falls above the curve in Figure 4C-4. YES NO

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

**EXISTING + BACKGROUND + REVISED PROJECT CONDITIONS - PEAK HOUR VOLUME WARRANT
(URBAN CONDITIONS)**

Intersection 5: East Lake Ave / Wagner Ave - AM Peak Hour

Peak Hour **AM**

Major Stre **East Lake**

Minor **Wagner Ave**

Total of Both Approaches (VPH): **1177**

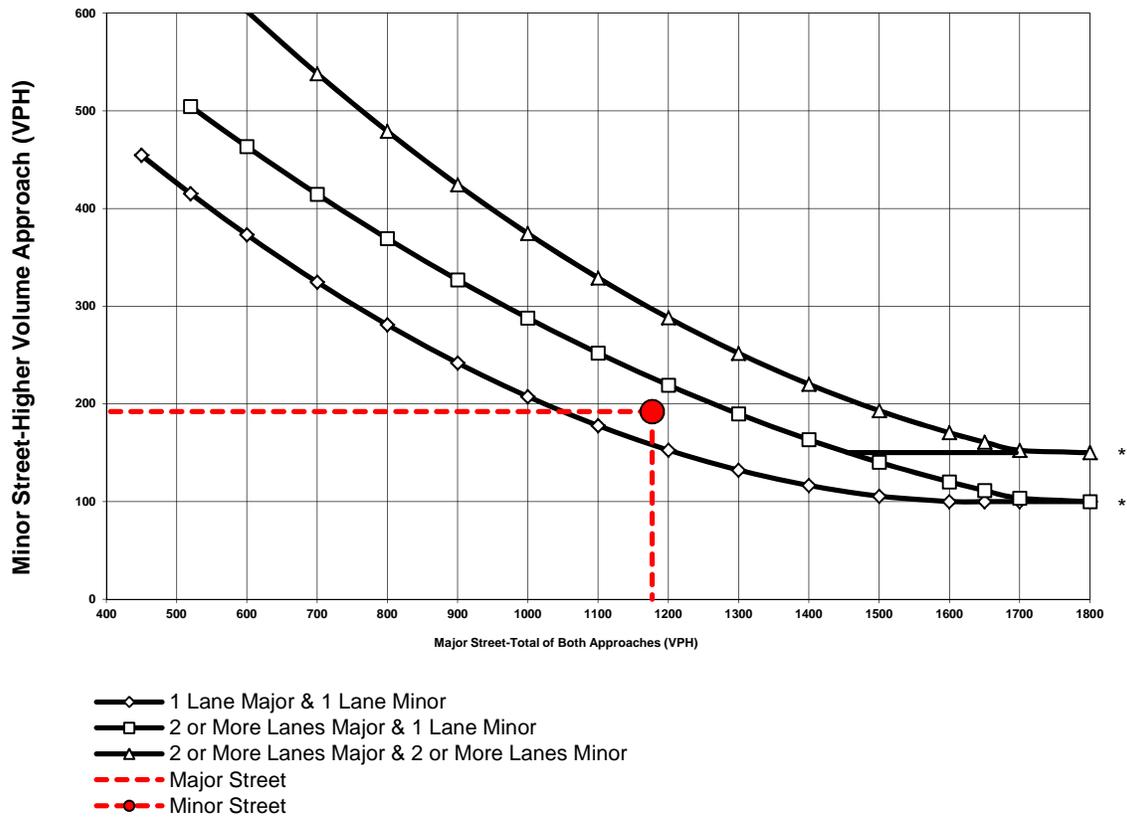
Higher Volume Approach (VPH): **192**

Number of Approach Lanes: **3**

Number of Approach Lanes: **2**

SIGNAL WARRANT NOT SATISFIED

Figure 4C-3. Peak Hour Warrant (Urban)



* Note:

150 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: MUTCD 2003 Revision 1, as amended for use in California (September 26, 2006).

**EXISTING + BACKGROUND + REVISED PROJECT CONDITIONS - PEAK HOUR VOLUME WARRANT
(URBAN CONDITIONS)**

General Information

Description Intersection 5: East Lake Ave / Wagner Ave - PM Peak Hour
 Major Approach Street Name East Lake
 Minor Approach Street Name Wagner Ave

Geometry

Number of Approach Legs 4
 Number of Major Approach Lanes 3
 Number of Minor Approach Lanes 2

Volumes and Delay

Major Approach Volumes (Both Directions) 1376
 Minor Approach Volume (One Direction Only) 92
 Total Entering Volume 1485
 Minor Approach Delay per Vehicle 34.3

SIGNAL WARRANT NOT SATISFIED

**WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied)**

PART A SATISFIED YES NO
 (All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced for 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**

Total Delay (Vehicle Hours) 0.88

2. The volume on the same minor street approach (one direction only equal or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; **AND**

Total Minor Approach Volume 92

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.

Total Entering Volume 1485

PART B SATISFIED YES NO

APPROACH LANES	Hour		
	One	2 or More	
Both Approaches - Major Street		✓	1376
Higher Approach - Minor Street		✓	92

The plotted point falls above the curve in Figure 4C-3. YES NO

OR. The plotted point falls above the curve in Figure 4C-4. YES NO

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

EXISTING + BACKGROUND + REVISED PROJECT CONDITIONS - PEAK HOUR VOLUME WARRANT (URBAN CONDITIONS)

Intersection 5: East Lake Ave / Wagner Ave - PM Peak Hour

Peak Hour **PM**

Major Stre **East Lake**

Minor **Wagner Ave**

Total of Both Approaches (VPH): **1376**

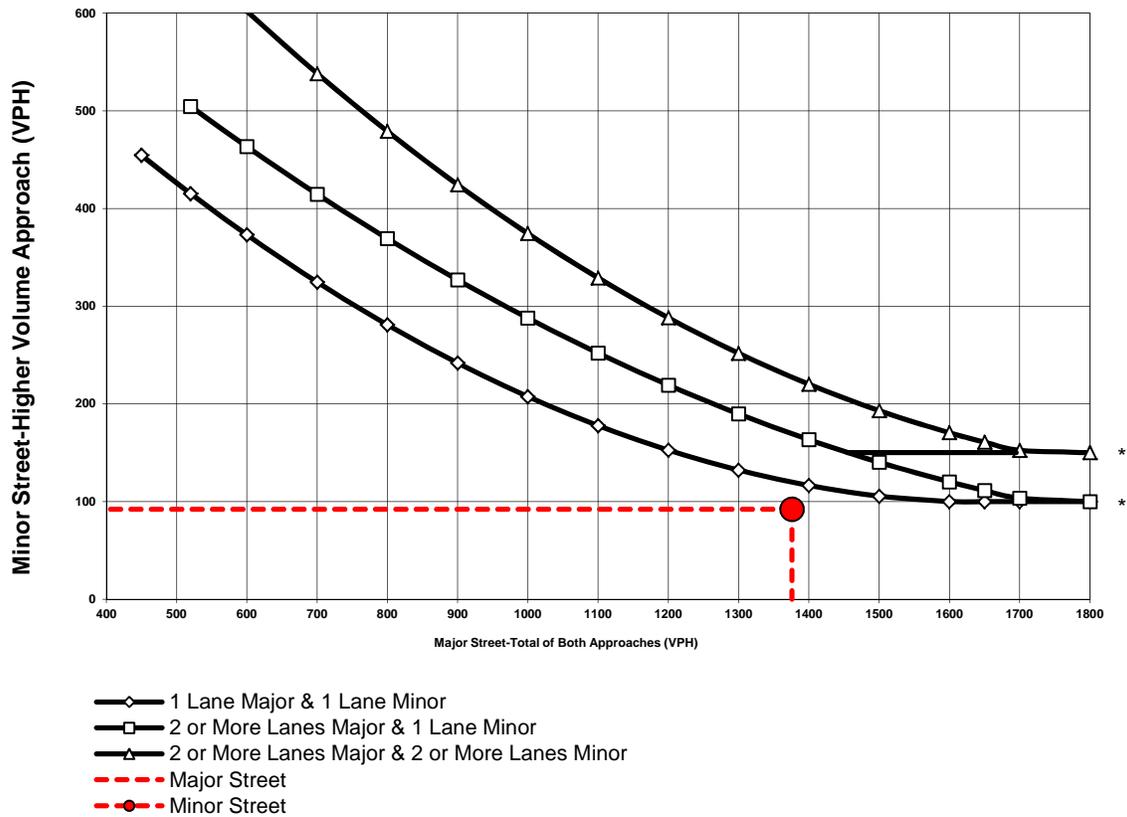
Higher Volume Approach (VPH): **92**

Number of Approach Lanes: **3**

Number of Approach Lanes: **2**

SIGNAL WARRANT NOT SATISFIED

Figure 4C-3. Peak Hour Warrant (Urban)



* Note:

150 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: MUTCD 2003 Revision 1, as amended for use in California (September 26, 2006).



Appendix O

Update of Biological Surveys and Mitigation Measures conducted on the MidPen Housing Pippen Court Affordable Income Housing Project on Atkinson Lane in Watsonville, California, dated June 14, 2013.



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Memo

To: Cynthia Iwanaga, Project Manager; MidPen Housing Corp
From: Bill Davilla
CC: Kate Smith, MidPen Housing Corp
Date: 6/14/2013
Re: Update of Biological Surveys and Mitigation Measures conducted on the MidPen Housing Pippin Court Affordable Income Housing Project on Atkinson Lane in Watsonville, California

This memorandum summarizes our current progress towards fulfilling biological mitigation measures required for development of the proposed MidPen Housing Corp Pippin Court housing project located east of Atkinson Lane in Watsonville, California. The biological mitigation measures are outlined below along with a description of surveys or activities conducted to date or to be completed.

MITIGATION MEASURES:

MM 3.4-2a Conduct CRLF surveys prior to permit. Protocol requires 8 surveys conducted between Feb and Sept. If CRLF observed, must consult USFWS and CDFG to determine action. (County and City)

Prepared an update to the CRLF site assessment plan and list of EIR conditions for preconstruction and construction mitigations and submitted to USFWS to get their concurrence with our conclusion that “Protocol-level Surveys” were not appropriate for this project. We received their concurrence with our position by email from Douglas Cooper, USFWS Northern Division Chief on April 23, 2013 (Attached). Copy of Site Assessment and Request for review is attached to this Memorandum.

MM 3.4-2b USFWS approved biologist will conduct CRLF preconstruction surveys a minimum of 48 hours before initiation of project activities. Preconstruction surveys will be two days and two nights, spaced a week apart, with notification of findings sent to USFWS. (County and City)

These surveys will be conducted prior to initiation of construction.

MM 3.4-3a A qualified herpetologist will conduct three consecutive days of pond turtle trapping in the freshwater march. If viable population is documented then a Western Pond Turtle habitat Enhancement Plan will be prepared and implemented. If no viable population is observed, any trapped turtles may be permanently relocated. A Habitat Enhancement Plan will be prepared by a wetland ecologist, hydrologist, and landscape architect that include:

- Removal of non-native vegetation
- Wetland and upland planting plan

- Revegetation of the wetland buffer with native riparian and upland species
- Development of monitoring program
- Development of success criteria for habitat enhancement (County and City)

This mitigation exceeds the level of potential impact for the scale and location of this development at this time. We are instead conducting monthly visual surveys of the pond to attempt to determine the presence and possible numbers of WPT occupying the pond/marsh habitat. To date we have not observed WPT. A summary of our observations to date are attached to this memorandum. We considered initiating trapping to establish presence but after further consultations with experts, it was determined that trapping would not be effective given the extensive cover of emergent vegetation and proximity of transient encampments adjacent to the pond. Surveys will continue into July if habitat conditions are determined to be appropriate. We will review the necessity for further surveys at the end of June.

MM 3.4-3b If viable WPT population is present a Habitat Enhancement Plan will be prepared and implemented prior to construction. (County and City)

Includes:

- Removal of non-native species
- Removal of the earthen berm
- Eradication of bullfrogs
- Placement of logs and rocks
- Development of wetland and upland planting plan
- Revegetation of the wetland buffer with native riparian and upland species

To be determined. Do not believe that implementation of this mitigation is appropriate since the project does not interfere or effect pond operation and maintenance. The project footprint also, does not interfere with migration corridors to other hydrated areas near by.

MM 3.4-3c If WPT population is determined to be viable, all captured turtles will be temporarily relocated to a holding area. After construction is completed all WPT will be returned to marsh. Coordinate with CDFG. (County and City)

Not applicable at this time.

MM 3.4-3d Prior to construction, fencing around the perimeter of the 50 ft wetland buffer, signage prohibiting human activity will be installed. Biologist will be present during placement of the fence. Exclusion fencing to be installed between September and March. (County and City)

Not applicable at this time. Measure to be implemented prior to initiation of construction activities.

MM 3.4-3e Captured turtles tagged and fully documented, non-native turtles also documented will not returned to wild. Coordinate with CDFG. (County and City)

Not applicable at this time. Implementation of this measure may be conducted for complete Atkinson Lane Specific Plan development.

MM 3.4-3f Workers Education Training for WPT for construction personnel (County and City)

Measure to be implemented prior to initiation of construction activities.

MM 3.4-2h For those possible WPT that evade trapping, the project must:

- Provide escape ramp
- Check under parked equipment everyday
- Contain trash
- Fueling and maintenance of vehicles to be done off site
- Smoke away from site and dispose of butts properly (County and City)

Mitigation Measure to be implemented before and during construction activities for all potential sensitive species.

MM 3.4-3i Before/during clearing of vegetation or initial ground disturbing activities, biologist will conduct preconstruction survey for WPT. (County and City)

Mitigation Measure to be implemented before and during construction activities.

MM 3.4-3k Monitoring of revegetation areas for three years or until success criteria have been met, vegetation is established and exotic species are controlled. (County Only)

Mitigation Measure would be conducted after revegetation (if any) following project completion.

MM 3.4-3l All relocated WPTs will be monitored for three years after they are returned to the marsh. Annual reports shall be prepared and provided to Co. of Santa Cruz Planning Dept, City of Watsonville Community Development Dept, and CDFG. (County Only)

Measure will be followed if WPTs are relocated. Not likely to be applicable for this project.

MM 3.4-4a Retain mature trees and replace removed trees with in-kind species and vegetation structure. Tree replacement indicated on landscape plan and approved by Co. of Santa Cruz Planning or Watsonville Community Development Department. (County and City)

Only trees to be removed are planted around the homesite. This requirement will be implemented within the development footprint as part of the landscape plan.

MM 3.4-4b If construction occurs between February-August and vegetation has not be cleared prior to this window, a biologist will conduct avian nest surveys prior to demolition or construction activities to determine if nesting is occurring within or adjacent to development activities. (County and City)

This measure was not followed during the demolition of the dwelling and adjacent outbuildings. Not certain if impacts to nesting birds occurred.

MM 3.4-4c If construction occurs between February-August and vegetation has not been cleared prior to this window, biologist will do yellow warbler nest survey during all phases of construction. If nests found, avoidance measures will be determined in consultation with State Fish and Wildlife Department. (County and City)

This measure will be followed prior to and during construction within the nesting window.

MM 3.4-5 Prior to construction activities or vegetation removal, a survey for bats will be conducted over a minimum of four visits at least 15 days prior to the beginning of tree vegetation removal, demolition, and other project activities. Other related requirements attached to this mitigation. (County and City)

This measure was not followed during the demolition of the dwelling and adjacent outbuildings. Not certain if impacts to roosting bats occurred. No bats were observed by Demolition Company (Cynthia Iwanaga, pers com. 2013).

MM 3.4-6 A biologist will survey the development footprint for the presence of San Francisco dusky footed woodrat. Developers will coordinate with CDFG to establish protective buffer widths around structures and install exclusion zones around structures before beginning of construction activities (County Only)

This measure will be implemented prior to initiation of construction activities.

WETLAND BOUNDARY DELINEATION

In addition to the above measures, a wetland delineation was conducted in January and February 2013 to determine the edge of the wetlands adjacent to the Pippin Court parcel and a development setback buffer of 50 feet from said edge. A formal COE Wetland Delineation report was completed and submitted to the COE for verification. At this time, we are awaiting a date for a COE verification visit to the project site. We have determined that they have our project in the cue and a visit should occur shortly.

ATTACHEMENTS



March 27, 2013

Douglass Cooper, Deputy Assistant Field Supervisor
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003

Subject: Request for U.S. Fish and Wildlife review of the need to conduct a California Red-legged Protocol Survey for the proposed MidPen Housing Corp. affordable housing community project located on Atkinson Lane in Watsonville, California

Dear Douglass,

This memorandum is a request for an amendment to the U.S. Fish and Wildlife Service's (hereafter Service) recommendation in its letter dated October 30, 2008 (Reference No. 81440-2008-TA-0607 attached) that surveys for California red-legged frog (CRLF) be performed to protocol for the Atkinson Lane Specific/Master Plan project area located in Watsonville, Santa Cruz County, California. We request an updated review of this recommendation based on additional information, not known at the time of the initial Service review. William Davilla, EcoSystems West and Bryan Mori, Mori Biological Consulting Services met on site with Jacob Martin, USFWS Senior Biologist on March 18th, 2013 to orient him to the project location and related aquatic features to discuss this projects potential impacts to CRLF. At his suggestion he recommended we provide the Service with our request in writing.

At the time of the 2008 Specific/Master Plan CEQA review process, evaluation of sensitive resources on the site was based on the full build out of the development which included a significant impact footprint, including the proposed removal of an existing irrigation detention basin, building that surrounds a good portion of the remaining detention pond and seasonal wetland, and housing along the length of Corralitos Creek boarding the north side of the 66 acre Plan Area. Per the Atkinson Lane Specific Plan and PUD, the project was approved in two Phases. Phase 1, the 2.3 acre Atkinson Lane Apartments Project (referred to now as Pippin Place) and Phase II, the remaining 64 acre project located within the City of Watsonville planning jurisdiction, for which the EIR has not been adopted due to ongoing litigation. Timing for development of the Phase II portion of the Atkinson Lane Specific Plan area is likely years away. Since the certification of the EIR in 2009, the land remains in similar land-uses (fallow grasslands, rotational row crops, and ruderal fields) with the exception of the removal and filling

of the irrigation detention basin on the plateau on the northwestern corner of the 66-acre Plan Area. This feature was removed sometime in 2011, presumably by the landowner, to create additional farm lands. The existing floodwater detention basin in the south-central portion of the Plan Area remains intact with noticeable changes in both reduced open water habitat due to pool infill by emergent vegetation and willows. We ask that the Service reconsider their recommendation based on the size and location of the proposed Pippin Place (Phase I) project footprint and the findings provided in the update of Atkinson Property–California Red-legged Frog Site Assessment prepared by Bryan Mori dated March 20, 2013 (attached) that the Service concur with the implementation of the remaining CRLF mitigation measures outlined in the EIR Impact Measure 4.4-2 shown below.

Pippin Place is proposed to be 46 units of family rental housing located at 56 Atkinson Lane in Watsonville. The project site consists of two separate parcels that have a total net developable area of 2.3 acres. The first parcel is located in the City of Watsonville’s jurisdiction and the second parcel is located within the County of Santa Cruz’s jurisdiction. Both of the properties are part of the Atkinson Lane Specific Plan, a plan drafted by the City of Watsonville and the County of Santa Cruz to guide the use and development of a total of 66 acres along the urban growth boundary between the City of Watsonville and the County of Santa Cruz. Pippin’s two parcels represent 3.5% of the total plan area, and will be the first sites to be developed. The proposed project will consist of three garden style walk-up buildings (Figure A.9.4 attached). Building #1 is a 2-story wood framed building that is located closest to Atkinson Lane. Buildings #2 and #3 are 3-story wood framed buildings. Building #3 is the largest building with 26 units in a U-shape configuration around open space and a tot lot. There are currently no plans for elevators. Building #3 will step down the hill that slopes towards the wetlands, making a portion of the first floor one story below the common entry first floor that faces the parking lot. The project footprint will be buffered at least 50 feet from the edge of jurisdictional wetland and riparian habitats. As proposed the development will occur entirely on the elevated terrace supporting introduced grassland/field and abandoned dwellings and horticultural landscape.

The excerpted impact section of the 2009 Draft Environmental EIR-Atkinson Lane Specific Plan and PUD (RBF Consulting 2009) for CRLF mitigation includes the following measures:

Impact 4.4-2: The California red-legged frog (CRLF) is federally Threatened and a CDFG Species of Special Concern. Ecosystems West (2008) and Mori (2008) concur that occurrence of CRLF in the project site is unlikely; however, based on the presence of suitable aquatic habitat within the project area and of known CRLF localities within the dispersal distance of the project area, USFWS (2008) determined that occurrence is possible and recommends that protocol surveys be conducted (USFWS 2005).

If CRLF are observed in the project area during protocol surveys, preconstruction surveys, inspections, or subsequent construction activities, all work on the site and any adjacent staging area parcels shall cease. Capturing, handling, moving, or harassing CRLF is considered a violation of state and federal Endangered Species Acts. The project's lead agency will initiate consultation with the USFWS and CDFG to determine the appropriate permitting action; a Section 7 consultation and development of a Biological Opinion or a section 10a consultation and development of an HCP may be required. Project activities shall not resume until final federal approval of the project is received.

Project activities such as vegetation removal, grading, excavating, and vehicle and equipment travel may result in "take" of incidental CRLF that may be encountered. This adverse direct impact is considered *Potentially Significant*.

Mitigation Measures: To avoid "take" of CRLF during construction activities:

- Initial project activities (including but not limited to ground disturbance and vegetation removal) shall occur during dry weather, during the day, and preferably before newly metamorphosed frogs disperse and when CRLF are less likely to be migrating between aquatic environments. Initial ground-disturbing activities shall occur between June 1 and October 15.
- Prior to initiating project activities, mark the boundaries of the work area with materials that are not potentially injurious to wildlife. With the input of a USFWS (Service) approved biologist, determine which fence materials would be most appropriate to install. Project activities will take place within these marked boundaries to ensure minimum impact to the area.
- Prior to initiating any project activities, install a temporary wildlife barrier between the work area(s) and habitat features providing potential CRLF habitat (e.g. marsh/wetland, ephemeral drainage, agricultural basin, and Corralitos Creek). A Service approved biologist, shall work with the appropriate agencies to develop designs of a barrier that will prevent entrapment or potentially harm CRLF and/or other sensitive species. The Service-approved biologist shall inspect the barrier daily to ensure no CRLF or other sensitive species are located along the fence. In the event a CRLF is observed along the fence, cease all on-site activities and immediately contact the appropriate agencies. No CRLF or other sensitive species will be handled or moved without pre-approvals from the appropriate agencies.
- Any marsh/wetland, ephemeral drainage, riparian and/or, upland forest, grassland, ruderal or scrub habitats shall be inspected by an approved biologist before and during any clearing of vegetation, or any other ground disturbing activities to

avoid killing, injuring or harming individual frogs, if present, during these activities.

- If water is present in the work area, coordinate with the appropriate resource agencies to obtain authorization to de-water or divert flows from the work area before initiating project activities. Isolate the workspace from flowing water during construction to minimize the potential for downstream sedimentation. Pump and water intake structures shall be screened with wire mesh not larger than 0.2 inches to prevent CRLF or other sensitive species from entering the pump system. After coordinating with the appropriate agencies, have a Service approved biologist regularly survey and monitor the diversion area for CRLF or any other sensitive resources to ensure they remain out of harms way during de-watering or stream diverting efforts. Restore the stream channel and flow capacity to its original condition once the project activities are complete.
- Before any project activities begin, a Service-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include (1.) a description of the life histories of CRLF and other sensitive resources and habitat information; (2.) general measures to be implemented to conserve the CRLF and other sensitive resources as they relate to the project, (3.) identify the boundaries within which the project may be accomplished; and (4.) provide education about the need to halt activities and avoid handling or moving any CRLF or other sensitive wildlife if encountered in the work area. Brochures, books and briefings may be used in the training session, provided that a Service-approved biologist is on hand to answer any questions.
- Where trenching occurs, provide an escape ramp at each end of the open trench to avoid wildlife entrapment. The ramp may be constructed of dirt fill, wood planking, or other suitable material that is placed at an angle of 30 degrees or less. Backfill open segments of trench as soon as possible to avoid wildlife entrapment.
- Check under all equipment for wildlife before use. If any special status wildlife is observed under equipment or within the work area, do not disturb or handle it. As previously recommended, cease project activities and contact the resource agencies (USFWS and CDFG) for further guidance.
- During project activities, all trash that may attract predators shall be properly contained, removed from the work site and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.
- All fueling and maintenance of vehicles and other equipment and staging areas should not occur within or near wetland and/or riparian habitats or water bodies. A plan to allow a prompt and effective response to accidental spills should be developed. All workers shall be informed of the importance of preventing spills

and of the appropriate measures to be taken should a spill occur. The Service should be contacted regarding spills if the approved biologist anticipates that impacts to listed species (e.g. CRLF) may occur as a result of the spill. As of 2008, the USFWS point of contact for this project is Jacob Martin of the Ventura Fish and Wildlife Service Office, Ventura California (805) 644-1766.

Implementing these mitigation measures would reduce the impact to *Less-than Significant*.

Since the likelihood that protocol-level surveys will not confirm presence of CRLF in the aquatic features, it seems more appropriate to implement the standard array of preconstruction and construction avoidance measures with the usual agency caveat that the proposed development has not official approval for “take” of the species and should the species be encountered during the course of development activities, all development would cease until consultation with the Service is completed. We look forward to your reply to this request. If your leaning is toward a continued requirement for protocol surveys, we would appreciate an informal notification, so that we do not miss the early window for surveys and have to wait till next season. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'BD', with a long horizontal line extending to the right.

Bill Davilla
Principal



**OPTION 9.4
SITE DATA**

NET ACRES: 2.6 (BOTH PARCELS)
(NET EXCLUDES WETLAND AREA)

TOTAL FAMILY UNITS:

1BD:	4
2BD:	26
3BD:	16
TOTAL:	46

COUNTY PARCEL UNIT MIX:

1BD:	2
2BD:	16
3BD:	8
TOTAL:	26

CITY PARCEL UNIT MIX:

1BD:	2
2BD:	10
3BD:	8
TOTAL:	20

DENSITY:
15.4 AT CITY PARCEL (1.3 NET ACRES)
20.0 AT COUNTY PARCEL (1.3 NET ACRES)

CITY PARCEL PARKING REQUIRED:

2.0 SPACES/UNIT:	40
GUEST 1 PER 4 BEDROOMS:	12
TOTAL REQUIRED:	52

COUNTY PARCEL PARKING REQUIRED:

1.5 SPACES/1-BD UNIT:	3
2.0 SPACES/2-BD UNIT:	32
2.5 SPACES/3-BD UNIT:	20
GUEST 20% OF TOTAL:	11
TOTAL REQUIRED:	66
30% MAX. COMPACT (14 PROVIDED)	

TOTAL PARKING REQUIRED: 118

TOTAL PARKING PROVIDED:

CITY PARCEL:	33
COUNTY PARCEL:	86
TOTAL:	119

(46 COVERED = 1/UNIT)

COMMON AREA FLOOR AREAS

- KITCHEN: 95 SF
- RECEPTION: 59 SF
- MANAGER'S OFFICE: 304 SF
- SERVICES OFFICE: 321 SF
- COMPUTER LAB: 220 SF
- COMMUNITY ROOM: 1,010 SF



PIPPIN LANE APARTMENTS
ATKINSON LANE, WATSONVILLE, CA
MIDPEN PENINSULA THE FARM, INC.

**SITE PLAN STUDY - OPTION 9.4
GROUND FLOOR**



JOB NO. 552.008
DATE 3-12-13

A9.4

5865 Owens Drive
Pleasanton, CA 94588
925-251-7200

March 20, 2013

William Davilla
Ecosystems West
180 Seventh Avenue, Suite 201
Santa Cruz, CA 95062

**RE: ATKINSON PROPERTY - CALIFORNIA RED-LEGGED FROG SITE
ASSESSMENT UPDATE**

Dear Bill:

This letter serves as an update to the California red-legged frog (CRF) (*Rana draytoni*) assessment originally prepared on July 30, 2008, as part of a more comprehensive special-status species assessment for the proposed Atkinson Lane project - Special-status Amphibians and Reptiles Preliminary Site Assessment for the City of Watsonville Atkinson Lane Specific/Master Plan, Santa Cruz County, California (Bryan Mori Biological Consulting Services 2008). Since then, the original proposed project has been divided into two Phases. Phase I, the Atkinson Lane Apartments, which is under the jurisdiction of the County of Santa Cruz, was approved through a Certified Environmental Impact Report. Phase II, under the jurisdiction of the City of Watsonville, is presently under litigation. This update focuses on the potential impacts of Phase I only.

In summary, the chances of CRF occurring on the project site, appear to be very low, given the low likelihood of this species' presence at the adjacent detention pond and accompanying seasonal wetland, due to several factors. These include the lack of known local CRF breeding sites in the project vicinity, the marginal quality of habitat in the project area, the isolated nature of the site and its setting within a landscape highly fragmented by urban and agricultural uses.

METHODS

The assessment was performed following the guidelines in Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog, August 2005 (USFWS 2005).

A reconnaissance-level survey was performed on 11 March 2013 to re-evaluate habitat conditions at the project site and adjacent wetlands (Figure 1). During the reconnaissance, the principal habitats were photographed (Appendix A – Photos) and existing conditions recorded in a field notebook. A pair of 10 x 40 powered binoculars

was used to assist in wildlife identification.

The California Natural Diversity Data Base (CNDDDB) was accessed and other biologists were consulted for known localities beyond the protocol recommended one-mile radius of the project site.

EXISTING CONDITIONS

Aquatic Habitats

Aquatic habitats adjacent to the project site include an ephemeral drainage swale that conveys runoff from Atkinson Lane into a large detention basin, a seasonal wetland, and a section of Corralitos Creek (Figure 1). In 2008, a large irrigation pond also was present between Corralitos Creek and the detention basin. Since then, at some undetermined point in 2011, the pond was removed and filled, based on Google Earth aerial photo interpretations. Photo documentation of relevant aquatic habitats is presented in Appendix A.

Habitat conditions at the large detention basin have changed noticeably since the 2008 assessment. The basin floor now appears to support larger willows, with more willow saplings growing among the cattails. Aquatic habitat still appears to be limited to within a narrow band around the periphery of the basin. However, unlike in 2008, where only shallow pockets of water were observed in June, the water formed a more continuous band, during the March 2013 assessment. Shallow surface water also may be present in the center of the basin, but was difficult to determine due to the dense growth of willows and cattails. Numerous Pacific chorus frogs (*Pseudacris regilla*), three bullfrogs (*Rana catesbeiana*), five unidentified frogs and a large adult red-eared slider (*Trachemys scripta*) were observed during the 2013 site assessment.

One important point to note is that the hydrology of the detention basin has changed dramatically, since the 1990s, when the detention basin held deep, open water on a regular basis (pers. obs.). A small rowboat and evidence of fishing were regularly observed at the detention basin, during this period. However, since late 2006, based on Google Earth historical photos and personal observations, the pond has been filling in dramatically with willows and emergent vegetation, and deep standing water has not been observed since.

The seasonal wetland immediately adjacent to the detention basin appears little changed since the 2008 assessment. In March 2013, the ground was saturated and a small area of standing water up to 2 feet deep was present along the berm separating the seasonal wetland from the detention basin.

Due to the lack of rains during the 2012-13 rainy season, the area of standing water at both the detention basin and the seasonal wetland was limited and, therefore, did not appear optimal for successful amphibian reproduction this year.

Upland Habitats

The uplands on the project site and adjacent to the detention basin and seasonal wetlands appear largely unchanged, since 2008. The project site supports primarily non-native annual grassland and ruderal vegetation. At the time of the 2013 assessment, the ruderal slopes east of the project site were disced bare (Appendix A - Photos). Periodic disking of this area has been performed over at least the past 20 years (pers. obs.). However, the complete removal of upland vegetation appears to be a recent management practice.

Off-Site Surrounding Landscape

No major changes in upland and aquatic habitat conditions within a one-mile radius of the project site have occurred, since 2008, based on review of Google Earth aerial photos.

LOCAL CALIFORNIA RED-LEGGED FROG RECORDS

Through consultation with other biologists and access of the CNDDDB and gray-literature, it was determined that no CRF records are located within a one-mile radius of the project site. The nearest CRF records to the project site are: 1) one adult from Watsonville Slough, approximately 1.3 miles to the south southwest; 2) one adult from Struve Slough, approximately 1.6 miles southwest of the site; and 3) several adults and sub-adults and one recently transformed metamorph from West Branch Struve Slough, approximately 1.7 miles west southwest of the site. Two other observations include adults and subadults observed in the Pajaro River, approximately 2.3 and 2.3 miles southeast of the project site (G. Kittleson, pers. comm.). Relevant CRF locations are mapped on Figure 2. Currently known CRF breeding sites in the Pajaro Valley are located south of Highway 1.

Of special note is information obtained on pre-construction survey results from 2002 through the present, in relation to the County's on-going vegetation management of Salsipuedes Creek. Other than bullfrogs and Pacific chorus frogs, no CRF have been observed in Salsipuedes Creek (G. Kittleson, pers. com.).

DISCUSSION

The conclusions regarding the potential occurrence of CRF in the detention pond and seasonal wetlands adjacent to the project site remain largely unchanged from the 2008 assessment. The potential for CRF presence is considered unlikely, due to the combination of the following factors: 1) the detention pond and seasonal wetland support an abundance of bullfrogs, which are significant predators of native amphibians; 2) the detention pond and seasonal wetland are mostly isolated from known areas of CRF occurrence in the project region, due to extensive urbanization and

agricultural uses surrounding the site; 3) although Corralitos Creek could function as a migration/dispersal corridor, dispersal into the project area from source populations is unlikely, since the closest known CRF breeding sites are south of Highway 1 and three miles overland distance (with urbanization in between) and over eight miles, following the Pajaro River-Salsipuedes Creek-Corralitos Creek corridor; 4) despite pre-construction surveys for CRF along Salsipuedes Creek for County flood control maintenance work from 2002 to the present, no CRF have been observed (G. Kittleson, pers. comm.); and 5) no suitable potential CRF ponds are located within a one-mile radius of the project site. These factors strongly suggest their likely absence from the project area. However, no focused studies were conducted to support this assumption.

CONCLUSIONS

Based on the inference of this CRF habitat assessment, the proposed Phase I Atkinson Lane project is not likely to result in direct impacts to CRF, especially since the project site primarily supports non-native annual grassland and ruderal vegetation, which is not considered over-summering/dispersal habitat.

Please call me if you have any comments or questions regarding this report.

Sincerely,

Bryan Mori
Consulting Wildlife Biologist

Attachments: Figures 1 and 2, Appendix A-Photos.



Figure 1. Atkinson Lane study area showing location of project site and nearby aquatic habitats.

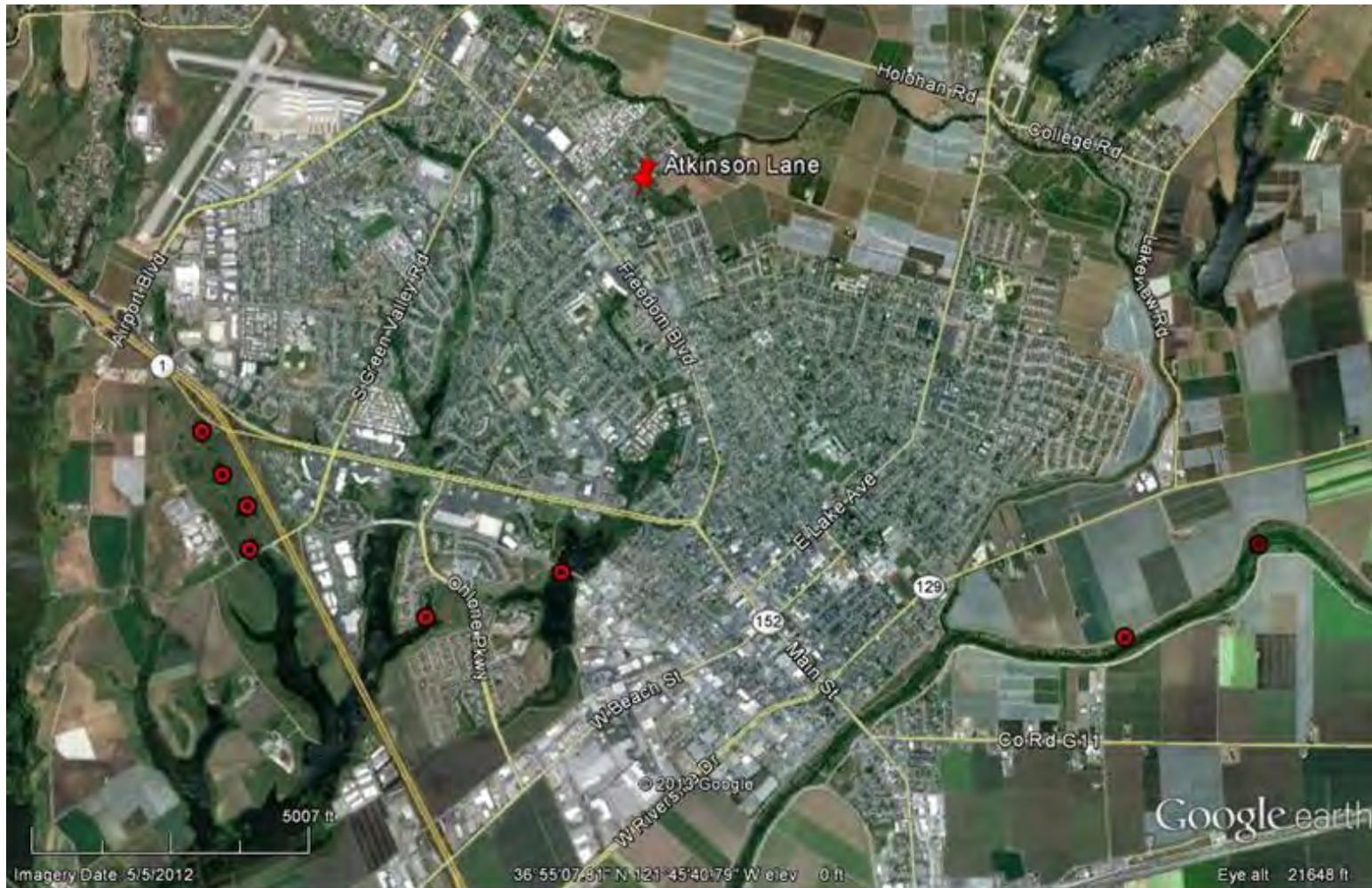


Figure 2. Relevant CRF locations in relation to the Atkinson Lane project site.

Attachment A – Atkinson Lane Assessment Photos



Photo 1. View into the detention basin. Note dense willow growth.



Photo 2. Aquatic habitat along the northwest margin of the detention basin.



Photo 3. Aquatic habitat along the west margin of the detention basin.180



Photo 4. Seasonal wetland adjacent to the detention basin. Note standing water on right half of photo.



Photo 5. Close-up view of standing water in seasonal wetland.



Photo 6. Upland habitat adjacent to seasonal wetland disced bare.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
81440-2008-TA-0607

October 30, 2008

Bill Davilla
Ecosystems West Consulting Group
819.5 Pacific Avenue, Suite 4
Santa Cruz, California 95060

Subject: Special Status Amphibian and Reptile Site Assessment for the Atkinson Lane Specific/Master Plan, Watsonville, Santa Cruz County, California

Dear Mr. Davilla:

We are responding to your letter, dated August 1, 2008, and the accompanying Special Status Amphibian and Reptile Site Assessment for the Atkinson Lane Specific/Master Plan (Site Assessment), Watsonville, Santa Cruz County, California. Your letter requested that we review the Site Assessment and provide guidance on the need for protocol level surveys for federally listed amphibians, including the endangered Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*) and the threatened California red-legged frog (*Rana aurora draytonii*) and California tiger salamander (*Ambystoma californiense*). The current project consists of planning for residential development and associated infrastructure improvements on approximately 68 acres.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act prohibits the taking of any endangered or threatened species. Section 3(18) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife 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. The Act provides for civil and criminal penalties for the unlawful taking of listed species.

The project site includes an ephemeral drainage swale, a large detention basin, a seasonal wetland, an irrigation pond, and a section of Corralitos Creek. One or more of these aquatic habitats may provide breeding habitat for the above listed amphibians. However, upland habitats within the project area have been highly disturbed through disking and other agricultural activities, the project area is largely surrounded by agricultural and urban development, and the nearest known locality of either the Santa Cruz long-toed salamander or California tiger

salamander is over 3 miles from the project area. Therefore, we conclude that neither of these species is likely to occur within the project area and protocol level surveys for them are not necessary.

California red-legged frogs may complete their entire life cycle within a single habitat type, such as a pond (U.S. Fish and Wildlife Service 2002) and are therefore less dependent on upland habitats than the Santa Cruz long-toed salamander or California tiger salamander. California red-legged frogs have been observed to move overland more than 2 miles (U.S. Fish and Wildlife Service 2002) and are known to occur within 1.2 miles of the project area. Because of the presence of suitable aquatic habitat within the project area and of known localities within dispersal distance of the project area, we recommend that surveys of the project area for the California red-legged frog be performed to protocol (U.S. Fish and Wildlife Service 2005).

Thank you for coordinating with us on this project to ensure that adequate information on the presence of listed species is gathered. If you have any questions regarding this letter, please contact Jacob Martin of my staff at (805) 644-1766, extension 285.

Sincerely,

A handwritten signature in black ink, appearing to read "D. M. Pereksta", with a long horizontal flourish extending to the right.

David M. Pereksta
Assistant Field Supervisor

Literature Cited

U.S. Fish and Wildlife Service. 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). Portland, Oregon. 173 pp.

U.S. Fish and Wildlife Service. 2005. Revised guidance on site assessments and field surveys for the California red-legged frog (*Rana aurora draytonii*). 26 pp. Available at: http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/

RE: Atkinson Lane Specific Plan CRLF Protocol Review

From: **Douglass Cooper** (douglass_cooper@fws.gov)
Sent: Thu 4/25/13 11:41 AM
To: William Davilla (davilla@msn.com)
Cc: Chad Mitcham (Chad_Mitcham@fws.gov); Jacob Martin (jacob_martin@fws.gov)

Bill,

We support your recommendation that further CRLF surveys would provide little additional conservation value. We recommend implementation of all proposed avoidance and minimization measures. We believe these measures are critical to reduce the likelihood of take occurring. We are providing these recommendations as technical assistance. This does not authorize any form of take. If any listed species are detected on the project site, all should cease and you should contact our office immediately.

Regards,

Doug

Douglass M. Cooper

Deputy Assistant Field Supervisor

Ventura Fish and Wildlife Office

2493 Portola Road, Suite B

Ventura, California 93003

(805) 644-1766, extension 272

<http://www.fws.gov/ventura/>

douglass_cooper@fws.gov

From: William Davilla [mailto:davilla@msn.com]
Sent: Thursday, March 28, 2013 4:24 PM
To: douglass_cooper@fws.gov
Subject: Atkinson Lane Specific Plan CRLF Protocol Review

Doug,

Please find attached a letter requesting a Service review of their recommendation to conduct CRLF protocol surveys for the Atkinson Lane Phase 1 development. We are interested if the Service continues to believe that protocol level surveys are necessary for this phase of the project given the location and findings of our CRLF site assessment prepared by Bryan Mori. As we spoke earlier, if you feel that protocol is still appropriate given the level of potential impact, I would appreciate a heads up so that we can begin those surveys asap. Thanks for taking the time out of your busy schedule. Please don't hesitate to call me at 831-429-6730 should you have any questions or require additional information.

Thanks,

Bill

May 22, 2013

William Davilla
Ecosystems West
180 7th Avenue, Suite 201
Santa Cruz, CA 95062

**RE: ATKINSON PROPERTY – WESTERN POND TURTLE SITE
ASSESSMENT PRELIMINARY RESULTS**

Dear Bill:

This letter presents preliminary results of western pond turtle (WPT) (*Emys marmorata*) surveys performed for the Atkinson Lane Apartments project in Watsonville, CA.

METHODS

Visual surveys of the reservoir were performed on 6 and 15 May 2013. Observations were made from eight viewing points along the periphery of the reservoir (Figure 1). The locations of the viewing points were determined by site accessibility and available sight lines, thus, were not spaced evenly around the reservoir margin. The first survey spanned from 13:45 – 15:00. The air temperature was 69°F, cloud cover was approximately 60% and winds were variable and estimated to be 5-10 mph. The second survey spanned from 1015 – 1115. The air temperature was 60°F; cloud cover was less than 10% and winds estimated at 0 - 5 mph.

EXISTING CONDITIONS

Reservoir

The following description is modified slightly from an earlier assessment of site conditions performed for California red-legged frog (*Rana draytoni*) on 11 March 2013. Superficially, site conditions appear unchanged except for a denser growth of vegetation surrounding the margin of the reservoir and minor recession of the water line. However, during the May surveys, it was discovered that the reservoir holds a substantial amount of water, not what appeared to be merely a narrow band of scattered pockets of open water around the densely growing willows and cattails in the main body of the reservoir. Deep water occurs beneath the willows and cattails, which are rooted on an extensive floating mat of decaying vegetation, giving the impression that the basin lacks water. Near the margins of the reservoir, the water is a least 3 feet deep and

possibly deeper towards the center of the reservoir. Open water was only observed as small pockets beneath the willows at the NW corner of the reservoir. Elsewhere, surface water was completely covered by mosquito fern.

Seasonal Wetland

Although not a focal point of the WPT surveys, conditions at the seasonal wetland were noted. On 6 May, the seasonal wetland supported a dense growth of smartweed and a small area of open water approximately 12 feet by 30 feet and 1 foot deep. The water was highly turbid and Pacific treefrog tadpoles (*Pseudacris regilla*) were abundant. By the 15 May survey, the area supported only a small puddle.

RESULTS

No pond turtles were observed on either the 6 or 15 May surveys. On 6 May, only two splashes were heard and assumed to be adult bullfrogs. The large, adult red-eared slider (*Trachemys scripta*), which was observed in March 2013, during the red-legged frog assessment, was not observed.

DISCUSSION

The dense vegetation surrounding the pond hinders effective visual surveys of the reservoir, due to limited accessibility, obstructions of sight-lines and because a quiet approach to the viewing stations cannot be executed. The conditions worsened during the second survey, as the vegetation grew more densely. Results obtained under this circumstance, cannot yield conclusive determinations on presence/absence, since turtles may flee from basking sites upon hearing the approach of the surveyor and/or turtles may simply be overlooked, due to obstructed views.

Because of this situation, a change in survey approach was considered and live-trapping was evaluated. Live-trapping would require establishing up to four traps throughout the reservoir over a 4 night period. Traps would be set with bait in the evening and checked the following morning. This method would involve coordination and approval with the California Department of Fish and Wildlife. On further analysis, including consultations with species experts, however, it was determined that the traps cannot be effectively installed without sufficient open water habitat, which is presently absent at the reservoir, except for two small areas at the NW edge of the site, near the willows. These sites, however, are not desirable, since they are in close proximity to a homeless encampment and would be exposed to vandalism and could result in harm to captured wildlife or compromised results. Also, personal safety becomes a serious matter in this area.

Therefore, I have decided to continue with visual surveys through June and July, with two surveys performed each month. I will continue to update you on the progress of the surveys.

Please call me if you have any comments or questions regarding this preliminary update.

Sincerely,

Bryan Mori
Consulting Wildlife Biologist

Attachments: Figure 1



Figure 1. Aerial map of the reservoir and the western pond turtle survey stations for the Atkinson Lane Apartments project.

Bryan Mori Biological Consulting Services



Appendix P

Amended Mitigation Monitoring and Reporting Program



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County of Santa Cruz

PLANNING DEPARTMENT

701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
 (831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
 KATHLEEN MOLLOY PREVISICH-TOM BURNS, PLANNING DIRECTOR

AMENDED MITIGATION MONITORING AND REPORTING PROGRAM for the Atkinson Lane Specific Plan and Planned Unit Development

Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
3.1 Aesthetics and Visual Character					
All Phases 1a and 1b/Remainder	No significant impacts.	No mitigation measures required.	Not applicable	Not applicable	Not applicable
3.2 Agricultural Resources					
City Phase 2 048 231 01 048 231 17 048 231 18 048 251 09	Impact 3.2-1: Future development within the planning area will result in the conversion of approximately 42.4 acres of Prime Farmland and 1.4 acres of Farmland of Statewide Importance as designated on the California Department of Conservation Santa Cruz County Important Farmlands Map to urban uses. In addition, construction of the off-site improvements to Wagner Avenue would result in the conversion of an additional 0.8 acres of Important Farmland under the 36-foot right of way and 1.51 acres for the 52-foot right of way for a total maximum conversion of 45.31 acres of Important Farmland. This would be considered a significant impact.	The City of Watsonville General Plan contains no policies or implementation programs that require mitigation or offsets for the conversion of Important Farmland. Therefore, there are no feasible mitigation measures available to reduce the impact of agricultural land conversion from the City Phase 2 to a less than significant level. As a result, implementation of the City Phase 2 would result in a Significant and Unavoidable impact . However, if an agricultural compensation program were developed, future development within the project site would be required to participate in order to address the conversion of prime farmland.	Not applicable.	Not applicable	Not applicable.
County Phase 1b/Remainder 048-221-09	Impact 3.2-2: The proposed project would place urban land uses adjacent to agricultural uses, which may impair agricultural production and result in land use compatibility conflicts. This is considered a potentially significant impact.	MM 3.2-2a: <u>A 200-foot interim agricultural buffer shall be established, consistent with Policy 5.13.23 (Agricultural Buffers Required) in the Santa Cruz County General Plan and Section 16.50.095 in the Santa Cruz County Code project applicant(s) for development applications involving APN 048-221-09, shall demonstrate adequate land use separation in conjunction with Final Map consistent with the proposed Specific Plan and PUD for Phase 2 (County site) subject to review and approval by the County of Santa Cruz Planning Department. Final site plans shall include an interim 200-foot agricultural buffer within Phase 2 (County site) consistent with the conceptual land use plan for the proposed Specific Plan and PUD. The buffer distance shall be measured from the edge of the parcel to the nearest residential property line and shall include a six to eight foot barrier (e.g. vegetated fencing) adjacent to the agricultural uses and no part of the agricultural</u>	Project Applicant	County of Santa Cruz	Project Design

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		<p><u>buffer shall be used for public recreation, park purposes, trails, picnic areas, road or sidewalks or other uses that would encourage public use of the buffer area, except for the construction and maintenance of the Brewington Avenue extension and other infrastructure needed to support housing project(s) authorized within the County Entitlements Area. Outdoor areas designed for intensive human use shall be restricted within the buffer zone.</u></p> <p>Sidewalks and bicycle lanes shall be allowed on the western portion of the public streets located within the buffer, but restricted on the eastern portion of the street. Upon annexation of the adjacent commercial agricultural use, the interim 200-foot agricultural buffer within the Phase 2 development area shall terminate.</p>			
<p>City Phase2</p> <p>048 231 01</p> <p>048 231 17</p> <p>048 231 18</p> <p>048 221 09</p> <p>048 251 09</p>	<p>Impact 3.2-2: The proposed project would place urban land uses adjacent to agricultural uses, which may impair agricultural production and result in land use compatibility conflicts. This is considered a potentially significant impact.</p>	<p>MM 3.2-2b. Consistent with the City of Watsonville Agricultural Buffer Policy, project applicants shall demonstrate adequate land use separation in conjunction with Final Map consistent with the proposed Specific Plan and PUD for Phase 2 (City site) subject to review and approval by the City of Watsonville Community Development Department. Final site plans shall include a 200 foot minimum land use buffer along the eastern boundary of the planning area within Phase 2 (City site) of the proposed project consistent with the conceptual land use plan. The buffer distance shall be measured from the edge of the parcel to the nearest residential property line and shall include a six to eight foot barrier (e.g. vegetated fencing) adjacent to the commercial agricultural uses. Other than fencing, regional drainage facilities, and underground utilities, only landscape and related non-accessible open space components are allowed within the first 150 feet of the buffer. Within the remaining 50 feet of buffer, adjacent to the proposed development area, uses such as public streets and roads, regional and local storm drainage improvements, and other underground utilities are allowed. Sidewalks and bicycle trails shall only be allowed on the western portion (development side) of the street within the remaining 50 feet of the buffer, but restricted on the eastern portion of the street. Any other pedestrian trails, such as one along Corralitos Creek, within the 200 foot agricultural buffer area shall only be permitted once a regional system has been developed adjacent to the planning area and a management plan has been developed with adjacent farm operators.</p>	<p>Project Applicant</p>	<p>City of Watsonville</p>	<p>Project Design</p>

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County Phases <u>1a</u> & <u>1b</u> / <u>Remainder</u> 048-221-09 048-211-25	Impact 3.2-2: The proposed project would place urban land uses adjacent to agricultural uses, which may impair agricultural production and result in land use compatibility conflicts. This is considered a potentially significant impact.	MM 3.2-2c. Consistent with Policy 5.13.31 (Agricultural Notification Recordation for Land Divisions) in the Santa Cruz County General Plan, project applicants within the planning area shall file a Right-to-Farm Notification Statement to run with the Title as disclosure and notice in deeds at the time of transfer or sale of all properties <u>or projects</u> within the <u>planning area-County Entitlements Area</u> . The statement shall inform any future property owners of the continuation of agricultural activities, including agricultural processing, in the area and shall disclose the potential effects of agricultural activities on adjacent land uses to future residents.	Project Applicant	County of Santa Cruz	Project Design
3.3 Air Quality					
All Phases <u>1a</u> and <u>1b/Remainder</u> 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.3-1: The proposed project would result in short-term air quality impacts associated with construction activities, including grading, operation of construction equipment, and demolition of existing structures at the planning area. This is considered a potentially significant impact.	MM 3.3-1: Project applicants limit areas of active disturbance to no more than 2.2 acres per day for initial site preparation activities that involve extensive earth moving activities (grubbing, excavation, rough grading), or 8.1 acres per day for activities that involve minimal earth moving (e.g. finish grading) during all phases of construction activities within the <u>Atkinson</u> planning area in accordance with the Monterey Bay Unified Air Pollution Control District CEQA Guidelines. If the proposed <u>modified</u> project requires that grading and excavation exceed those acreages, project applicants shall implement the following fugitive dust measures during grading and excavation and incorporate these measures on all grading plans for future development within the planning area subject to review and approval by the County of Santa Cruz Planning Department or the City of Watsonville Community Development Department: <ul style="list-style-type: none"> • Water all active construction areas at least twice daily; • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard; • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites; • Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites; • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets; 	Project Applicant	City of Watsonville and/or County of Santa Cruz	Construction

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		<ul style="list-style-type: none"> • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more); • Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.); • Limit traffic speeds on unpaved roads to 15 mph; • Install appropriate best management practices or other erosion control measures to prevent silt runoff to public roadways; • Replant vegetation in disturbed areas as quickly as possible; • Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site; • Limit the area subject to excavation, grading and other construction activity at any one time; • Post a publicly visible sign which specifies the telephone number and person to contact regarding dust complaints (the person shall respond to complaints and take corrective action within 48 hours); and • Ensure that the phone number of MBUAPCD is visible to the public for compliance with Rule 402 (Nuisance). 			
<p><u>All-Phases 1a and 1b/Remainder</u></p> <p>048-211-25 048-231-18 019-226-43 019-226-44</p>	<p>Impact 3.3-2: The proposed project may result in the demolition of four residential homes and associated structures within the planning area, which may contain asbestos and/or lead. This would be considered a potentially significant impact.</p>	<p>Mitigation measures MM 3.7-3a and MM 3.7-3b in Section 3.7, Hazards and Hazardous Materials would require that each structure is inspected by a qualified environmental specialist for the presence of asbestos containing materials (ACMs) and lead based paints (LBPs). If ACMs and LBPs are found during the investigations, a remediation program shall be developed to ensure that these materials are removed and disposed of by a licensed contractor in accordance with all federal, state and local laws and regulations.</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Demolition and Construction</p>
<p><u>All-Phases 1a and 1b/Remainder</u></p> <p>048-231-01 048-231-17</p>	<p>Impact 3.3-3: The proposed project would result in long-term stationary and vehicular emissions, which would exceed the MBUAPCD thresholds.</p>	<p>MM 3.3-3: Fireplaces proposed for future residential development within the planning area shall be gas-fired and meet U.S. Environmental Protection Agency (EPA) certification requirements. The use of wood-burning fireplaces or wood burning stoves shall be prohibited in perpetuity on all residential properties included within the proposed <u>modified</u> project and shall be recorded on the title of all parcels and run with the land. This measure shall be demonstrated on all proposed tentative</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Project Design</p>

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<p>048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>		<p>maps and improvement plans prior to approval of building permits within the planning area. In addition, project applicants within the planning area shall consider implementation of MBUAPCD-recommended mitigation. The City of Watsonville Community Development Department and the County of Santa Cruz Planning Department shall review proposed tentative maps and improvement plans to identify emission reduction measures that are incorporated into the plans and staff may recommend additional measures as practical and feasible including the following:</p> <ul style="list-style-type: none"> • Incorporate energy-efficient appliances into residential uses. • Orient buildings to minimize heating and cooling needs; • Provide shade trees to reduce cooling needs; • Include energy-efficient lighting systems; • Include solar water heaters or centralized water heating systems; and • Increase insulation beyond Title 24 requirements to minimize heating and cooling needs. 			
3.4 Biological Resources					
<p><u>All-Phases 1a and 1b/Remainder</u></p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.4-1: A population of federally Threatened and California Endangered Santa Cruz tarplant (<i>Holocarpha macradenia</i>) is located entirely within the PG&E parcel in the westernmost portion of the planning area on Assessors Parcel Number 048-211-24. No development is proposed for this portion of the planning area; however the proposed residential development may result in indirect impacts to the population. This is considered a potentially significant impact.</p>	<p>MM 3.4-1: Subject to review and approval by the County of Santa Cruz Planning Department and the City of Watsonville Community Development Department, project applicants shall ensure that all construction and staging activities occur outside of APN 048-211-24 (PG&E parcel) containing Santa Cruz tarplant during all phases of the proposed <u>modified</u> project. Prior to construction activities, project applicants shall install temporary construction fencing and informative signs around the perimeter of APN 048-211-24 as construction occurs in the vicinity of this parcel. The location and integrity of the fence shall be verified in the field by County or City staff prior to grading and periodically checked throughout the construction period. Following construction, project applicants within <u>the County Entitlements Area Phase 1 (County site) and Phase 2 (City site)</u> shall install permanent fencing around the perimeter of APN 048-211-24.</p>	Project Applicant	City of Watsonville and/or County of Santa Cruz	Construction
All Phases	Impact 3.4-2: The California red-legged frog	MM 3.4-2a: At the recommendation of the USFWS, project	Applicant	County of Santa	Prior to Issuance of

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<p>048-221-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>(CRLF) is federally listed as “Threatened” and considered a CDFG ‘Species of Special Concern.’ Although presence is unlikely, potential habitat for CRLF is present within the planning area and the planning area is located within dispersal distance of known CRLF localities. Project activities such as vegetation removal, grading, excavating, and vehicle and equipment travel may result in “take” of CRLF. This adverse direct impact is considered a potentially significant impact.</p>	<p>applicants shall conduct CRLF protocol level surveys within the planning area prior to issuance of the building permit. Surveys shall be conducted in accordance with the USFWS recommendations by an approved biologist and shall include a set of eight field surveys that shall be conducted between February and September in order to examine the site during the CRLF breeding, non-breeding, and dispersal seasons. If CRLF are observed in the planning area during protocol surveys, preconstruction surveys, inspections, or subsequent construction activities during all phases of the proposed project, project applicants shall cease all work within the planning area. Capturing, handling, moving, or harassing CRLF is considered a violation of the ESA. If CRLF are observed, the applicant shall initiate consultation with the USFWS and CDFG to determine the appropriate permitting action; a section 7 consultation and development of a Biological Opinion or a section 10a consultation and development of an HCP may be required. Project conditions may be developed in consultation with USFWS and CDFG to avoid “take” of CRLF that may occur within the planning area during construction activities. Project activities shall not resume until final federal approval of the proposed project is received.</p>		<p>Cruz and/or City of Watsonville</p>	<p>a Building Permit</p>
<p>All Phases 1a and 1b/Remainder</p> <p>048-221-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.4-2: The California red-legged frog (CRLF) is federally-listed as ‘Threatened’ and considered a CDFGCDFW ‘Species of Special Concern.’ Although presence is unlikely, potential habitat for CRLF is present within the planning area and the planning area is located within dispersal distance of known CRLF localities. Project activities such as vegetation removal, grading, excavating, and vehicle and equipment travel may result in “take” of CRLF. This adverse direct impact is considered a potentially significant impact.</p>	<p>MM 3.4-2b: Project applicants shall have a USFWS-approved biologist conduct CRLF preconstruction surveys a minimum of 48 hours prior to initiation of project activities. Pre-construction surveys shall consist of two days and two nights, spaced a week apart, with notification to the USFWS.</p>	<p>Applicant</p>	<p>County of Santa Cruz and/or City of Watsonville</p>	<p>Prior to Ground Disturbance</p>

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City Phase 2 048-231-17	Impact 3.4-2: The California red-legged frog (CRLF) is federally listed as “Threatened” and considered a CDFG ‘Species of Special Concern.’ Although presence is unlikely, potential habitat for CRLF is present within the planning area and the planning area is located within dispersal distance of known CRLF localities. Project activities such as vegetation removal, grading, excavating, and vehicle and equipment travel may result in “take” of CRLF. This adverse direct impact is considered a potentially significant impact.	MM 3.4-2e: Prior to initiating construction activities within Phase 2 (City site), the project applicant(s) shall ensure that the irrigated agricultural basin is dry through the following processes: <ul style="list-style-type: none">● Discontinue pumping into the basin and cap the adjacent well to prevent leakage.● Allow remaining water to evaporate naturally; do not de-water the basin.	Applicant	City of Watsonville	Prior to Issuance of a Building Permit
All-Phases 1a and 1b/Remainder 048-221-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.4-3: The WPT is a CDFG CDFW ‘Species of Special Concern.’ WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	MM 3.4-3a: Based on the lack of suitable habitat within the onsite pond and the absence of a viable population of WPTs, the following shall be implemented. Prior to construction of the Phase 1 project, a qualified herpetologist shall conduct three consecutive days of pond turtle trapping within the freshwater marsh to evaluate the existing turtle population and to determine its viability. If it is determined that a viable western pond turtle population is present, a Western Pond Turtle habitat Enhancement Plan shall be prepared and implemented as described in MM 3.4-3b. If it is determined that no pond turtles are present, or that the existing population is no longer viable, During preconstruction surveys, all captured western pond turtles shall be permanently relocated under the direction of the qualified herpetologist in consultation with CDFG CDFW. In addition, a Habitat Enhancement Plan shall be prepared by a qualified wetland ecologist, hydrologist and landscape architect that includes the following improvements to the wetland: <ul style="list-style-type: none">(a) Removal of non-native vegetation;(b) Development of a wetland and upland planting plan to benefit wetland functions and values;(c) Revegetation of the wetland buffer with native riparian and upland species;(d) Development of a monitoring program; and(e) Development of success criteria for habitat enhancement.	Project Applicant	County of Santa Cruz and/or City of Watsonville	Prior to Issuance of a Building Permit, Construction, and Post-construction
All Phases	Impact 3.4-3: The WPT is a CDFG ‘Species of Special Concern.’ WPT is known to occur within the planning area. Project activities	MM 3.4-3b: If it is determined that a viable western pond turtle population is present, a Habitat Enhancement Plan shall be prepared and implemented prior to the construction of Phase 1	Project Applicant	County of Santa Cruz and/or City of	Prior to Issuance of a Building Permit, Construction, and

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<p>048 221 09 048 211 25 019 226 42 019 226 43 019 226 44 019 236 01</p>	<p>may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.</p>	<p>for the western pond turtle by a qualified herpetologist, wetland ecologist, hydrologist, and landscape architect. The plan shall provide specific habitat enhancement strategies intended to improve breeding, basking, aestivating, and reduced predation potential. The plan shall also specify the location of the temporary holding area and care requirements for captured pond turtles. The habitat enhancement plan may include the following improvements:</p> <ul style="list-style-type: none"> (a) Removal of non-native species; (b) Removal of the earthen berm dividing the freshwater marsh from the seasonal wetland to create additional freshwater marsh habitat; (c) Eradication of bullfrogs from the pond to reduce predation and competition; (d) Placement of logs (living downed willows) and rocks at strategic locations to improve basking opportunities that are protected from predators; (e) Development of a wetland and upland planting plan; (f) Revegetation of the wetland buffer with native riparian and upland species to provide greater opportunity for breeding and aestivation; (g) Development of hydrologic requirements for freshwater marsh and western pond turtle; (h) Development of a monitoring program and; (i) Development of success criteria for habitat enhancement. <p>The Habitat Enhancement Plan shall be provided to the County of Santa Cruz Planning Department, and the City of Watsonville Community Development Department for review and approval in consultation with the CDFG prior to issuance of the building permit.</p>		<p>Watsonville</p>	<p>Post construction</p>
<p>All Phases 048 221 09 048 211 25 019 226 42 019 226 43</p>	<p>Impact 3.4.3: The WPT is a CDFG 'Species of Special Concern.' WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability</p>	<p>MM3.4.3c: If the existing pond turtle population is determined to be viable as a result of data collection during trapping, all captured western pond turtles shall be temporarily relocated to a holding area until Phase 1 construction and habitat enhancement has been completed. Temporary relocation may be needed for up to two years. Upon completion of the construction and implementation of the Habitat Enhancement Plan, all relocated pond turtles shall be returned to the enhanced freshwater marsh</p>	<p>Project Applicant</p>	<p>County of Santa Cruz and/or City of Watsonville</p>	<p>Prior to Issuance of a Building Permit, Construction, and Post construction</p>

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019-226-44 019-236-01	of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	within the planning area outside of the breeding season when the turtles are active. All turtle relocations efforts shall be coordinated with CDFG.			
All-Phases 1a and 1b/Remainder 048-221-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.4-3: The WPT is a CDFG CDFW 'Species of Special Concern.' WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	MM 3.4-3d: Prior to construction, exclusionary fencing shall be established around the perimeter of the 50-foot wetland buffer area around the freshwater marsh and seasonal wetland to prevent any potentially uncaptured western pond turtles from entering construction areas. The fencing shall be marked by highly visible signage indicating that human activity is prohibited within these areas. A qualified biologist shall be present during placement of the exclusionary fencing to ensure that no pond turtles are impacted. The establishment of pond turtle exclusion fencing shall only occur between the months of September and March outside of the breeding season.	Project Applicant	County of Santa Cruz and/or City of Watsonville	Prior to Issuance of a Building Permit, Construction, and Post-construction
All-Phases 1a and 1b/Remainder 048-221-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.4-3: The WPT is a CDFG CDFW 'Species of Special Concern.' WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	MM 3.4-3e: All captured pond turtles shall be tagged and fully documented at the time of capture (e.g., number, sex, age, carapace length, weight, overall condition, etc.). All non-native turtles that are captured shall also be documented and not returned to the wild. Trapping requirements, the holding location and required care during the holding period shall be coordinated with the CDFG CDFW and included in the Habitat Enhancement Plan.	Project Applicant	County of Santa Cruz and/or City of Watsonville	Prior to Issuance of a Building Permit, Construction, and Post-construction
All-Phases 1a and 1b/Remainder 048-221-09 048-211-25 019-226-42 019-226-43	Impact 3.4-3: The WPT is a CDFG CDFW 'Species of Special Concern.' WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife	MM 3.4-3f: A "Species Sensitivity Training" program will be established for western pond turtle during all phases of the proposed modified project. This program will be designed to educate construction personnel about the mitigation measures required for the execution of the project. All construction personnel will attend the sensitivity training that will provide instruction on western pond turtle identification, status and detailed protocol of the actions that should be taken in the event that a western pond turtle is encountered onsite during	Project Applicant	County of Santa Cruz and/or City of Watsonville	Prior to Issuance of a Building Permit, Construction, and Post-construction

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019-226-44 019-236-01	species is considered under CEQA and is considered a potentially significant impact.	construction activities.			
County Phase 1 & 2 1a and 1b/Remainder 048-221-09 048-211-25 019-226-42 019-236-01	Impact 3.4-3: The WPT is a CDFG CDFW 'Species of Special Concern.' WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	MM 3.4-3g: Implementation of the Habitat Enhancement Plan shall occur during the construction of the Phase 1 portions of the project. During the Construction of project sites located within the County Entitlements Area the Phase 2 of the County site, exclusion fencing shall be placed around the eastern adjacent perimeter of the wetland buffer to preclude <u>any potential</u> turtles from entering the construction area. In addition, brightly colored temporary construction fencing shall also be placed along the eastern adjacent perimeter to keep out construction personnel and equipment.	Project Applicant	County of Santa Cruz	Prior to Issuance of a Building Permit, Construction, and Post-construction
All Phases 1a and 1b/Remainder 048-251-09 048-221-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.4-3: The WPT is a CDFG CDFW 'Species of Special Concern.' WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	MM 3.4-3h: To avoid harming WPT that may have evaded trapping (MM 3.4-3ea), project applicants shall implement the following measures during Phase 1a & b/Remainder of construction and Phase 2 construction. <ul style="list-style-type: none"> • Where trenching occurs, provide an escape ramp at each end of the open trench to avoid entrapment. The ramp may be constructed of dirt fill, wood planking, or other suitable material that is placed at an angle of 30 degrees or less. Backfill open segments of trench as soon as possible to avoid entrapment. • At the beginning of each day, check under all parked equipment for WPT before use. If any WTP are observed under equipment or within the work area, do not disturb or handle it. Cease project activities and contact the CDFG and the City or County for further guidance. • During project activities, all trash that may attract predators shall be properly contained, removed from the work site and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas. • All fueling and maintenance of vehicles and other equipment and staging areas shall not occur within or near wetland and/or riparian habitats or water bodies. A plan to allow a prompt and effective response to accidental spills shall be developed. All workers shall be informed of the 	Project Applicant	County of Santa Cruz and/or City of Watsonville	Prior to Issuance of a Building Permit, Construction, and Post-construction

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		<p>importance of preventing spills and of the appropriate measures to be taken should a spill occur. The agencies should be contacted regarding spills if the approved biologist anticipates that impacts to WPT may occur as a result of the spill.</p> <ul style="list-style-type: none"> Smoke in areas clear of vegetation and away from hazardous materials. Dispose of cigarette butts in an appropriate area away from the planning area. 			
<p>All-Phases <u>1a and 1b/Remainder</u> 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.4-3: The WPT is a CDFGCDFW ‘Species of Special Concern.’ WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.</p>	<p>MM 3.4-3i – Before and during clearing of vegetation, or initial ground disturbing activities, a qualified biologist shall conduct a preconstruction survey for the WPT.</p>	Project Applicant	County of Santa Cruz and/or City of Watsonville	Prior to Issuance of a Building Permit, Construction, and Post-construction
<p>County Phase <u>1a & 1b/Remainder 2</u> 048-211-25 048-221-09</p>	<p>Impact 3.4-3: The WPT is a CDFGCDFW ‘Species of Special Concern.’ WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.</p>	<p>MM 3.4-3j: Access into the freshwater marsh habitat and associated wetland buffer by humans and/or their pets shall be discouraged. Permanent signage shall be placed at the perimeter of the wetland buffer area clearly stating that people and their pets should not enter the wetland area or associated buffer due to the presence of sensitive habitat.</p>	Project Applicant	County of Santa Cruz	Prior to Issuance of a Building Permit, Construction, and Post-construction
<p>County Phase <u>1a & 1b/</u></p>	<p>Impact 3.4-3: The WPT is a CDFGCDFW ‘Species of Special Concern.’ WPT is known</p>	<p>MM 3.4-3k: Monitoring of the revegetation areas shall be conducted for a period of three years or until success criteria</p>	Project Applicant	County of Santa Cruz	Prior to Issuance of a Building Permit,

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Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
<u>Remainder</u> 048-221-09 048-211-25	to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	have been met, vegetation is established, and exotic species are controlled.			Construction, and Post-construction
County Phase 1 048 221 09 048 211 25	Impact 3.4-3: The WPT is a CDFG 'Species of Special Concern.' WPT is known to occur within the planning area. Project activities may result in direct impacts to WPT utilizing portions of the planning area that are scheduled for construction. Land use changes to upland areas and potential dispersal habitat may result in indirect impacts to the viability of the local WPT population. Interference with the movement of any native wildlife species is considered under CEQA and is considered a potentially significant impact.	MM 3.4-3i: Upon return to the enhanced freshwater marsh habitat, all relocated pond turtles shall be monitored annually for a period of three years to determine the overall success of the mitigation. Annual monitoring reports shall be prepared and provided to the County of Santa Cruz Planning Department, the City Watsonville Community Development Department, and the CDFG.	Project Applicant	County of Santa Cruz	Prior to Issuance of a Building Permit, Construction, and Post construction
All Phases 1a and 1b/Remainder 048 231 01 048 231 17 048 231 18 048-221-09 048 251 09 048-211-25 019-226-42 019 226 43 019 226 44 019-236-01	Impact 3.4-4: The planning area provides potential wintering habitat for the ferruginous hawk (a 'Bird of Conservation Concern'), nesting and wintering habitat for the white tailed kite (a 'Fully Protected species'), and nesting habitat for the yellow warbler (a CDFG 'Species of Special Concern'), as well as other common raptor and bird species. The federal Migratory Bird Treaty Act (MBTA) and CDFG Codes prohibit the destruction or possession of individual birds, birds of prey, eggs or active nests without federal and/or state authorization. Project activities may disrupt avian species, including special-status bird species that may utilize habitats within the planning area.	MM 3.4-4a: Future development within the planning area shall retain mature trees to the extent possible and replace removed trees with in-kind species and vegetation structure within the planning area. Tree replacement shall be indicated on landscape plans subject to review and approval by the County of Santa Cruz Planning Department or the City of Watsonville Community Development Department.	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design and Construction

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Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
<p>All-Phases 1a and 1b/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.4-4: The planning area provides potential wintering habitat for the ferruginous hawk (a ‘Bird of Conservation Concern’), nesting and wintering habitat for the white tailed kite (a ‘Fully Protected Species’), and nesting habitat for the yellow warbler (a CDFGCDFW ‘Species of Special Concern’), as well as other common raptor and bird species. The federal Migratory Bird Treaty Act (MBTA) and CDFGCDFW Codes prohibit the destruction or possession of individual birds, birds of prey, eggs or active nests without federal and/or state authorization. Project activities may disrupt avian species, including special-status bird species that may utilize habitats within the planning area.</p>	<p>MM 3.4-4b: If the project applicant cannot avoid construction activities outside of the breeding season (February through August) and cannot clear vegetation prior to the breeding season, a qualified wildlife biologist shall conduct avian nest surveys prior to construction activities that may disturb nests (e.g. vegetation clearing, tree removal, grading, large equipment operation, or demolition) within the <u>Atkinson</u> planning area during all phases of the proposed project. These surveys shall include special-status birds, and all birds (and their nests) protected under the MBTA, and shall encompass the planning area and a 200-foot-wide buffer, to examine nearby tree stands and structures. If an active nest is found, it will be necessary to consult with the appropriate resource agencies (CDFGCDFW, USFWS) to determine appropriate construction buffers or other avoidance measures. If nesting or wintering special-status birds are not found, no further action would be necessary.</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Project Design and Construction</p>
<p>All-Phases 1a and 1b/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.4-4: The planning area provides potential wintering habitat for the ferruginous hawk (a ‘Bird of Conservation Concern’), nesting and wintering habitat for the white tailed kite (a ‘Fully Protected species’), and nesting habitat for the yellow warbler (a CDFGCDFW ‘Species of Special Concern’), as well as other common raptor and bird species. The federal Migratory Bird Treaty Act (MBTA) and CDFGCDFW Codes prohibit the destruction or possession of individual birds, birds of prey, eggs or active nests without federal and/or state authorization. Project activities may disrupt avian species, including special-status bird species that may utilize habitats within the planning area.</p>	<p>MM 3.4-4c: If the project applicant cannot avoid construction activities during the breeding season (February through August) and cannot clear vegetation prior to the breeding season, a qualified biologist shall conduct a specific yellow warbler nest survey in the riparian and scrub habitats of the <u>Atkinson</u> planning area during all-phases 1a and 1b/Remainder of the proposed <u>modified</u> project during this period. If active nests are found within the planning area, a minimum 250-foot construction buffer shall be established during the peak of the warblers breeding season (April through July), or until the young have fledged. A qualified biologist shall monitor the activity of any warbler nests to determine when construction activities may re-commence within the established buffer area.</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Project Design and Construction</p>
<p>All-Phases 1a and 1b/Remainder</p>	<p>Impact 3.4-5: The planning area provides potential habitat for several special-status bat species. If special-status bat species roost within the planning area, construction-related activities could result in the direct loss of active</p>	<p>MM 3.4-5: Prior to initiation of project activities including, but not limited to, vegetation, snag, and tree removal and demolition of structures on Assessor Parcel Numbers: 019-226-043, 019-226-042, 048-211-25, 048-221-09, and 048-231-17, or loud construction-related noise within the work area, the County of</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p><u>Site clearing and Construction</u></p>

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<p>019-226-42 019-226-43 048-211-25 048-221-09 048-231-17</p>	<p>roosts, which is considered a potentially significant impact.</p>	<p>Santa Cruz Planning Department and the City of Watsonville Community Development Department shall require that project applicants within the planning area implement the following measures:</p> <ul style="list-style-type: none"> • Conduct a pre-construction survey for bats over a minimum of four visits at least 15 days prior to the beginning of tree/vegetation removal, building demolition and other project activities, to determine if the area is being actively utilized by bats for spring/summer maternity colonies (April to September). Surveys shall also include determining if any trees or buildings marked for removal have characteristics that make them suitable bat roosting habitat (e.g., hollows, broken limbs, crevices, etc.). For any trees/snags that could provide roosting space for bats, thoroughly evaluate the trees/snags to determine if a colony is present prior to trimming or cutting. Visual inspection, trapping, and acoustic surveys may be utilized as initial techniques. Special permits from CDFGCDFW are required if trapping is conducted. Removal of any native riparian tree shall be preceded by a thorough visual inspection of foliage to reduce the risk of displacing or harming foliage roosting bats. If no roosting bats are observed, no further mitigation would be required. • If a tree or structure is determined not to be an active roost site, it may be immediately trimmed or removed. If the tree or structure is not trimmed or removed within four days of the survey, repeat night survey efforts. • Removal of occupied trees/snags or structures shall be mitigated for by the creation of a snag or other artificial roost structure within suitable habitat located in the planning area. With the input from a professional bat specialist and coordination with CDFGCDFW, design alternative roost structure(s) that provide suitable habitat for evicted or displaced bats. Depending on the species, artificial roost structures may not be appropriate. Coordinate with CDFGCDFW for acceptable mitigation alternatives. • Protect maternity colonies that have pre-volant young (not yet able to fly). If active bat roosts are observed during the maternity roosting season, avoid disturbing the roost until after all juvenile bats are able to fly from the roost. The 			

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Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
		<p>project biologist must confirm there are no pre-volant young present before a colony is displaced. It is assumed that after September 1 colonies have no pre-volant young.</p> <ul style="list-style-type: none"> • Coordinate with CDFGCDFW and a biologist that is permitted to handle special-status bats to develop appropriate exclusion methods if necessary. Project activities involving potential disturbances to roosting bats shall correspond with the time frame stated in the California Fish and Game Commission regulations. The CFGC stipulates bats may be excluded from occupied roosts in two time periods; between September 1 and October 15 and between February 15 and April 15 (CFGC 2006). If bats are found roosting within these time frames, it may be necessary to passively exclude them from trees or structures scheduled for removal. If necessary, prior to initiating project activities, passive exclusion methods shall be installed for a minimum of two weeks and monitored by a qualified biologist within the appropriate time frames above. At a minimum, monitoring efforts shall include conducting acoustic and evening emergence surveys. 			
<p>All Phases 048 231 01 048 231 17 048 231 18 048 221 09 048 211 25 019 236 01</p>	<p>Impact 3.4-6: The San Francisco dusky footed woodrat is a CDFG ‘Species of Concern.’ Project activities may result in destruction of potential woodrat habitat and harm to the potential San Francisco dusky footed woodrat population in the planning area. This is considered a potentially significant impact.</p>	<p>MM 3.4-6: The County of Santa Cruz Planning Department and the City of Watsonville Community Development Department shall require that project applicants have a qualified biologist examine the planning area for San Francisco dusky footed woodrats before and during any initial vegetation, woody debris, and/or tree removal, or other initial ground disturbing activities. If a woodrat nest/house structure is encountered in the area of disturbance, avoid disturbing the structure or evicting the individuals. Project applicants shall coordinate with CDFG to establish protective buffer widths around the structures and install exclusion zones around each structure before initiating tree/vegetation removal and ground disturbing activities. If a woodrat is incidentally encountered in the work area and does not voluntarily move out of the area, a biological monitor, with the appropriate CDFG permits, shall be on call during project activities to relocate the animal out of the construction area to the nearest safe location (as approved and authorized by CDFG). Woodrats shall not be handled without prior agency authorization from CDFG.</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Construction</p>

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<p>All Phases 1a and 1b/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.4-7: Construction activities may result in increased erosion, runoff, accumulation of water, and introduction of harmful materials to wetland habitats within the planning area. This is considered a potentially significant impact.</p>	<p>Future development within the <u>Atkinson</u> planning area would be required to comply with each jurisdiction's erosion control ordinances and comply with the National Pollution Discharge Elimination System (NPDES) permitting requirements for construction of site stormwater discharges in accordance with mitigation measure MM 3.8-2 in Section 3.8: Hydrology and Water Quality.</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Construction</p>
<p>City Phase 2</p> <p>048-231-01 048-231-17 048-231-18 048-251-09</p>	<p>Impact 3.4-8: Phase 2 (City site) of the proposed project would remove the irrigated agricultural basin and associated freshwater marsh and coast live oak riparian tree canopy in the northwest corner of the planning area near the terminus of Atkinson Lane. These habitat types are considered 'sensitive' and provide nesting and foraging habitat for avian species. Removal of this the freshwater marsh and riparian vegetation would be considered a potentially significant impact.</p>	<p>MM 3.4-8a: Project applicants within Phase 2 (City site) shall provide replacement wetland acreage that shall be created at a ratio of 2:1 acceptable to the City of Watsonville and the CDFG for removal of the agricultural basin in the northeastern portion of the planning area. Because the agricultural basin is man-made and actively flooded by mechanical pumps, replacement wetlands shall not be required to support "in-kind" freshwater marsh habitat. Created wetland habitat will be designed by a certified landscape architect and wetland specialist to function as wetlands, support wetland vegetation during the rainy season, and will be planted with native wetland vegetation typical of the Central California coast region (<i>Typha angustifolia</i>, <i>Scirpus californicus</i>, <i>Salix</i> spp., etc.) at the stormwater detention basin in the southern portion of the planning area within the expanded Crestview Park.</p> <p>Long term monitoring of mitigation wetlands and existing wetlands within the planning area shall be conducted for a period of five years or until the time the established success criteria are met (see Table 3.4-3). Monitoring will be performed annually by a qualified botanist/wetland specialist to determine whether mitigation wetlands meet or exceed pre-established performance criteria. The success of wetland creation will be evaluated on the basis of density and diversity of native plant</p>	<p>Project Applicant</p>	<p>City of Watsonville</p>	<p>Project Design, Construction, and Post Construction</p>

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Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance																		
		<p>species at the wetland creation site. If excessive mortality occurs, plantings will be replaced at a 1:1 ratio. The wetland specialist will be responsible for selecting the species for replacement plantings. Recommendations for enhancement and continued long term success of created wetlands will be included in annual monitoring reports submitted to the City of Watsonville and CDFG.</p> <p align="center">Table 3.4.3: Success Criteria for Wetland Creation Site</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Type of Criterion Used</th> <th>Success Criterion</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Percent of Plants Surviving</td> <td>90% Survival in Good or Fair Condition</td> </tr> <tr> <td>2</td> <td>Percent of Plants Surviving</td> <td>80% Survival in Good or Fair Condition</td> </tr> <tr> <td>3</td> <td>Percent of Plants Surviving</td> <td>75% Survival in Good or Fair Condition</td> </tr> <tr> <td>4</td> <td>Percent of Plants Surviving</td> <td>70% Survival in Good or Fair Condition</td> </tr> <tr> <td>5</td> <td>Percent of Plants Surviving</td> <td>65% Survival in Good or Fair Condition with 75% Vegetative Cover</td> </tr> </tbody> </table>	Year	Type of Criterion Used	Success Criterion	1	Percent of Plants Surviving	90% Survival in Good or Fair Condition	2	Percent of Plants Surviving	80% Survival in Good or Fair Condition	3	Percent of Plants Surviving	75% Survival in Good or Fair Condition	4	Percent of Plants Surviving	70% Survival in Good or Fair Condition	5	Percent of Plants Surviving	65% Survival in Good or Fair Condition with 75% Vegetative Cover			
Year	Type of Criterion Used	Success Criterion																					
1	Percent of Plants Surviving	90% Survival in Good or Fair Condition																					
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<p>City Phase 2 048 231 01 048 231 17 048 231 18 048 251 09</p>	<p>Impact 3.4.8: Phase 2 (City site) of the proposed project would remove the irrigated agricultural basin and associated freshwater marsh and coast live oak riparian tree canopy in the northwest corner of the planning area near the terminus of Atkinson Lane. These habitat types are considered 'sensitive' and provide nesting and foraging habitat for avian species. Removal of this the freshwater marsh and riparian vegetation would be considered a potentially significant impact.</p>	<p>MM 3.4.8b: For all oaks greater than 6 inches DBH or greater than 8 feet tall that are removed, project applicants within Phase 2 (City site) shall plant replacement oaks along the margins of the riparian buffer and ephemeral drainage in the western half of the planning area and within the designated agricultural buffer and along Corralitos Creek at a 3:1 ratio subject to review and approval by the City of Watsonville Community Development Department. A qualified biologist or restoration ecologist and landscape architect shall develop a planting plan that includes success criteria and conduct and/or oversee restoration and monitoring activities. The plan shall include, but shall be limited to, the following measures:</p> <ul style="list-style-type: none"> Planting shall occur following completion of grading and construction activities. Replacement oaks will provide riparian habitat similar to impacted habitat around the irrigated agricultural basin. Enhance replacement oak habitat and existing habitat adjacent to the freshwater marsh/seasonal wetland and ephemeral drainage with local native species that have the same or similar vegetation structure as impacted habitat around the irrigated agricultural basin to provide replacement avian foraging and nesting habitat. If a Habitat Enhancement Plan is required by mitigation measure MM 3.4.3b, vegetation replacement shall be consistent with the 	<p>Project Applicant</p>	<p>City of Watsonville</p>	<p>Project Design, Construction, and Post Construction</p>																		

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Habitat Enhancement Plan.					
3.5 Cultural Resources					
County Phase 1a & 1b/ <u>Remainder 2</u> 048-211-25 048-221-09	Impact 3.5-1: The planning area does not contain any recorded or anticipated resources of archeological, cultural, or pre-historic significance. However, site preparation and grading could disrupt undiscovered archeological and cultural resources of importance under CEQA and/or eligible for listing on the California Register. This is considered a potentially significant impact.	MM 3.5-1a: Project applicants within County Phases 1a and 1b/ <u>Remainder Phase 2</u> of the proposed <u>modified</u> project shall comply with Sections 16.40.040 and 16.42.100 of the Santa Cruz County Code (Native American Cultural Sites Ordinance), which includes regulations for the protection, enhancement, and perpetuation of Native American cultural sites. If human remains or any artifact or other evidence of a Native American cultural site are found during ground disturbance or excavation, the project applicant(s) shall cease and desist from further excavations and disturbance within 200 feet of the discovery; stake around the discovery in accordance with the requirements in the ordinance; and notify the Sherriff-Coroner if the discovery contains human remains or the Santa Cruz County Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100 shall be observed.	Project Applicant	County of Santa Cruz	Construction
City Phase 1a & 2 019-226-42 019-226-43 019-226-44 019-236-01 048-231-01 048-231-17 048-231-18 048-251-09	Impact 3.5-1: The planning area does not contain any recorded or anticipated resources of archeological, cultural, or pre-historic significance. However, site preparation and grading could disrupt undiscovered archeological and cultural resources of importance under CEQA and/or eligible for listing on the California Register. This is considered a potentially significant impact.	MM 3.5-1b: Project applicants within City Phase 1a and Phase 2 of the proposed <u>modified</u> project shall ensure that if any previously undisturbed cultural, historic, or archaeological resources are uncovered in the course of site preparation, clearing or grading activities that the City of Watsonville Community Development Director is notified and operations within 200 feet of the discovery are halted until such time as a qualified professional archaeologist can be consulted to evaluate the find and recommend appropriate action. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented subject to review and approval by the City of Watsonville Community Development Department.	Project Applicant	City of Watsonville	Construction
All Phases 1a and 1b/Remainder 048-231-01 048-231-17	Impact 3.5-1: The planning area does not contain any recorded or anticipated resources of archeological, cultural, or pre-historic significance. However, site preparation and grading could disrupt undiscovered archeological and cultural resources of importance under CEQA and/or eligible for	MM 3.5-1c: If human remains of Native American origin are discovered during ground-disturbing activities, project applicant(s) shall comply with state laws relating to the dispositions of Native American burials, which falls within the jurisdiction of the California Native American Heritage Commission (NAHC) (Public Resources Code, Section 5097.98). If human remains are discovered or recognized in any	Project Applicant	City of Watsonville and/or County of Santa Cruz	Construction

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048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	listing on the California Register. This is considered a potentially significant impact.	location other than a dedicated cemetery, there shall be no further excavation or disturbance of the planning area or any nearby area reasonably suspected to overlie adjacent human remains until: <ul style="list-style-type: none"> • The Santa Cruz County Sheriff-Coroner has been informed and has determined that no investigation of the cease of death is required, and • If the remains are of Native American origin, <ul style="list-style-type: none"> ○ The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave good as provided in the Public Resources Code, Section 5097.98, or The California NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.			
3.6 Geology and Soils					
All-Phases 1a and 1b/Remainder 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.6-1: The planning area would experience strong ground shaking during a major earthquake on any of the nearby faults, resulting in the exposure of people and/or structures to potentially substantial adverse effects, including the risk of loss, injury, or death. This is considered a potentially significant impact.	MM 3.6-1: Future development within the planning area shall be designed in accordance with the requirements of the current edition of the CBC. Project applicants within the planning area shall consult with a qualified engineer to prepare a design level geotechnical report in accordance with the CBC and the recommendations contained with the Feasibility Level Geotechnical Investigation and Engineering Geology Report, prepared by Pacific Crest Engineering in March 2009. Recommendations included in the Feasibility Geotechnical Investigation and Engineering Geology Report include: site grading, cut and fill slopes, erosion control, utility trenches, surface drainage, pavement design, and soil corrosivity. Prior to final inspection, project applicants shall provide certification from a qualified professional that all development has been constructed in accordance with all geologic and geotechnical reports.	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design
All-Phases 1a and	Impact 3.6-2: The potential for liquefaction to occur along the area southern embankment of	MM 3.6-2: Project applicants shall consult with a qualified engineer to perform a quantitative evaluation of liquefaction and	Project Applicant	City of Watsonville and/or County of	Project Design

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<p>Ib/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-211-25</p>	<p>Corralitos Creek, the central area, and near the pond in the western portion of the site is high and consequently the potential for lateral spreading is high, which could result in potential structural damage and associated human safety hazards. This is considered a potentially significant impact.</p>	<p>liquefaction-induced lateral spreading in conjunction with a design level geotechnical report for future development within the planning area. The evaluation shall be in accordance with the recommendations contained within the Feasibility Level Geotechnical Investigation and Engineering Geology Report prepared by Pacific Crest Engineering in March 2009. The design level geotechnical report shall also specify foundations and structural elements that are designed to resist forces and potential ground settlement generated by liquefaction and lateral spreading and shall incorporate the following into the final site plans, unless the additional analysis indicates it is not necessary:</p> <ul style="list-style-type: none"> • Development shall be set-back a minimum of 150 feet from the southern “top of bank” for Corralitos Creek and 50 feet from the delineated wetland boundary (Appendix D) for the pond located in the western portion of the planning area. The 50 foot set back should apply to the 100-year flood plain elevation or ordinary high water mark of the pond, and • Development shall be constructed upon a structural mat foundation system; likely consisting of a 12-inch thick concrete slab, with one or two layers of reinforcing steel placed within the mat. 		Santa Cruz	
<p>City Phase 2</p> <p>048-231-01 048-231-17 048-231-18</p>	<p>Impact 3.6-3: The potential for seismically induced landsliding is considered low. However, slope failures are possible along the steep embankments of Corralitos Creek during strong seismic shaking, which could present a risk. This is considered a potentially significant impact.</p>	<p>Implementation of mitigation measures MM 3.6-1 and MM 3.6-2, which would require that development is set back a minimum of 150 feet from the southern “top of bank” for Corralitos Creek unless the subsequent project level geotechnical investigation allows for a reduced setback. No additional mitigation measures are necessary.</p>	Project Applicant	City of Watsonville	Project Design
<p>All Phases 1a and Ib/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25</p>	<p>Impact 3.6-4: The proposed project is partially located on soils with slight to moderate erosion hazard and would result in substantial soil erosion or the loss of topsoil in these areas if disturbed during short-term construction activities. This is considered a potentially significant impact.</p>	<p>Compliance with the respective erosion control ordinances and acquisition of the NPDES General Permit for construction activities as required by MM 3.8-2 in Section 3.8: Hydrology and Water Quality would ensure that potential soil erosion impacts associated with the proposed <u>modified</u> project would be less than significant.</p>	Project Applicant	City of Watsonville and/or County of Santa Cruz	Construction

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019-226-42 019-226-43 019-226-44 019-236-01					
All-Phases 1a and 1b/Remainder 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.6-5: The proposed project includes approximately 22 acres of expansive soils of low strength, which could create substantial risk to life or property on these portions of the planning area. This is considered a potentially significant impact.	Implementation of mitigation measure MM 3.6-1 , which would require that future development be designed in accordance with the recommendations contained within a design-level geotechnical report, would reduce this impact to a less than significant level. No additional mitigation measures are necessary.	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design
3.7 Hazards and Hazardous Materials					
All-Phases 1a and 1b/Remainder 019-226-43 019-226-44 048-211-25 048-231-18	Impact 3.7-3: The proposed project may result in the demolition of four residential homes and associated structures at the project site, which may contain asbestos and/or lead. This would be considered a potentially significant impact.	MM 3.7-3a: Pursuant to Cal OSHA regulations, project applicants shall have each structure within the planning area within Assessor Parcel Numbers: 019-226-43, 019-226-44, 048-211-25, and 048-231-18 inspected by a qualified environmental specialist for the presence of ACMs and LBPs prior to obtaining a demolition permit from the County of Santa Cruz Planning Department and the City of Watsonville Community Development Department. If ACMs and LBPs are found during the investigations, project applicants within the planning area shall develop a remediation program to ensure that these materials are removed and disposed of by a licensed contractor in accordance with all federal, state and local laws and regulations, subject to approval by the MBUAPCD, City of Watsonville, and the Santa Cruz County Environmental Health Department, as applicable. Any hazardous materials that are removed from the structures shall be disposed of at an approved	Project Applicant	City of Watsonville and/or County of Santa Cruz	Demolition and Construction

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		landfill facility in accordance with federal, state and local laws and regulations.			
All-Phases <u>1a</u> and <u>1b/Remainder</u> 019-226-43 019-226-44 048-211-25 048-231-18	Impact 3.7-3: The proposed project may result in the demolition of four residential homes and associated structures at the project site, which may contain asbestos and/or lead. This would be considered a potentially significant impact.	MM 3.7-3b: Project applicants within the planning area shall have the interior of all on-site structures within Assessor Parcel Numbers: 019-226-43, 019-226-44, 048-211-25, and 048-231-18 visually inspected by a qualified environmental specialist to determine the presence of hazardous materials prior to obtaining a demolition permit from the County of Santa Cruz Planning Department and the City of Watsonville Community Development Department. Should any hazardous materials be encountered within any of the structures, the material shall be tested and properly disposed of in accordance with federal, state, and local regulatory requirements. Any stained soils or surfaces underneath the removed materials shall be sampled. Subsequent testing shall indicate the appropriate level of remediation necessary and a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.	Project Applicant	City of Watsonville and/or County of Santa Cruz	Demolition and Construction
City Phase 2 048-231-18 048-251-09	Impact 3.7-4: There is the potential presence of hazardous materials located within the boundaries of the planning area based on the site inspection which determined that there are above ground storage tanks (ASTs) and a debris pile on APN 048-231-18, as well as evidence of a burn pit on Assessor's Parcel Number 048-251-09 within Phase 2 (City site) of the proposed project. This is considered a potentially significant impact.	MM 3.7-4a: The City of Watsonville Community Development Department shall ensure that project applicants remove the miscellaneous debris (i.e., stockpiled metal piping and 55-gallon drums, etc.) on APN 048-231-18 and APN 048-251-09 within Phase 2 (City site) of the planning area prior to construction activities at the project site. Once removed, a visual inspection of the areas beneath the miscellaneous debris shall be performed. If any stained soils are observed beneath the debris piles, the soil shall be sampled. In the event that subsequent testing indicates the presence of any hazardous materials beyond acceptable thresholds, a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.	Project Applicant	City of Watsonville	Demolition and Construction
City Phase 2 048-231-18	Impact 3.7-4: There is the potential presence of hazardous materials located within the boundaries of the planning area based on the site inspection which determined that there are above ground storage tanks (ASTs) and a debris pile on APN 048-231-18, as well as evidence of a burn pit on Assessor's Parcel Number 048-251-09 within Phase 2 (City site)	MM 3.7-4b: The City of Watsonville Community Development Department shall ensure that project applicants remove and properly dispose of the aboveground storage tanks on APN 048-231-18 within Phase 2 (City site) of the proposed project at an approved landfill facility prior to construction activities within the planning area. Once the ASTs are removed, a visual inspection of the areas beneath and around the removed ASTs shall be performed. If any stained soils are observed beneath the	Project Applicant	City of Watsonville	Demolition and Construction

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	of the proposed project. This is considered a potentially significant impact.	ASTs, the soil shall be sampled. In the event that subsequent testing indicates the presence of any hazardous materials beyond acceptable thresholds, a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.			
City Phase 2 048-231-18	Impact 3.7-4: There is the potential presence of hazardous materials located within the boundaries of the planning area based on the site inspection which determined that there are above ground storage tanks (ASTs) and a debris pile on APN 048-231-18, as well as evidence of a burn pit on Assessor's Parcel Number 048-251-09 within Phase 2 (City site) of the proposed project. This is considered a potentially significant impact.	MM 3.7-4c: The City of Watsonville Community Development Department shall ensure that project applicants sample and excavate stained soils located within agricultural equipment storage areas on and within on-site storage structures (located on bare soil) on APN 048-231-18 within Phase 2 (City site) of the proposed project to determine the extent of contamination prior to construction activities. If during soil removal, evidence of petroleum products appears to continue below the ground surface, sampling would be performed to characterize the extent of contamination and identify appropriate remedial measures in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.	Project Applicant	City of Watsonville	Demolition and Construction
City & County Phase 2 048-221-09 048-231-17 048-231-18 048-251-09	Impact 3.7-5: Overhead powerlines with transformers traversing the planning area in a north/south direction are located within the planning area. This is considered a potentially significant impact.	MM 3.7-5: Prior to relocation of the transformers located within the planning area, the project applicants shall work with PG&E to identify the proper handling procedures regarding PCBs and relocate the power lines and transformers prior to development within the planning area in coordination with the City of Watsonville Community Development Department and the County of Santa Cruz Planning Department. The costs for relocation of the overhead power line shall be shared by project applicants within all phases of the proposed project.	Project Applicant	City of Watsonville	Demolition and Construction
County Phase 1a 048-211-25	Impact 3.7-6: Implementation of the proposed project may expose people or property to hazardous materials associated with the abandonment of septic systems within the planning area. This would be considered a potentially significant impact.	MM 3.7-6: Subject to review by the County of Santa Cruz Environmental Health Department, the project applicant shall map the specific location of all septic tanks located on APN 048-211-25 on a survey within Phase 1a (County site). Once located, the septic tanks shall be removed and properly disposed of at an approved landfill facility. Once the tanks are removed, a visual inspection of the areas beneath and around the removed tanks shall be performed. Any stained soils observed underneath the septic tanks shall be sampled. Results of the sampling (if necessary) shall indicate the level or remediation efforts that may be required. In the event that subsequent testing indicates the presence of any hazardous materials beyond acceptable thresholds, a work plan shall be prepared subject to	Project Applicant	County of Santa Cruz	Project Design and Pre-construction

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		review and approval by the County of Santa Cruz Environmental Health Department in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.			
<p><u>All Phases 1a and 1b/Remainder</u></p> <p>048-211-25 048-221-09 019-226-42 019-236-01 048-231-01 048-231-17 048-231-18 048-251-09</p>	<p>Impact 3.7-7: Implementation of the proposed project may expose people or property to hazardous materials associated with groundwater contamination due to abandonment of agricultural water wells within the planning area. This is considered a potentially significant impact.</p>	<p>MM 3.7-7: The City of Watsonville Community Development Department and the County of Santa Cruz Planning Department shall ensure that project applicants properly close and abandon all groundwater wells within both phases of the proposed <u>modified</u> project pursuant to applicable federal, state, and local regulations prior to grading activities. Soils located within the vicinity of the water wells shall be inspected. If any stained soils are observed surrounding the water wells shall be sampled and in the event that subsequent testing indicates the presence of pesticide residues beyond acceptable thresholds, the potential health risks shall be evaluated and a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.</p>	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design and Pre-construction
<p><u>All Phases 1a and 1b/Remainder</u></p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.7-8: An off-site property located at 1488 Freedom Boulevard approximately 0.16 miles from the planning area released petroleum hydrocarbons into the soil and groundwater. Should the contamination migrate towards the planning area it may contaminate the groundwater. This is considered a potentially significant impact.</p>	<p>MM 3.7-8a: The project applicants shall hire a qualified hazardous materials consultant with Phase I and/or Phase II experience to review files for the off-site property located at 1488 Freedom Boulevard prior to construction activities during all phases of the proposed <u>modified</u> project. Should files indicate that the property located at 1488 Freedom Boulevard may have impacted the planning area, Phase II testing shall occur to confirm or deny the presence of contaminated groundwater prior to construction activities. If unanticipated contaminated groundwater is found during construction activities, the project applicants shall ensure that proper safety/handling procedures are followed involving contaminated groundwater within the planning area during all <u>phases 1a and 1b/Remainder</u> of the proposed <u>modified</u> project subject to review and approval by the City of Watsonville and County of Santa Cruz.</p>	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design, Pre-construction, and Construction
<p><u>All Phases 1a and 1b/Remainder</u></p>	<p>Impact 3.7-8: An off-site property located at 1488 Freedom Boulevard approximately 0.16 miles from the planning area released</p>	<p>MM 3.7-8b: If unknown wastes of suspect materials are discovered during construction activities associated with each <u>each</u> phase <u>1a and 1b/Remainder</u> of the proposed <u>modified</u> project,</p>	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design, Pre-construction, and Construction

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Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
<p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>petroleum hydrocarbons into the soil and groundwater. Should the contamination migrate towards the planning area it may contaminate the groundwater. This is considered a potentially significant impact.</p>	<p>the project applicants shall immediately stop work in the vicinity of the suspected contaminant; remove workers and the public from the area; notify the County of Santa Cruz Planning Department or the City of Watsonville Community Development Department; secure the area as directed by the Project Engineer; and notify the Hazardous Waste/Materials Coordinator. In the event that testing indicates the presence of hazardous materials beyond acceptable thresholds, a work plan shall be prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations prior to issuance of a grading permit.</p>			
<p><u>All Phases 1a and 1b/Remainder</u> 019-226-43 019-226-44 019-236-01 048-231-01 048-221-09 048-231-17 048-231-18 048-251-09 <u>048-211-25</u> <u>019-226-42</u></p>	<p>Impact 3.7-9: The planning area has historically been used for agricultural purposes for several decades and may contain pesticide residues on the soil. Pesticide residues within the planning area may pose a significant long-term chronic health threat to human health and the environment for proposed residential uses within the planning area. This is considered a potentially significant impact.</p>	<p>MM 3.7-9: Prior to issuance of a grading permit for future development within the <u>County Entitlements Area</u> planning area on APNs 019-226-43, 019-226-44, 019-236-01, 048-231-01, 048-211-25, 019-226-42, and 048-221-09, 048-231-17, 048-231-18, and 048-251-09 during Phase 1 and Phase 2 of the proposed <u>modified</u> project, the project applicants shall retain a qualified hazardous materials professional to conduct a Phase II Soil Investigation in order to adequately test the surface soil and subsurface soil for pesticide residues in accordance with the Department of Toxic Substances and Control (DTSC) and CalEPA Guidance Manual Interim Guidance for Sampling Agricultural Fields for School Sites, Second Revision (DTSC and CalEPA 2004) to provide a uniform approach for evaluating former agricultural properties where pesticides have been applied. The soil sampling and testing program shall be subject to review and approval by the City of Watsonville and County of Santa Cruz. Soil sampling and testing shall include, but not be limited to the following in accordance with the DTSC and CalEPA guidance documents: sampling the freshwater marsh in the western portion of the planning area adjacent to the former agricultural areas of the planning area; sampling each area of a parcel which historically produced different agricultural crops; sampling of one surface soil sample from zero to six inches and one sub-surface sample from two to three feet with the minimum number of samples based on the size of the parcel; and analytical testing for these samples for pesticide residues, including but not limited to include DDT and its derivatives</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Prior to issuance of a Building Permit</p>

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		<p>DDD and DDE, toxaphene, dieldrin, and aldrin.</p> <p>In the event that subsequent testing indicates the presence of pesticide residues beyond acceptable thresholds, the potential health risks shall be evaluated and a work plan prepared in order to remediate the soil in accordance with all applicable federal, state, and local regulations. All subsequent testing and remediation activities are subject to review and approval by the County of Santa Cruz Environmental Health Department and the City of Watsonville prior to issuance of a grading permit.</p>			
<p>All Phases 1a and 1b/Remainder</p> <p>019-226-42 019-226-43 019-226-44 048-211-25 019-236-01</p>	<p>Impact 3.7-10: The planning area is located in the airport approach zone for the Watsonville Municipal Airport. In addition, Assessors Parcel Number 019-226-43 and 019-226-44 and portions of Assessors Parcel Number 048-211-25, 019-226-42, and 019-236-01 are located within the Zone 6 (Traffic Pattern Zone) Safety Compatibility Zones for the Watsonville Municipal Airport. This is considered a potentially significant impact.</p>	<p>MM 3.7-10: Project applicants within all phases of the planning area shall file an overflight easement with the City of Watsonville to run with the title of the property as disclosure and notice in deeds at the time of transfer or sale of all properties within the planning area. The disclosure shall inform future property owners that their property is located in an airport approach zone and that the City of Watsonville has the right to regulate or prohibit light emissions, either direct or indirect which may interfere with pilot vision; regulate or prohibit release into the air any substances that would impair the visibility or otherwise interfere with the operation of aircraft including steam, dust, and smoke; and regulate or prohibit electrical emissions which would interfere with aircraft communication systems or navigational equipment. The easement shall run with the land until such time the Watsonville Municipal Airport is no longer in use.</p>	Project Applicant	City of Watsonville and/or County of Santa Cruz	Time of Property Transfer or Sale
3.8 Hydrology and Water Quality					
<p>City Phase 1a & County Phase 1a & b and Phase 2</p> <p>048-211-25 048-221-09 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.8-1: Development of the proposed project would alter existing drainage patterns, increase impervious surfaces and increase surface water runoff, thus contributing to localized drainage, flooding and erosion problems within and/or in the vicinity of the planning area. This is considered a potentially significant impact.</p>	<p>MM 3.8-1a: Future development within <u>the County Entitlements Area Phase 1</u> of the <u>Atkinson</u> planning area shall identify, with Tentative Map submittals, a detailed final drainage plan <u>and analysis demonstrating maintenance of the predevelopment 2-year, 2-hour release rate and storage as well as the 5-year predevelopment release rate while providing storage volume for the post development 25-year storm designed to control the rate and volume of stormwater runoff to pre-development conditions for a variety of storm event recurrences up to the 10-year storm</u> consistent with the County of Santa Cruz performance standards or equivalent methods, and retaining the existing functions of storage, filtration, infiltration and evaporation of stormwater. The final drainage control plans</p>	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design and Construction

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		<p>shall include: detailed hydrologic modeling, existing facilities, soil and topographic data; erosion control and best management practices; descriptions of proposed flood control facilities; Low Impact Development (LID) techniques; compliance with waste discharge requirements; phasing and implementation; identification of the entity that is responsible for facility design and construction; Clean Water Program compliance; and facility maintenance to ensure for long-term vegetation maintenance and access. As part of the final drainage plan, the culvert connecting the freshwater marsh to the temporary detention basin shall be designed to reduce the potential for flooding of existing and future development by passing the 100 year peak spill rate and controlling the surcharge elevation in the freshwater marsh/seasonal wetland. All drainage improvements shall be subject to review and approval by the County of Santa Cruz Public Works Director and the City of Watsonville Public Works Director. County Public Works staff shall confirm that the <u>onsite</u> stormwater detention facilities have been constructed in accordance with approved plans.</p>			
<p>City & County Phase 2 048 221 09 048 231 01 048 231 17 048 231 18 048 251 09</p>	<p>Impact 3.8-1: Development of the proposed project would alter existing drainage patterns; increase impervious surfaces and increase surface water runoff, thus contributing to localized drainage, flooding and erosion problems within and/or in the vicinity of the planning area. This is considered a potentially significant impact.</p>	<p>MM 3.8-1b: Future development within Phase 2 of the planning area shall identify, with Tentative Map submittals, a detailed final drainage plan designed to control the rate and volume of stormwater runoff to pre-development conditions for a variety of storm event recurrences up to the 25-year storm consistent with the conceptual stormwater plan in the proposed Specific Plan and PUD and the City of Watsonville Stormwater Management Plan performance standards, or equivalent measures. The final drainage control plans shall include: detailed hydrologic modeling that takes into account the soil and topographic data; erosion control and best management practices; descriptions of proposed flood control facilities; Low Impact Development (LID) techniques; compliance with waste discharge requirements; phasing and implementation; identification of the entity that is responsible for facility design and construction; Clean Water Program compliance; and facility maintenance to ensure for long-term vegetation maintenance and access. All drainage improvements shall be subject to review and approval by the City of Watsonville Public Works Director. Prior to final inspection, the project applicant (s) shall provide the City of Watsonville with certification from a registered Civil Engineer or licensed contractor that the stormwater detention</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Project Design and Construction</p>

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		facilities have been constructed in accordance with approved plans.			
<p>All Phases <u>1a</u> and <u>1b/Remainder</u> 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.8-2: Soil disturbance associated with site preparation, grading and construction activities resulting from the proposed project may cause soil erosion and sedimentation, and/or the release of other pollutants into adjacent waterways, including Corralitos Creek. This is considered a potentially significant impact.</p>	<p>MM 3.8-2: In order to comply with the National Pollution Discharge Elimination System (NPDES), requirements for construction of site storm water discharges, project applicants shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) if construction exceeds one acre or more within the planning area. The SWPPP shall specify how the discharger will protect water quality during construction activities subject to review and approval by the County of Santa Cruz Planning Department or the City of Watsonville Community Development Department. These measures shall include but are not limited to the following:</p> <ul style="list-style-type: none"> • design and construction of cut and fill slopes in a manner that will minimize erosion; • protection of exposed slope areas; • control of surface water flows over exposed soils; • use of wetting or sealing agents or sedimentation ponds; • limiting soil excavation in high winds; • construction of beams and runoff diversion ditches; and • use of sediment traps, such as weed-free straw bales and/or straw wattles. <p>In addition, project applicants shall implement the following measures during construction activities within the planning area:</p> <ul style="list-style-type: none"> • Stabilize and revegetate all areas of disturbed soil with appropriate native species. Monitor revegetation success and take remedial measures as necessary; • When hay or straw is used in erosion control, ensure that it is weed free; • If possible, conduct work during low- or no-flow periods. Consult weather forecasts from the National Weather Service at least 72 hours prior to performing work that may result in sediment runoff; and • Inspect and clean all equipment of soil containing noxious or invasive weeds or fungus before arriving on site. If any imported fill material is necessary to bring to the site, present evidence certifying the material is void of any noxious or invasive species or pollutants. 	Project Applicant	City of Watsonville and/or County of Santa Cruz	Project Design and Construction

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<p>All Phases 1a and 1b/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.8-3: The proposed project would generate urban non-point contaminants, which may be carried in stormwater runoff from paved surfaces to downstream water bodies. This is considered a potentially significant impact.</p>	<p>Implementation of mitigation measures MM 3.8-1a and MM 3.8-1b would require that future development prepare a detailed final drainage plan designed to control the rate and volume of stormwater runoff to pre-development conditions for a variety of storm event recurrences up to the 10-year storm event for Phase 1a & 1b/Remainder (County site) and the 25-year storm event for buildout of the planning area consistent with the conceptual stormwater plan in the proposed Specific Plan.</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Project Design and Construction</p>
<p>All Phases 1a and 1b/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.8-4: Implementation of the proposed project would increase impervious surfaces and increase surface water runoff, which may contribute to localized flooding in the vicinity of the planning area. This is considered a potentially significant impact.</p>	<p>As required by mitigation measures MM 3.8-1a and MM 3.8-1b, the proposed modified project is anticipated to contain stormwater runoff within the planning area, would not increase stormwater runoff over existing conditions and therefore would not result in flooding within the planning area or in the vicinity of the planning area.</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Project Design and Construction</p>
<p>3.9 Land Use and Planning</p>					
<p>County Phase 1a & b and City Phase 2</p>	<p>Impact 3.9-3: Development of the proposed project could create land use compatibility conflicts with surrounding uses, which is considered a potentially significant impact.</p>	<p>Mitigation measures MM 3.2-1 and MM 3.2-2a in Section 3.2, Agricultural Resources require incorporation of an 200-foot buffer on the eastern portion of the planning area adjacent to existing agricultural uses within Phase 2 (City site) and an</p>	<p>Project Applicant</p>	<p>City of Watsonville and/or County of Santa Cruz</p>	<p>Project Design</p>

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048-231-01 048-231-17 048-231-18 048-251-09 048-221-09	However, with implementation of mitigation measures, this impact would be reduced to a less than significant level.	interim agricultural buffer within Phase 1b/ <u>Remainder (County site)</u> that is consistent with the proposed PUD Amendment/Modifications to the Approvals. It will also be subject to review and approval, with appropriate conditions regarding agricultural buffer design, by the County of Santa Cruz Planning Department and Agricultural Policy Advisory Commission. In addition the mitigation measures ensure that future residents are notified of potential agricultural/urban conflicts.			
3.10 Noise					
County Phase 1a & 1b/ <u>Remainder</u> 2 048-211-25 048-221-09	Impact 3.10-1: The proposed project could result in construction-related noise that would exceed applicable noise standards at nearby noise sensitive land uses. This is considered a potentially significant impact.	MM 3.10-1a: To minimize impacts associated with short-term construction noise, the County of Santa Cruz Planning Department shall ensure that project applicants incorporate the following noise control measures into construction contracts for future development within County Phases 1 and 2 of the proposed <u>modified</u> project in accordance with Policy 6.9.7 <i>County of Santa Cruz General Plan</i> : <ul style="list-style-type: none"> • Limit construction that involves motorized equipment to Monday through Friday from 7:30 am to 4:30 pm to avoid the times of day and the days of the week when noise effects would cause the greatest annoyance to residents and to those using the area for recreation; • Allow exceptions to the specified construction hours only for construction emergencies and when approved by the County of Santa Cruz Planning Department; and • Post a sign that is clearly visible to adjacent land uses that provides the phone number for the public to call to register complaints about construction-related noise problems. A single disturbance coordinator shall be assigned to log in and respond to all calls. All verified problems shall be resolved within 24 hours of registering the complaint. 	Project Applicant	County of Santa Cruz	Construction
City Phase 1a & 2 048-231-01 048-231-17 048-231-18 048-251-09	Impact 3.10-1: The proposed project could result in construction-related noise that would exceed applicable noise standards at nearby noise sensitive land uses. This is considered a potentially significant impact.	MM 3.10-1b: To reduce the effects of construction noise, the City of Watsonville Community Development Department shall ensure that the project applicants include the following on all construction contracts for future development within City Phases 1a and 2 of the proposed <u>modified</u> project: <ul style="list-style-type: none"> • Restrict construction activities within 1,500 feet of noise-sensitive receptors between the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday. No construction shall occur 	Project Applicant	City of Watsonville	Construction

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019-226-42 019-226-43 019-226-44 019-236-01		<p>on legal holidays. Equipment maintenance and servicing shall be confined to the same restrictions;</p> <ul style="list-style-type: none"> • Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible; • During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receptors; • Operate earthmoving equipment on the construction site, as far away as practical from noise sensitive receptors; • Operate earthmoving equipment on the construction site, as far away from vibration sensitive sites as possible; and • Post construction hours, allowable workdays, and the phone number of the job superintendent at all construction entrances to allow for surrounding owners and residents to contact the job superintendent. If the City or the job superintendent receive a complaint during construction activities, the superintendent shall investigate, take appropriate corrective actions, and report the action taken to the reporting party. 			
3.11 Population and Housing					
All Phases	No significant impacts.	No mitigation measures required.	Not applicable	Not applicable	Not applicable
3.12 Public Services, Utilities, and Recreation					
All Phases 1a and 1b/Remainder 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25	Impact 3.12-1: The proposed project would <u>is</u> estimated to generate approximately 4,679,829 people, which would subsequently increase the demand for fire protection services within the planning area. Future development within the planning area would be required to pay applicable fire impact fees at the time of issuance of the building permits. <u>Future development will also be subject to a requirement to incorporate fire sprinklers into structures.</u> If City and County impact fees <u>revenues</u> do not adequately fund fire protection	MRM 3.12-1: To fund a potential gap in funding for municipal services, if deemed necessary the City of Watsonville and the County of Santa Cruz shall work cooperatively to define and implement the appropriate funding mechanism(s) (e.g. a <u>municipal services mitigation payment in lieu of taxes (PILOT) agreement</u> , establishment of a community facilities district [CFD], a Mello Roos, etc.) to ensure that the proposed <u>modified</u> project pays its fair share to support municipal services.	City of Watsonville and County of Santa Cruz	City of Watsonville and County of Santa Cruz	Prior to issuance of Building Permit

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019-226-42 019-226-43 019-226-44 019-236-01	<u>facilities and</u> services to the planning area this would be considered a potentially significant impact.				
All-Phases <u>1a</u> <u>and</u> <u>1b/Remainder</u> 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.12-2: The proposed project would generate approximately 1,679,829 people, which would increase demand for law enforcement services. Future development within the planning area would be required to pay applicable police impact fees at the time of issuance of the building permits. If City and County impact fees do not adequately fund law enforcement <u>facilities and</u> service to the planning area, this would be considered a potentially significant impact.	Implementation of mitigation measure MRM 3.12-1 would ensure that funding of additional law enforcement services would be handled through a funding mechanism between the City and the County to ensure that the proposed modified project pays its “fair share” of funding in order to provide three additional sworn officers and one civilian staff member at the City of Watsonville Police Department in order to serve the planning area under project buildout.	City of Watsonville and County of Santa Cruz	City of Watsonville and County of Santa Cruz	Prior to Issuance of a Building Permit
All-Phases <u>1a</u> <u>and</u> <u>1b/Remainder</u> 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01	Impact 3.12-4: The proposed project would increase a demand for parks in the area that is currently considered underserved. However, the proposed project would provide an <u>additional 3.5 acre park adjacent to Crestview Park,</u> and payment of applicable fees for parks and recreational uses. If City and County impact fees do not adequately <u>fund</u> park and recreation <u>facilities and services capability,</u> this would be considered a potentially significant impact.	Implementation of mitigation measure MRM 3.12-1 would be handled through a funding mechanism between the City and the County to ensure that the proposed modified project pays its “fair share” of funding in order to meet acceptable thresholds, including the projects “fair share” of funding parks and recreation facilities with buildout of the proposed project.	City of Watsonville and County of Santa Cruz	City of Watsonville and County of Santa Cruz	Prior to Issuance of a Building Permit

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Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
<p>All Phases 1a and 1b/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.12-5: The proposed project would generate approximately 4,679<u>829</u> people, which would increase demand for library services. The proposed project would result in an increase in expenditures as a result of increased service level demands. If City impact fees do not adequately fund library <u>facilities and</u> service <u>capability</u>, this would be considered a potentially significant impact.</p>	<p>Implementation of mitigation measure MRM 3.12-1 would be handled through a funding mechanism between the City and the County to ensure that the proposed <u>modified</u> project pays its “fair share” of funding for library facilities with buildout of the proposed project.</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Issuance of a Building Permit</p>
<p>All Phases 1a and 1b/Remainder</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.12-8: Implementation of the proposed project would result in construction of on-site water infrastructure in order to serve the proposed project. If City and County impact fees do not adequately fund water infrastructure improvements, this is considered a potentially significant impact.</p>	<p>Future development within the planning area would be required to pay applicable development impact fees at the time of issuance of the building permits. The County and the City will enter into an agreement to fund infrastructure costs for the proposed <u>modified</u> project not covered by City or County impact fees and taxes. Funding of additional services would be handled through levies on future development in order to meet acceptable thresholds as required by mitigation measure MRM 3.12-1.</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Issuance of a Building Permit</p>
<p>All Phases 1a and 1b/Remainder</p>	<p>Impact 3.12-9: The proposed project would require expansion of stormwater facilities on-site, the construction of which could cause significant environmental effects. Future development within the planning area would be</p>	<p>Implementation of mitigation measure MRM 3.12-1 would ensure that funding of additional services would be handled through levies paid by future development in order to meet acceptable thresholds, including the projects “fair share” of funding for stormwater infrastructure with buildout of the</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Issuance of a Building Permit</p>

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<p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>required to pay applicable impact fees at the time of issuance of the building permits. If City and County impact fees do not adequately fund stormwater infrastructure, this would be considered a potentially significant impact.</p>	<p>proposed project.</p>			
3.13 Transportation and Circulation					
<p><u>County Phases 1 & Phase 2 Phases 1a and 1b/Remainder</u></p> <p>048-221-09 048-211-25</p>	<p>Impact 3.13-5: The proposed project would result in an increase in traffic at the East Lake Avenue (Highway 152)/Holohan Road intersection that would increase the volume to capacity ratio by more than one percent at an intersection that is currently operating at an unacceptable level of service (LOS E or F). In accordance with the County of Santa Cruz significance criteria, this is considered a potentially significant impact.</p>	<p>MM 3.13-5: Prior to occupancy of the proposed project, project applicants within the <u>County Entitlements Area</u> planning area shall pay their proportional fair share towards improving the eastbound approach on Holohan Road at the East Lake Avenue (Highway 152)/Holohan Road intersection to include a dedicated eastbound left-turn lane, a shared eastbound left-turn lane, a shared eastbound left-turn/through lane and a dedicated right-turn lane. The estimated cost of this improvement is \$1,225,100 <u>4.5 million dollars</u>. <u>Phase 1a (MidPen Housing project) of the modified project would pay a fair share contribution of 0.40-percent of the estimated improvement cost (\$4,900), while developments within the remainder of the County Entitlements Area would pay an estimated 1.75 percent (\$21,439) of the estimated improvement cost as its percent fair share contribution (see Table 3.13-3).</u> To fund this improvement, project applicants shall pay the Pajaro Valley Planning Area traffic impact fee to the County of Santa Cruz towards construction of this planned improvement in the County’s Capital Improvement Program (CIP). <u>Payment of impact fees to the County will cover the above fair share contribution levels as well as meet other impact fees purposes.</u></p>	<p>Project Applicant</p>	<p>County of Santa Cruz</p>	<p>Prior to Occupancy of Project.</p>
<p><u>All Phases 1a and 1b/Remainder</u></p>	<p>Impact 3.13-6: The proposed project would result in an increase in traffic at the Highway 1 NB Ramps/Harkins Slough Road intersection that would increase the volume to capacity ratio by more than one percent, at an intersection that</p>	<p>MM 3.13-6: Prior to occupancy of the proposed project, project applicants within the <u>County Entitlements Area</u> planning area shall pay their proportional fair share towards installation of a traffic signal at the Highway 1 NB Ramps/Harkin Slough Road and the Highway 1 SB Ramps/Harkin Slough Road</p>	<p>Project Applicant</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Issuance of Building Permits</p>

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Phase/APN ¹	Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
<p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>is currently operating at an unacceptable level of service (LOS E or F). In accordance with the County of Santa Cruz significance criteria, this is considered a potentially significant impact.</p>	<p>intersections. This signal shall be coordinated/interconnected with the intersection of Harkins Slough Road/Green Valley Road due to the close spacing of these intersections and the potential overflow of queues and the new signal at the southbound ramp terminal. The estimated cost of this improvement is approximately \$424,700 520,000 dollars. <u>Phase 1a (MidPen Housing project) of the modified project shall pay a fair share contribution of 0.182-36 percent (\$764) of the estimated improvement cost, while developments within the remainder of the County Entitlements Area would pay an estimated 0.66 percent (\$2,803) of the estimated improvement cost as its percent fair share contribution which is \$12,272 (see Table 3.13-3).</u> The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours. To fund this improvement, project applicants shall pay applicable traffic impact fees to the City of Watsonville towards construction of this improvement prior to issuance of building permits. <u>Payment of traffic impact fees to the City and County will cover these fair share contribution levels as well as meet other impact fee purposes. The City of Watsonville is updating their fee program and fee ordinance and will adopt the program prior to implementation of the first phase of the proposed project.</u> The City of Watsonville shall coordinate with Caltrans on improvements to this intersection.</p>			
<p><u>All-Phases 1a and 1b/Remainder</u> 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44</p>	<p>Impact 3.13-7: The proposed project would increase the volume/capacity ratio by more than one percent during both the AM and PM peak hours at the Airport Boulevard/Freedom Boulevard intersection, which is currently operating at unacceptable levels of service (LOS E or F). In accordance with the County of Santa Cruz significance criteria, this would be considered a potentially significant impact.</p>	<p>MM 3.13-7: Prior to occupancy of the proposed project, project applicants within the planning area shall pay their proportional fair share towards installation of a second through and right-turn lane on the Airport Boulevard approach from Highway 1 and a second left-turn lane on Freedom Boulevard at the Airport Boulevard/Freedom Boulevard intersection. The receiving leg on Airport Boulevard shall be widened in order to accommodate the additional through-lanes. The estimated cost of these improvements is approximately \$855,100 1,047,000 dollars. <u>Phase 1a of the modified project would pay a fair share contribution of 0.987-57 percent (\$8,380) of the estimated improvement cost, which is \$79,257 while developments within the remainder of the County Entitlements Area Phase 1b would pay an estimated 3.50 percent (\$29,929) of the estimated improvement cost as the fair share contribution.</u> The fair share contribution is calculated as the project portion of all future</p>	<p>Project Applicant</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Issuance of Building Permits</p>

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019-236-01		<p>traffic that would be added to the intersection for both peak hours. The City of Watsonville is updating their fee program and fee ordinance and will adopt the program prior to implementation of the first phase of the proposed project. To fund this improvement, project applicants shall pay applicable traffic impact fees to the City of Watsonville towards construction of this improvement prior to issuance of building permits. <u>Payment of traffic impact fees to the City (20 units) and to the County (26 units) will cover these fair share contribution levels as well as meet other impact fee purposes.</u></p>			
<p><u>All Phases 1a and 1b/Remainder</u></p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.13-8: The proposed project would result in an increase in traffic at the Highway 1 NB Ramps/Larkin Valley Road intersection that would increase the volume to capacity ratio by more than one percent, which is currently operating at an unacceptable level of service. In accordance with the County of Santa Cruz significance criteria, this is considered a potentially significant impact.</p>	<p>MM 3.13-8: Prior to occupancy of the proposed <u>modified</u> project, project applicants within the <u>County Entitlements Area planning area</u> shall pay their proportional fair share towards installation of two roundabouts (one at the northbound hook ramp terminal and one at the Airport Boulevard/Larkin Valley intersection) at the Highway 1 NB Ramps/Larkin Valley Road Intersection. Since the ramp terminal and the intersection of Airport Boulevard/Larkin Valley Road are closely spaced, improvements shall take both intersection operations into consideration when constructing the proposed improvements. The estimated cost of these improvements is \$1,029,000 <u>260,000 dollars.</u> <u>Phase 1a (MidPen Housing project) of the modified</u> The project would pay a fair share contribution of 0.818-70 <u>percent (\$8,335)</u> of the estimated improvement cost, <u>while developments within the remainder of the County Entitlements Area</u> Phase 1b would pay an estimated <u>2.77 percent (\$28,504)</u> of the estimated improvement cost which is \$109,620 <u>as the fair share contributions.</u> The fair share contribution is calculated as the project portion of all future traffic that would be added to the intersection for both peak hours. To fund this improvement, project applicants shall pay applicable traffic impact fees to the City of Watsonville towards construction of this improvement. <u>This obligation will be met through payment of traffic impact fees to the City (20 units in Phase 1a), and a portion of the County's impact fees received by the County (\$130 per unit) shall be paid to the City by the County.</u> The City of Watsonville is updating their fee program and will adopt the program prior to implementation of the first phase of the proposed project. The City of Watsonville shall coordinate with Caltrans and prepare a Project Study Report for improvements to this intersection.</p>	Project Applicant	City of Watsonville and County of Santa Cruz	Prior to Occupancy of Project

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<p>All Phases 1a and 1b/Remainder</p> <p>048-231-17 048-231-18 048-221-09 048-251-09 019-236-01</p>	<p>Impact 3.13-11: The left-turn pocket from Freedom Boulevard onto Crestview Avenue would increase substantially with implementation of the proposed project and create an operational deficiency. Therefore, this is considered potentially significant impact.</p>	<p>MM 3.13-11a: The first project applicant on APNs 019-236-01 and 048-221-09 (Lamb properties), 048-251-09, 048-231-17 or 048-231-18, shall design, fund and implement the southbound left-turn pocket from Freedom Boulevard to Crestview Drive to <u>lengthen the pocket</u> by at least 2550 feet. <u>The existing storage length is 150 feet and the SimTraffic analysis indicated a 95% queue of 175 feet.</u> The estimated cost of this improvement is \$16,300 20,000 and shall be funded by the first applicant <u>for development on APN 048-221-09 (Lamb) within the planning area.</u> This improvement shall be <u>either installed by the first applicant prior to occupancy of any portion of these parcels or satisfied through a payment of that amount directly to the City of Watsonville.</u> A cost share agreement will be developed by both the City and the County to ensure that these improvements are fully implemented.</p>	<p>Project Applicant</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Occupancy of Project</p>
<p>All Phases</p> <p>048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 3.13-11: The left turn pocket from Freedom Boulevard onto Crestview Avenue would increase substantially with implementation of the proposed project and create an operational deficiency. Therefore, this is considered potentially significant impact.</p>	<p>MM 3.13-11b: All project applicants shall contribute their fair share toward the installation of traffic improvements in MM3.13-11a through the collection of TIA fees and/or any other fees through the cost sharing agreement.</p>	<p>Project Applicant</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Occupancy of Project</p>
<p>All Phases</p> <p>048-231-01 048-211-25 019-226-42 019-226-43 019-226-44</p>	<p>Impact 3.13-12: The proposed project would result in an increase in traffic that would be experienced by the neighbors on Brewington Avenue north of Crestview Drive; Gardener Avenue, east of Freedom Boulevard; and Atkinson Lane, east of Freedom Boulevard. The addition of the project traffic could result in increased hazards on these neighborhood streets, which is considered a potentially</p>	<p>MM 3.13-12a: Prior to occupancy of any project on APNs 048-211-25, 019-226-42, 019-226-44, or 019-236-01, or 048-231-01, project applicants shall develop and implement a traffic calming plan on: 1) Atkinson Lane, east of Freedom Boulevard; and 2) Gardner Avenue, east of Freedom Boulevard, along the streets that are affected by the proposed project. The estimated cost of this improvement is \$200,000. A cost share agreement will be developed by both the City and the County to ensure that these improvements are fully implemented.</p>	<p>Project Applicant</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Occupancy of Project</p>

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019-236-01	significant impact.				
<p>All Phases 1a and 1b/Remainder</p> <p>048-221-09</p> <p>048-251-09</p> <p>048-231-17</p> <p>048-231-18</p>	<p>Impact 3.13-12: The proposed project would result in an increase in traffic that would be experienced by the neighbors on Brewington Avenue north of Crestview Drive; Gardener Avenue, east of Freedom Boulevard; and Atkinson Lane, east of Freedom Boulevard. The addition of the project traffic could result in increased hazards on these neighborhood streets, which is considered a potentially significant impact.</p>	<p>MM 3.13-12b: Prior to occupancy of any project development on APNs 048-221-09 and 019-236-01 (Lamb), 048-251-09, 048-231-17, or 048-231-18, project applicants shall develop and implement a traffic calming plan on Brewington Avenue north of Crestview Drive; along the streets that are affected by the proposed project. The estimated cost of this improvement is \$130,700 160,000. A cost share agreement will be developed by both the City and the County to ensure that these improvements are fully implemented. <u>This improvement shall be installed by the first applicant prior to final occupancy of any portion of these parcels, or satisfied through payment of that amount directly to the City of Watsonville under an approach that may involve a reimbursement agreement, as other future development on the Lamb property may be required to pay their fair shares and reimburse the first applicant.</u></p>	Project Applicant	City of Watsonville and County of Santa Cruz	Prior to Occupancy of Project
3.14 Greenhouse Gas Emissions					
Phase 1a and 1b/Remainder	<u>No significant impacts.</u>	<u>No mitigation measures required.</u>	<u>Not applicable</u>	<u>Not applicable</u>	<u>Not applicable</u>
4.0 CEQA Considerations					
<p>Phase 1b/Remainder</p> <p>City Phase 2</p> <p>048-231-17</p> <p>048-231-18</p> <p>048-221-09</p> <p>048-251-09</p>	<p>Impact 4-1: Under cumulative conditions, the volume to capacity ratio at the East Lake Avenue/Wagner Avenue intersection would increase by more than one percent; and therefore, the proposed project would result in a cumulative impact to this intersection, which is considered a potentially significant cumulative impact.</p>	<p>MM 4-1: Project applicants within the <u>County Entitlements Area planning area</u> shall pay their proportionate fair share of \$81,250 towards installation of a traffic signal at the East Lake Avenue/Wagner Avenue intersection prior to occupancy of <u>any development within the proposed modified project area.</u> <u>This obligation will be met through payment of impact fees to the City of Watsonville by the units located on City parcels (i.e., 20 units in Phase 1a), and a portion of the County's impact fees received by the County (\$603 per unit) shall be paid to the City by the County for a total of \$132,700 towards the installation of the signal.</u> The estimated cost of this improvement is \$265,400 <u>325,000.</u> The City of Watsonville is updating their fee program and fee ordinance and will adopt the program prior to issuance of a building permit. <u>The City of Watsonville plans to install a signal at the intersection of East Lake Avenue and Wagner Avenue.</u> The City of Watsonville shall coordinate with Caltrans to approve design and installation of the signal.</p>	Project Applicant	City of Watsonville	Prior to Occupancy of Project

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<p>All Phases 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 4-2: The proposed project would contribute to a significant cumulative impact to hazardous conditions on Brewington Avenue south of Crestview Drive as a result of increased traffic from the proposed project.</p>	<p>MM 4-2: Project applicants within the planning area shall pay their proportionate fair share contribution towards a traffic calming plan on Brewington Avenue south of Crestview Drive, which is updating its impact fee program. The estimated cost of this improvement is \$500,000. A cost share program will be developed by both the City and the County to ensure these improvements are fully implemented.</p>	<p>Project Applicant</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Occupancy of Project</p>
<p>All Phases <u>1b/</u> <u>Remainder</u> 048-231-01 048-231-17 048-231-18 048-221-09 048-251-09 048-211-25 019-226-42 019-226-43 019-226-44 019-236-01</p>	<p>Impact 4-3: The proposed project in combination with reasonably foreseeable future growth would result in an incremental increase of water use that would continue to contribute to depletion of water supply within the Pajaro Valley Groundwater Basin, which is currently in overdraft condition.</p>	<p>MM 4-3: The City's groundwater impact fee program shall apply to all future development within the County Entitlements Area. In addition, future development shall be required to for the project area shall be modified to ensure that project water demand is fully offset (at a ratio of 1.2:1) either by comparing pre-development water demand to post development water demand or by participating in a water offset program with fixture and landscaping replacements in the City's water service area or, a combination of both. The project applicants shall be responsible for working with the City, or their designee, in developing an offset program that achieves the water saving objectives and shall bear the costs associated with the offset program including any additional replacement of plumbing fixtures and landscaping retrofits identified in the City water service area to meet the stated goals. Pre-development water demand shall be accounted for on a per parcel basis.</p>	<p>Project Applicant</p>	<p>City of Watsonville and County of Santa Cruz</p>	<p>Prior to Occupancy of Project</p>

Note:
1 – The specified Assessor Parcel Numbers are responsible for either triggering the specified Mitigation Measure and/or contributing their fair share contribution of impact fees.