



11th ADDENDUM TO THE SIERRA VISTA SPECIFIC PLAN ENVIRONMENTAL IMPACT REPORT (SCH #2008032115, ADOPTED ON MAY 5, 2010)

Project Title/File Number:	SVSP PCL KT-41A & KT-41B – Erickson Senior Living; File #PL22-0207
Project Location:	6000 Baseline Rd., Roseville, Placer County, CA 95747
Project Description:	The applicant requests a Major Project Permit Stage 1 to review the site plan for Erickson Senior Living, a 2.1 million square-foot continuing care retirement community, consisting of approximately 1,200 independent living units, 40 skilled nursing beds, and 200 assisted living/memory care beds, on a 55.6-acre site. A Major Project Permit Stage 2 is also requested to review the building elevations for Phase 1 of the project, which will total approximately 630,000 square feet and include 354 independent living units. A Development Agreement Amendment and Lot Line Adjustment are also requested for the project.
Project Applicant:	Kris Steward, Plan Steward, Inc.
Property Owner:	KV SIERRA VISTA LLC
Lead Agency Contact:	Sean Morales, Associate Planner, (916) 774-5282

An Addendum to a previously certified and adopted negative declaration or environmental impact report may be prepared for a project if only minor technical changes or additions are necessary or none of the conditions calling for the preparation of a subsequent EIR or negative declaration have occurred (California Environmental Quality Act Guidelines [CEQA] Section 15164). Consistent with CEQA Guidelines Section 15164, the below analysis demonstrates that none of the conditions described in Sections 15162 or 15163 of the CEQA Guidelines calling for preparation of a subsequent or supplemental EIR have occurred and that no more than minor technical changes or additions to the certified Sierra Vista Specific Plan EIR are necessary in order to describe the impacts of the proposed project. CEQA Guidelines Section 15164 also states that an addendum need not be circulated for public review, but can be included in or attached to the final EIR for consideration by the hearing body. This Addendum focuses only on those aspects of the project or its impacts which require additional discussion.

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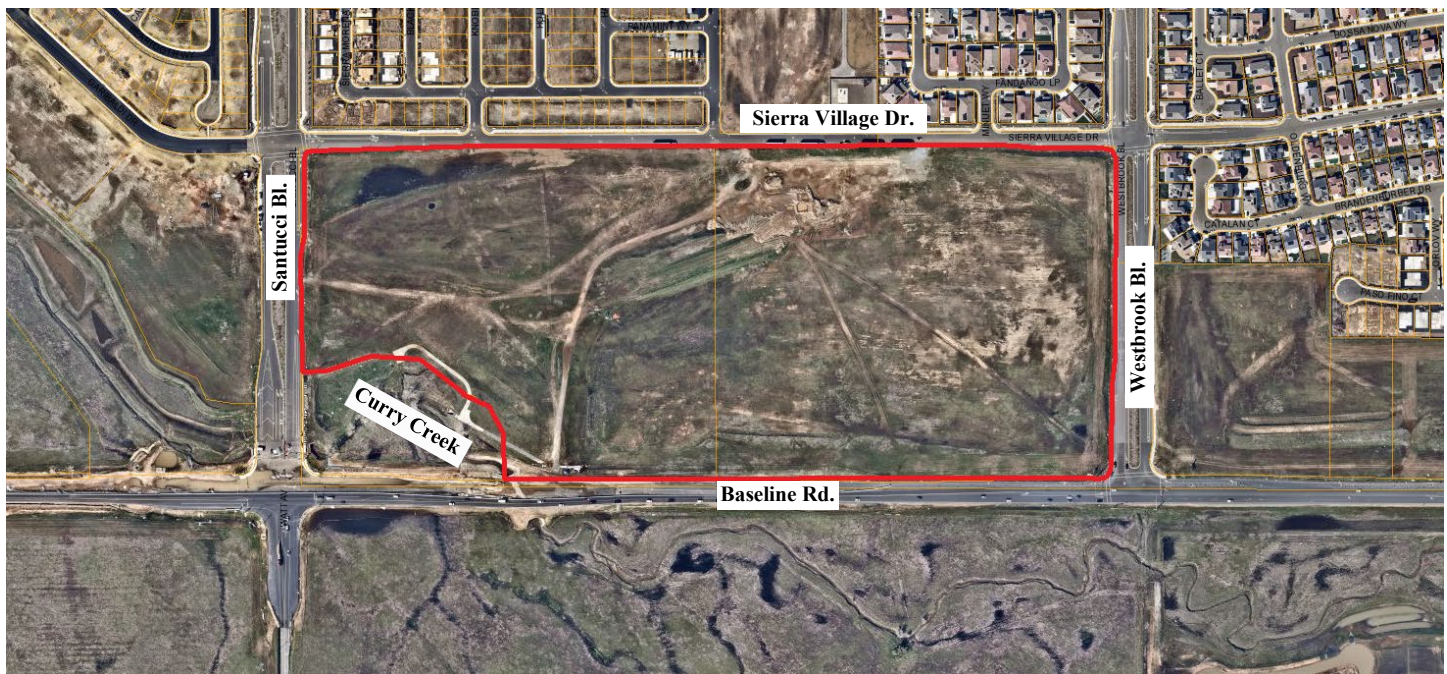
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PROJECT DESCRIPTION

Project Location

The project address is 6000 Baseline Road, within the southern portion of the Sierra Vista Specific Plan (SVSP), south of Sierra Village Drive, east of Santucci Boulevard, west of Westbrook Boulevard, and north of Baseline Road and Curry Creek (see Figure 1).

Figure 1: Project Location (parcel bordered in red)



Background

The project site is identified as parcels KT-41A and KT-41B within the Sierra Vista Specific Plan (SVSP). The SVSP was adopted on May 5, 2010 and includes 2,064 acres west of Fiddymont Road and north of Baseline Road. The SVSP consists of a mix of land uses, with KT-41A and KT-41B designated for Community Commercial land use. The SVSP anticipated these parcels to be developed with large commercial uses as shown in figure B-29 of the SVSP, which provides a concept design for a commercial center that can support over 950,000 square feet of commercial uses. Prior to taking action on the SVSP, the City adopted Resolution 10-160 certifying an Environmental Impact Report (EIR) and adopting a Mitigation Monitoring Program, collectively analyzing, and reducing to the extent feasible, impacts associated with development that would occur pursuant to the SVSP. Additionally, Development Agreements with the property owners of the SVSP parcels and the City were entered into to outline development obligations within the SVSP.

The current project is a Major Project Permit Stage 1 and Stage 2 for the construction of a continuing care retirement community (see Figure 2). The proposed development is consistent with what was anticipated in the SVSP in that it is composed of a large commercial use that is consistent with the zoning and land use

designations for the site adopted with the SVSP. The addendum documents the details of the site use and layout and how they are within the scope of the impacts anticipated with the SVSP EIR.

Location	Zoning	General Plan Land Use	Actual Use of Property
Site	General Commercial	Community Commercial	Leveled and graded, undeveloped
North (West)	Residential Small Lot/ Development Standards	Medium-Density Residential	Single-family subdivision under construction
North (Center)	Parks and Recreation	Parks and Recreation	Graded and undeveloped park site
North (East)	Residential Small Lot/ Development Standards	Low-Density Residential	Single-family subdivision
South	Open Space	Open Space	Curry Creek
South (Beyond Baseline Rd.)	Specific Plan – Placer Vineyards Specific Plan	Placer Vineyards Specific Plan	Curry Creek
West	Multi-Family Residential	High-Density Residential	Leveled and graded, undeveloped
East	General Commercial	Community Commercial	Leveled and graded, undeveloped

Environmental Setting

The project site was rough-graded and has been annually maintained, and is therefore dominated by relatively flat topography and is devoid of trees, wetlands, or other natural features. The site is primarily populated by non-native annual grasses, and aerial photography shows evidence of ground disturbance, including areas of bare ground and furrows from discing on the property. There are no structures on the property. No native oak trees or other trees are present on the subject parcels. Curry Creek is located south of the project site with the majority located in unincorporated Placer County and a portion located within a designated Open Space preserve within City limits to the southwest of the project site. The Open Space preserve includes the entirety of Curry Creek and its floodplain, including a buffer between any wetland or riparian resources and the boundary of the Open Space parcel.

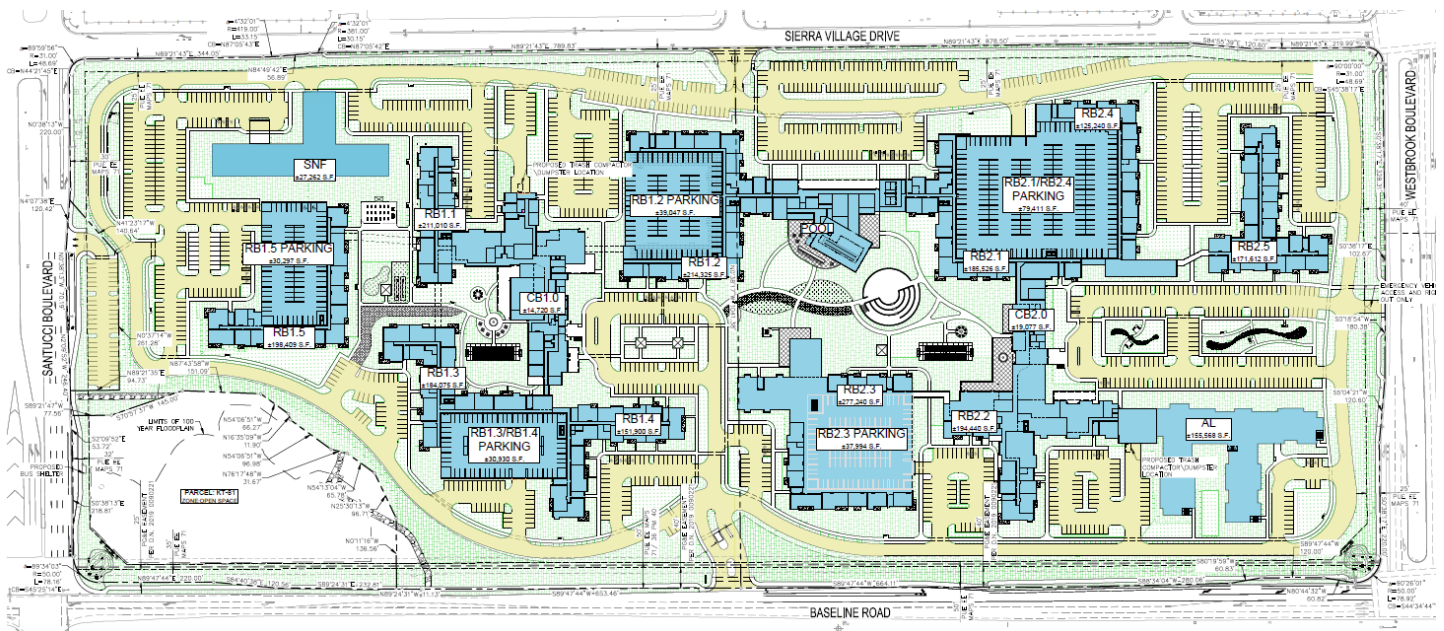
The project site is bordered by Baseline Road to the south, which is currently a two-lane road but is designated for expansion to six lanes with full buildout of the SVSP area. An open space parcel containing Curry Creek within unincorporated Placer County is located to the south of the project site beyond Baseline Road. The site is bordered on the east by parcel KT-42, which is an undeveloped commercial site and contains similarly disturbed non-native grasslands. The site is bordered on the west by parcel KT-30, which is an undeveloped multi-family residential site and contains similarly disturbed non-native grasslands. The site is bordered on the north by single-family subdivisions as well as a neighborhood park. The site will be served by utilities within Westbrook Boulevard.

Proposed Project

The proposed project is a request for a Major Project Permit Stage 1 and Stage 2 to approve the site plan and phase one building elevations for the Erickson Senior Living project for construction of an approximately 2,130,404 square-foot continuing care retirement community and includes the following requested entitlement:

- A. Development Agreement Amendment (DAA) – The project site is within the area covered by the Baseline P&R Development Agreement. The applicant proposes to amend the agreement in order to memorialize the operations and use type classifications of the project as well as timing for needed electrical improvements.
- B. Major Project Permit (MPP) Stage 1 – The intent of the Major Project Permit (MPP) process is to streamline the review of large and diverse projects that could be constructed over a period of several years. The MPP process allows for the resolution of site issues prior to the review of more detailed architectural and landscape issues that may not be finalized at the time the site plan is ready. Stage 1 consists of the approval of a preliminary development plan (Figure 2). The preliminary plan will establish the configuration of the buildings, rough grading and drainage on-site, vehicular and pedestrian circulation, and the preliminary landscape plan. The entire Erickson Senior Living site is included in the MPP Stage 1 review.
- C. Major Project Permit (MPP) Stage 2 – Stage 2 of the Major Project Permit includes review of the architectural design, landscape treatments, and design guidelines. Only Phase 1 of the project is included in the MPP Stage 2 review.
- D. Lot Line Adjustment (LLA) – The applicant proposes to move the existing lot line that divides the two large lot parcels to better accommodate the proposed site plan.

Figure 2. Site Plan



PURPOSE AND SCOPE OF ADDENDUM

This Addendum has been prepared to identify and assess the anticipated environmental impacts of the above-described project. The document relies on previous environmental documents and site-specific studies prepared

to address in detail the effects or impacts associated with the project as well as updated technical analyses, prepared by qualified consultants. This document has been prepared to satisfy the California Environmental Quality Act (CEQA), (Public Resources Code, Section 21000 et seq.) and the State CEQA Guidelines (14 CCR 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects.

Where, as here, an EIR addressing an earlier version of the project has been previously prepared and certified, the lead agency considers the relevance of that prior EIR in light of the current modified version of the project and changed circumstances since the time of the preparation of the prior EIR. Pursuant to CEQA Guidelines §15162–15163, if the lead agency determines, based on substantial evidence, that new information of substantial importance, or changes to the project or surrounding circumstances will require major revisions to the previous EIR due either to a new significant effect or a substantial increase in the severity of a previously identified significant effect on the environment, the lead agency is required to prepare a Subsequent EIR or an EIR Supplement to analyze the project at hand. Pursuant to CEQA Guidelines §15164, if the agency finds no basis for requiring the preparation of either a Subsequent EIR or an EIR Supplement, but some changes or additions are necessary, an Addendum shall be prepared.

The Sierra Vista Specific Plan Environmental Impact Report (SVSP EIR) was certified by City Council on May 5, 2010 (State Clearinghouse Number 2008032115). The document analyzed the impacts that would occur as a result of development of the SVSP area, including a large commercial development on the project site. A copy of the SVSP EIR is available for review online at www.roseville.ca.us/planning under Specific Plans and then the Sierra Vista Specific Plan page. The City Council adopted Findings of Fact and a Statement of Overriding Considerations when it certified the SVSP EIR. The EIR identified the following impacts associated with development of the SVSP area, including the buildout of the project area, as significant and unavoidable:

- Conversion of agricultural land to developed uses
- Inducement of substantial population growth
- Increased traffic on City of Roseville roadways
- Increased traffic on State Highways, including Interstate 80
- Increased traffic on Placer County roadways
- Increased emissions of fugitive dust and PM10 from grading and trenching activities (short term)
- Increased emissions of ozone precursors during construction (short-term)
- Increased emissions of air pollutants during operation
- Loss of oak trees of greater than 6 inches diameter breast height (dbh) (short-term)
- Removal of historically significant properties and/or loss of historic integrity of such resources
- Increased demand for solid waste services at the Western Regional Sanitary Landfill
- Increased demand for solid waste services at the Materials Recovery Facility (MRF)
- Construction debris demand for solid waste services
- Alteration of the visual character of the site and vicinity
- New sources of light and glare

For build out of the SVSP project area, the SVSP EIR also identified the following cumulative impacts as significant and unavoidable:

- Agricultural land conversion
- Air pollutant emissions from construction
- Air pollutant emissions from operation
- Contribution to greenhouse gas emissions/global warming
- On-site noise levels that exceed City standards
- Off-site noise levels that exceed City standards
- Traffic impacts to Roseville, Placer County, Sacramento County, Sutter County and State facilities

- Increased demand for water
- Increased demand for recycled water distribution system
- Increased generation of solid waste
- Change in visual character

The analyses below rely on the EIR analysis with minor supplements or technical updates where appropriate. The project impacts remain within the scope of the impacts of the SVSP EIR, because the proposed project is of the scale, type, and form of development anticipated within the SVSP EIR for the project site. The SVSP EIR anticipated approximately 215 acres of commercial development. In the SVSP, a concept plan for parcels KT-41A and KT-41B was provided to illustrate possible commercial use types and building layouts. The concept project was a large retail center of “over 950,000 square feet of commercial, business professional, and service uses.” The SVSP EIR considered impacts related to project construction and those related to project operation. The Erickson Senior Living project is within the scope of the environmental impacts related to project construction anticipated in the SVSP EIR, which evaluated the impacts of full development of the project site, including grading of the entire site and the construction of large commercial buildings, parking, utilities, and other appurtenances. The operational impacts of the Erickson Senior Living project, as shown in technical studies included in this report, are less intensive than what was previously evaluated in the SVSP EIR as it relates to the project site, and therefore would not result in new or more severe environmental effects than were already analyzed in the SVSP EIR.

Impacts to physical resources (such as agricultural land, biological resources, etc.) are based on the grading and development of a site, not on the arrangement or use of buildings within the site. The entire project site was anticipated to be graded and fully developed with commercial uses within the SVSP EIR. For other types of impacts which are affected by size and use of buildings, such as air quality, minor technical updates have been provided, where necessary. The Environmental Checklist section, below, provides minor supplements or technical updates where appropriate, to demonstrate that the project remains within the scope of the impacts previously analyzed in the EIR.

ENVIRONMENTAL CHECKLIST FOR ADDENDUM ENVIRONMENTAL REVIEW

The purpose of this checklist is to evaluate the categories in terms of any “changed condition” (i.e. changed circumstances, project changes, or new information of substantial importance) that may result in a changed environmental result. A “no” answer does not necessarily mean there are no potential impacts relative to the environmental category, but that there is no change in the condition or status of the impact since it was analyzed and addressed in prior environmental documents.

EXPLANATION OF CHECKLIST EVALUATION CATEGORIES

Where Impact was Analyzed

This column provides a cross-reference to the pages of the prior environmental documents where information and analysis may be found relative to the environmental issue listed under each topic.

Do Proposed Changes Involve New Significant Impacts?

Pursuant to Section 15162(a)(1) of the CEQA Guidelines, this column indicates whether the changes represented by the current project will result in new significant impacts that have not already been considered and mitigated by the prior environmental review documents and related approvals, or will result in a substantial increase in the severity of a previously identified impact.

Any new Circumstances Involving New Impacts?

Pursuant to Section 15162(a)(2) of the CEQA Guidelines, this column indicates whether there have been changes to the project site or the vicinity (circumstances under which the project is undertaken) which have occurred subsequent to the certification or adoption of prior environmental documents, which would result in the

current project having new significant environmental impacts that were not considered in the prior environmental documents or that substantially increase the severity of a previously identified impact.

Any new Information Requiring New Analysis or Verification?

Pursuant to Section 15162(a)(3)(A–D) of the CEQA Guidelines, this column indicates whether 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 environmental documents were certified or adopted is available requiring an update to the analysis of the previous environmental documents to verify that the environmental conclusions and mitigation measures remain valid. Either “yes” or “no” will be answered to indicate whether there is new information showing that: (A) the project will have one or more significant effects not discussed in the prior environmental documents; (B) that significant effects previously examined will be substantially more severe than shown in the prior environmental documents; (C) that 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) that mitigation measures or alternatives which are considerably different from those analyzed in the prior environmental documents would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative. If “no,” then no additional environmental documentation (supplemental or subsequent EIR) is required.

Mitigation Measures Implemented or Addressing Impacts

Pursuant to Section 15162(a)(3) of the CEQA Guidelines, this column indicates whether the prior environmental documents provide mitigation measures to address effects in the related impact category. In some cases, the mitigation measures have already been implemented. A “yes” response will be provided in any instance where mitigation was included, regardless of whether the mitigation has been completed at this time. If “none” is indicated, this environmental analysis concludes a significant impact does not occur with this project, no mitigation was previously included, and no mitigation is needed.

DISCUSSION AND MITIGATION SECTIONS

Discussion

A discussion of the elements of the checklist is provided under each environmental category in order to clarify the answers. The discussion provides information about the particular environmental issue, how the project relates to the issue and the status of any mitigation that may be required or has already been implemented.

Mitigation Measures

Applicable mitigation measures from the prior environmental review that apply to the project are listed under each environmental category.

Conclusions

A discussion of the conclusion relating to the analysis contained in each section.

OTHER CONSIDERATIONS

Since the publication of the SVSP EIR, the Office of Planning and Research (OPR) has updated CEQA Guidelines Appendix G (Environmental Checklist Form). These updates address legislative changes to CEQA, clarify language, and update language consistent with case law. None of the changes to the checklist require new analysis related to impacts which were not known or which could not have been known at the time the SVSP EIR was prepared. The majority of the checklist changes clarified language, reorganized existing language, or eliminated analysis requirements. For analysis requirements which have been eliminated, this is in response to

case law affirming that analysis must focus on impacts caused by the project, not impacts to the project. An example of each of these types of changes is included below:

- Cultural Resources (a): Cause a substantial adverse change in the significance of an historic resource ~~as defined in~~ pursuant to Section 15064.5?

The replacement of “as defined in” with “pursuant to” is a phrasing change which has no impact on required analysis.

- Cultural Resources (c) has been moved to Geology and Soils (f).

Moving the topical section of this analysis requirement (which is related to paleontological resources) from Cultural Resources to Geology and Soils has no impact on required analysis.

- Noise (b): ~~Exposure of persons to or~~ Generation of excessive ground borne vibration of ground borne noise levels?

The above changes redirect the analysis from considering overall exposure of persons to ground borne vibration, and focus the analysis on any ground borne vibration generated by a project. This same change is reflected in all other checklist questions related to noise. Therefore, the EIR included more analysis than is currently required, because they included analysis related to exposing neighboring areas to noise, but also analyzed the effect of noise on the proposed uses; the latter analysis is no longer required.

The updated CEQA Guidelines Appendix G also includes three new sections (Tribal Cultural Resources, Energy, and Wildfire) and includes new and modified requirements as part of the Transportation/Traffic section. Although the Tribal Cultural Resources *section* is new, the analysis of this impact area was included in the SVSP EIR as part of the Cultural Resources section. The new Energy section was formerly included in CEQA Guidelines Appendix F, but has been moved into the Appendix G, so while it is new to the checklist, it is not new to the CEQA Guidelines. In regards to Wildfire, the California Department of Forestry and Fire Protection (CAL FIRE) is the state agency responsible for wildland fire protection and management. As part of that task, CAL FIRE maintains maps designating Wildland Fire Hazard Severity zones. The City is not located within a Very High Fire Hazard Severity Zone, and is not in a CAL FIRE responsibility area; fire suppression is entirely within local responsibility. Therefore, the Wildfire section does not apply because the project site is not within a Very High Fire Hazard Severity Zone and is not in a CAL FIRE responsibility area.

The changes to the Transportation/Traffic section—which is now called simply Transportation—refocuses the analysis on vehicle miles traveled (VMT). Pursuant to Senate Bill 743, the Natural Resources Agency promulgated CEQA Guidelines section 15064.3 in late 2018. It became effective in early 2019. Subdivision (a) of that section provides that “...vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, ‘vehicle miles traveled’ refers to the amount and distance of automobile travel attributable to a project...” Section 15064.3(c) states that the section applies prospectively and did not require lead agencies to undertake VMT analysis until July 1, 2020. Even as of that date, the VMT requirement only applied to projects for which draft EIRs (or negative declarations) had not yet been issued. An addendum is considered together with a certified Final EIR (CEQA Guidelines, § 15164 (d)) and thus represents a later stage in the CEQA process that follows a period of time after the issuance of a draft EIR. The new VMT requirement, then, does not apply to an addendum. Here, the SVSP EIR at issue was certified in 2010, approximately 10 years before the VMT requirement took effect. Case law substantiating this includes “Citizen’s for Positive Growth & Preservation v. City of Sacramento” (2019).

Although, as explained above, VMT is not applicable to this addendum, the City of Roseville considered VMT in the SVSP EIR, albeit in a different context. The SVSP EIR’s chapter regarding Climate Change and Greenhouse

Gas Emissions included an estimate of greenhouse gas emissions that would be generated by the traffic associated with the operation of uses allowed under the SVSP at buildout. As discussed in more detail in the Transportation section of this Environmental Checklist, the trip generation associated with the project is well within the trips that were assumed as part of the SVSP. Because the project's proposed uses are also consistent with the uses allowed pursuant to the SVSP, the trip lengths associated with project trips would not be expected to meaningfully vary from the assumptions that were used to generate the original VMT analysis in the SVSP EIR. Therefore, even if VMT were required to be analyzed, the project would not generate new or more severe impacts with respect to VMT as compared with the SVSP EIR.

Moreover, the City also analyzed VMT in connection with the 2035 General Plan Update EIR (SCH No. 2019080418). The General Plan Update (GPU) EIR¹ used the Roseville travel forecasting model to estimate VMT for the City. The VMT data was then normalized to residents as a "per capita" rate. As described in the GPU EIR, and consistent with the VMT reductions in OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA*, the City has adopted a VMT significance threshold of 12.8 VMT/capita. This threshold represents a 15 percent reduction to baseline per capita VMT. The GPU EIR concluded that buildout of the remaining undeveloped areas of the City, consistent with existing land use designations and existing development agreements, would exceed the City's adopted threshold resulting in a Significant impact in both the constrained and unconstrained buildout scenarios, and that mitigation requiring land use changes was not feasible because of existing development agreements in place for the undeveloped areas of the City.

As stated in the GPU EIR and pursuant to the tiering provisions of CEQA, projects that are consistent with the General Plan do not require further VMT analysis. Quantitative analyses are not required if it can be demonstrated that a project would generate VMT which is equivalent to or less than what was assumed in the GPU EIR. The proposed project includes construction of a commercial development on a parcel with a Community Commercial land use designation. A large commercial development was anticipated on this site in the SVSP and GPU EIR and the proposed project does not exceed what was anticipated with buildout of the SVSP (further discussion of this is found in the Transportation section of this Environmental Checklist) or analyzed in the GPU EIR; therefore, it can be concluded that the project is consistent with GPU EIR analysis as it relates to VMT, and the project does not require further VMT analysis.

Based on the foregoing, none of the modifications to CEQA Guidelines Appendix G require new analysis related to impacts which were not known or which could not have been known at the time the SVSP EIR was prepared. Therefore, an Addendum is the appropriate environmental document to describe the impacts of the proposed project.

¹ General Plan Update EIR: www.roseville.ca.us/GeneralPlan

CHECKLIST

I. Aesthetics

	Where Impact Was Analyzed in Prior Environmental Documents	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a. Have a substantial adverse effect on a scenic vista?	SVSP EIR Section 4.14	No	No	No	None
b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Same	No	No	No	None
c. In non-urbanized area, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Same	No	No	No	None
d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	Same	No	No	No	SVSP EIR MM 4.14-1 SVSP EIR MM 4.14-2 SVSP EIR MM 4.14-3

Discussion: Impacts to visual and aesthetic resources were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as significant and unavoidable. The SVSP included a concept plan for potential development of the site with large format retail buildings adjacent to Sierra Village Drive. Thus, it was contemplated that homes to the north would have some view of the commercial development. While the proposed project is taller than the buildings in the concept plan, the setback from the homes is larger resulting in a comparable aesthetic impact. The proposed project does not introduce development to properties not already planned for development, and the scale of development is consistent with the development anticipated within the SVSP EIR. The proposed uses are substantially consistent with the build out assumptions and would not increase the severity of already identified significant impacts. The SVSP EIR analysis remains adequate and applicable to the proposed project.

The SVSP EIR found there were no designated or eligible scenic vistas or resources within or near the SVSP, and this evaluation remains adequate and applicable to the proposed project.

At the time of the SVSP EIR the planning area was within a non-urbanized area, and impacts to aesthetic and visual resources were found to be significant and unavoidable, because the Specific Plan would result in large-scale development within an area dominated by open space. The

proposed project is currently within an urban area, and the project has been evaluated for compliance with the City's Community Design Guidelines (CDG) and the design guidelines established in the SVSP. As it relates to aesthetics, these standards ensure the high quality design and architectural character of any buildings developed as well as establishing minimum landscaping standards. The proposed project does not conflict with applicable zoning and other regulations governing scenic quality, and therefore impacts are less than significant. The SVSP EIR analysis remains adequate and applicable to the proposed project.

As it relates to light and glare, the SVSP EIR found impacts would be significant and unavoidable, because the Specific Plan would introduce artificial light into a rural area. EIR Mitigation Measure (MM) 4.14-1 requires all light fixtures for commercial and office uses to have glare shields and all new buildings to be constructed with low-glare materials; this mitigation measure applies to the proposed project. In addition, project lighting is conditioned to comply with current City standards (i.e., CDG), which require the project to limit the height of light standards and also require cut-off lenses and glare shields to minimize light and glare impacts. MM 4.14-2 recommends low-glare materials be utilized for new buildings to reduce glare impacts. MM 4.14-3 reduces light impacts on nearby open space through design measures and light direction and placement. Based on the above discussion, there would be no new significant impacts not previously identified in the SVSP EIR, and the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: SVSP EIR Mitigation Measures **MM 4.14-1** (site lighting to minimize nuisance), **MM 4.14-2 (use low-glare materials)**, and **MM 4.14-3** (avoid light spillover into Curry Creek and Open Space) can be found in the table of applicable mitigation measures included with this Addendum (see Attachment 1).

II. Agricultural & Forestry Resources

	Where Impact Was Analyzed in Prior Environmental Documents	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
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?	SVSP EIR Section 4.1	No	No	No	SVSP EIR MM 4.1-2
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	Same	No	No	No	None
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))?	Same	No	No	No	None
d) Result in the loss of forest land or conversion of forest land to non-forest use?	Same	No	No	No	None
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?	Same	No	No	No	None

Discussion: Impacts to agricultural resources were adequately addressed in the SVSP EIR as it relates to the proposed project. There is no significant change in the proposed project that would change the environmental impact for this section. The SVSP EIR concluded development of the project area would convert fallow grazing land to urbanized development and have a less than significant impact with mitigation. The SVSP EIR found that while the project site did not provide opportunities for prime agricultural production, approving an urban land use designation would preclude any agricultural use of the land in the future. The SVSP EIR found that with mitigation in the form of 1:1 open space preservation, the impact would be less than significant. The project site is no longer used for agricultural purposes, does not include agricultural zoning, is not within

or adjacent to one of the areas of the City designated as a protected farmland category on the Placer County Important Farmland map, is not within or adjacent to land within a Williamson Act Contract, and is not considered forest land. For these reasons, project impacts related to agricultural and forestry resources are less than significant. The proposed project is substantially consistent with the development assumptions of the SVSP EIR and would not increase the severity of already identified less than significant impacts. The SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: SVSP EIR Mitigation Measure MM 4.1-2 required preservation of open space within Placer County in order to mitigate for the loss of open space in the SVSP. Though this measure remains applicable to the project, the measure has been completed via an established fee program that directs funds to the Placer Land Trust, which then sets aside land.

III. Air Quality

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Conflict with or obstruct implementation of the applicable air quality plan?	SVSP EIR Section 4.4	No	No	No	None
b) Result in a cumulatively considerable net increase of any criteria for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	Same	No	No	No	SVSP EIR MM 4.4-1, MM 4.5-1, and MM 4.5-2
c) Expose sensitive receptors to substantial pollutant concentrations?	Same	No	No	No	WMM 4.4-7 (a) ²
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Same	No	No	No	None

Discussion: a–b) The SVSP EIR concluded that standard dust control and other construction measures would be sufficient to avoid particulate matter and ozone precursor construction impacts, but that reactive organic gases would remain significant. The SVSP and EIR anticipated over

² The SVSP encompasses area that had been subject to program-level analysis in the West Roseville Specific Plan EIR. Mitigation measures from the West Roseville Specific Plan EIR that remained applicable were incorporated into the SVSP EIR and are denoted by a “WMM” label.

950,000 square feet of commercial development on Specific Plan Parcels KT-41A and KT-41B. A concept plan for parcels KT-41A and KT-41B was provided within the SVSP to illustrate probable commercial use types and building layouts. The concept project was a large retail center of “over 950,000 square feet of commercial, business professional, and service uses.” While the concept plan assumed somewhat less building square footage, air quality impacts related to construction remain within the scope of the SVSP EIR. Air quality impacts related to grading remain the same, because the SVSP EIR assumed the entire site would be developed, consistent with the proposed project. Construction air quality is based on maximum daily emissions, so while some additional building area may lengthen the overall construction schedule, it will not increase the amount of construction which can feasibly occur on any given day for a large commercial site. Therefore, the construction activity associated with the proposed project remains consistent with the scale of daily construction activity and resulting scope of impacts anticipated in the SVSP EIR.

For operational impacts, while the square footage of the proposed Erickson Senior Living project is greater than that shown in the concept site plan, the difference in commercial use type leads to a less intensive operational impact. In terms of operational air quality impacts, there are two general types of pollutants: area and mobile source emissions, with mobile emissions representing the bulk of operational emissions. The area emissions related to landscaping equipment and consumer products will be consistent with the retail center anticipated in the SVSP EIR, as the proposed project and a retail center include similar amounts of landscaping. The mobile source emissions related to automobile emissions will be less than the retail center. A traffic study completed by Kimley-Horn is included as Attachment 2 and includes a comparison of vehicle trip generation for the proposed project versus the retail center anticipated in the SVSP EIR. The proposed project will generate only 24 percent of the trips assumed for this parcel in the SVSP EIR, which will result in substantially less mobile-source emissions. The project development intensity is substantially less than what was previously evaluated for the project site within the Specific Plan as part of the SVSP EIR. Therefore, the operational air quality impacts of the project fall within the scope of the impacts and mitigation already established in the SVSP EIR, and the SVSP EIR analysis remains adequate and applicable to the proposed project.

c) Toxic Air Contaminants (TACs) are typically generated by stationary sources like facilities using solvents and heavy industrial operations, but can also be generated by more common uses such as gas stations. The SVSP EIR found that development of the Specific Plan would include certain uses, such as gas stations, which could emit TACs, and determined that mitigation could reduce impacts to less than significant levels. The proposed project, which includes 1,200 independent living units, 40 skilled nursing beds, and 200 assisted living/memory care beds, is not a stationary source of TAC emissions, and therefore will not result in significant impacts related to TACs.

d) The SVSP EIR found that development of the Specific Plan would not involve the long-term operation of any new sources of odor and that odors from construction activities would be short-term; therefore, impacts were found to be less than significant and no mitigation was required. Consistent with this analysis, while diesel fumes from construction equipment and delivery trucks are often found to be objectionable, construction is temporary and diesel emissions are minimal and regulated. Typical urban projects such as the proposed project do not result in substantial objectionable odors when operated in compliance with City Ordinances (e.g. proper trash disposal and storage). The Project is a typical urban development that lacks any characteristics that would cause the generation of substantial unpleasant odors. Thus, construction and operation of the proposed project would not result in the creation of objectionable odors affecting a substantial number of people. Therefore, the SVSP EIR analysis remains adequate and applicable, and impacts related to odors are less than significant.

Mitigation Measures: SVSP EIR Mitigation Measures **MM 4.4-1, MM 4.5-1, MM 4.5-2, and WMM 4.4-7(a)** were identified to reduce the impacts related to air quality though the impact would still be significant and unavoidable. These measures remain applicable to the proposed project.

IV. Biological Resources

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
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 Game or U.S. Fish and Wildlife Service?	SVSP EIR Section 4.8	No	No	No	SVSP EIR MM 4.8-1 to 4.8-7
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Same	No	No	No	SVSP EIR MM 4.8-4 to 4.8-7
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	Same	No	No	No	SVSP EIR MM 4.8-1 to 4.8-7
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Same	No	No	No	SVSP EIR MM 4.8-4 to 4.8-7

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Same	No	No	No	None
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Same	No	No	No	None

Discussion: Impacts to Biological Resources were adequately addressed in the SVSP EIR as it relates to the proposed project. There is no significant change in the proposed project that would change the environmental impact for this section. The SVSP EIR concluded development of the project area would impact wetlands on-site and could potentially impact special status species found in the area. The EIR concluded that the impact on Biological Resources would be less than significant with mitigation. Mitigation measures were adopted to reduce impacts to wetlands, vernal pool species, Swainson’s hawk, burrowing owl, and other protected raptors nesting and foraging habitat to less-than-significant levels. As discussed in the Environmental Setting section, above, the project site has been rough-graded and regularly maintained through discing, and no wetlands, intact grasslands, or trees remain on the site to be impacted. The proposed project is within the scope of the development assumptions for the parcels created for commercial development with the SVSP. There is no significant change in the proposed project that would change the environmental impact for this section and the proposed project is located on properties already anticipated for development.

The mitigation measures adopted with certification of the SVSP EIR remain appropriate and no additional impacts will occur. EIR mitigation measures adopted for the purpose of avoiding or reducing impacts to special habitats (such as wetlands and grasslands) and their dependent species were implemented prior to rough grading of the site, and have been effectuated; these measures are no longer applicable. Mitigation measures which remain applicable are those requiring surveys for ground-nesting birds (MM 4.8-3) and avoiding light and glare into the Curry Creek open space (MM4.14-3). Impacts remain less than significant upon compliance with the applicable mitigation measures. The SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: Effectuated mitigation measures which are no longer applicable are Mitigation Measure MM 4.8-1 (wetland permits and no net loss), MM 4.8-2 (relocate western spadefoot), MM 4.8-4 (preservation of grassland habitat), MM 4.8-5 (wildlife movement protection), MM 4.8-6 (habitat restoration), and MM 4.8-7 (off-site surveys for infrastructure). Mitigation Measures **MM 4.8-3** (protection for nesting birds) and **MM 4.14-3** (avoid light spill into Curry Creek open space) remain applicable to the proposed project, and will ensure impacts to biological resources remain less than significant.

V. Cultural Resources

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Cause a substantial adverse change in the significance of an historic resource pursuant to in Section 15064.5?	SVSP EIR Section 4.9	No	No	No	None
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	Same	No	No	No	SVSP EIR MM 4.9-1 to 4.9-2
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	Same	No	No	No	SVSP EIR MM 4.9-1 to 4.9-2

Discussion: Impacts to cultural resources were adequately addressed in the SVSP EIR as it relates to the proposed project. There is no significant change in the proposed project that would change the environmental impact for this section. The SVSP EIR discussed the potential for subsurface remains or deposits to be found on the site, and included a mitigation measure requiring a cessation of work should any item of cultural interest be found. Surveys performed in the project area did not detect evidence of prehistoric archeological resources. However, the impact to cultural resources was found to be potentially significant and unavoidable because there is always the potential that resources could be encountered during grading. Though the project site has been rough-graded and no resources were found, there is still the possibility that further grading and site development could unearth resources. The mitigation measures requiring a cessation of work and consultation should resources be discovered remain applicable (MM 4.9-1 and MM 4.9-2). MM 4.9-3 requiring studies before construction of any offsite work is also applicable to any off-site work that may be needed. The proposed project is substantially consistent with the development assumptions of the SVSP EIR and would not increase the severity of already identified impacts. The SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: Mitigation Measure **MM 4.9-1** (cease work and consult with archeologist) and **MM 4.9-2** (cease work and consult with paleontologist), and **MM 4.9-3** (conduct studies prior to offsite infrastructure construction) remain applicable to the proposed project.

VI. Energy

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	SVSP EIR Section 4.12.5	No	No	No	None
b) Conflict with or obstruct a state or local plan for renewable energy or energy inefficiency?	SVSP EIR Section 4.12.5	No	No	No	None

Discussion: Impacts to energy resources were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant. The SVSP EIR concluded that development and implementation of the SVSP would add land uses that would increase the demand for electrical services. However, Roseville Electric determined there were no constraints to providing a reliable energy source to serve the development proposed in the SVSP area. Electricity in the area is provided by Roseville Electric and natural gas is provided by Pacific Gas & Electric (PG&E). Impacts 4.12-5.1 and 4.12-5-2 in the SVSP EIR evaluated the potential for development of the SVSP to increase demands for electricity and natural gas and found these impacts to be less than significant.

The project includes development of an approximately 2.1 million square-foot continuing care retirement community. The project would consume energy both during project construction and during project operation. During construction, fossil fuels, electricity, and natural gas would be used by construction vehicles and equipment. However, the energy consumed during construction would be temporary, and would not represent a significant demand on available resources. There are no unusual project characteristics that would necessitate the use of construction equipment or methods that would be less energy-efficient or which would be wasteful.

The completed project would consume energy related to building operation, exterior lighting, landscape irrigation and maintenance, and vehicle trips to and from the use. In accordance with California Energy Code Title 24, the project would be required to meet the Building Energy Efficiency Standards. This includes standards for water and space heating and cooling equipment; insulation for doors, pipes, walls, and ceilings; and appliances, to name a few. The project would also be eligible for rebates and other financial incentives from both the electric and gas providers for the purchase of energy-efficient appliances and systems, which would further reduce the operational energy demand of the project. The project plans were distributed to both PG&E and Roseville Electric for comments, and was found to conform to the standards of both providers; energy supplies are available to serve the project. Roseville Electric provided a memo that confirmed they would be able to provide the electrical capacity needed for the Erickson Senior Living project. Construction of the project will occur in phases over approximately 10 years. The memo states what infrastructure improvements will need to be completed by the project developer if they have not yet been completed with other anticipated

surrounding developments. This is a matter of timing for the development and does not conflict with the ability to efficiently provide energy to other uses.

The proposed project will not result in inefficient, wasteful, or unnecessary consumption of energy, nor would it conflict with or obstruct State or local plans for renewable energy or energy efficiency. The proposed uses are within the scope of the build out assumptions of the SVSP EIR and would not increase the severity of already identified significant impacts. The SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: No mitigation measures are required for this Project.

VII. Geology and Soils

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	SVSP EIR Section 4.7	No	No	No	None
i) Ruptures 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.)	Same	No	No	No	None
ii) Strong seismic ground shaking?	Same	No	No	No	None
iii) Seismic-related ground failure, including liquefaction?	Same	No	No	No	None
iv) Landslides?	Same	No	No	No	None
b) Result in substantial soil erosion or the loss of topsoil?	Same	No	No	No	None

c) Be located in a geological 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?	Same	No	No	No	None
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	Same	No	No	No	None
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	Same	No	No	No	None
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	SVSP EIR Section 4.7 and Section 4.9	No	No	No	SVSP EIR MM 4.9-2

Discussion: Impacts to geology and soils resources were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant. The project is not expected to expose people or structures to potential substantial adverse effects involving seismic shaking, ground failure or landslides. The project site is located in Roseville, which is in Placer County. The California Department of Mines and Geology classifies the South Placer area as a low severity earthquake zone. No active faults are known to exist within the County. The project site is considered to have low seismic risk with respect to faulting, ground shaking, seismically related ground failure and liquefaction.

The SVSP EIR indicated that compliance with existing regulations and permit requirements would be sufficient to avoid impacts related to these issues. This conclusion remains appropriate for the proposed project because there is no new information indicating that geologic conditions are different than previously understood and the proposed project is within the development area anticipated in the SVSP EIR.

As discussed in the Cultural Resources section, though the project site has been rough-graded and no resources were found, there is still the possibility that further grading and site development could unearth resources. Should any evidence of paleontological resources (e.g. fossils) be encountered during grading or excavation, work shall be suspended within 100 feet of the find, and the City of Roseville shall be immediately notified. At that time, the City shall coordinate any necessary investigation of the site with a qualified paleontologist to assess the resource and provide proper management recommendations.

The proposed uses are substantially consistent with the build out assumptions of the SVSP EIR and would not increase the severity of already identified significant impacts. The SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: MM 4.9-2 (cease work and consult with paleontologist) remains applicable to the proposed project.

VIII. Greenhouse Gases

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	SVSP EIR Section 4.5	No	No	No	SVSP EIR MM 4.4-1, 4.5-1 and 4.5-2
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Same	No	No	No	None

Discussion: Impacts relating to greenhouse gases were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as significant and unavoidable. The SVSP EIR quantified the greenhouse gas (GHG) emissions resulting from buildout and operation of the SVSP and concluded that the SVSP would cause significant and unavoidable impacts with respect to greenhouse gas (GHG) emissions. Mitigation measures were adopted to reduce the project’s GHG emissions to the extent feasible. Construction activity associated with the proposed project remains consistent with the scale of activity and resulting scope of impacts anticipated in the SVSP EIR, as previously discussed in the Purpose and Scope of Addendum section. For operational impacts, GHG is primarily generated by vehicle travel, and to a much lesser extent by building energy usage. The proposed project is consistent with the General Plan land use designation and with the scale and intensity of development anticipated in the SVSP EIR, also as previously discussed in the Purpose and Scope of Addendum section. Although the building area of the proposed project is greater than anticipated in the SVSP EIR, the development intensity and vehicle travel, as discussed in the Air Quality section, will be substantially less. Furthermore, the California Building Code (CBC) requirements related to energy efficiency have become more stringent since publication of the EIR, and therefore GHG emissions related to building energy demands would be less than previously anticipated.

The City evaluated the proposed Erickson Senior Living in order to determine whether the project falls within the scope of vehicle-related GHG emissions anticipated in the SVSP EIR, first by examining the trip characteristics of the project and then by examining the expected trip lengths. Kimley-Horn prepared a transportation memorandum (Kimley-Horn Memo, Attachment 2) dated March 13, 2023 which compares the anticipated transportation impacts of the project to the impacts anticipated in the SVSP EIR. The Memo indicates the SVSP EIR transportation analysis accounted for the various uses (e.g. strip malls, small-scale retail, and large format retail) that make up the Community Commercial land use. In other words, the traffic analysis assumed and accounted for large retail uses that would generate a higher volume of traffic as well as smaller retail uses, which would generate a relatively smaller amount of traffic. The Memo concludes that the project will generate fewer trips and result in less travel than the typical retail uses evaluated in the SVSP EIR.

As stated in the GPU EIR and pursuant to the tiering provisions of CEQA, projects that are consistent with the General Plan do not require further VMT analysis. Quantitative analyses are not required if it can be demonstrated that a project would generate VMT that is equivalent to or less than what was assumed in the GPU EIR.

Based on the foregoing analysis, greenhouse gas emissions, from both the construction and operational phases, will result in impacts within the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project. The project has incorporated the applicable requirements of SVSP EIR mitigation into the project design, and will comply with the required mitigation in the SVSP EIR.

Mitigation Measures: Mitigation Measures **MM 4.4-1** (construction emissions), **MM 4.5-1** (operational emissions), **MM 4.5-2** (greenhouse gas emissions) from the SVSP EIR remain applicable to the proposed project, and have been incorporated into the design of the project as appropriate.

IX. Hazards and Hazardous Materials

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	SVSP EIR Section 4.10	No	No	No	None
b) Create a significant hazard to the public or the environment though reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Same	No	No	No	SVSP EIR MM 4.10-1
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Same	No	No	No	None

<p>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?</p>	<p>Same</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>None</p>
<p>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 or excessive noise for people residing or working in the project area?</p>	<p>Same</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>None</p>
<p>f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</p>	<p>Same</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>None</p>
<p>g) Expose people or structures either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?</p>	<p>Same</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>None</p>

Discussion: Impacts related to hazards and hazardous materials were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant with mitigation. The SVSP EIR includes a brief overview for each impact topic, concluding that compliance with existing federal, state, and local regulations regarding the use, transport and disposal of hazardous materials would ensure most impacts will be less than significant. The exception was for unknown soil contamination, as land which was used for agricultural purposes may include undiscovered, underground storage tanks or other contamination issues; mitigation for this was included. The project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The SVSP EIR analysis also found that there would be sufficient emergency services and facilities and that the area was not located within an airport land use plan or other aviation hazard area. These conclusions still fit for the proposed project, which is within the same development footprint.

Standard construction activities would require the use of hazardous materials such as fuels, oils, lubricants, glues, paints and paint thinners, soaps, bleach, and solvents. These are common household and commercial materials routinely used by both businesses and average members of the public. The materials only pose a hazard if they are improperly used, stored, or transported either through upset conditions (e.g. a vehicle accident) or mishandling. In addition to construction use, the operational project would result in the use of common hazardous materials as well, including bleach, solvents, and herbicides. Regulations pertaining to the transport of materials are codified in 49 Code of Federal Regulations 171–180, and transport regulations are enforced and monitored by the California Department of Transportation and by the California Highway Patrol. Specifications for storage on a construction site are contained in various regulations and codes, including the California Code of Regulations, the Uniform Fire Code, and the California Health and Safety Code. These same codes require that all hazardous materials be used and stored in the manner specified on the material packaging. Existing regulations and programs are sufficient to ensure that potential impacts as a result of the use or storage of hazardous materials are reduced to less than significant levels.

The California Department of Forestry and Fire Protection (CAL FIRE) is the state agency responsible for wildland fire protection and management. As part of that task, CAL FIRE maintains maps designating Wildland Fire Hazard Severity zones. The City is not located within a Very High Fire Hazard Severity Zone, and is not in a CAL FIRE responsibility area; fire suppression is entirely within local responsibility. The project site is in an urban area, and therefore would not expose people to any risk from wildland fire.

The proposed uses for the Erickson Senior Living site are a continuing care retirement community, assisted living/memory care, and skilled nursing, and are all uses found in the Community Commercial land use category. These uses are substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: The SVSP EIR included a mitigation measure to address the low possibility that some contamination of soils still lingered due to past use of the land for agricultural purposes. The measure, Mitigation Measure **MM 4.10-1**, indicates that if evidence of contamination is observed (stained soils, unearthing of a tank, etc.) then proper testing and remediation is required, in coordination with the appropriate City Departments. This measure remains applicable to the project.

X. Hydrology and Water Quality

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	SVSP EIR Section 4.13	No	No	No	SVSP EIR MM 4.13-1
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	Same	No	No	No	None
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	Same	No	No	No	None
i) result in substantial erosion or siltation on or off-site;	Same	No	No	No	None
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	Same	No	No	No	None
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater systems or provide substantial additional sources of polluted runoff; or	Same	No	No	No	None
iv) impede or redirect flood flows?	Same	No	No	No	None

d) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Same	No	No	No	None
e) 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?	Same	No	No	No	None
f) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	Same	No	No	No	None

Discussion: Impacts related to hydrology and water quality were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant with mitigation. A Drainage and Storm Water Master Plan was prepared and approved by the City as part of the SVSP EIR. As noted in the EIR, the Drainage and Storm Water Master Plan demonstrated that the increases in impervious surfaces being caused by buildout of the SVSP would be offset by proposed drainage facilities and storm water improvements. The project is located adjacent to an open space preserve to the southwest, which contains Curry Creek, but no drainage is proposed directly into the creek. The project would offset increases in peak flow and no development would occur within the 100-year floodplain area. The project design complies with the West Placer Storm Water Quality Design Manual, and includes onsite treatment of stormwater through the use of onsite swales and other best management practices. With regard to storm water quality, the EIR notes that there are existing programs, regulations, and permits in place to ensure that the project would not have significant effects related to water pollution from construction or operation, though a mitigation measure is included to require compliance with these regulations.

The project is in an area of flat topography and is not near any large water bodies or dams/levees, so would not be subject to losses due to dam/levee failure, seiche, tsunami, or mudflow. The project falls within the development footprint of the SVSP, and does not result in any changes to the scope or scale of impacts, and the prior conclusions remain appropriate. Thus, the project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: Mitigation Measure **MM 4.13-1** was included to require compliance with the City’s stormwater quality standards, including preparation of a Storm Water Pollution Prevention Plan (SWPPP). This measure remains applicable to the proposed project.

XI. Land Use and Planning

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Physically divide an established community?	SVSP EIR Section 4.1	No	No	No	None
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation of an agency adopted for the purpose of avoiding or mitigating an environmental effect?		No	No	No	SVSP EIR MM 4.1-3, 4.6-1 and 4.6-2

Discussion: Impacts related to land use and planning were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant with mitigation. The SVSP EIR concluded that there were some potential land use incompatibilities between certain types of uses in the Specific Plan, but that these could be addressed by a mix of mitigation measures and compliance with the City Noise Ordinance and Grading Ordinance. The EIR concluded that all impacts of the SVSP could be reduced to less than significant levels with mitigation. The Erickson Senior Living project involves a commercial use, which is principally permitted in the General Commercial zone and Community Commercial designated land use parcel where the project is proposed. The proposed uses are consistent with the buildout assumptions anticipated in the SVSP EIR, and therefore the conclusions of the SVSP EIR remain applicable to the proposed project. The project is consistent with the policies of the Zoning Ordinance, SVSP, and the General Plan which are adopted for the purpose of avoiding environmental effects.

The project area has been planned for development, including adequate roads, pedestrian paths, and bicycle paths to provide connections within the community. The project involves frontage improvements including new driveways, sidewalks, and pedestrian connections. As such, the project will not physically divide an established community.

As described above, the project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: Mitigation Measure **MM 4.6-1** (construction noise) and **MM 4.6-2** (commercial noise controls) are applied during construction, so remain applicable to the proposed project.

XII. Mineral Resources

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	SVSP EIR Section 4.7	No	No	No	None
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	Same	No	No	No	None
<p>Discussion: Impacts related to mineral resources were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant. The SVSP EIR indicated that there were no significant mineral resources in the area, and this finding remains accurate. Therefore, the project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.</p> <p>Mitigation Measures: None required for this Project.</p>					

XIII. Noise

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents' Mitigation Measures Implemented or Addressing Impacts.
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	SVSP EIR Section 4.6	No	No	No	SVSP EIR MM 4.6-1
b) Generation of excessive ground borne vibration of ground borne noise levels?	Same	No	No	No	SVSP EIR MM 4.6-1
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Same	No	No	No	None

Discussion: Impacts related to noise were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as significant and unavoidable for temporary construction noise and increases in traffic noise outside the plan area. Construction noise in general was discussed, and addressed via mitigation. Noise was determined to be an impact resulting from traffic on all of the major roadways in the SVSP area. Traffic-related noise levels expected in the year 2025 plus project were found to be significant and unavoidable.

The proposed Erickson Senior Living includes a continuing care retirement community consisting of independent living units, assisted living, memory, care and skilled nursing facilities, which are all principally permitted uses on this parcel and are therefore substantially consistent with the build out assumptions in the SVSP EIR. None of the proposed uses includes equipment or operations that are known to create noise in excess of a typical medical office use.

Existing and future noise from Baseline Road was estimated to be approximately 66 db in the existing plus SVSP project condition and 71.7 db at full buildout (at a point 100 feet from the centerline). As discussed in the Transportation section of this Environmental Checklist, the proposed project is within the scope of the transportation impacts analyzed in the SVSP EIR, and therefore would not result in new or increased impacts related to roadway noise.

The project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: Mitigation Measure **MM 4.6-1** (construction noise), was applied in the SVSP EIR related to commercial and residential projects. Construction noise controls in the mitigation includes located fixed equipment away from noise sensitive uses and having a construction disturbance coordinator to address noise concerns. This mitigation measure remains applicable to the proposed project.

XIV. Population and Housing

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	SVSP EIR Section 4.2	No	No	No	None
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	Same	No	No	No	None

Discussion: Impacts related to population and housing were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as significant and unavoidable for inducement of substantial population growth. The SVSP EIR indicated the SVSP would increase the number of housing units above those which had been anticipated in the General Plan, and analyzed the effect on supporting services, infrastructure, and other issues related to environmental impacts. It was concluded that impacts would be significant and unavoidable. The impact identified by the SVSP EIR was the result of adopting an urban land use plan over a non-urbanized area. The proposed project is currently within an urbanized area which is planned for such use consistent with the development assumptions for this parcel in the SVSP EIR. Technical studies were provided to show that water and sewer impacts (Attachment 3) and electricity impacts (Attachment 4) are consistent with the impacts of the SVSP EIR and the site can be adequately served with existing planned infrastructure. Therefore the project will not have a new or more severe impact related to unplanned population growth. No existing buildings or residents are present on the project site; therefore, no residences or communities would be displaced.

The project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: None required for this Project.

XV. Public Services

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
Would the project 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 the public services:					
a) Fire protection?	SVSP EIR Section 4.11	No	No	No	None
b) Police protection?	Same	No	No	No	None
c) Schools?	Same	No	No	No	None
d) Parks?	Same	No	No	No	None
e) Other public facilities?	Same	No	No	No	None

Discussion: Impacts related to public services were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant. The SVSP EIR concluded that fire and police protection services, and other public services would not be negatively affected by the project. Existing City codes and regulations require adequate water pressure in the water lines, and construction must comply with the Uniform Fire and Building Codes used by the City of Roseville. Additionally, the applicant is required to pay a fire service construction tax, which is used for purchasing capital facilities for the Fire Department. Sales taxes and property taxes resulting from development will add revenue to the General Fund, which provides funding for police services. Existing codes, regulations, funding agreements, and facilities plans are sufficient to ensure less than significant impacts.

An analysis of impacts to schools was included in the SVSP EIR, which concluded that two new elementary schools and one new intermediate school would be required in the project area. The high school students generated from the SVSP were assumed in the nearby high schools located outside the plan area. A portion of the SVSP is located within the Center School District and a portion is located within the Roseville City School District, though the current project area is entirely within the Center School District. This project will contain a continuing care

retirement community and no children will reside in the development, and will therefore not create an increased demand for schools or have an impact on schools.

The developer will be required to pay fees into a Community Facilities District, which provides funding for park services. Future park and recreation sites and facilities have already been identified as part of the Specific Plan process. The City charges fees for end-users for other services, such as garbage and greenwaste collection, in order to fund those services. Existing codes, regulations, funding agreements, and facilities plans are sufficient to ensure less than significant impacts.

The project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR because no development beyond what was analyzed in the SVSEP EIR would occur and accordingly there would be no increased demand for services or need for construction of new facilities. Therefore, the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: None required for this Project.

XVI. Recreation

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that physical deterioration of the facility would occur or be accelerated?	SVSP EIR Section 4.11	No	No	No	None
b) 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?	Same	No	No	No	None

Discussion: Impacts related to recreation were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant. The SVSP indicates that the required parkland dedication was met by dedication of parkland and through payment of park dedication in-lieu fees. As noted in the EIR, the payment of Citywide and neighborhood park fees will be required, and the payment of fees combined with the dedication of parkland will ensure that impacts to park services are less than significant. The project includes many on-site park-like amenities for residents, who will be elderly and largely stay within the development; therefore, this conclusion remains applicable to the proposed project. Moreover, because the level of development is consistent with what was analyzed in the SVSP EIR, the project would not cause the need for construction of recreational facilities that might have an adverse effect on the environment beyond what was previously studied.

Given the foregoing, the project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: None required for this Project.

XVII. Transportation

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	SVSP EIR Section 4.3	No	No	No	SVSP EIR MM 4.3-1 to 4.3-5
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	n/a	No	No	No	None
c) Substantially increase hazards due to a geometric design feature(s) (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	SVSP EIR Section 4.3	No	No	No	None

d) Result in inadequate emergency access?	Same	No	No	No	None
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Discussion: The SVSP EIR evaluated the traffic impacts to existing and future roadways from traffic being generated by the anticipated uses within the plan area. The EIR concluded that, with mitigation, impacts to City roadways would be less than significant. Impacts to adjacent agency roadways were identified as a significant and unavoidable impact, and mitigation to lessen the impact was adopted. These analyses were based upon the level of service criteria and metrics. Per changes in state law, level of service is no longer considered an impact under CEQA, such that this document need not further address the level of service impacts studied in the EIR. However, the Kimley-Horn Transportation Memo confirms that the trips generated by the project are significantly less than the SVSP EIR assumptions and thus the level of service conclusions in that EIR remain valid. In accordance with the changes in the law adopted after the EIR was certified, wholly new CEQA documents must examine transportation impacts in terms of vehicle miles traveled (VMT). Though there is no requirement to consider VMT associated with the project given use of the existing EIR, the discussion below provides information as to the project's consistency with the VMT assumptions within the Climate Change and Greenhouse Gas Emissions chapter of the SVSP EIR and the General Plan Update (GPU) EIR.

Checklist item "b" focuses on Vehicle Miles Traveled (VMT). This was added to the checklist after publication of the SVSP EIR. However, the SVSP EIR did include quantification of VMT projected from Specific Plan implementation. The SVSP EIR's chapter regarding Climate Change and Greenhouse Gas Emissions included an estimate of greenhouse gas emissions that would be generated by the traffic associated with the operation of uses allowed under the SVSP at buildout. As discussed in the Kimley-Horn Memo, the trip generation and travel associated with the project is well within the trips that were assumed as part of the SVSP. Because the project's proposed uses are also consistent with the uses allowed pursuant to the SVSP, the trip lengths associated with project trips would also be expected to mesh with the assumptions that were used to generate the original VMT analysis in the SVSP EIR. Therefore, VMT stemming from the project would be within the scope of VMT set forth in the SVSP EIR, confirming that no new or more severe VMT impacts would result.

In addition, the GPU EIR used the Roseville travel forecasting model to estimate VMT for the City. The VMT data was then normalized to residents as a "per capita" rate. As described in the GPU EIR, and consistent with the VMT reductions in OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA, the City has adopted a VMT significance threshold of 12.8 VMT/capita. This threshold represents a 15 percent reduction from baseline per capita VMT. The GPU EIR concluded that buildout of the remaining undeveloped areas of the City, consistent with General Plan land use designations and existing development agreements, would exceed the City's adopted threshold, resulting in a significant and unavoidable impact in both the constrained and unconstrained buildout scenarios.

As stated in the GPU EIR and pursuant to the tiering provisions of CEQA, projects that are consistent with the General Plan do not require further VMT analysis; the proposed project is consistent with the General Plan. Quantitative analyses are not required if it can be demonstrated that a project would generate VMT that is equivalent to or less than what was assumed in the GPU EIR.

The proposed project has no impact on air traffic patterns, and does not present substantial safety risks. The project design does not introduce hazards such as sharp curves or dangerous intersections. The project has been reviewed by the City Engineering Division and City Fire Department staff, and has been found to be consistent with the City's Design Standards. Furthermore, standard conditions of approval added

to all City project require compliance with Fire Codes and other design standards. Compliance with existing regulations ensure that impacts are less than significant.

The proposed use is within the scope of the development assumptions of the SVSP EIR and would not increase the severity of already identified significant impacts or cause new significant impacts not previously identified in the SVSP EIR relative to transportation. Thus, the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: Mitigation measures were included for each impacted facility (see SVSP EIR MM 4.3-1 to 4.3-5), but these measures have already been incorporated into the City’s Capital Improvement Program and fee programs. The measures are no longer necessary to apply to individual projects, as a mechanism for their funding and construction is already implemented.

XVIII. Tribal Cultural Resources

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
Would the project cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?	SVSP EIR Section 4.9	No	No	No	None

<p>b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 the lead agency shall consider the significance of the resource to a California Native American tribe.</p>	<p>Same</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>None</p>
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Discussion: Impacts related to tribal cultural resources were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant. In addition to archeological resources, tribal cultural resources are also given particular treatment. Tribal cultural resources are defined in Public Resources Code Section 21074, as either 1) a site, feature, place, geographically-defined cultural landscape, sacred place, or object with cultural value to a California Native American Tribe, that is listed or eligible for listing on the California Register or Historical Resources, or on a local register of historical resources or as 2) a resource determined by the lead agency, supported by substantial evidence, to be significant according to the historical register criteria in Public Resources Code section 5024.1(c), and considering the significance of the resource to a California Native American Tribe. This section was added as a stand-alone section to the CEQA Guidelines after the publication of the prior environmental document to which this Addendum is attached, but were previously addressed as part of the Cultural Resources chapter of the EIRs part of this project, notice of the proposed project was mailed to tribes which had requested such notice, and no requests for consultation were received.

Given the forgoing, the project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: Mitigation Measure **MM 4.9-1** (cease work and consult with archeologist) and **MM 4.9-2** (cease work and consult with paleontologist) remain applicable to the proposed project.

XIX. Utilities and Service Systems

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	SVS EIR Section 4.12.1 & 4.12.3	No	No	No	None
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	SVSP EIR Section 4.12.1	No	No	No	None
c) Result in a determination by the wastewater treatment provider which serves the project that it has adequate capacity to serve the project's projected demand in addition of the provider's existing commitments?	SVSP EIR Section 4.12.3	No	No	No	None
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	SVSP EIR Section 4.12.4	No	No	No	None
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	Same	No	No	No	None

Discussion: Impacts related to utilities and service systems were adequately addressed in the SVSP EIR as it relates to the proposed project, and were previously identified as less than significant. The SVSP EIR addressed water demand for the plan area and determined there was adequate supply to meet the anticipated water demands from development of the plan area. Furthermore, the Kimley-Horn Water and Sewer Memo (Attachment 3), compares the expected water demand from the SVSP with expected water demand for the Erickson Senior Living site based on historical data from other Erickson projects and finds the project is expected to use approximately 83% of the gallons of water day as

anticipated for this site in the SVSP EIR. The City's Environmental Utilities Department staff reviewed the proposed project and memo and concluded there is sufficient water supply to meet the demands of the project. Therefore, the impact conclusions of the SVSP EIR with respect to water supply are still applicable to this project.

Development of the project area will require the construction of water lines and sewer lines and facilities, but these were previously identified through the infrastructure master plans developed for the SVSP. The project does not require any major changes or need for expanded facilities. Additionally, the Water and Sewer Memo concluded that the Peak Wet Weather Flow would be approximately 42% of that anticipated in the SVSP EIR. Therefore, the project will have no effect on wastewater generation beyond that previously analyzed in the SVSP EIR. Environmental Utilities determined that the proposed project changes fell within the scope of the prior assessment. The SVSP EIR concluded that the Pleasant Grove Wastewater Treatment Plan was sized to accommodate flow from the plan area and that impacts would be less than significant. This conclusion remains applicable to the proposed project.

The SVSP EIR indicated that the Western Placer Waste Management Authority facilities would be used to dispose of solid waste, and that there was sufficient capacity to accept solid waste from the SVSP. The SVSP EIR also found that impacts related to solid waste would be significant and unavoidable. The proposed project is a commercial use consistent with the designated zone and is consistent with the waste assumptions of the SVSP.

Given the forgoing, the project is substantially consistent with the build out assumptions in the SVSP EIR, and will result in impacts consistent with the scope of those analyzed in the SVSP EIR and therefore the SVSP EIR analysis remains adequate and applicable to the proposed project.

Mitigation Measures: **Mitigation Measures 4.12.4-1** (expand the landfill) and **4.12.4-2** (diversion of construction debris) were included to require payment of fees to be used for landfill expansion and to require a 50% reduction in the construction waste stream. The landfill expansion measure has already been implemented, as fees are already in place that will apply to the proposed project. The remaining measure regarding diversion of construction debris remains applicable, as it is a project-level measure that applies during construction.

XX. Wildfire

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	n/a	No	No	No	None
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	n/a	No	No	No	None
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	n/a	No	No	No	None
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	n/a	No	No	No	None

Discussion: The Wildfire section was added to the CEQA Guidelines after the publication of the prior environmental document to which this Addendum is attached. The California Department of Forestry and Fire Protection (CAL FIRE) is the state agency responsible for wildland fire protection and management. As part of that task, CAL FIRE maintains maps designating Wildland Fire Hazard Severity zones. The City is not

located within a Very High Fire Hazard Severity Zone, and is not in a CAL FIRE responsibility area; fire suppression is entirely within local responsibility. Checklist questions a—d above do not apply, because the project site is not within a Very High Fire Hazard Severity Zone and is not in a CAL FIRE responsibility area. Therefore, there would be no impact related to this criteria.

Mitigation Measures: None required for this Project.

XXI. Mandatory Findings of Significance

	Where Impact Was Analyzed in Prior Environmental Documents.	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information Requiring New Analysis or Verification?	Prior Environmental Documents Mitigation Measures Implemented or Addressing Impacts.
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, threatened or rare species, or eliminate important examples of the major periods of California history or prehistory?	SVSP EIR	No	No	No	None
b) Does the project have impacts which are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	SVSP EIR	No	No	No	None

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	SVSP EIR	No	No	No	None
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Discussion: Long term environmental goals are not impacted by the proposed project. The cumulative impacts do not deviate beyond what was contemplated in the SVSP EIR, and mitigation measures have already been incorporated. With implementation of the City’s Mitigating Ordinances, Guidelines, and Standards and best management practices, mitigation measures described in this document chapter, and permit conditions, the proposed project will not have a significant impact on the habitat of any plant or animal species. Based on the foregoing, the project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of any wildlife species, or create adverse effects on human beings. Thus, pursuant to CEQA Guidelines section 15164, subdivision (a), the City finds that “none of the conditions described in Section 15162 calling for preparation of a subsequent FEIR have occurred” relative to the mandatory findings of significance.

ENVIRONMENTAL DETERMINATION:

In reviewing the site specific information provided for this project and acting as Lead Agency, the City of Roseville, Development Services Department, Planning Division has analyzed the potential environmental impacts created by this project and determined that the findings of CEQA Section 15162 concerning the decision not to prepare a subsequent EIR or negative declaration and the findings of CEQA Section 15164 concerning the decision to prepare an Addendum can be made. As supported by substantial evidence within the Addendum to the Sierra Vista Specific Plan EIR (2008032115, adopted on May 5, 2010), the Lead Agency makes the following findings:

[X] No substantial changes are proposed in the project which would require major revisions of the previous EIR or Mitigated Negative Declaration.

[X] No substantial changes have occurred with respect to the circumstances under which the project is undertaken.

[X] There is no new information of substantial importance which was not known and could not have been known with the exercise of due diligence at the time the previous EIR was certified as complete or the Mitigated Negative Declaration was adopted.

[X] Only minor technical changes or additions are necessary in order to deem the adopted environmental document adequate.

Addendum Prepared by:

Sean Morales

Sean Morales, Associate Planner
City of Roseville, Development Services–Planning Division

Attachments:

1. SVSP Applicable Mitigation Measures
2. Kimley-Horn Transportation Memo
3. Kimley-Horn Water and Sewer Study
4. City of Roseville Electric Capacity Study

TABLE OF APPLICABLE MITIGATION MEASURES

Mitigation Measure	Implementation	Timing	Reviewing Party	Documents to be Submitted to City	Staff Use Only
<p>MM 4.4-1 Dust and Construction Control Measures</p> <p>In accordance with the PCAPCD, the applicant shall comply with all applicable rules and regulations as listed above (e.g., Rule 202, 218 and 228). In addition, at the time of tentative map the applicant(s) shall implement a minimum of five (5) of the following measures unless superseded by state or other more stringent standards:</p> <p>The following mitigation measures shall be implemented to reduce short-term construction-related air quality impacts. In addition, dust control measures are required to be implemented by all projects in accordance with the City of Roseville Grading Ordinance, and the PCAPCD Fugitive Dust Rule 228.</p> <ul style="list-style-type: none"> Applicant shall submit to PCAPCD a Construction Emission / Dust Control Plan within 30 days prior to groundbreaking. If the PCAPCD does not respond within 20 days, the plan shall be considered approved. The plan must address the minimum requirements found in section 300 and 400 of District Rule 228, Fugitive Dust (www.placer.ca.gov/airpollution/airpolut.htm). The applicant shall keep a hard or electronic copy of Rule 228, Fugitive Dust on-site for reference. The Construction Emission/Dust Control Plan shall include a comprehensive inventory (i.e. make, model, year, emission rating) of all heavy-duty off-road equipment (50 horsepower (HP) or greater) that will be used an aggregate of 40 or more hours for the construction project. If any new equipment is added after submission of the inventory, the prime contractor shall the prime contractor shall contact the APCD prior to the new equipment being utilized. The project representative shall provide PCAPCD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The plan shall demonstrate that the heavy-duty (> 50 HP) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20% NO_x reduction and 45% particulate reduction compared to the most recent ARB fleet average. PCAPCD shall be contacted for average fleet emission data. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. Contractors can access the Sacramento Metropolitan Air Quality Management District's web site to determine if their off-road fleet meets the requirements listed in this measure (http://www.airquality.org/ceqa/Construction_Mitigation_Calculator.xls). <p>The following measures are also included to reduce construction-related ROG, NO_x, PM10 and PM2.5 emissions:</p> <ul style="list-style-type: none"> All construction equipment shall be maintained in good operating condition. Contractor shall ensure that all construction equipment is being properly serviced and maintained as per the manufacturer's specifications. Maintenance records shall be available at the construction site for verification. This measure will reduce combustion emissions of all criteria air pollutants. Prior to the issuance of any grading permits, all applicants shall submit construction plans denoting the proposed schedule and projected equipment use. Construction contractors shall provide evidence that low emission mobile construction will be used, or that their use was investigated and found to be infeasible for the project. Low emission equipment is defined as meeting the California Air Resources Board's Tier III standards. Contractors shall also conform to any construction measures imposed by the PCAPCD as well as City Planning Staff. This measure will primarily reduce ROG, NO_x, PM10, and PM2.5 exhaust emissions. 	<p>The applicants shall submit construction management plans as part of the Grading Permit application.</p> <p>Engineering will review plans for inclusion of these measures prior to issuance of permits or approval of plans.</p>	<p><i>Pre-Construction:</i> Prior to issuance of Grading Permits or Improvement Plans.</p> <p>Add as note on Improvement Plans.</p>	<p>Engineering</p>	<p>Dust Control Plan and proof of submittal to PCAPCD</p>	

- Paints and coating shall be applied either by hand or by high volume, low-pressure spray. This measure will reduce evaporative ROG emissions.
- All construction shall comply with the following measures to reduce fugitive dust related emissions of PM10 and PM2.5:
 - Maintain a minimum 24-inch freeboard on soil haul trucks or cover payloads using tarps or other suitable means.
 - Suspend grading operations during high winds (greater than 15 mph).
 - Sweep streets as necessary if silt is carried off-site to adjacent public thoroughfares or occurs as a result of hauling.
 - Dispose of surplus excavated material in accordance with local ordinances and use sound engineering practices.
 - Schedule activities to minimize the amounts of exposed excavated soil during and after the end of work periods.
 - Phase grading into smaller areas to prevent the susceptibility of larger areas to erosion over extended periods of time.
 - Pave or apply gravel to anyon-site haul roads.
 - Reestablish ground cover on the construction site through seeding and water.
 - Clean earth moving construction equipment with water or sweep clean, once per day, or as necessary (e.g., when moving onsite), consistent with National Pollutant Discharge Elimination System Best Management Practices and the Roseville Grading Ordinance. Water shall be applied to control dust as needed to prevent dust impacts offsite. Operational water truck(s), shall be on-site, as required, to control fugitive dust. Construction vehicles leaving the site shall be cleaned, as needed, to prevent dust, silt, mud, and dirt from being released or tracked off-site.
 - Spread soil binders on unpaved roads and employee/equipment parking areas. Soil binders shall be non-toxic in accordance with state and local regulations. Apply approved chemical soil stabilizers, or vegetated mats, etc. according to manufacturers' specifications, to all-inactive construction areas (previously graded areas which remain inactive for 96 hours).
 - Minimize diesel idling time to a maximum of five minutes.
 - Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary diesel power generators, if feasible.
 - An applicant representative, ARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely (i.e., once per week) evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement for projects grading more than 20 acres in size, regardless of how many acres are to be disturbed daily.
 - Construction equipment exhaust emissions shall not exceed the PCAPCD Visible Emissions Rule 202. Fugitive dust is not to exceed 40% opacity and not go beyond property boundary at any time. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified and the equipment must be repaired within 72 hours.

The following measures will be required:

1. Include the following standard note on the Improvement/Grading Plan: *If required by the Public Works Department, the contractor shall hold a pre-construction meeting prior to grading activities. The contractor shall invite the Placer County APCD to the pre-construction meeting in order to discuss the construction emission/dust control plan with employees and/or contractors.*
2. Prior to building permit approval, the applicant shall show, on the plans submitted to the Building Department, that electrical outlets shall be installed on the exterior walls of both the front and back of all residences or all commercial buildings to promote the use of electric landscape maintenance equipment.
3. Prior to building permit approval, the applicant shall show, on the plans submitted to the Building Department, provisions for construction of new residences, and where natural gas is available, the installation of a gas outlet for use with outdoor cooking appliances, such as a gas barbecue or outdoor recreational fire pits.
4. Prior to building permit approval, in accordance with District Rule 225, only U.S. EPA Phase II certified wood burning devices shall be allowed in single-family residences. The emission potential from each residence shall not exceed a cumulative total of 7.5 grams per hour for

<p>all devices. Masonry fireplaces shall have either an EPA certified Phase II wood burning device or shall be a U.L. Listed Decorative Gas Appliance. (Rule 225)</p> <ol style="list-style-type: none"> 5. Wood burning or Pellet appliances shall not be permitted in multi-family developments. Only natural gas or propane fired fireplace appliances are permitted. These appliances shall be clearly delineated on the Floor Plans submitted in conjunction with the Building Permit application. (Rule 225 / section 302.2) 6. Prior to the issuance of a Building Permit, the applicant shall show that all flat roofs with parapets shall include a white or silver cap sheet to reduce energy demands. 7. Diesel trucks shall be prohibited from idling more than five minutes. Prior to the issuance of a Building Permit, the applicant shall show that all truck loading and unloading docks shall be equipped with one 110/208 volt power outlet for every two dock doors. Diesel Trucks idling for more than five minutes shall be required to connect to the 110/208 volt power to run any auxiliary equipment. 2'x3' signage which indicates "Diesel engine Idling Limited to a Maximum of 5 Minutes" shall be shown on the building elevations and shall be submitted to the Placer County APCD prior to the issuance of Building Permits for the project. 8. Prior to approval of Improvement Plans, an enforcement plan shall be established, and submitted to the APCD for review, in order to evaluate project-related on-and-off- road heavy-duty vehicle engine emission opacities on a weekly basis, using standards as defined in California Code of Regulations, Title 13, Sections 2180 – 2194. An Environmental Coordinator, hired by the prime contractor or property owner, and who is CARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely evaluate project related off-road and heavy duty on-road equipment emissions for compliance with this requirement. Operators of vehicles and equipment found to exceed opacity limits will be notified by APCD and the equipment must be repaired within 72 hours. (California Code of Regulations, Title 13, Sections 2180 – 2194) <p><i>The project shall comply with all applicable Placer County Air Pollution Control District rules and regulations, and shall obtain applicable permits and/or clearances from the District prior to the start of construction.</i></p> <ul style="list-style-type: none"> • The contractor shall use CARB ultra-low sulfur diesel fuel for all diesel-powered equipment. In addition, low sulfur fuel shall be utilized for all stationary equipment. (California Standards for Motor Vehicle Diesel Fuel, title 13, article 4.8, chapter 9, California Code of Regulations). • Processes that discharge 2 pounds per day or more of air contaminants, as defined by Health and Safety Code Section 39013, to the atmosphere may require a permit. Permits are required for both construction and operation. Developers/contractors should contact the District prior to construction and obtain any necessary permits prior to the issuance of a Building Permit. (Rule 501) • Pursuant to the Placer County Air Pollution Control District Rule 501, General Permit Requirements, the proposed project may need a permit from the District prior to construction. In general, any engine greater than 50 brake horsepower or any boiler with heat greater than 1,000,000 Btu per hour shall require a permit issued by the District. (Rule 501) • All on-site stationary equipment which is classified as 50 hp or greater shall either obtain a state issued portable equipment permit or a Placer County APCD issued portable equipment permit. (California Portable Equipment Registration Program, Section 2452). • The contractor shall utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary diesel power generators if feasible. • During construction, the contractor shall minimize idling time to a maximum of 5 minutes for all diesel powered equipment. • During construction, traffic speeds on all unpaved surfaces shall be limited to 15 miles per hour or less. (Rule 228 / section 401.2) 					
<p>MM 4.5-1 Air Quality Measures</p> <p>Implementation of the Air Quality Mitigation Measures listed in Section 4.3 Air Quality would reduce operational and construction-related emissions of criteria air pollutants and precursors, and would also act to reduce GHG emissions associated with project construction and operation. Mitigation Measure 4.4-1 found in the Air Quality section of this EIR, is relevant to impact 4.5-1 because both criteria air pollutant and GHG emissions are frequently associated with combustion byproducts. In addition, the City shall implement the following measures to reduce direct and indirect GHG</p>	<p>The applicants shall submit construction management plans as part of the Grading Permit application. The Public Works Director shall review grading plans for inclusion of these measures prior to issuance of grading permits. The City Code</p>	<p><i>Pre-Construction:</i> Prior to issuance of Grading Permits. Add as note on Improvement Plans and Building Plans</p>	<p>Director of Public Works shall ensure that dust and construction-control measures are implemented.</p>		

<p>emissions associated with the proposed project. Certain measures would already be components of the project (i.e., Specific Plan policies, design guidelines and standards), and/or would be applied consistent with the City's General Plan Policies, addressing GHG emissions and climate change, but are provided here for purposes of completeness.</p> <p>MM 4.5-2 Additional Measures to Reduce GHG Emissions</p> <p>For each new development within the project site requiring a discretionary approval (e.g., tentative subdivision map, conditional use permit), the City shall impose mitigation measures that reduce GHG emissions to the extent feasible and to the extent appropriate with respect to the state's progress at the time toward meeting GHG emissions reductions required by the California Global Warming Solutions Act of 2006 (AB 32). The City shall require feasible reduction measures that, in combination with existing and future regulatory measures developed under AB 32, will reduce GHG emissions associated with the operation of developments and supporting infrastructure that are part of the proposed project by 30% from business-as-usual emissions levels projected for 2025, if feasible.</p>	<p>Enforcement Officer shall respond to complaints. In addition, plans will be reviewed by the Placer County Air Pollution Control District for compliance with their rules and regulations.</p>				
<p>MM 4.14-1 Site Lighting to Minimize Nuisance</p> <p>Light producing uses, such as ball fields, within the SVSP Area shall be located and oriented to minimize visual impacts on adjacent residential areas. Lighting should be shielded and designed to distribute light in the most effective and efficient manner, using the minimum amount of light to achieve the necessary illumination for the use, as defined by suggested lighting standards for competitive play.</p> <p>MM 4.14-2 Use Low Glare Materials</p> <p>In order to reduce the effects of daytime glare from development of commercial or office uses within the SVSP Area, building developers should make use, when feasible, of low-glare materials.</p> <p>MM 4.14-3 Avoid Light Spill Over into Curry Creek and Open Space Areas</p> <p>Outdoor lighting shall be placed, designed and directed so as to avoid light spillover into the habitat of Curry Creek and the Open Space Preserve areas located immediately adjacent to the open space, as shown on the Land Use Map as parcels KT-1, KT-40, KT-30, KT-41, DF-1, DF-2, DF-40, CG-1, CG-82m JM-21, JM-3, and JM-4.</p>	<p>Comply with the measure</p>	<p><i>Pre-Construction:</i> Ensure fixtures shown on Improvement Plans and Building Plans comply with the measure.</p>	<p>Engineering and Building</p>	<p>None</p>	

Attachment 1

<p>Outdoor lighting shall be placed, designed and directed so as to avoid light spillover into the habitat of Curry Creek and the Open Space Preserve areas located immediately adjacent to the open space, as shown on the Land Use Map as parcels KT-1, KT-40, KT-30, KT-41, DF-1, DF-2, DF-40, CG-1, CG-82m JM-21, JM-3, and JM-4.</p>		<p style="color: red;">Add as note on Improvement Plans and Building Plans</p>			
<p>MM 4.6-1 Construction Noise Reduction MM 4.6-1(a): Construction activities shall comply with the requirements of the City of Roseville Noise Ordinance. MM4.6-1(b): Locate fixed construction equipment such as compressors and generators as far as possible from sensitive receptors. Shroud or shield all impact tools, and muffle or shield all in-take and exhaust ports on power construction equipment. MM 4.6-1(c): Designate a construction disturbance coordinator and conspicuously post the Coordinator's contact information around the project site and in adjacent public spaces. The disturbance coordinator will receive all public complaints about construction noise disturbances, and will be responsible for determining the cause of the complaint, and implementing any feasible measures to be taken to alleviate the problem. MM 4.6-1(d): Well drilling shall occur prior to construction of the adjacent subdivision, to the extent feasible. If construction timing for the wells occurs after subdivision construction, then measures to reduce noise shall include; hanging flexible sound control curtains around the drilling apparatus, and the drill rig, to the degree feasible, as determined by the Environmental Utilities Director, if located within 1,000-feet of an occupied residence.</p>	<p>Discuss during pre-construction meeting and comply with the measure.</p>	<p><i>Pre-Construction and Construction:</i> During construction for MM 4.6-1(d), and prior to issuance of Improvement Plans and/or Building Permits for all others. Add as note on Improvement Plans and Building Plans</p>	<p><u>Engineering</u> staff to discuss this measure during pre-construction meeting and ensure posting has occurred. <u>Environmental Utilities</u> to address well drilling.</p>	<p>None</p>	
<p>MM 4.6-2 Commercial Noise Controls For all commercial uses within 150 feet of residential uses, the developer shall implement the following or equally effective measures: In general, where commercial land uses adjoin residential property lines, the following measures should be included in the design of the commercial use. If the primary noise sources are parking lot noise, HVAC equipment and light truck deliveries, then 6-7 foot tall masonry walls shall be constructed to provide adequate isolation of parking lot and delivery truck activities. HVAC equipment shall be located either at ground level, or when located on roof-tops the building facades shall include parapets for shielding.</p>	<p>The Planning Department shall review development proposals to ensure that the uses are compatible</p>	<p><i>Prior to issuance of Building Permits</i></p>	<p>The Planning Director shall review all commercial plans and ensure that appropriate measures are implemented.</p>		

<p>MM 4.8-3 Avoid Nesting Sites</p> <p>To ensure that fully protected bird and raptor species are not injured or disturbed by construction in the vicinity of nesting habitat, the project applicant shall implement the following measures:</p> <p><i>Raptors</i></p> <p>a) When feasible, all tree removal shall occur between August 30th and February 15th to avoid the breeding season of any raptor species that could be using the area, and to discourage hawks from nesting in the vicinity of an upcoming construction area.</p> <p>b) For Swainson's hawk, if avoidance of tree removal outside the breeding season is not feasible, and a nest is present, the applicants would be required to obtain a 2081 permit from CDFG to mitigate for potential "take" under CESA. If no nesting is occurring, a take permit would not be required.</p> <p>c) Prior to the beginning of mass grading, including grading for major infrastructure improvements, during the period between February 15th and August 30th, all trees and potential burrowing owl habitat within 350 feet of any grading or earthmoving activity shall be surveyed for active raptor nests or burrows by a qualified biologist no more than 30-days prior to disturbance. If active raptor nests or burrows are found, and the site is within 350-feet of potential construction activity, a highly visible temporary fence shall be erected around the tree or burrow(s) at a distance of up to 350-feet, depending on the species, from the edge of the canopy to prevent construction disturbance and intrusions on the nest area.</p> <p>d) Preconstruction and non-breeding season exclusion measures shall be developed in consultation with CDFG, and shall preclude burrowing owl occupation of the portions of the project site subject to disturbance such as grading. Burrowing owls may be passively excluded from burrows in construction areas by placing one-way doors in the burrows according to CDFG protocol. The one-way doors must be in place for a minimum of three days. All burrows that may be occupied by burrowing owls regardless of whether they exhibit signs of occupation must be cleared with the one way doors. Burrows that have been cleared through the use of the one-way doors shall then be closed or backfilled to prevent owls from entering the burrow.</p> <p>e) No construction vehicles shall be permitted within restricted areas (i.e., raptor protection zones) unless directly related to the management or protection of the legally protected species.</p> <p>f) If a legally protected species nest is located in a tree designated for removal, the removal shall be deferred until after August 30th or until the adults and young of the year are no longer dependent on the nest site as determined by a qualified biologist.</p> <p><i>Black Rails and Tri-colored Blackbirds</i></p> <p>Prior to earth moving that would disturb marsh habitat, a qualified biologist shall conduct surveys to determine the presence of the California black rail. If either of these species is found, all earth moving within 250 feet shall stop and measures, including establishing nest protection buffers along both sides of Curry Creek during the nesting season (generally February 1 through August 31st) shall be implemented.</p> <p><i>Rookeries</i></p> <p>No heron rookeries are present within the plan area. Prior to earthmoving that would disturb marsh habitat or tree removal of the eucalyptus grove, pre-construction surveys should be conducted to verify that no rookeries have been established. If rookeries are present all earth moving within 250-feet shall stop, during the breeding season.</p>	<p>Results of preconstruction surveys shall be submitted prior to the issuance of a grading permit or Improvement Plans. Applicable construction restrictions shall be reflected within plans. The applicants shall prepare annual reports on the status and success of mitigation and shall submit these reports to USFWS and CDFG. The applicants shall coordinate with USFWS and CDFG to modify as necessary any mitigation plans in an effort to attain mitigation success.</p>	<p><i>Pre-Construction and Construction:</i> Surveys required prior to construction. If surveys are positive for birds, then remainder of mitigation steps are required prior to construction.</p> <p>Add as note on Improvement Plans.</p>	<p>Engineering</p>	<p>Nesting bird surveys</p>	
<p>MM 4.13-1 Implementation of construction activity stormwater protection standards</p> <p>Prior to the issuance of a City grading permit and the commencement of construction activities, compliance with the State's General Construction permit, the City of Roseville's Construction Standards, and the City's Stormwater BMP Guidance Manual will be met. This includes the creation of a Storm Water Pollution Prevention Plan (SWPPP) that will identify the site, the location of sensitive habitats or watercourses, drainage areas, discharge locations, soil disturbance areas, and the locations of all runoff, erosion control, and sediment control Best Management Practices (BMPs). On-going monitoring and adjustments to the SWPPP will occur when needed to address changes in the field as construction activities evolve.</p>	<p>The developer shall create a SWPPP, submit it to the City, and comply with its provisions.</p>	<p><i>Pre-Construction and Construction:</i> Submit SWPPP and ensure that BMPs remain in place during construction.</p> <p>Add as note on Improvement Plans and Building Plans.</p>	<p>Engineering</p>	<p>SWPPP</p>	

Attachment 1

<p>MM 4.9-1 Cease Work and Consult with Qualified Archaeologist</p> <p>Should any cultural resources, such as structural features, any amount of bone or shell, artifacts, human remains, or architectural remains, be encountered during any subsurface development activities, work shall be suspended within 100-feet of the find. The City of Roseville Planning and Public Works Staff shall be immediately notified. At that time, the City of Roseville shall coordinate any necessary investigation of the site with qualified archaeologists as needed, to assess the resource (i.e., whether it is an “historical resource” or a “unique archaeological resource”) and provide proper management recommendations should potential impacts to the resources be found to be significant. Possible management recommendations for important resources could include resource avoidance or, where avoidance is infeasible in light of project design or layout or is unnecessary to avoid significant effects, data recovery excavations. The contractor shall implement any measures deemed feasible and necessary by City staff, in consultation with the archaeologists, to be to avoid or minimize significant effects to the cultural resources. In addition, pursuant to Section 5097.98 or the State Public Resources Code, and Section 7050.5 of the State Health and Safety Code, in the event of the discovery of human remains, the County Coroner shall be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission shall be adhered to in the treatment and disposition of the remains.</p>	<p>This condition shall be reflected in all construction and building plans, and construction site workers shall be advised by the site manager of this measure.</p>	<p><i>Construction:</i> Measure applies if resources are discovered during construction.</p> <p>Add as note on Improvement Plans and Building Plans.</p>	<p>Engineering and Building</p>	<p>None</p>	
<p>Mitigation Measure 4.9-2 Cease Work and Consult with Qualified Paleontologist</p> <p>Should any evidence of paleontological resources (e.g. fossils) be encountered during grading or excavation, work shall be suspended within 100 feet of the find, and the City of Roseville shall be immediately notified. At that time, the City shall coordinate any necessary investigation of the site with a qualified paleontologist to assess the resource and provide proper management recommendations. Possible management recommendations for important resources could include resource avoidance, if feasible in light of project design or layout, or data recovery excavations. The contractor shall implement any measures deemed feasible and necessary by City staff in consultation with the paleontologist for the protection of the paleontological resources.</p>	<p>This condition shall be reflected in all construction and building plans, and construction site workers shall be advised by the site manager of this measure.</p>	<p><i>Construction:</i> Measure applies if resources are discovered during construction.</p> <p>Add as note on Improvement Plans and Building Plans.</p>	<p>Engineering and Building</p>	<p>None</p>	
<p>Mitigation Measure 4.9-3 Conduct Studies Prior To Offsite Infrastructure Construction</p> <p>Prior to undertaking construction of off-site infrastructure, the City shall determine whether or not cultural resource surveys have been undertaken for any areas to be disturbed during construction. If surveys were conducted, the City shall document that any identified resources were treated as recommended in the studies. If no studies or surveys were conducted, the City shall ensure that a qualified archaeologist conducts the appropriate level of study. If resources are found, recommendations, including the possible management recommendations listed in MM 4.9-1 and MM4.9-2, shall be implemented to ensure that the resources are avoided, protected and/or recorded, as determined to be feasible and appropriate by City staff.</p>	<p>This condition shall be reflected in all construction and building plans, and construction site workers shall be advised by the site manager of this measure.</p>	<p><i>Pre-Construction:</i> Prior to issuance of Grading Permits or Improvement Plans.</p> <p>Add as note on Improvement Plans.</p>	<p>Engineering and Building</p>	<p>Applicable studies</p>	
<p>MM 4.10-1 Identify Potential Hazardous Materials (soil contamination, tank or well sites, lead based paint and/or asbestos)</p> <p>Prior to site development in the SVSP, recommended testing and remediation, if needed shall occur. Groundwater wells shall be properly closed.</p> <p>If evidence of soil contamination, septic tanks, or other underground storage tanks are encountered in previously unidentified locations in the SVSP area, work shall cease until the area can be tested, and if necessary remediated and/or properly removed or closed. Remediation activities could include removal of contaminated soil, and/or onsite treatment. As part of the process, the City shall ensure that any necessary investigation and/or remediation activities are coordinated with the Roseville Fire Department, Placer County Division of Environmental Health, and if needed, other appropriate federal, state and local agencies. Once a site is remediated, construction can continue.</p>	<p>The applicants shall be responsible for conducting soil testing and/or recommendation of the Phase I environmental site assessments, if conditions are encountered which warrant such studies.</p>	<p><i>Construction:</i> Applies if conditions found which warrant assessment (e.g. stained soils, underground tanks).</p> <p>Add as note on Improvement Plans.</p>	<p>Engineering and Fire</p>	<p>Phase I environmental assessment, if conditions warrant</p>	
<p>MM 4.12.4-2 Divert Construction Debris</p> <p>The applicants shall ensure a 50% reduction in the construction waste stream generated from development within the SVSP. In Developer contracts with construction contractors and their sub-contractors, the Developer shall require that construction waste be reduced by 50%. The Developer shall further require that contractors and sub-contractors submit records of diversion and disposal to the City’s Environmental Utilities Department in order to verify compliance with this requirement.</p>	<p>Comply with the measure</p>	<p><i>Construction:</i> Contractor to ensure diversion occurs during construction.</p> <p>Add as note on Improvement Plans and Building Plans.</p>	<p>Environmental Utilities</p>	<p>Records of diversion</p>	

NOTE: This table is provided as a courtesy to the developer, to highlight the text of measures which are required to be placed on Improvement Plans and/or Building Plans. Refer to the applicable environmental document (e.g. Environmental Impact Report) for a full list of measures, and for context. Other measures may be applicable, but are not included here because they have already been completed or they are addressed via other mechanisms (e.g. development fees).

Memorandum

To: Jack Varozza, P.E., QSD/P
Senior Engineer, City of Roseville

From: Pedro Cortes
Matt Weir, P.E., T.E., PTOE, RSP₁
Curtis Yee, E.I.T.

Re: *Erickson Senior Living*
Local Traffic Evaluation
Roseville, California

Date: March 13, 2023

This memorandum documents the transportation analysis completed for the Erickson Senior Living project. The purpose of this analysis is to evaluate the proposed project's localized traffic operations and access points, including throat depths and driveway treatments, that are necessary to ensure safe and efficient operations.

Project Description

Erickson Senior Living intends to construct up to 1,201 continuing care units and an assisted living facility with 240 beds on a currently vacant site located along the north side of Baseline Road between Watt Avenue/Santucci Boulevard and Westbrook Boulevard in Roseville, California. A fifty (50) space Park & Ride lot is included at the project's western frontage along Santucci Boulevard. Access to the project site is proposed to be accomplished from multiple driveways along the project frontages. The primary access driveway will be a full-access driveway along Baseline Road. This main driveway intersection will be signalized and will also house the primary gated entry serving the project. One additional secondary driveway is also provided on Sierra Village drive along the northern frontage of the project, and one emergency vehicle access with resident egress is provided on Westbrook Boulevard along the eastern frontage of the project. The aforementioned Park & Ride lot is currently shown as being external to the project's on-site roadway network and would be accessed via one driveway along Santucci Boulevard. The project site plan is provided in **Exhibit 1**.

Study Facilities and Analysis Methodology

Study Facilities

Exhibit 2 shows the location of the project site. **Exhibit 3** illustrates the study facilities, traffic control, and lane geometry. The lane geometries represented in the **Exhibit 3** and the analysis include the 4-lane Baseline Road currently under construction and the pending opening of the Santucci Boulevard leg at its intersection with Baseline Road. A weekday, peak-hour level of service (LOS) analysis was completed for the following intersections:

1. Baseline Road @ Watt Avenue/ Santucci Boulevard
2. Baseline Road @ Site Access Driveway (South)
3. Baseline Road @ Westbrook Boulevard
4. Santucci Boulevard @ Park & Ride Driveway (West)
5. Sierra Village Drive @ Site Access Driveway (North)
6. Westbrook Boulevard @ Site Access Driveway (East)

Level of Service (LOS) Definitions

The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A, which represents minimal delay, to F, which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual (HCM), 6th Edition*.

The HCM includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for the worst (most delay) minor street approach or movement. Conversely, the AWSC and signalized intersection procedures define LOS as a function of average control delay for the intersection as a whole. **Table 1** presents intersection LOS definitions as defined in the HCM.

Table 1 – Intersection Level of Service Criteria

Level of Service (LOS)	Un-Signalized	Signalized
	Average Control Delay* (sec/veh)	Average Control Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: *Highway Capacity Manual, 6th Edition*

* Applied to the worst lane/lane group(s) for SSSC and AWSC

Assessment of Proposed Project

Trip Generation, Distribution, and Assignment

The number of trips anticipated by the proposed project was approximated using data included in the *Trip Generation Manual, 11th Edition*, published by the Institute of Transportation Engineers (ITE). ITE Land Use (LU) Code 255 (Continuing Care Retirement Community) and Code 254 (Assisted Living) were used to approximate trips generated by this project. Land Use Code 90 (Park-and-Ride Lot with Bus or Light Rail) was used to approximate trips generated by the Park & Ride lot.

Table 2 presents the project trip generation estimate. As shown, the project is anticipated to generate 3,752 weekday trips, 271 trips during the AM peak-hour, and 353 during the PM peak-hour.

It should be noted that per the *Sierra Vista Specific Plan*¹, the project parcel was originally designated as a commercial land use. The land use is represented as a mix of office and retail in the Buildout/2035 CIP Travel Demand Model (TDM). **Table 2** presents the comparison of the originally assumed PM-peak-hour trips with the proposed project trip generation. As shown in **Table 2**, the proposed project’s PM peak-hour trips represent only approximately 24-percent of the originally assumed trips in the City TDM. Therefore, cumulative scenarios were not considered in the analysis.

The distribution of project traffic was developed based on the project area roadway volumes, general knowledge of project area traffic patterns, and engineering judgement. The project trip distribution is shown in **Exhibit 4**. Project Trips were assigned to the study intersections and the surrounding roadway network according to these patterns. The project trip assignment is reflected in **Exhibit 5**.

¹ *Sierra Vista Specific Plan*, City of Roseville, Adopted May 5, 2020.

Table 2 – Proposed Project Trip Generation

ITE Land Use Code	Land Use	# Units	Weekday Trips	AM Peak-Hour			PM Peak-Hour		
				Total	In	Out	Total	In	Out
Buildout/2035 CIP Model Travel Demand Model									
N/A	Retail	549	-	-	-	-	1,351	-	-
N/A	Office	98	-	-	-	-	141	-	-
Total Assumed Trips			-	-	-	-	1,492	-	-
Proposed Project									
255	Continuing Care Retirement Community ¹	1,201	2,966	180	117	63	228	89	139
254	Assisted Living ¹	240	624	43	26	17	58	23	35
90	Park-and-Ride Lot with Bus or Light Rail ¹	50	162	48	37	11	67	17	50
Total Proposed Project Trips			3,752	271	180	91	353	129	224

Source: ¹ Trip Generation Manual, 11th Edition

Analysis Results

Intersection Level of Service (LOS)

To establish Existing conditions, traffic counts were collected for the existing study intersections on Tuesday, March 1, 2022. Existing intersections turning movement counts are included as **Attachment A**. The proposed project trips were then added to the existing peak-hour traffic volumes. Furthermore, additional non-project trips were generated and distributed on the network to account for the anticipated traffic associated with the connection of Santucci Boulevard to Baseline Road. The number of trips added were based on the trip generation for 609 single-family detached units from the developments north of Sierra Village Drive found in the *Sierra Vista Specific Plan*. **Exhibit 6** presents the established Existing plus Project peak-hour traffic volumes.

Table 3 presents the peak-hour intersection LOS analysis results. As indicated in **Table 3**, the study intersections operate between LOS A and C in the Existing plus Project scenario. Analysis worksheets for the Existing plus Project are provided in **Attachment B**.

Table 3 – Existing plus Project Intersection LOS Summary

ID	Intersection	LOS Threshold	Control	Peak Hour	Existing plus Project	
					Delay (sec)	LOS
1	Baseline Road @ Watt Avenue/Santucci Boulevard	C	Signal	AM	25.2	C
				PM	31.2	C
2	Baseline Road @ Site Access Dwy (South)		AM	6.7	A	
			PM	6.5	A	
3	Baseline Road @ Westbrook Boulevard		AM	14.4	B	
			PM	9.7	A	
4	Santucci Boulevard @ Park & Ride Dwy		AM	0.3(8.6 WB)	A(A)	
			PM	1.1(9.1 WB)	A(A)	
5	Sierra Village Drive @ Site Access Dwy (North)		AM	1.1(9.4 NB)	A(A)	
			PM	1.3(9.5 NB)	A(A)	
6	Westbrook Boulevard @ Site Access Dwy (East)	AM	0.4 (9.2 EB)	A(A)		
		PM	0.8(9.1 EB)	A(A)		

Notes: Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst approach's delay.

Queuing Analysis

Queuing for select movements was analyzed to evaluate turning movement storage lengths. **Table 4** summarizes the expected 95th percentile queues for left-turn movements at the Base Line Road intersections with Watt Avenue/Santucci Boulevard, Site Access Driveway (South), and Westbrook Boulevard.

Table 4 – Turning Lane 95th Percentile Queues

Intersection / Analysis Scenario	Movement	Available Storage (ft)	95th % Queue (ft)	
			AM Peak-Hour	PM Peak-Hour
#1, Baseline Road @ Watt Avenue/Santucci Boulevard	EBL			
Existing plus Proposed Project		250	31	69
	WBL			
Existing plus Proposed Project		330	345	494
	NBL			
Existing plus Proposed Project		200	75	119
	SBL			
Existing plus Proposed Project		230	32	48
#2, Baseline Road @ Site Access Driveway (South)	EBL			
Existing plus Proposed Project		150	33	30
#3, Baseline Road @ Westbrook Boulevard	EBL			
Existing plus Proposed Project		270	93	61
	SBL			
Existing plus Proposed Project		250	273	204

As shown in **Table 4**, the westbound left-turn queues exceed the available storage at Intersection #1 (Baseline Road @ Watt Avenue/Santucci Boulevard) in the PM peak-hour scenario. The proposed project adds 26 trips for the PM Peak-Hour to this movement, or approximately 6-percent of the total turning movement volume. By removing the project trips, the project is found to contribute just over one vehicle length in queuing to the Existing condition.

It is recommended that the signal timing at Intersection #1 (Baseline Road @ Watt Avenue/Santucci Boulevard) be optimized upon construction of the full intersection. Optimizing the signal could improve the intersection’s westbound left 95th percentile queue length to approximately 430-feet. In addition to signal timing optimization, it is recommended that a striping modification be made to the westbound left turn at Intersection #1 to push the opening of the left-turn lane 100-feet east and remove the bay taper striping to open up the adjacent two-way left-turn lane and accommodate the excess queue. The queuing analysis for the optimized signal is shown in **Attachment B**. The striping modification will be constructed as part of the ongoing intersection improvement along Baseline Road.

Minimum Required Throat Depth (MRTD)

The MRTD was determined for the unsignalized site access driveways, as well as the Park & Ride lot driveways per the *City of Roseville Traffic Impact Study Standards*². The City’s MRTD methodology uses traffic volumes approaching the side-street stop control (project trips), conflicting volumes for right- and left-turns along the major street, and percentages of right-turn movements to determine the MRTD. The

² *City of Roseville Improvement Standards, Section 4 - Traffic Impact Studies*, City of Roseville, January 2016.

Park & Ride driveway was evaluated as a right-in/right-out driveway and the Site Access Driveway (North) was evaluated as a full access driveway. The Site Access Driveway (East) is understood to be an emergency vehicle access and was not evaluated for MRTD. **Table 5** summarizes the findings of the MRTD evaluation.

Table 5 – MRTD for Site Access Driveways

Driveway		Peak-Hour	Approach Volume	ConflVol (Left)	ConflVol (Right)	LT Out	RT Out	RT%	MRTD (ft)
4	Santucci Boulevard @ Park & Ride Driveway	AM	12	0	64	0	12	100%	50
		PM	54	0	182	0	54	100%	
5	Sierra Village Drive @ Site Access Driveway (North)	AM	17	207	143	8	9	54%	25
		PM	37	278	101	17	20	54%	

As shown in **Table 5**, per the project site plan in **Exhibit 1**, the MRTD is provided for each of the driveways evaluated.

Baseline Road @ Site Access Driveway (South) Gate Evaluation

As we understand, a guard shack is being proposed, according to the project site plan in **Exhibit 1**, to provide safe access for employees and residents entering the main gate and to monitor visitor and guest access to the facility. As such, recommendations must consider this dual-purpose guard shack, and are informed based on estimated arrival and processing times for both residents/employees and guests.

Arrival and processing times associated with the worst-case (highest) peak-hour volumes entering the gate were evaluated to determine if potential queues at the guard shack have the potential to spill back onto Baseline Road. Of the worst-case peak-hour volume entering the gate (115 vehicles), a conservative estimate results in approximately 50-percent (or 58 vehicles) of vehicles arriving within a peak 30-minute period. Of these 58 vehicles arriving within a peak 30-minute period, approximately 80-percent are assumed to access an ‘express’ lane reserved for residents/employees, while 20-percent will access a visitor/guest lane. The ‘express’ lane will be accessed by an automated gate, resulting in an approximate wait time of 30-seconds per vehicle. The visitor/guest lane will require check in with the guard, resulting in an average conservative wait time of 1 ½ minutes. Actual wait times are expected to be less than the estimated wait times used to calculate the required storage in most instances. **Table 6** presents the estimated arrival times and resulting anticipated queue lengths at the proposed guard shack.

Table 6 – Guard Shack Arrival and Processing Times

Vehicles Entering Gate		Average Processing Time	Total Number of Cars Processed by Gate*	Max Queue	Required Storage per Lane**
Express Lane	Approx. 46	30 seconds	60	1 vehicle	25 ft
Visitor/Guest Lane	Approx. 12	1.5 minutes	20	1 vehicle	25 ft

*Within a 30-minute peak-period

** Assumes 25-foot vehicles

As shown in **Table 6**, the maximum queue anticipated at the guard shack is 1-vehicle in both the resident/employee ‘express’ lane and visitor/guest lane. These values equate to approximately 25-feet of

required storage. Based on this evaluation, it is recommended that dual-entry lanes be provided at the gate, with an ‘express’ lane with no less than 25-feet of storage, and a visitor/guest lane with no less than 25-feet of storage.

Right-Turn Deceleration Lane

According to the City’s guidelines³, a right-turn deceleration lane is required when all four of the following conditions are satisfied:

- A. The driveway is located on an arterial or expressway,
- B. Right turn ingress volume is expected to exceed fifty (50) during peak hour flows on the roadway. For right turn ingress volumes between ten (10) and fifty (50) a right turn curb taper shall be constructed in conformance with the Standard Drawings,
- C. There is ample room and frontage to fit a deceleration lane as determined by the City Engineer, and
- D. The travel speed of the roadway, as determined by the City Engineer, equals or exceeds 45 mph.

The requirements and the conditions at the access points along Baseline Road and Santucci Boulevard are summarized in **Table 7** below. Based on these guidelines, the access on Baseline Road satisfies the requirements for consideration of a right-turn deceleration lane. The Park & Ride driveway along Santucci Boulevard does not satisfy the requirements for consideration of a right-turn deceleration lane. However, in the interest of safety, and consistent with the provisions of the guidelines, a right-turn deceleration lane is recommended at that driveway.

Table 7 – Right-Turn Deceleration Lane

Access Driveway Location	Time Period	Located on Arterial or Expressway?	Right Turn Volume	Right Turn Volume over 50?	Ample Room and Frontage?	Posted Speed Limit (MPH)	Travel Speed ≥ 45 mph?	Deceleration Lane Appropriate?
Baseline Road	AM	Yes	72	Yes	Yes	55	Yes	Yes
	PM	Yes	56	Yes	Yes	55	Yes	Yes
Santucci Boulevard	AM	Yes	37	No	Yes	45	Yes	No
	PM	Yes	17	No	Yes	45	Yes	No

Conclusions

The following are the primary conclusions based on the analyses discussed herein:

- City of Roseville LOS standards are achieved at all study intersections.
- Signal timing improvements and striping modifications are at the Baseline Road intersection with Watt Avenue/Santucci Boulevard (Intersection #1) to reduce the 95th percentile queue for the westbound left-turn during the PM peak-hour.
- City of Roseville MRTD standards are provided at all evaluated site driveways.
- It is recommended that dual-entry lanes be provided at the Baseline Road main entry gate, with an ‘express’ lane with no less than 25-feet of storage, and a visitor/guest lane with no less than 25-feet of storage.
- It is recommended that Right-Turn deceleration lanes are constructed at the primary project driveway on Baseline Road and at the Park & Ride driveway on Santucci Boulevard

³ Section 5 Traffic Impact Studies, City of Roseville Design Standards, January 2016.

Attachments

Exhibit 1 – Project Site Plan

Exhibit 2 – Project Site Vicinity Map

Exhibit 3 – Study Facilities, Traffic Control, and Lane Geometry

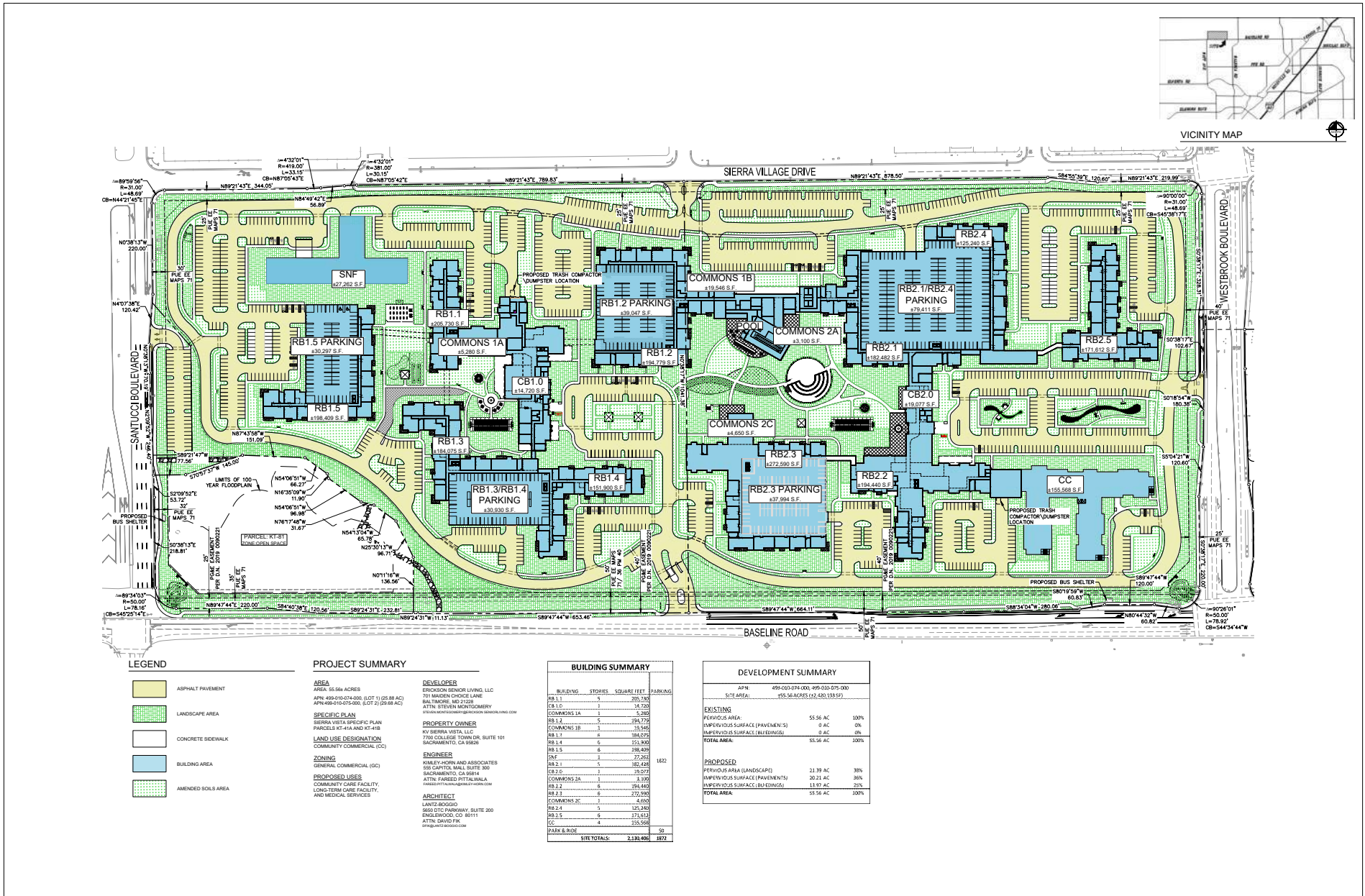
Exhibit 4 – Project Trip Distribution

Exhibit 5 – Project Trip Assignment

Exhibit 6 – Existing plus Project Peak-Hour Traffic Volumes

Attachment A – Traffic Count Data Sheets

Attachment B – Analysis Worksheets for Existing plus Project Conditions



LEGEND

- ASPHALT PAVEMENT
- LANDSCAPE AREA
- CONCRETE SIDEWALK
- BUILDING AREA
- AMENDED SOILS AREA

PROJECT SUMMARY

AREA
 AREA: 55.96 ACRES
 APN: 499-010-018-008 (LOT 1) (05.88 AC)
 APN: 499-010-075-000 (LOT 2) (09.88 AC)

SPECIFIC PLAN
 SIERRA VISTA SPECIFIC PLAN
 PARCELS K1-A14 AND K1-B18

LAND USE DESIGNATION
 COMMUNITY COMMERCIAL (CC)

ZONING
 GENERAL COMMERCIAL (GC)

PROPOSED USES
 COMMUNITY CARE FACILITY,
 LONG-TERM CARE FACILITY,
 AND MEDICAL SERVICES

DEVELOPER
 ERICKSON SENIOR LIVING, LLC
 701 MARDEN CHOCOLATE LANE
 BALTIMORE, MD 21208
 ATTN: STEVEN MONTGOMERY
STEVEN.MONTGOMERY@ERICKSONSENIORLIVING.COM

PROPERTY OWNER
 NV SIERRA VISTA, LLC
 7700 COLLEGE TOWN DR, SUITE 101
 SACRAMENTO, CA 95828

ENGINEER
 KIMLEY-HORN AND ASSOCIATES
 805 CANTON HALL, SUITE 300
 SACRAMENTO, CA 95814
 ATTN: PARESH PITHALAMBA
PARESH.PITHALAMBA@KIMLEY-HORN.COM

ARCHITECT
 LANZ-T BOGGIO
 800 DTC PARKWAY, SUITE 200
 ENGLEWOOD, CO 80111
 ATTN: DAVID PARK
DAVID@LANZ-TBOGGIO.COM

BUILDING SUMMARY

BUILDING	STORIES	SQUARE FEET	PARKING
RB 1.1	5	205,743	
CB 1.0	1	14,720	
COMMONS 1A	1	5,280	
RB 1.2	5	234,770	
COMMONS 1B	1	19,545	
RB 1.3	6	184,075	
RB 1.4	6	151,900	
RB 1.5	6	198,409	
SNF	1	27,252	1822
RB 2.1	5	362,426	
CB 2.0	1	19,077	
COMMONS 2A	1	3,390	
RB 2.2	6	25,440	
RB 2.3	6	272,990	
COMMONS 2C	1	4,600	
RB 2.4	5	125,340	
RB 2.5	6	171,612	
CC	4	135,996	
PARK & RIDE			50
SITE TOTALS:		2,192,400	1872

DEVELOPMENT SUMMARY

APN: 499-010-018-008, 499-010-075-000
SITE AREA: 105.84 ACRES (25,000,193.571)

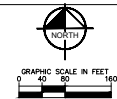
EXISTING

PERVIOUS AREA:	55.56 AC	100%
IMPERVIOUS SURFACE (PAVEMENT/S)	0 AC	0%
IMPERVIOUS SURFACE (BUILDINGS)	0 AC	0%
TOTAL AREA:	55.56 AC	100%

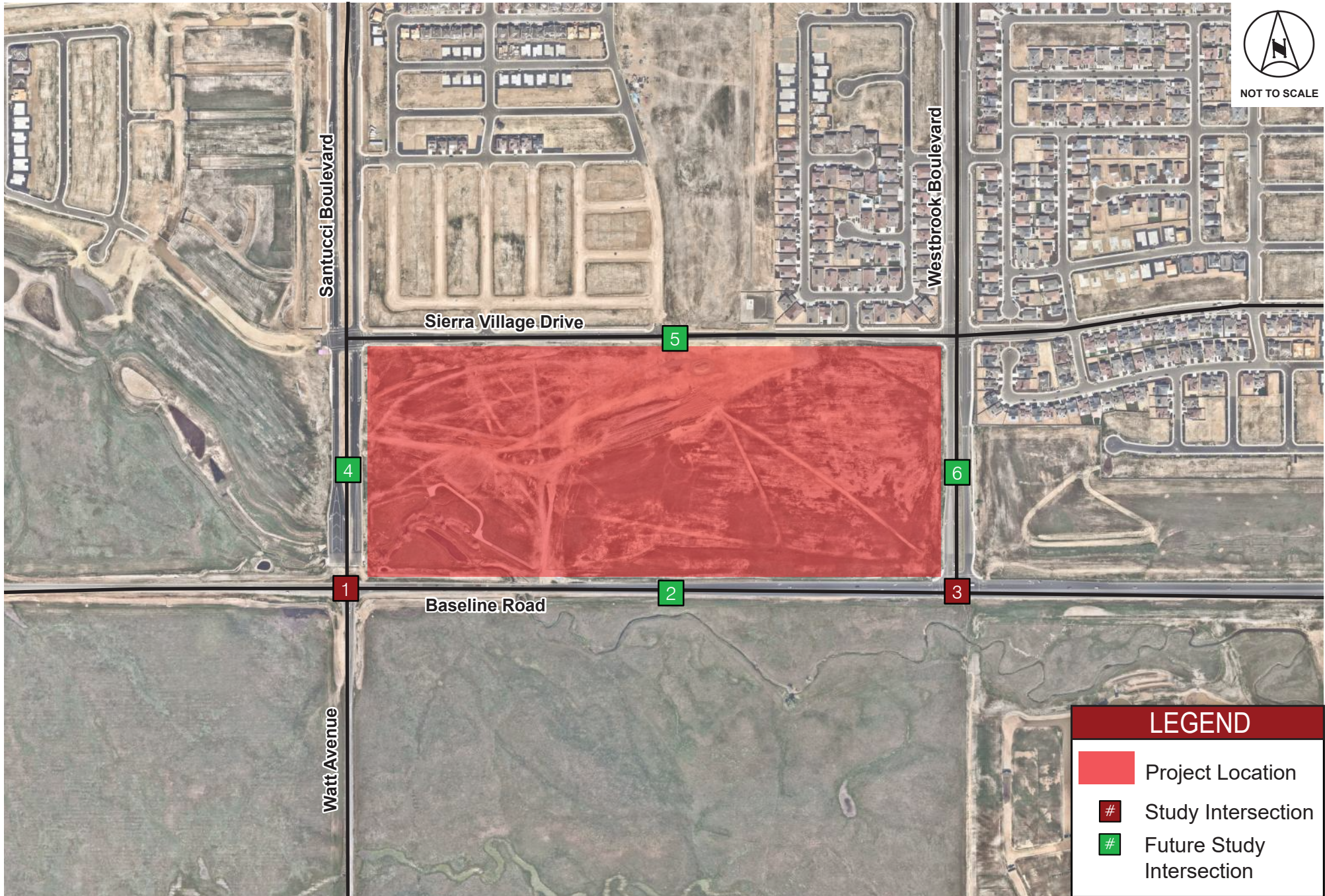
PROPOSED

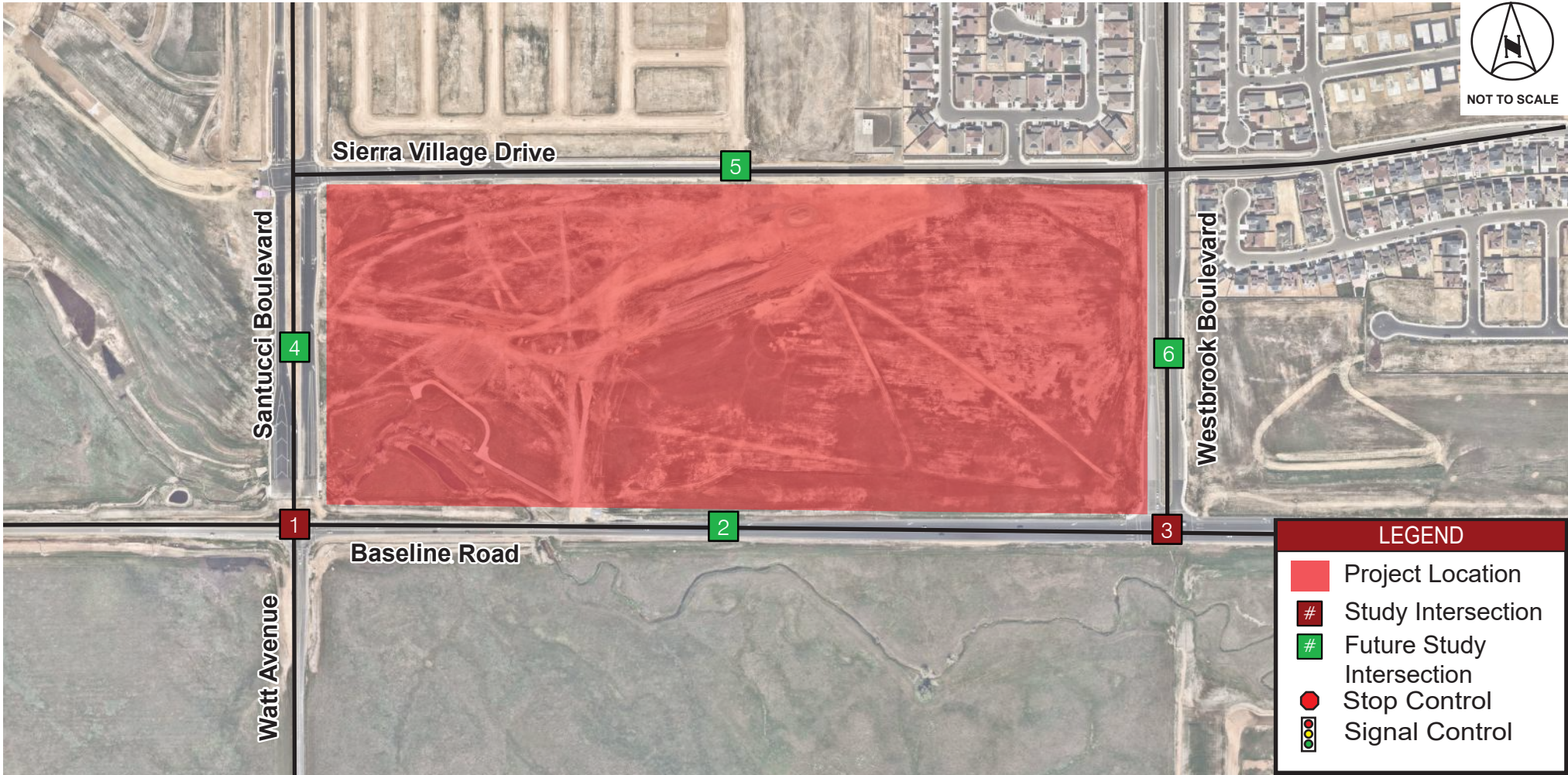
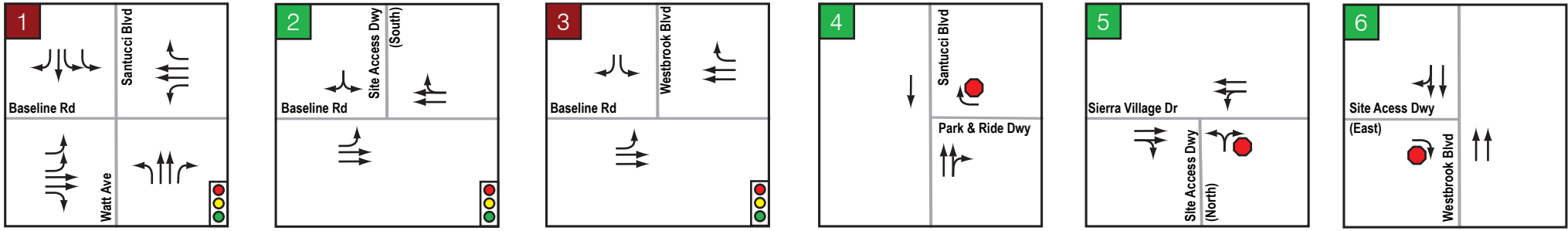
PERVIOUS AREA (LANDSCAPE)	21.39 AC	38%
IMPERVIOUS SURFACE (PAVEMENT/S)	20.23 AC	36%
IMPERVIOUS SURFACE (BUILDINGS)	13.97 AC	25%
TOTAL AREA:	55.56 AC	100%

6000 BASELINE ROAD
 ERICKSON SENIOR LIVING ROSEVILLE
MPP STAGE 1: SITE PLAN



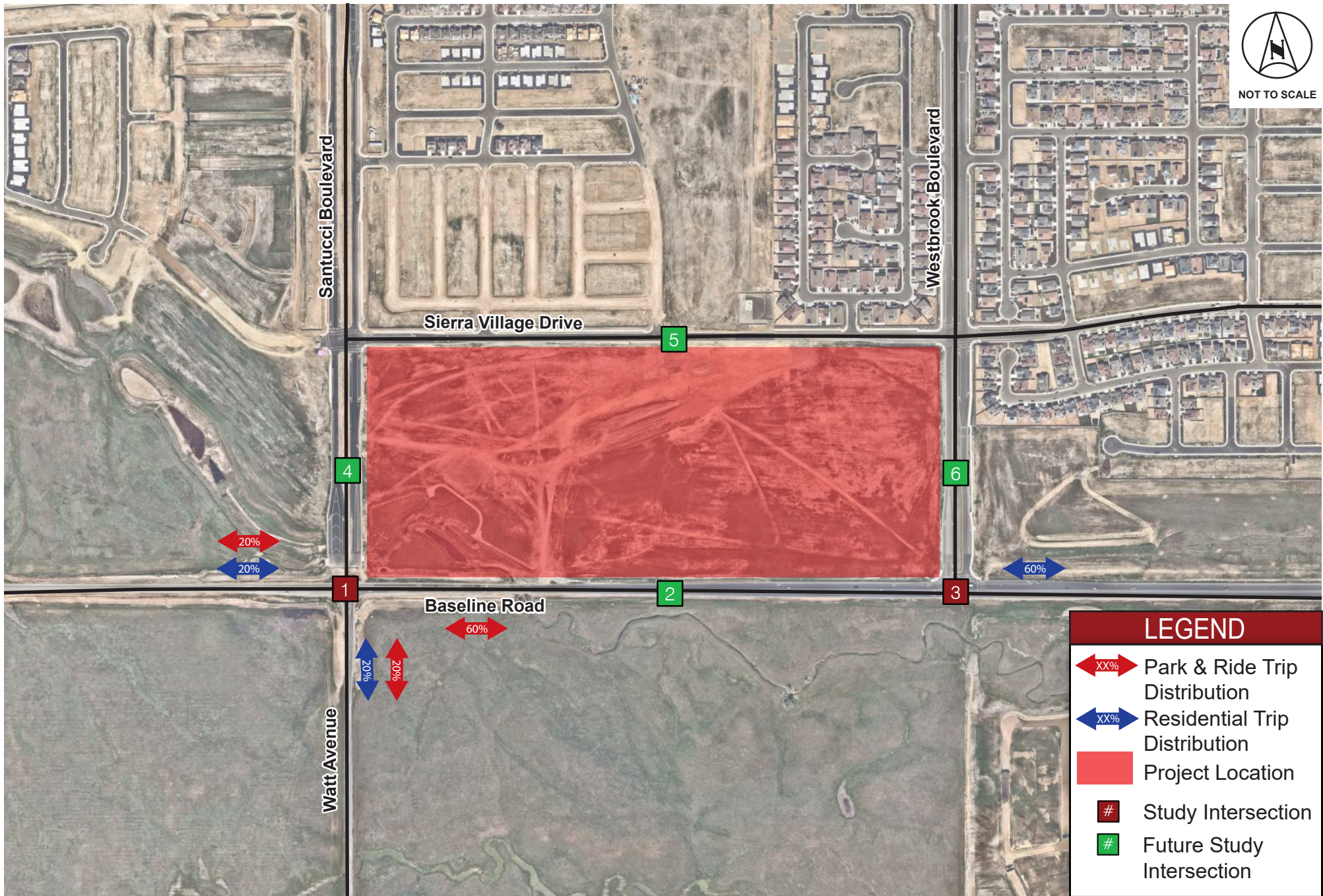
Kimley Horn



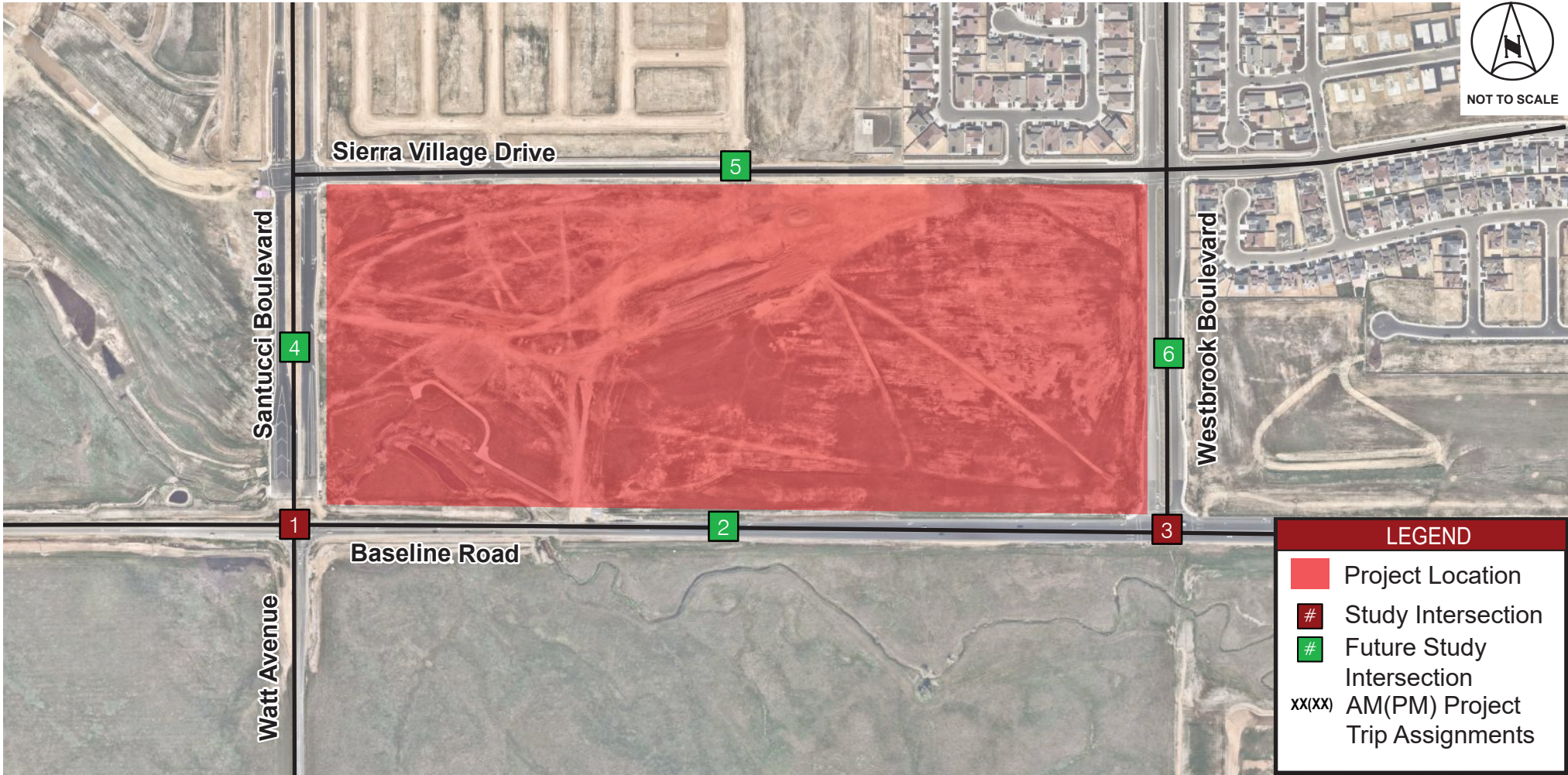
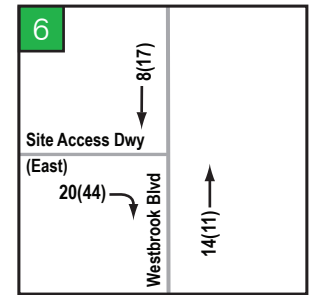
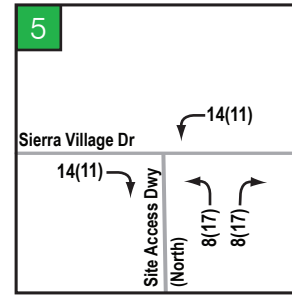
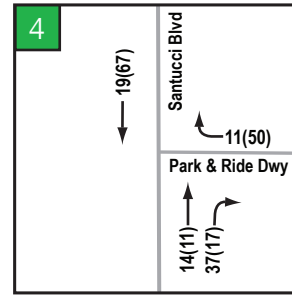
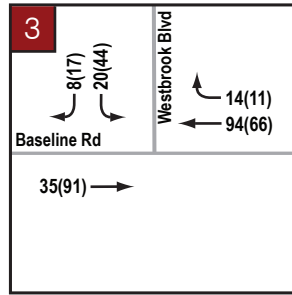
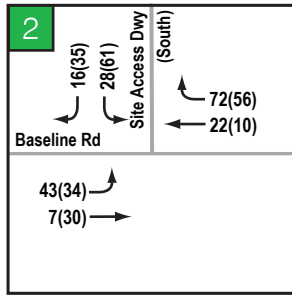
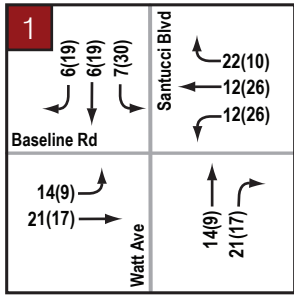


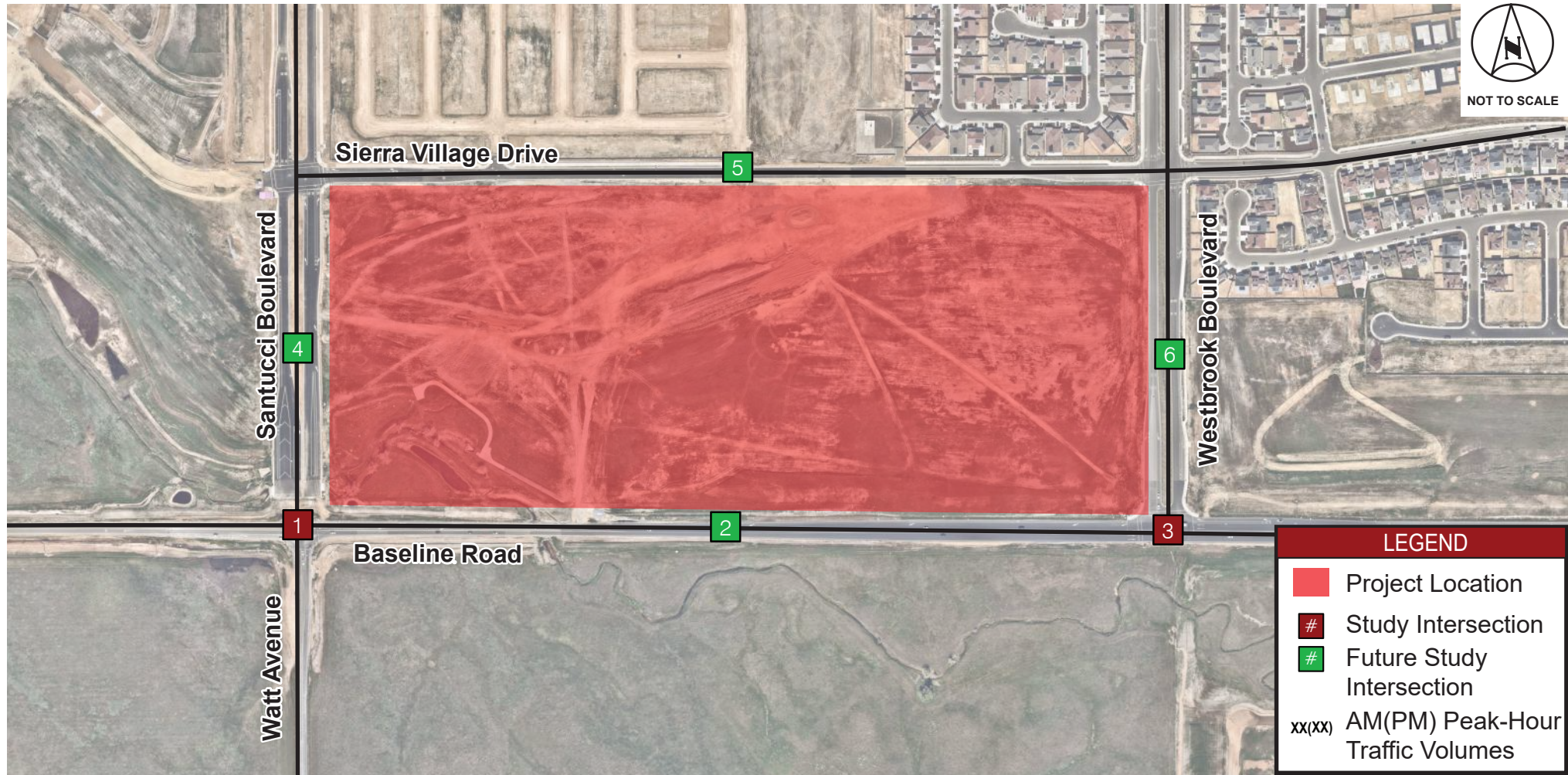
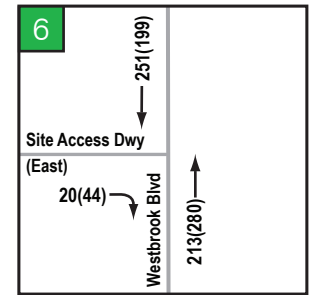
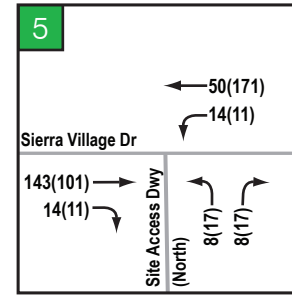
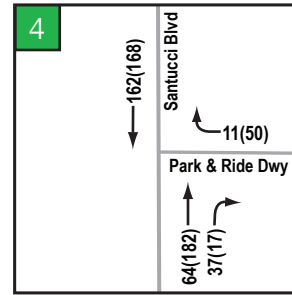
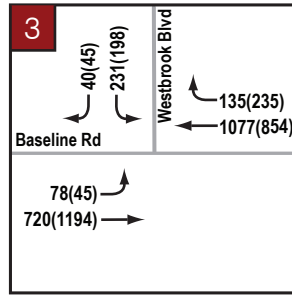
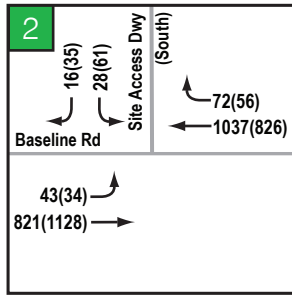
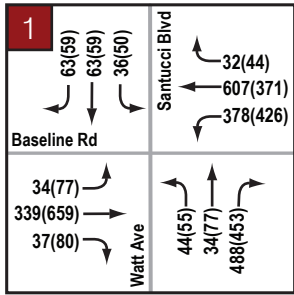


NOT TO SCALE



LEGEND	
	Park & Ride Trip Distribution
	Residential Trip Distribution
	Project Location
	Study Intersection
	Future Study Intersection





Attachment A

Traffic Count Data Sheets

Attachment 2

National Data & Surveying Services Intersection Turning Movement Count

Location: Watt Ave & Baseline Rd
 City: Roseville
 Control: Signalized

Project ID: 22-070037-001
 Date: 3/1/2022

Data - Totals

NS/EW Streets:	Watt Ave				Watt Ave				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	0	1	0	0	0	0	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	10		119							113	8		57	122			429
7:15 AM	14		113							82	7		86	147			449
7:30 AM	8		126							55	10		104	176			479
7:45 AM	12		109							68	12		119	150			470
8:00 AM	9		108							81	18		101	119			436
8:15 AM	15		93							65	10		104	125			412
8:30 AM	12		82							49	12		85	116			356
8:45 AM	7		81							72	14		97	111			382
TOTAL VOLUMES :	87	0	831	0	0	0	0	0	0	585	91	0	753	1066	0	0	3413
APPROACH %'s :	9.48%	0.00%	90.52%	0.00%					0.00%	86.54%	13.46%	0.00%	41.40%	58.60%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	44	0	467	0	0	0	0	0	0	318	37	0	366	595	0	0	1827
PEAK HR FACTOR :	0.786	0.000	0.927	0.000	0.000	0.000	0.000	0.000	0.000	0.704	0.771	0.000	0.769	0.845	0.000	0.000	0.954
	0.953																
	0.733																
	0.858																
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	0	1	0	0	0	0	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	9		127							128	30		122	138			554
4:15 PM	14		93							120	13		90	90			420
4:30 PM	14		108							157	22		123	90			514
4:45 PM	15		100							157	25		93	73			463
5:00 PM	15		104							176	18		109	80			502
5:15 PM	13		110							140	19		90	85			457
5:30 PM	12		122							169	18		108	107			536
5:45 PM	22		98							176	15		99	59			469
TOTAL VOLUMES :	114	0	862	0	0	0	0	0	0	1223	160	0	834	722	0	0	3915
APPROACH %'s :	11.68%	0.00%	88.32%	0.00%					0.00%	88.43%	11.57%	0.00%	53.60%	46.40%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	55	0	436	0	0	0	0	0	0	642	80	0	400	345	0	0	1958
PEAK HR FACTOR :	0.917	0.000	0.893	0.000	0.000	0.000	0.000	0.000	0.000	0.912	0.800	0.000	0.917	0.806	0.000	0.000	0.913
	0.916																
	0.930																
	0.866																

Attachment 2

National Data & Surveying Services Intersection Turning Movement Count

Location: Westbrook Blvd & Baseline Rd
 City: Roseville
 Control: Signalized

Project ID: 22-070037-001
 Date: 3/1/2022

Data - Totals

NS/EW Streets:	Westbrook Blvd				Westbrook Blvd				Baseline Rd				Baseline Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	0	0	0	1	0	1	0	1	2	0	0	0	2	1	0	0
7:15 AM	0	0	0	0	15	0	11	0	49	139	0	0	0	225	20	0	0
7:30 AM	0	0	0	0	21	0	10	0	13	176	0	0	0	257	14	0	0
7:45 AM	0	0	0	0	19	0	8	0	9	168	0	0	0	270	21	0	0
8:00 AM	0	0	0	0	13	0	3	0	7	173	0	0	0	221	16	0	0
8:15 AM	0	0	0	0	12	0	12	0	12	153	0	0	0	218	12	0	0
8:30 AM	0	0	0	0	23	0	7	0	10	113	0	0	0	197	22	0	0
8:45 AM	0	0	0	0	23	0	8	0	12	142	0	0	0	190	10	0	0
8:45 AM	0	0	0	0	20	0	12	0	13	129	0	0	0	167	7	0	0
TOTAL VOLUMES :	0	0	0	0	146	0	71	0	125	1193	0	0	0	1745	122	0	0
APPROACH %'s :					67.28%	0.00%	32.72%	0.00%	9.48%	90.52%	0.00%	0.00%	0.00%	93.47%	6.53%	0.00%	0.00%
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	68	0	32	0	78	656	0	0	0	973	71	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.810	0.000	0.727	0.000	0.398	0.932	0.000	0.000	0.000	0.901	0.845	0.000	0.000
					0.806				0.971				0.897				0.948
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	11	0	1	0	13	181	0	0	0	150	9	0	0
4:15 PM	0	0	0	0	5	0	12	0	9	265	0	0	0	193	16	0	0
4:30 PM	0	0	0	0	15	0	8	0	7	255	0	0	0	167	9	0	0
4:45 PM	0	0	0	0	12	0	7	0	9	278	0	0	0	188	15	0	0
5:00 PM	0	0	0	0	13	0	6	0	9	238	0	0	0	180	15	0	0
5:15 PM	0	0	0	0	14	0	12	0	21	293	0	0	0	223	11	0	0
5:30 PM	0	0	0	0	13	0	3	1	6	274	0	0	0	163	12	0	0
5:45 PM	0	0	0	0	8	0	6	0	6	288	0	0	0	172	18	0	0
TOTAL VOLUMES :	0	0	0	0	91	0	55	1	80	2072	0	0	0	1436	105	0	0
APPROACH %'s :					61.90%	0.00%	37.41%	0.68%	3.72%	96.28%	0.00%	0.00%	0.00%	93.19%	6.81%	0.00%	0.00%
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	52	0	28	1	45	1083	0	0	0	754	53	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.929	0.000	0.583	0.250	0.536	0.924	0.000	0.000	0.000	0.845	0.883	0.000	0.000
					0.779				0.898				0.862				0.878



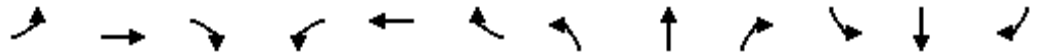
Attachment B

Analysis Worksheets for Existing plus Project Conditions

Attachment 2

Erickson Senior Living LTA
1: Watt Avenue & Baseline Road

Existing PP
Timing Plan: AM



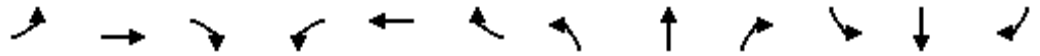
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	37	484	48	491	714	35	56	37	525	39	68	68
v/c Ratio	0.12	0.51	0.10	0.76	0.33	0.04	0.34	0.09	0.62	0.12	0.34	0.27
Control Delay	46.9	32.7	3.0	35.6	10.8	1.3	52.6	43.4	12.2	46.9	48.6	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.9	32.7	3.0	35.6	10.8	1.3	52.6	43.4	12.2	46.9	48.6	8.4
Queue Length 50th (ft)	10	127	0	258	123	0	32	10	103	11	38	0
Queue Length 95th (ft)	31	163	4	345	159	8	75	30	219	32	95	28
Internal Link Dist (ft)		648			1230			400			311	
Turn Bay Length (ft)	250		220	330		235	200		200	230		230
Base Capacity (vph)	319	2880	1303	1173	3539	1583	164	988	1249	319	520	506
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.17	0.04	0.42	0.20	0.02	0.34	0.04	0.42	0.12	0.13	0.13

Intersection Summary

Attachment 2

Erickson Senior Living LTA
1: Watt Avenue & Baseline Road

Existing PP
Timing Plan: AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↖	↗	↕	↖	↖	↕	↗	↖↗	↕	↖
Traffic Volume (veh/h)	34	339	37	378	607	32	44	34	488	36	63	63
Future Volume (veh/h)	34	339	37	378	607	32	44	34	488	36	63	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	37	484	48	491	714	35	56	37	525	39	68	68
Peak Hour Factor	0.92	0.70	0.77	0.77	0.85	0.92	0.79	0.92	0.93	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	808	360	529	1672	746	119	787	821	191	392	333
Arrive On Green	0.05	0.23	0.23	0.30	0.47	0.47	0.07	0.22	0.22	0.06	0.21	0.21
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	37	484	48	491	714	35	56	37	525	39	68	68
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	0.9	11.0	2.2	24.2	12.0	1.1	2.7	0.7	20.0	1.0	2.7	3.2
Cycle Q Clear(g_c), s	0.9	11.0	2.2	24.2	12.0	1.1	2.7	0.7	20.0	1.0	2.7	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	185	808	360	529	1672	746	119	787	821	191	392	333
V/C Ratio(X)	0.20	0.60	0.13	0.93	0.43	0.05	0.47	0.05	0.64	0.20	0.17	0.20
Avail Cap(c_a), veh/h	306	2950	1316	1124	2950	1316	158	787	821	306	497	421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	31.2	27.8	30.8	15.8	12.9	40.6	27.7	15.7	40.8	29.3	29.5
Incr Delay (d2), s/veh	0.5	1.8	0.4	3.2	0.4	0.1	1.1	0.0	1.3	0.5	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.5	0.8	9.7	4.2	0.3	1.2	0.3	6.6	0.4	1.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	33.0	28.2	34.1	16.3	13.0	41.7	27.7	17.0	41.3	29.5	29.8
LnGrp LOS	D	C	C	C	B	B	D	C	B	D	C	C
Approach Vol, veh/h		569			1240			618			175	
Approach Delay, s/veh		33.1			23.2			19.9			32.2	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	24.0	30.8	26.5	10.0	23.0	8.8	48.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0				
Max Green Setting (Gmax), s	8.0	20.0	57.0	75.0	8.0	24.0	8.0	75.0				
Max Q Clear Time (g_c+I1), s	3.0	22.0	26.2	13.0	4.7	5.2	2.9	14.0				
Green Ext Time (p_c), s	0.0	0.0	0.6	7.5	0.0	0.4	0.0	12.0				

Intersection Summary

HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Erickson Senior Living LTA
2: Baseline Road & Site Access Dwy (South)



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	47	892	1205	47
v/c Ratio	0.15	0.30	0.45	0.12
Control Delay	16.7	2.6	8.2	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.7	2.6	8.2	11.7
Queue Length 50th (ft)	4	0	0	2
Queue Length 95th (ft)	33	72	#247	27
Internal Link Dist (ft)		1230	1250	338
Turn Bay Length (ft)	150			
Base Capacity (vph)	322	3011	2679	1166
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.15	0.30	0.45	0.04

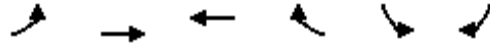
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Attachment 2

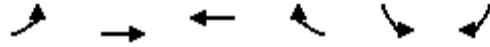
Erickson Senior Living LTA 2: Baseline Road & Site Access Dwy (South)

Existing PP
Timing Plan: AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↶	↕↕	↕↶		↶↶		
Traffic Volume (veh/h)	43	821	1037	72	28	16	
Future Volume (veh/h)	43	821	1037	72	28	16	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	47	892	1127	78	30	17	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	95	2339	1554	107	58	33	
Arrive On Green	0.05	0.66	0.46	0.46	0.05	0.05	
Sat Flow, veh/h	1781	3647	3466	233	1068	605	
Grp Volume(v), veh/h	47	892	594	611	48	0	
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1828	1708	0	
Q Serve(g_s), s	0.8	3.6	8.5	8.5	0.9	0.0	
Cycle Q Clear(g_c), s	0.8	3.6	8.5	8.5	0.9	0.0	
Prop In Lane	1.00			0.13	0.62	0.35	
Lane Grp Cap(c), veh/h	95	2339	819	843	93	0	
V/C Ratio(X)	0.49	0.38	0.72	0.73	0.52	0.00	
Avail Cap(c_a), veh/h	290	3132	1021	1051	1031	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	14.4	2.4	6.8	6.8	14.4	0.0	
Incr Delay (d2), s/veh	3.9	0.1	2.0	1.9	4.4	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.0	1.1	0.4	0.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	18.3	2.5	8.8	8.8	18.8	0.0	
LnGrp LOS	B	A	A	A	B	A	
Approach Vol, veh/h		939	1205		48		
Approach Delay, s/veh		3.3	8.8		18.8		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				25.1	6.2	6.2	18.9
Change Period (Y+Rc), s				4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s				27.6	18.9	5.1	18.0
Max Q Clear Time (g_c+I1), s				5.6	2.9	2.8	10.5
Green Ext Time (p_c), s				5.5	0.1	0.0	3.9
Intersection Summary							
HCM 6th Ctrl Delay			6.7				
HCM 6th LOS			A				
Notes							
User approved volume balancing among the lanes for turning movement.							

Erickson Senior Living LTA
3: Baseline Road & Westbrook Boulevard



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	111	774	1197	159	285	55
v/c Ratio	0.48	0.33	0.65	0.18	0.74	0.14
Control Delay	46.6	6.4	18.0	2.6	48.7	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	6.4	18.0	2.6	48.7	11.0
Queue Length 50th (ft)	61	86	260	0	154	0
Queue Length 95th (ft)	93	112	365	26	#273	21
Internal Link Dist (ft)		1250	1277		320	
Turn Bay Length (ft)	270			240	250	250
Base Capacity (vph)	436	3089	2365	1111	436	431
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.25	0.51	0.14	0.65	0.13

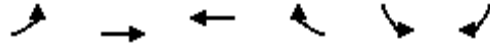
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Attachment 2

Erickson Senior Living LTA 3: Baseline Road & Westbrook Boulevard

Existing PP
Timing Plan: AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖	↑↑	↗	↑	↙	↘	
Traffic Volume (veh/h)	78	720	1077	135	231	40	
Future Volume (veh/h)	78	720	1077	135	231	40	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	111	774	1197	159	285	55	
Peak Hour Factor	0.70	0.93	0.90	0.85	0.81	0.73	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	152	2397	1899	847	337	300	
Arrive On Green	0.09	0.67	0.53	0.53	0.19	0.19	
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585	
Grp Volume(v), veh/h	111	774	1197	159	285	55	
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585	
Q Serve(g_s), s	4.5	6.7	17.3	3.8	11.3	2.1	
Cycle Q Clear(g_c), s	4.5	6.7	17.3	3.8	11.3	2.1	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	152	2397	1899	847	337	300	
V/C Ratio(X)	0.73	0.32	0.63	0.19	0.85	0.18	
Avail Cap(c_a), veh/h	486	2664	2664	1188	486	432	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	32.7	5.0	12.0	8.8	28.7	25.0	
Incr Delay (d2), s/veh	6.5	0.2	0.7	0.2	9.1	0.3	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	2.0	1.3	5.1	1.0	5.2	2.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	39.2	5.1	12.7	9.1	37.8	25.3	
LnGrp LOS	D	A	B	A	D	C	
Approach Vol, veh/h		885	1356		340		
Approach Delay, s/veh		9.4	12.3		35.8		
Approach LOS		A	B		D		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				55.5	17.9	10.3	45.2
Change Period (Y+Rc), s				6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s				55.0	20.0	20.0	55.0
Max Q Clear Time (g_c+I1), s				8.7	13.3	6.5	19.3
Green Ext Time (p_c), s				11.2	0.6	0.2	19.9
Intersection Summary							
HCM 6th Ctrl Delay			14.4				
HCM 6th LOS			B				
Notes							
User approved pedestrian interval to be less than phase max green.							

Attachment 2

Erickson Senior Living LTA
4: Park & Ride Driveway & Santucci Blvd

Existing PP
Timing Plan: AM

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↖
Traffic Vol, veh/h	0	11	64	37	0	162
Future Vol, veh/h	0	11	64	37	0	162
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	12	70	40	0	176

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	55	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.93	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.319	-
Pot Cap-1 Maneuver	0	1001	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1001	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	1001
HCM Lane V/C Ratio	-	-	0.012
HCM Control Delay (s)	-	-	8.6
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

Attachment 2

Erickson Senior Living LTA
5: Site Access Dwy (North) & Sierra Village Drive

Existing PP
Timing Plan: AM

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	143	14	14	50	8	8
Future Vol, veh/h	143	14	14	50	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	155	15	15	54	9	9

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	170	0	220
Stage 1	-	-	-	-	163
Stage 2	-	-	-	-	57
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1405	-	748
Stage 1	-	-	-	-	849
Stage 2	-	-	-	-	959
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1405	-	740
Mov Cap-2 Maneuver	-	-	-	-	740
Stage 1	-	-	-	-	849
Stage 2	-	-	-	-	948

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	835	-	-	1405	-
HCM Lane V/C Ratio	0.021	-	-	0.011	-
HCM Control Delay (s)	9.4	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Attachment 2

Erickson Senior Living LTA
6: Westbrook Boulevard & Site Access Dwy (East)

Existing PP
Timing Plan: AM

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	20	0	213	251	0
Future Vol, veh/h	0	20	0	213	251	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	0	232	273	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	137	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	886	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	886	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 886	-	-
HCM Lane V/C Ratio	- 0.025	-	-
HCM Control Delay (s)	- 9.2	-	-
HCM Lane LOS	- A	-	-
HCM 95th %tile Q(veh)	- 0.1	-	-

Attachment 2

Erickson Senior Living LTA
1: Watt Avenue & Baseline Road

Existing PP
Timing Plan: PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	84	724	100	463	458	48	60	84	509	54	64	64
v/c Ratio	0.32	0.62	0.17	0.81	0.22	0.05	0.44	0.19	0.61	0.20	0.36	0.28
Control Delay	57.6	33.8	8.9	46.8	10.7	2.0	65.8	51.8	20.5	56.5	58.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	33.8	8.9	46.8	10.7	2.0	65.8	51.8	20.5	56.5	58.1	7.9
Queue Length 50th (ft)	28	212	6	286	72	0	40	28	202	18	42	0
Queue Length 95th (ft)	69	356	37	494	92	12	#119	66	364	48	106	23
Internal Link Dist (ft)		648			1230			400			311	
Turn Bay Length (ft)	250		220	330		235	200		200	230		230
Base Capacity (vph)	264	2557	1168	971	3449	1544	136	818	1155	264	430	435
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.28	0.09	0.48	0.13	0.03	0.44	0.10	0.44	0.20	0.15	0.15

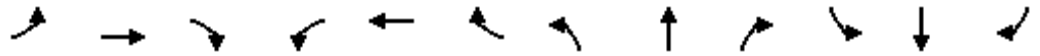
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Attachment 2

Erickson Senior Living LTA
1: Watt Avenue & Baseline Road

Existing PP
Timing Plan: PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↖	↗	↕	↖	↗	↕	↖	↗	↕	↖
Traffic Volume (veh/h)	77	659	80	426	371	44	55	77	453	50	59	59
Future Volume (veh/h)	77	659	80	426	371	44	55	77	453	50	59	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	724	100	463	458	48	60	84	509	54	64	64
Peak Hour Factor	0.92	0.91	0.80	0.92	0.81	0.92	0.92	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	1112	496	495	1857	828	110	655	732	205	340	288
Arrive On Green	0.07	0.31	0.31	0.28	0.52	0.52	0.06	0.18	0.18	0.06	0.18	0.18
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	1781	3554	1585	3456	1870	1585
Grp Volume(v), veh/h	84	724	100	463	458	48	60	84	509	54	64	64
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1781	1777	1585	1728	1870	1585
Q Serve(g_s), s	2.5	19.1	5.0	27.5	7.7	1.6	3.5	2.1	20.0	1.6	3.1	3.7
Cycle Q Clear(g_c), s	2.5	19.1	5.0	27.5	7.7	1.6	3.5	2.1	20.0	1.6	3.1	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	1112	496	495	1857	828	110	655	732	205	340	288
V/C Ratio(X)	0.36	0.65	0.20	0.94	0.25	0.06	0.55	0.13	0.70	0.26	0.19	0.22
Avail Cap(c_a), veh/h	255	2457	1096	936	2457	1096	131	655	732	255	414	351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	32.2	27.3	38.2	14.2	12.7	49.4	37.0	23.1	48.8	37.6	37.8
Incr Delay (d2), s/veh	0.9	1.6	0.5	3.8	0.2	0.1	1.6	0.0	2.4	0.7	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	7.8	1.8	11.6	2.8	0.5	1.6	0.9	9.6	0.7	1.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	33.8	27.8	42.0	14.4	12.8	51.0	37.0	25.5	49.5	37.9	38.2
LnGrp LOS	D	C	C	D	B	B	D	D	C	D	D	D
Approach Vol, veh/h		908			969			653			182	
Approach Delay, s/veh		34.6			27.5			29.4			41.4	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	24.0	34.1	39.9	10.7	23.7	11.4	62.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	6.0	4.0	4.0	4.0	6.0				
Max Green Setting (Gmax), s	8.0	20.0	57.0	75.0	8.0	24.0	8.0	75.0				
Max Q Clear Time (g_c+I1), s	3.6	22.0	29.5	21.1	5.5	5.7	4.5	9.7				
Green Ext Time (p_c), s	0.0	0.0	0.6	12.9	0.0	0.4	0.1	7.1				

Intersection Summary

HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Erickson Senior Living LTA
 2: Baseline Road & Site Access Dwy (South)

Existing PP
 Timing Plan: PM

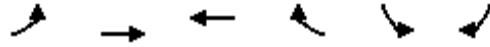


Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	37	1226	959	104
v/c Ratio	0.10	0.46	0.41	0.22
Control Delay	18.1	4.8	8.0	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.1	4.8	8.0	11.6
Queue Length 50th (ft)	6	68	47	11
Queue Length 95th (ft)	30	131	161	45
Internal Link Dist (ft)		1230	1250	338
Turn Bay Length (ft)	150			
Base Capacity (vph)	364	2825	2342	1155
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.41	0.09
Intersection Summary				

Attachment 2

Erickson Senior Living LTA 2: Baseline Road & Site Access Dwy (South)

Existing PP
Timing Plan: PM



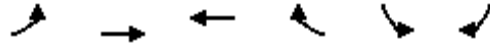
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	34	1128	826	56	61	35	
Future Volume (veh/h)	34	1128	826	56	61	35	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	37	1226	898	61	66	38	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	79	2134	1368	93	104	60	
Arrive On Green	0.04	0.60	0.41	0.41	0.10	0.10	
Sat Flow, veh/h	1781	3647	3470	229	1072	617	
Grp Volume(v), veh/h	37	1226	473	486	105	0	
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1829	1706	0	
Q Serve(g_s), s	0.6	6.3	6.4	6.4	1.8	0.0	
Cycle Q Clear(g_c), s	0.6	6.3	6.4	6.4	1.8	0.0	
Prop In Lane	1.00			0.13	0.63	0.36	
Lane Grp Cap(c), veh/h	79	2134	720	741	166	0	
V/C Ratio(X)	0.47	0.57	0.66	0.66	0.63	0.00	
Avail Cap(c_a), veh/h	305	3293	1074	1105	1054	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	13.9	3.6	7.2	7.2	12.9	0.0	
Incr Delay (d2), s/veh	4.3	0.2	1.0	1.0	3.9	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.8	0.8	0.7	0.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	18.2	3.9	8.2	8.2	16.8	0.0	
LnGrp LOS	B	A	A	A	B	A	
Approach Vol, veh/h		1263	959		105		
Approach Delay, s/veh		4.3	8.2		16.8		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				22.4	7.4	5.8	16.6
Change Period (Y+Rc), s				4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s				27.6	18.4	5.1	18.0
Max Q Clear Time (g_c+I1), s				8.3	3.8	2.6	8.4
Green Ext Time (p_c), s				7.7	0.2	0.0	3.6

Intersection Summary

HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

Notes

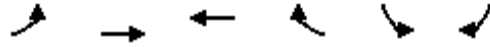
User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	64	1298	1005	267	213	64
v/c Ratio	0.30	0.55	0.53	0.28	0.62	0.18
Control Delay	39.7	7.7	13.9	2.3	39.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	7.7	13.9	2.3	39.2	10.1
Queue Length 50th (ft)	27	140	159	0	89	0
Queue Length 95th (ft)	61	225	241	33	204	19
Internal Link Dist (ft)		1250	1277		320	
Turn Bay Length (ft)	270			240	250	250
Base Capacity (vph)	500	3320	2689	1267	500	493
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.39	0.37	0.21	0.43	0.13
Intersection Summary						

Erickson Senior Living LTA 3: Baseline Road & Westbrook Boulevard

Existing PP
Timing Plan: PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖	↗↗	↗↗	↖	↖	↖	
Traffic Volume (veh/h)	45	1194	854	235	198	45	
Future Volume (veh/h)	45	1194	854	235	198	45	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	64	1298	1005	267	213	64	
Peak Hour Factor	0.70	0.92	0.85	0.88	0.93	0.70	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	136	2406	1897	846	278	248	
Arrive On Green	0.08	0.68	0.53	0.53	0.16	0.16	
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585	
Grp Volume(v), veh/h	64	1298	1005	267	213	64	
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585	
Q Serve(g_s), s	2.1	11.1	11.0	5.7	6.9	2.1	
Cycle Q Clear(g_c), s	2.1	11.1	11.0	5.7	6.9	2.1	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	136	2406	1897	846	278	248	
V/C Ratio(X)	0.47	0.54	0.53	0.32	0.77	0.26	
Avail Cap(c_a), veh/h	594	3259	3259	1454	594	529	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	26.5	4.9	9.1	7.8	24.3	22.2	
Incr Delay (d2), s/veh	2.5	0.4	0.5	0.5	4.4	0.5	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.8	1.5	2.8	1.3	2.9	2.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	29.0	5.3	9.6	8.3	28.6	22.8	
LnGrp LOS	C	A	A	A	C	C	
Approach Vol, veh/h		1362	1272		277		
Approach Delay, s/veh		6.4	9.3		27.3		
Approach LOS		A	A		C		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				46.6	13.4	8.6	38.0
Change Period (Y+Rc), s				6.0	4.0	4.0	6.0
Max Green Setting (Gmax), s				55.0	20.0	20.0	55.0
Max Q Clear Time (g_c+I1), s				13.1	8.9	4.1	13.0
Green Ext Time (p_c), s				21.9	0.6	0.1	19.0

Intersection Summary

HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Attachment 2

Erickson Senior Living LTA
4: Park & Ride Driveway & Santucci Blvd

Existing PP
Timing Plan: PM

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↖
Traffic Vol, veh/h	0	50	182	17	0	168
Future Vol, veh/h	0	50	182	17	0	168
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	54	198	18	0	183

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	108	0	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.93	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-
Pot Cap-1 Maneuver	0	926	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	926	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	926
HCM Lane V/C Ratio	-	-	0.059
HCM Control Delay (s)	-	-	9.1
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

Attachment 2

Erickson Senior Living LTA
5: Site Access Dwy (North) & Sierra Village Drive

Existing PP
Timing Plan: PM

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	101	11	11	171	17	17
Future Vol, veh/h	101	11	11	171	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	110	12	12	186	18	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	122	0	233 61
Stage 1	-	-	-	-	116 -
Stage 2	-	-	-	-	117 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	1463	-	735 991
Stage 1	-	-	-	-	896 -
Stage 2	-	-	-	-	895 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1463	-	728 991
Mov Cap-2 Maneuver	-	-	-	-	728 -
Stage 1	-	-	-	-	896 -
Stage 2	-	-	-	-	887 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	839	-	-	1463	-
HCM Lane V/C Ratio	0.044	-	-	0.008	-
HCM Control Delay (s)	9.5	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Attachment 2

Erickson Senior Living LTA
6: Westbrook Boulevard & Site Access Dwy (East)

Existing PP
Timing Plan: PM

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	44	0	280	199	0
Future Vol, veh/h	0	44	0	280	199	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	48	0	304	216	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	108	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	925	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	925	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 925	-	-
HCM Lane V/C Ratio	- 0.052	-	-
HCM Control Delay (s)	- 9.1	-	-
HCM Lane LOS	- A	-	-
HCM 95th %tile Q(veh)	- 0.2	-	-



MEMORANDUM

To: Matthew Todd, Principal Engineer
George Hanson, Principal Engineer
City of Roseville Development Services Department - Engineering

From: Fareed S. Pittalwala
Kimley-Horn and Associates, Inc.
March 21, 2022

Date: **Revised August 8th, 2022**
Revised November 3^d, 2022
Revised November 16th, 2022

Subject: Erickson West Roseville – Sewer Generation and Water Demand Analysis

PURPOSE

This memorandum is being provided to the City of Roseville to provide a baseline comparison of what the currently approved Sierra Vista Specific Plan (SVSP) technical studies show for the proposed parcels, versus their proposed demands.

PROJECT DESCRIPTION

The approximately 60-acre project site is located on the northwest corner of Westbrook Boulevard and Baseline Road. Baseline Road and Sierra Village Drive are south and north of the site. The site consists of Sierra Vista Specific Plan (SVSP) parcel KT-41, which in some portions of the SVSP is labelled or broken down into KT-41A, KT-41B.

Erickson Senior Living (Erickson) proposes a community care facility with independent living, assisted living, memory care, skilled nursing, and other advanced care services. The self-contained community will be designed to meet most daily needs of seniors and will feature the following components:

- 200+ assisted living/memory care suites
- 40+ skilled nursing rooms
- 1,200+ independent living units (one and two-bedroom)
- Fine and casual indoor and outdoor dining options
- Medical services, including pharmacy
- Recreation amenities such as fitness center, swimming and walking paths

The project will be built out in phases, with approximately 1,800 residents occupying the facility at full buildout. At the time of the preparation of this technical memorandum, the City of Roseville has accepted this project as a “Commercial” land use.

WATER DEMAND PER SVSP WATER SUPPLY ASSESSMENT

Assuming that the project is evaluated as a commercial zone, the projected water demand will be calculated using a Water Demand Factor of 2,598 GPD/AC. Using this factor, the estimated demand for the project would be **155,880 gallons per day**.

SEWER CAPACITY PER SVSP SANITARY SEWER MASTER PLAN

According to the SVSP Sanitary Sewer Master Plan (latest revision, May 26, 2009), the land use associated with this project (KT-41) is categorized as commercial land uses and will generate the following sewer flows.

Parcel KT-41 (See Exhibit 2 – Sanitary Sewer Master Plan, SVSP Base + Urban Reserve Condition):

Q_A = Average Dry Weather Flow (MGD) = 0.048 (57,645 gpd)

Q_F = Factored Flow (MGD) = 0.095 (114,090 gpd)

P_F = Peaking Factor = 3.23

Q_P = Peak Wet Weather Flow (MGD) = 0.307 (368,691 gpd)

Projected DU = 55.2

Therefore, the total Projected Site Wastewater Generation for the project area per the SVSP Sewer Master Plan is:

- Average Dry Weather Flow (ADWF) = **57,645 gallons per day**
- Peak Wet Weather Flow (PWWF) = **368,691 gallons per day**

COMPARISON DATA FROM REPRESENTATIVE ERICKSON PROJECTS OF SIMILAR SCALE

Two detailed reports were commissioned by Erickson in early 2020 to evaluate the true sewer generation and water usage for their typical projects. These reports provide baseline data for the same product type being proposed for the Roseville site. Copies of these reports are provided as part of this memorandum.

In summary, the report provided this baseline data:

SEWER GENERATION (Per the GMB Report dated January 29, 2020)

The report used real flow metering data from the Erickson Living Ashby Ponds Senior Living project in Ashburn, Virginia to determine typical sanitary sewer flow rate generation for future Erickson projects. Per Section 3.3 – Wastewater Calculations, the result of the report was a Daily Sewer Flow of 81 gallons per day, per resident. The average daily Extraneous Flow Rate would equate to 6 gpd per person. Extraneous Flow, as the report defines, would include groundwater infiltration, and rainfall-dependent infiltration and inflow. Therefore, we can assume that a value of 87 gallons per day, per resident would be the equivalent of Peak Wet weather Flow (PWWF). Using the total number of projected residents (1,800 Residents) for the full buildout of the Roseville site, the approximate total sewer generation would be 87 gpd/resident x 1,800 residents, or **156,600 gallons per day** at full buildout.

WATER USAGE (Per the Aqua San Report dated January 7, 2020)

The report details actual water usage (using approximately 2 years of water bill data) for the Erickson Wind Crest project located in Highlands Ranch, Colorado. The result of the report was an estimate of **total domestic water usage of approximately 72.5 gallons per capita per day**. Using the total number of projected residents (1,800 Residents) for the full buildout of the Roseville site, the approximate total domestic water usage generation would be **130,500 gallons per day**.

CONCLUSION

A summary of sewer and water demand for the proposed project is below:

SEWER GENERATION	ADWF (GPD)	PWWF (GPD)
Per Sierra Vista Specific Plan	57,645	368,691
Using Roseville Design Standards	56,200	342,820
Using Historical Erickson Meter Data		156,600*
*inclusive of groundwater infiltration, and rainfall-dependant infiltration and inflow		
WATER DEMAND	TOTAL DEMAND (GPD)	
Per Sierra Vista Specific Plan WSA	155,880	
Using Historical Erickson Meter Data	130,500	
Difference	-25,380	

Using the Sierra Vista Specific Plan Water Supply Assessment and Sewer Analysis as a comparative baseline, it is projected that the Erickson Senior Living Project will have a lower overall water demand.

Additionally, using the Sierra Vista Specific Sewer Master Plan as a comparative baseline, it is projected that the Erickson Senior Living Project will have a lower sewer generation for a peak wet weather scenario.

Attachments:

- Erickson Living Sanitary Sewer Flow Metering Analysis – Ashby Ponds Project
- Erickson Living Water Management Analysis – Wind Crest Project

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JOHN E. BURNSWORTH, PE
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AUTUMN J. WILLIS

January 29, 2020

Bohler Engineering
901 Dulaney Valley Road, Suite 801
Towson, MD 21204

Attn: Mr. Brandon Rowe, P.E.

Re: Erickson Living Ashby Ponds
Sanitary Sewer Flow Metering
GMB Job No. 190108

Dear Mr. Rowe:

Per your request, George, Miles & Buhr, LLC (GMB) is providing this letter report regarding flow metering performed at the Erickson Living Ashby Ponds Senior Living Community located in Ashburn, Virginia.

1. Background and Purpose

This effort stems from the sanitary sewer flow metering and capacity evaluation performed by GMB for the Erickson Living community proposed for Clarksville, Maryland in Howard County, as documented in our letter report dated 5/07/2019.

The purpose of the effort was to determine typical sanitary sewage flow rate generation from an existing Erickson Living community which could then be applied to the proposed Erickson Living community in Howard County, instead of typical design values which may not be reflective for actual flows from this type of community.

2. Flow Metering Program

2.1. Flow Metering Program Data Sources

Flow Meter 1 and Flow Meter 2 were installed at the locations indicated on Figure 1: Flow Meter Locations.

Based on the configuration of the sanitary sewer system in this area, the entire Ashby Ponds community flows to these two (2) sites with no other outside flows, so the sum of the two (2) flow meters is equal to the total average daily flow rate from the entire Ashby Ponds community.

The flow meters were installed on 6/11/2019 and operated until 8/13/2019 recording depth, velocity, and flow rate at 5-minute intervals.

Typically, sanitary sewer flow metering is performed for the purpose of either locating groundwater infiltration and rainfall-dependent infiltration and inflow (RDII) sources, or developing a hydraulic model, or both, so with the purpose of this effort being none of those, but rather to determine typical day-to-day flows, it was unnecessary to include a rain gauge as part of the effort.

However, some general rainfall data was still needed as it can affect flows by contributing RDII directly to the sanitary sewer system and indirectly by raising the groundwater table and increasing groundwater infiltration.

In lieu of a rain gauge recording at 5-minute intervals, the same as the flow meters daily rainfall totals, as recorded at Dulles International Airport in Dulles, VA, as available via the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information website (<https://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USW00093738/detail>) were used instead.

2.2. Flow Meter 1 Data

Flow Meter 1 was located in a 12-inch pipe, as shown in Figure 2: Flow Meter 1 Site Sheet and recorded an average daily flow rate of 106,103 gallons per day (gpd) over the course of the flow metering program as shown in Table 1: Flow Meter 1 Daily Totals.

Reviewing the data and comparing it to the rainfall daily totals, the area draining to the site does not appear to be susceptible to RDII.

2.3. Flow Meter 2 Data

Flow Meter 2 was located in an 8-inch pipe, as shown in Figure 3: Flow Meter 2 Site Sheet and recorded an average daily flow rate of 31,824 gpd over the course of the program, as shown in Table 2: Flow Meter 2 Daily Totals.

Reviewing the data and comparing it to the rainfall daily totals, the area draining to the site may appear to have some susceptibility to RDII.

On 7/08/2019, Flow Meter 2 recorded 103,469 gallons in response to a 1.05-inch rainfall which is more than triple the 31,824 gpd average daily flow rate.

Without having a rain gauge located at Ashby Ponds recording data in 5-minute intervals during the flow metering program and relying on rainfall data that is from Dulles Airport which is approximately 7 miles away means that the rainfall total could be different, so a direct RDII volume to rainfall total comparison is considered not reliable enough to make the call as to whether there is excessive RDII present in this area or not.

2.4. Total Flow from Erickson Community at Ashby Ponds

Based on the configuration of the sanitary sewer system in this area, the entire Ashby Ponds community flows to these two (2) flow meter sites with no other outside flows, so the sum of the two (2) flow meters is the total average daily flow rate from the Ashby Ponds community which is 137,927 gpd.

2.5. Rainfall Data

A total of 5.31 inches of rainfall was recorded at Dulles Airport over the course of the flow metering program including the partial days at the start and end of the program.

3. Erickson Community at Ashby Ponds Service Area Characteristics

3.1. Population and Surface Area

The Erickson Community at Ashby Ponds is a new development with portions still under construction during the timeframe of this evaluation.

At the time of the flow metering program, the portion of the Erickson Living Ashby Ponds Senior Living Community campus that was in use at the time encompassed approximately 43.3 acres and had an average population of 1,581 residents.

Our understanding is that Erickson facilities typically have an average of 1.3 persons per unit which would equate to 1,216 units occupied during the flow metering program for this location.

3.2. Water Usage Records

Four quarters of water & sewer utility bills from Loudoun Water were available for the twelve (12) buildings that comprise the occupied portion of the Erickson Community at Ashby Ponds covering Fall 2018 (9/13/2018 – 12/12/2018), Winter 2018 – 2019 (12/13/2018 – 3/13/2019), Spring 2019 (3/14/2019 – 6/12/2019), and Summer 2019 (6/13/2019 – 9/11/2019).

With the exception of one (1) building that had a separate water only account, which presumably was for irrigation, all of the utility bills charged the amount of water used for the quarter as both potable water and sanitary sewage, so the one (1) water-only account was excluded from the evaluation.

Even with the one (1) irrigation account excluded, the flows were much higher in the summer quarter with the average daily water usage flow totals ranging from a low of 96,564 gpd in the winter quarter to a high of 128,605 gpd in the summer quarter.

Taking all four (4) quarters together, the average daily water usage flow rate was 109,120 gallons per day.

Looking at the water usage in a different way, the flow metering program took place 6/11/2019 – 8/13/2019 which corresponds very closely to the first two (2) months of the Summer 2019 quarter which had an average daily water usage flow rate of 128,605 gallons per day.

For the purposes of this evaluation, we will use the average daily water usage flow rate of 128,605 gallons per day for several reasons as follows:

- The 128,605 gpd is the highest average of the data available, so would be the “worst-case scenario” in terms of high flows.
- The 128,605 gpd was the average during the period when the flow metering was taking place.

- One of the buildings is new so was being populated with residents at the time of the flow metering program, which is why we referred to an “average” population, so the 128,605 gpd summer being the most recent is considered the most accurate.

3.3. Wastewater Calculations

Wastewater flow through sanitary sewers is comprised of three (3) components which are sewage, groundwater infiltration, and rainfall-dependent infiltration & inflow (RDII) with the latter two (2) being extraneous flows.

Based on an average daily water usage of 128,605 gallons per day of water per the water usage records, which is assumed to be returned as sewage, and a total average daily wastewater flow rate of 137,927 gpd from the flow metering program, the area has an average daily flow rate of 9,322 gpd of extraneous flows.

The average daily sewage flow rate of 128,605 gpd equates to 81 gallons per day per resident, and the average daily extraneous flow rate would equate to 6 gpd per person normalized by population.

4. Comparison to Howard County Design Rates

The Howard County Design Manual Volume II Water and Sewer provides the following guidelines for calculating average daily wastewater flow:

Residential Usage	72 gallons per capita per day
Infiltration / Inflow – Residential Area	40 gallons per capita per day
Institutional Usage	350 gpd per acre (including I/I)
Industrial / Commercial Area	1,000 gpd per acre (including I/I)

For Institutional Usage and Industrial / Commercial Area, the Design Manual also cites the State of Maryland’s “Design Guidelines for Sewerage Facilities” as another source reference.

As a retirement community with different levels of assisted living amenities, the Erickson Living community best fits as residential usage, although part of the flow could also fit as institutional usage.

Compared to residential design flow rates, the 81 gallons per day per resident sewage flow is higher than the 72 gpd per person that is used by Howard County, but reasonable, considering that it also includes common areas used by all of the residents, as well as Erickson Community at Ashby Ponds staff, plus some residents may generate higher than average flows due to higher levels of care.

Conversely, the 6 gallons per day per resident extraneous flow is much lower than the 40 gpd per person that is used by Howard County for residential areas, but also would seem reasonable considering that the population of 1,581 is spread over only twelve buildings, so the amount of sanitary sewer service piping is much lower than if that same population was spread out over hundreds of single family homes.

Applying the County's institutional usage rate of 350 gallons per acre per day (which includes infiltration) to the 43.3 acre site would equate to 15,155 gallons per day, and applying the County's industrial / commercial usage rate of 1,000 gallons per acre per day (which includes infiltration) to the 43.3 acre site would equate to 43,300 gallons per day, neither of which is reasonable for application to the proposed Erickson Living community.

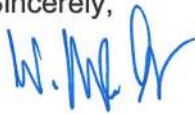
5. Conclusion

The results of the sanitary sewer flow metering of the Erickson Living Ashby Ponds Senior Living Community located in Ashburn, VA indicated that the average daily sewage flow rate is 81 gpd per person, and the average daily infiltration rate is 6 gpd per person when normalized by resident.

These flow generation rates seem reasonable and we believe that they could be considered representational of what flows to expect from similar facilities.

We trust that this evaluation satisfies your needs, but please let us know if you have any questions or need any additional information regarding this work. Thank you.

Sincerely,



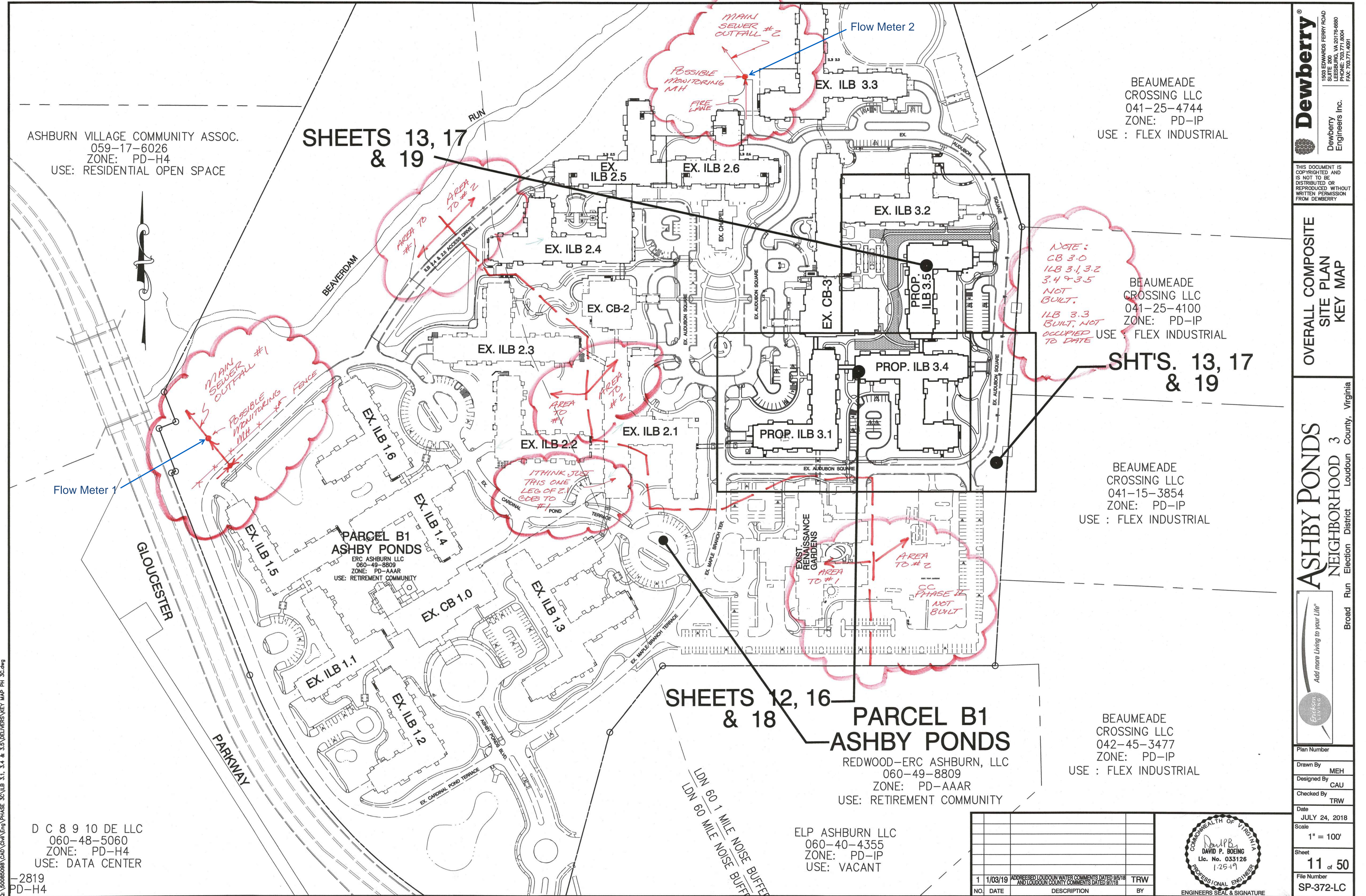
W. Mark Gardocky, P.E.
Vice President / Senior Project Manager

WMG/nc

Enclosures:

- Figure 1: Flow Meter Locations
- Figure 2: Flow Meter 1 Site Sheet
- Figure 3: Flow Meter 2 Site Sheet

- Table 1: Flow Meter 1 Daily Totals
- Table 2: Flow Meter 2 Daily Totals



ASHBURN VILLAGE COMMUNITY ASSOC.
059-17-6026
ZONE: PD-H4
USE: RESIDENTIAL OPEN SPACE

SHEETS 13, 17
& 19

BEAUMEADE CROSSING LLC
041-25-4744
ZONE: PD-IP
USE: FLEX INDUSTRIAL

NOTE:
CB 3.0
ILB 3.1, 3.2
3.4 & 3.5
NOT BUILT.
ILB 3.3
BUILT, NOT OCCUPIED TO DATE

SHT'S. 13, 17
& 19

BEAUMEADE CROSSING LLC
041-15-3854
ZONE: PD-IP
USE: FLEX INDUSTRIAL

SHEETS 12, 16
& 18

PARCEL B1
ASHBY PONDS

REDWOOD-ERC ASHBURN, LLC
060-49-8809
ZONE: PD-AAAR
USE: RETIREMENT COMMUNITY

BEAUMEADE CROSSING LLC
042-45-3477
ZONE: PD-IP
USE: FLEX INDUSTRIAL

ELP ASHBURN LLC
060-40-4355
ZONE: PD-IP
USE: VACANT

D C 8 9 10 DE LLC
060-48-5060
ZONE: PD-H4
USE: DATA CENTER

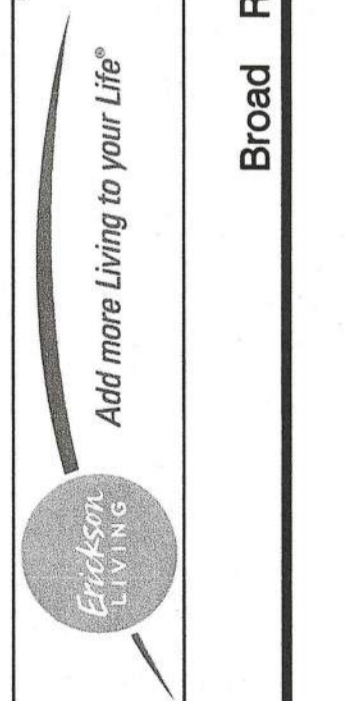
2819
PD-H4

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DPO
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703.771.4481

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OVERALL COMPOSITE
SITE PLAN
KEY MAP

ASHBY PONDS
NEIGHBORHOOD 3
Broad Run Election District
Loudoun County, Virginia



Plan Number	
Drawn By	MEH
Designed By	CALU
Checked By	TRW
Date	JULY 24, 2018
Scale	1" = 100'
Sheet	11 of 50
File Number	SP-372-LC



NO.	DATE	DESCRIPTION	BY
1	1/03/19	ADDRESSED LOUDOUN WATER COMMENTS DATED 9/18 AND LOUDOUN COUNTY COMMENTS DATED 9/18	TRW

FIGURE 1: FLOW METER LOCATIONS

Attachment 3

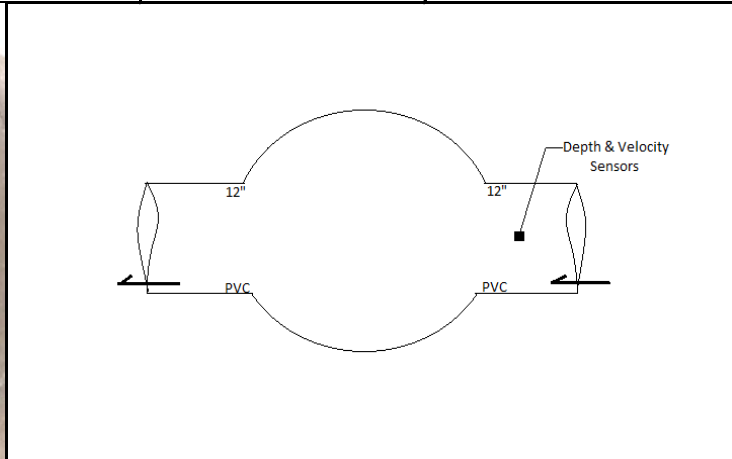


METER SITE INFORMATION FIELD LOG

PROJECT: Ashburn, VA	DATE: June 11, 2019	JOB#: 19070
LOCATION: Cardinal Pond Terrace R.O.W.	MH#:	METER SITE: 1
GPS/COMMENTS: 39.031797, -77.457596		



	Size (")	Material	Flow Depth (")	Debris (")	Shape	MH Depth
Incoming	12	PVC	1	0	Circular	08' 07"
Incoming						
Incoming						
Outgoing	12	PVC	1	0	Circular	08' 08"



SURCHARGE INFORMATION
SURCHARGE NONE EVIDENT: X
SURCHARGED MARKS TO:
SURCHARGE CURRENTLY TO:

WEIR INFORMATION
LENGTH:
BREADTH:
LEVEL:
HEIGHT ABOVE WEIR:
OVERFLOW OCCURS AT:

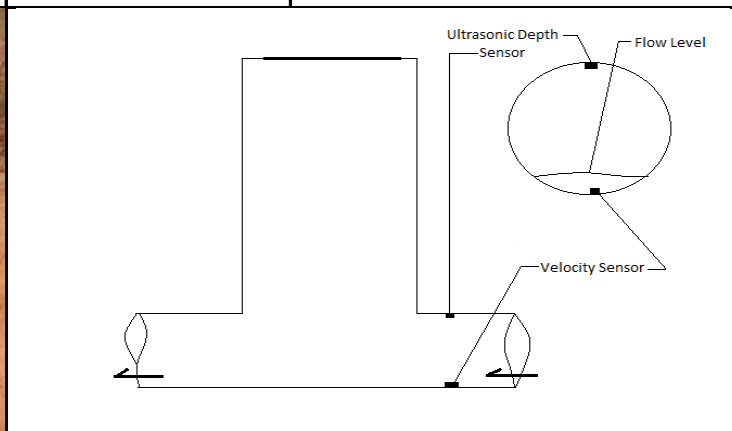


FIGURE 2 - FLOW METER 1 SITE SHEET

Attachment 3

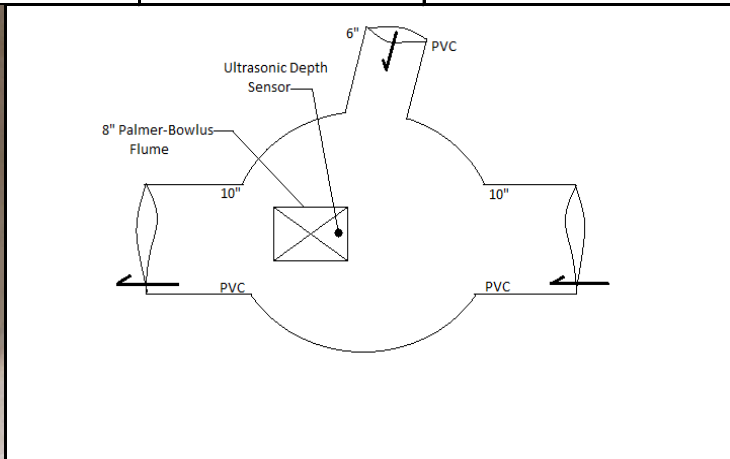


METER SITE INFORMATION FIELD LOG

PROJECT: Ashburn, VA	DATE: June 11, 2019	JOB#: 19070
LOCATION: Audubon Square R.O.W.	MH#:	METER SITE: 2
GPS/COMMENTS: 39.031294, -77.452787		



	Size (")	Material	Flow Depth (")	Debris (")	Shape	MH Depth
Incoming	10	PVC	1.5	0	Circular	20' 05"
Incoming	6	PVC	0.125	0	Circular	20' 02"
Incoming						
Outgoing	10	PVC	1.6	0	Circular	20' 06"



SURCHARGE INFORMATION		WEIR INFORMATION	
SURCHARGE NONE EVIDENT: X	LENGTH:	HEIGHT ABOVE WEIR:	
SURCHARGED MARKS TO:	BREADTH:	OVERFLOW OCCURS AT:	
SURCHARGE CURRENTLY TO:	LEVEL:		

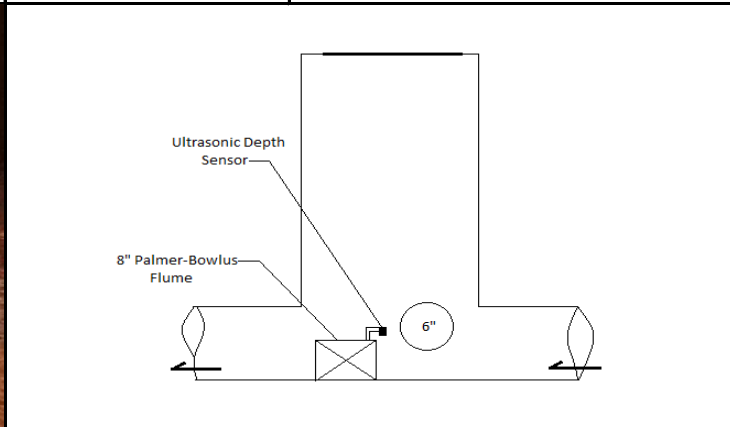


FIGURE 3 - FLOW METER 2 SITE SHEET

Attachment 3

Table 1: Flow Meter 1 Daily Totals

Date of Reading		Daily Flow (mgal)	Daily Rain (in)	Maximum Rain Rate (in/hr)	Maximum Surcharge (in)	Minimum Depth (in)	Maximum Depth (in)	Min - Max Difference (in)	Average Depth (in)	Minimum Velocity (fps)	Maximum Velocity (fps)	Min - Max Difference (fps)	Average Velocity (fps)	Minimum Flow Rate (mgd)	Maximum Flow Rate (mgd)	Min - Max Difference (mgd)	Average Flow Rate (mgd)
(m/d/y)	(SMTWTFS)	Rate (mgd)	Rate (in/day)	(in/hr)	(in)	(in)	(in)	(in)	(in)	(fps)	(fps)	(fps)	(fps)	(mgd)	(mgd)	(mgd)	(mgd)
6/12/2019	Wednesday	0.084	0.08	0.00	0.00	0.72	2.23	1.51	1.01	0.60	9.46	8.86	3.76	0.009	0.614	0.605	0.084
6/13/2019	Thursday	0.078	0.66	0.00	0.00	0.68	1.45	0.76	1.02	0.00	6.68	6.68	3.45	0.000	0.200	0.200	0.078
6/14/2019	Friday	0.060	0.00	0.00	0.00	0.67	1.38	0.71	0.97	0.06	5.94	5.88	2.85	0.001	0.170	0.169	0.060
6/15/2019	Saturday	0.074	0.00	0.00	0.00	0.64	2.12	1.48	1.02	0.07	8.09	8.02	3.18	0.001	0.487	0.486	0.074
6/16/2019	Sunday	0.093	0.00	0.00	0.00	0.74	2.17	1.43	1.11	0.19	8.33	8.15	3.77	0.003	0.520	0.517	0.093
6/17/2019	Monday	0.106	0.06	0.00	0.00	0.73	2.42	1.69	1.12	1.06	9.21	8.15	4.18	0.015	0.675	0.660	0.106
6/18/2019	Tuesday	0.108	0.00	0.00	0.00	0.73	2.20	1.46	1.13	1.69	8.59	6.89	4.22	0.023	0.547	0.523	0.108
6/19/2019	Wednesday	0.128	0.00	0.00	0.00	0.75	2.24	1.49	1.20	0.81	8.57	7.76	4.63	0.011	0.561	0.550	0.128
6/20/2019	Thursday	0.136	0.00	0.00	0.00	0.84	2.31	1.48	1.23	2.89	8.76	5.87	4.74	0.047	0.601	0.554	0.136
6/21/2019	Friday	0.121	0.00	0.00	0.00	0.82	2.18	1.36	1.17	2.50	8.45	5.96	4.59	0.040	0.532	0.492	0.121
6/22/2019	Saturday	0.098	0.00	0.00	0.00	0.78	2.21	1.43	1.10	1.64	8.46	6.82	4.01	0.023	0.543	0.520	0.097
6/23/2019	Sunday	0.105	0.00	0.00	0.00	0.76	2.24	1.49	1.10	2.11	8.79	6.67	4.24	0.031	0.577	0.546	0.105
6/24/2019	Monday	0.124	0.19	0.00	0.00	0.75	2.21	1.46	1.15	2.04	8.38	6.34	4.59	0.027	0.540	0.512	0.124
6/25/2019	Tuesday	0.140	0.17	0.00	0.00	0.75	2.24	1.49	1.21	1.47	8.22	6.75	4.85	0.019	0.538	0.519	0.140
6/26/2019	Wednesday	0.129	0.00	0.00	0.00	0.77	2.39	1.62	1.17	1.88	8.34	6.46	4.81	0.027	0.599	0.572	0.129
6/27/2019	Thursday	0.133	0.74	0.00	0.00	0.80	2.24	1.44	1.17	2.24	8.03	5.79	4.88	0.036	0.525	0.489	0.133
6/28/2019	Friday	0.130	0.00	0.00	0.00	0.78	2.73	1.96	1.16	2.34	8.71	6.37	4.77	0.034	0.758	0.724	0.130
6/29/2019	Saturday	0.136	0.04	0.00	0.00	0.78	2.59	1.81	1.16	2.46	8.10	5.64	4.96	0.035	0.651	0.616	0.136
6/30/2019	Sunday	0.129	0.00	0.00	0.00	0.79	2.67	1.87	1.14	2.15	8.61	6.45	4.91	0.033	0.723	0.690	0.129
7/01/2019	Monday	0.126	0.00	0.00	0.00	0.71	2.62	1.91	1.12	1.91	8.63	6.71	4.89	0.024	0.707	0.682	0.126
7/02/2019	Tuesday	0.128	0.19	0.00	0.00	0.72	2.43	1.71	1.13	2.19	8.49	6.30	4.79	0.030	0.623	0.593	0.128
7/03/2019	Wednesday	0.144	0.00	0.00	0.00	0.79	2.65	1.86	1.19	2.45	8.42	5.97	5.15	0.035	0.701	0.666	0.144
7/04/2019	Thursday	0.126	0.04	0.00	0.00	0.84	2.29	1.46	1.13	2.62	8.23	5.61	4.81	0.041	0.557	0.516	0.126
7/05/2019	Friday	0.152	0.00	0.00	0.00	0.81	2.73	1.92	1.21	2.90	8.69	5.79	5.39	0.047	0.754	0.707	0.152
7/06/2019	Saturday	0.135	0.00	0.00	0.00	0.79	2.61	1.82	1.17	2.27	9.05	6.78	4.87	0.037	0.718	0.681	0.135
7/07/2019	Sunday	0.130	0.00	0.00	0.00	0.78	2.56	1.78	1.15	2.18	8.58	6.40	4.89	0.031	0.678	0.648	0.130
7/08/2019	Monday	0.107	1.05	0.00	0.00	0.73	2.59	1.85	1.06	2.18	8.76	6.58	4.45	0.030	0.704	0.674	0.107
7/09/2019	Tuesday	0.120	0.00	0.00	0.00	0.72	1.90	1.18	1.12	1.64	8.79	7.14	4.67	0.021	0.454	0.434	0.120
7/10/2019	Wednesday	0.129	0.00	0.00	0.00	0.75	2.54	1.78	1.16	2.46	8.82	6.36	4.83	0.036	0.657	0.621	0.129
7/11/2019	Thursday	0.111	0.26	0.00	0.00	0.72	2.48	1.76	1.09	1.78	8.50	6.72	4.39	0.025	0.634	0.608	0.111
7/12/2019	Friday	0.127	0.00	0.00	0.00	0.78	2.56	1.78	1.15	2.29	8.45	6.16	4.76	0.032	0.668	0.636	0.127
7/13/2019	Saturday	0.120	0.00	0.00	0.00	0.71	2.54	1.83	1.11	1.97	8.68	6.71	4.67	0.025	0.674	0.649	0.120
7/14/2019	Sunday	0.120	0.00	0.00	0.00	0.72	1.78	1.06	1.11	2.47	7.88	5.41	4.81	0.031	0.369	0.338	0.120
7/15/2019	Monday	0.117	0.00	0.00	0.00	0.70	2.39	1.69	1.10	1.88	9.23	7.35	4.71	0.022	0.618	0.596	0.117
7/16/2019	Tuesday	0.116	0.00	0.00	0.00	0.74	1.73	0.99	1.10	2.21	8.20	5.99	4.68	0.029	0.368	0.339	0.116
7/17/2019	Wednesday	0.111	0.41	0.00	0.00	0.68	1.48	0.80	1.05	2.62	7.25	4.62	4.88	0.034	0.238	0.204	0.110
7/18/2019	Thursday	0.113	0.00	0.00	0.00	0.67	2.52	1.85	1.09	1.78	8.50	6.72	4.59	0.023	0.650	0.626	0.113
7/19/2019	Friday	0.101	0.00	0.00	0.00	0.66	1.73	1.06	1.04	1.86	8.10	6.24	4.44	0.020	0.364	0.343	0.101
7/20/2019	Saturday	0.105	0.00	0.00	0.00	0.78	1.43	0.65	1.06	2.84	6.83	3.99	4.64	0.042	0.222	0.180	0.105
7/21/2019	Sunday	0.096	0.00	0.00	0.00	0.75	1.70	0.95	1.03	2.24	8.44	6.20	4.38	0.034	0.361	0.327	0.096
7/22/2019	Monday	0.104	0.18	0.00	0.00	0.67	2.37	1.70	1.06	2.20	8.16	5.96	4.37	0.025	0.563	0.539	0.104
7/23/2019	Tuesday	0.079	0.58	0.00	0.00	0.63	2.37	1.74	0.94	1.33	8.39	7.06	3.92	0.014	0.586	0.571	0.079
7/24/2019	Wednesday	0.075	0.00	0.00	0.00	0.64	1.79	1.15	0.93	2.09	8.40	6.31	3.92	0.022	0.388	0.366	0.075
7/25/2019	Thursday	0.092	0.00	0.00	0.00	0.66	2.26	1.60	1.00	1.67	8.88	7.21	4.17	0.020	0.548	0.528	0.092
7/26/2019	Friday	0.086	0.00	0.00	0.00	0.67	2.32	1.65	0.97	2.08	8.96	6.87	4.13	0.026	0.563	0.537	0.086
7/27/2019	Saturday	0.087	0.00	0.00	0.00	0.65	2.23	1.58	0.98	1.22	8.94	7.72	4.10	0.013	0.578	0.565	0.087
7/28/2019	Sunday	0.095	0.00	0.00	0.00	0.67	2.19	1.52	1.02	1.98	9.08	7.10	4.28	0.025	0.574	0.549	0.095
7/29/2019	Monday	0.107	0.00	0.00	0.00	0.69	2.23	1.53	1.08	1.71	8.51	6.80	4.48	0.022	0.535	0.514	0.107
7/30/2019	Tuesday	0.098	0.02	0.00	0.00	0.68	2.27	1.58	1.05	2.35	8.92	6.57	4.24	0.031	0.582	0.551	0.098
7/31/2019	Wednesday	0.080	0.00	0.00	0.00	0.65	2.20	1.55	0.97	1.28	8.58	7.30	3.88	0.016	0.515	0.499	0.080
8/01/2019	Thursday	0.090	0.00	0.00	0.00	0.62	2.25	1.63	1.02	1.40	7.99	6.59	4.11	0.016	0.527	0.511	0.090
8/02/2019	Friday	0.081	0.00	0.00	0.00	0.65	2.11	1.46	0.96	1.24	8.37	7.12	3.95	0.017	0.492	0.476	0.081
8/03/2019	Saturday	0.081	0.00	0.00	0.00	0.64	2.00	1.36	0.98	2.36	8.02	5.66	3.92	0.029	0.446	0.417	0.081
8/04/2019	Sunday	0.080	0.00	0.00	0.00	0.67	2.06	1.39	0.96	1.37	8.46	7.09	3.95	0.016	0.492	0.477	0.080
8/05/2019	Monday	0.084	0.00	0.00	0.00	0.63	1.96	1.33	0.98	1.39	8.52	7.12	3.99	0.015	0.461	0.446	0.084

Attachment 3

Date of Reading (m/d/y)	Day of the Week (SMTWTFS)	Daily Flow (mgd) Rate (mgd)	Daily Rain (in) Rate (in/day)	Maximum Rain (in/hr)	Maximum Surcharge (in)	Minimum Depth (in)	Maximum Depth (in)	Min - Max Difference (in)	Average Depth (in)	Minimum Velocity (fps)	Maximum Velocity (fps)	Min - Max Difference (fps)	Average Velocity (fps)	Minimum Flow Rate (mgd)	Maximum Flow Rate (mgd)	Min - Max Difference (mgd)	Average Flow Rate (mgd)
8/06/2019	Tuesday	0.082	0.00	0.00	0.00	0.62	2.17	1.55	0.97	2.30	8.65	6.35	3.95	0.024	0.542	0.518	0.082
8/07/2019	Wednesday	0.087	0.39	0.00	0.00	0.66	2.13	1.47	1.00	1.05	8.32	7.27	4.06	0.012	0.471	0.459	0.087
8/08/2019	Thursday	0.094	0.00	0.00	0.00	0.66	2.16	1.50	1.02	1.80	8.13	6.33	4.23	0.023	0.462	0.440	0.094
8/09/2019	Friday	0.089	0.00	0.00	0.00	0.68	2.11	1.43	1.00	2.08	7.96	5.88	4.13	0.026	0.477	0.450	0.089
8/10/2019	Saturday	0.086	0.00	0.00	0.00	0.64	2.06	1.42	0.98	1.54	8.30	6.76	4.13	0.019	0.483	0.464	0.086
8/11/2019	Sunday	0.083	0.00	0.00	0.00	0.63	2.16	1.53	0.97	2.36	8.55	6.19	4.04	0.027	0.532	0.505	0.083
8/12/2019	Monday	0.092	0.00	0.00	0.00	0.67	2.15	1.48	1.01	1.94	8.33	6.40	4.22	0.022	0.514	0.492	0.092

Totals:	6.578	5.06															
Maximum:	0.152		0.00	0.00	0.84	2.73	1.96	1.23	2.90	9.46	8.86	5.39	0.047	0.758	0.724	0.152	
Minimum:	0.060				0.62	1.38	0.65	0.93	0.00	5.94	3.99	2.85	0.000	0.170	0.169	0.060	
Average:	0.106				0.71	2.21	1.50	1.07	1.83	8.40	6.56	4.38	0.025	0.539	0.514	0.106	

106,103 gpd (Partial days excluded.)

Attachment 3

Table 2: Flow Meter 2 Daily Totals

Date of Reading		Daily Flow (mgal)	Daily Rain (in)	Maximum Rain Rate (in/hr)	Maximum Surcharge (in)	Minimum Depth (in)	Maximum Depth (in)	Min - Max Difference (in)	Average Depth (in)	Minimum Velocity (fps)	Maximum Velocity (fps)	Min - Max Difference (fps)	Average Velocity (fps)	Minimum Flow Rate (mgd)	Maximum Flow Rate (mgd)	Min - Max Difference (mgd)	Average Flow Rate (mgd)
(m/d/y)	(SMTWTFS)	Rate (mgd)	Rate (in/day)	(in/hr)	(in)	(in)	(in)	(in)	(in)	(fps)	(fps)	(fps)	(fps)	(mgd)	(mgd)	(mgd)	(mgd)
6/12/2019	Wednesday	0.026	0.08	0.00	0.00	0.37	2.27	1.90	1.27	0.00	0.00	0.00	0.00	0.002	0.071	0.068	0.026
6/13/2019	Thursday	0.073	0.66	0.00	0.00	0.43	4.07	3.64	2.13	0.00	0.00	0.00	0.00	0.003	0.214	0.211	0.073
6/14/2019	Friday	0.027	0.00	0.00	0.00	0.42	2.42	2.00	1.30	0.00	0.00	0.00	0.00	0.003	0.080	0.077	0.027
6/15/2019	Saturday	0.026	0.00	0.00	0.00	0.37	2.31	1.94	1.27	0.00	0.00	0.00	0.00	0.002	0.073	0.071	0.026
6/16/2019	Sunday	0.025	0.00	0.00	0.00	0.31	2.41	2.10	1.22	0.00	0.00	0.00	0.00	0.002	0.079	0.078	0.025
6/17/2019	Monday	0.048	0.06	0.00	0.00	0.35	4.79	4.43	1.63	0.00	0.00	0.00	0.00	0.002	0.291	0.289	0.048
6/18/2019	Tuesday	0.037	0.00	0.00	0.00	0.44	3.21	2.77	1.55	0.00	0.00	0.00	0.00	0.003	0.136	0.133	0.037
6/19/2019	Wednesday	0.027	0.00	0.00	0.00	0.53	2.27	1.73	1.30	0.00	0.00	0.00	0.00	0.005	0.071	0.066	0.027
6/20/2019	Thursday	0.030	0.00	0.00	0.00	0.39	2.39	2.01	1.35	0.00	0.00	0.00	0.00	0.002	0.078	0.076	0.030
6/21/2019	Friday	0.027	0.00	0.00	0.00	0.37	2.46	2.09	1.29	0.00	0.00	0.00	0.00	0.002	0.082	0.080	0.027
6/22/2019	Saturday	0.027	0.00	0.00	0.00	0.43	2.20	1.77	1.30	0.00	0.00	0.00	0.00	0.003	0.066	0.063	0.027
6/23/2019	Sunday	0.024	0.00	0.00	0.00	0.32	2.28	1.97	1.21	0.00	0.00	0.00	0.00	0.002	0.071	0.070	0.024
6/24/2019	Monday	0.027	0.19	0.00	0.00	0.39	2.50	2.11	1.28	0.00	0.00	0.00	0.00	0.002	0.084	0.082	0.027
6/25/2019	Tuesday	0.042	0.17	0.00	0.00	0.43	2.91	2.47	1.64	0.00	0.00	0.00	0.00	0.003	0.113	0.110	0.042
6/26/2019	Wednesday	0.028	0.00	0.00	0.00	0.43	2.32	1.88	1.33	0.00	0.00	0.00	0.00	0.003	0.073	0.070	0.028
6/27/2019	Thursday	0.028	0.74	0.00	0.00	0.50	2.34	1.84	1.33	0.00	0.00	0.00	0.00	0.004	0.075	0.071	0.028
6/28/2019	Friday	0.030	0.00	0.00	0.00	0.36	2.30	1.94	1.35	0.00	0.00	0.00	0.00	0.002	0.072	0.070	0.030
6/29/2019	Saturday	0.026	0.04	0.00	0.00	0.35	2.42	2.06	1.26	0.00	0.00	0.00	0.00	0.002	0.080	0.077	0.026
6/30/2019	Sunday	0.027	0.00	0.00	0.00	0.37	2.30	1.92	1.30	0.00	0.00	0.00	0.00	0.002	0.072	0.070	0.027
7/01/2019	Monday	0.027	0.00	0.00	0.00	0.37	2.30	1.93	1.28	0.00	0.00	0.00	0.00	0.002	0.072	0.070	0.027
7/02/2019	Tuesday	0.027	0.19	0.00	0.00	0.35	2.33	1.97	1.29	0.00	0.00	0.00	0.00	0.002	0.074	0.072	0.027
7/03/2019	Wednesday	0.028	0.00	0.00	0.00	0.37	2.46	2.09	1.31	0.00	0.00	0.00	0.00	0.002	0.082	0.080	0.028
7/04/2019	Thursday	0.025	0.04	0.00	0.00	0.44	2.49	2.05	1.22	0.00	0.00	0.00	0.00	0.003	0.084	0.081	0.025
7/05/2019	Friday	0.026	0.00	0.00	0.00	0.35	2.35	2.01	1.26	0.00	0.00	0.00	0.00	0.002	0.076	0.074	0.026
7/06/2019	Saturday	0.045	0.00	0.00	0.00	0.41	3.73	3.33	1.65	0.00	0.00	0.00	0.00	0.003	0.182	0.179	0.045
7/07/2019	Sunday	0.034	0.00	0.00	0.00	0.62	2.62	2.00	1.52	0.00	0.00	0.00	0.00	0.006	0.093	0.087	0.034
7/08/2019	Monday	0.103	1.05	0.00	0.00	0.40	4.54	4.14	2.50	0.00	0.00	0.00	0.00	0.003	0.264	0.261	0.104
7/09/2019	Tuesday	0.037	0.00	0.00	0.00	0.44	2.62	2.17	1.57	0.00	0.00	0.00	0.00	0.003	0.092	0.089	0.037
7/10/2019	Wednesday	0.027	0.00	0.00	0.00	0.31	2.28	1.97	1.29	0.00	0.00	0.00	0.00	0.002	0.071	0.070	0.027
7/11/2019	Thursday	0.053	0.26	0.00	0.00	0.36	3.27	2.91	1.79	0.00	0.00	0.00	0.00	0.002	0.141	0.139	0.053
7/12/2019	Friday	0.034	0.00	0.00	0.00	0.57	2.78	2.21	1.51	0.00	0.00	0.00	0.00	0.005	0.103	0.098	0.034
7/13/2019	Saturday	0.028	0.00	0.00	0.00	0.34	2.35	2.00	1.30	0.00	0.00	0.00	0.00	0.002	0.075	0.073	0.028
7/14/2019	Sunday	0.027	0.00	0.00	0.00	0.39	2.44	2.05	1.29	0.00	0.00	0.00	0.00	0.002	0.081	0.078	0.027
7/15/2019	Monday	0.028	0.00	0.00	0.00	0.38	2.53	2.16	1.31	0.00	0.00	0.00	0.00	0.002	0.087	0.085	0.028
7/16/2019	Tuesday	0.030	0.00	0.00	0.00	0.55	2.50	1.95	1.37	0.00	0.00	0.00	0.00	0.005	0.085	0.080	0.030
7/17/2019	Wednesday	0.026	0.41	0.00	0.00	0.41	2.31	1.90	1.29	0.00	0.00	0.00	0.00	0.003	0.073	0.070	0.026
7/18/2019	Thursday	0.029	0.00	0.00	0.00	0.39	2.84	2.45	1.30	0.00	0.00	0.00	0.00	0.002	0.108	0.106	0.029
7/19/2019	Friday	0.027	0.00	0.00	0.00	0.37	2.26	1.89	1.28	0.00	0.00	0.00	0.00	0.002	0.070	0.068	0.027
7/20/2019	Saturday	0.028	0.00	0.00	0.00	0.34	2.54	2.20	1.32	0.00	0.00	0.00	0.00	0.002	0.088	0.086	0.028
7/21/2019	Sunday	0.026	0.00	0.00	0.00	0.39	2.16	1.77	1.26	0.00	0.00	0.00	0.00	0.002	0.064	0.062	0.026
7/22/2019	Monday	0.027	0.18	0.00	0.00	0.37	2.45	2.08	1.30	0.00	0.00	0.00	0.00	0.002	0.082	0.079	0.027
7/23/2019	Tuesday	0.031	0.58	0.00	0.00	0.39	3.19	2.80	1.38	0.00	0.00	0.00	0.00	0.003	0.135	0.132	0.031
7/24/2019	Wednesday	0.029	0.00	0.00	0.00	0.36	2.58	2.21	1.33	0.00	0.00	0.00	0.00	0.002	0.090	0.088	0.029
7/25/2019	Thursday	0.031	0.00	0.00	0.00	0.35	2.69	2.34	1.37	0.00	0.00	0.00	0.00	0.002	0.097	0.095	0.031
7/26/2019	Friday	0.030	0.00	0.00	0.00	0.36	2.37	2.01	1.36	0.00	0.00	0.00	0.00	0.002	0.077	0.075	0.030
7/27/2019	Saturday	0.028	0.00	0.00	0.00	0.37	2.34	1.97	1.30	0.00	0.00	0.00	0.00	0.002	0.075	0.073	0.028
7/28/2019	Sunday	0.028	0.00	0.00	0.00	0.37	2.41	2.04	1.32	0.00	0.00	0.00	0.00	0.002	0.079	0.077	0.028
7/29/2019	Monday	0.029	0.00	0.00	0.00	0.40	2.65	2.25	1.34	0.00	0.00	0.00	0.00	0.003	0.095	0.092	0.029
7/30/2019	Tuesday	0.028	0.02	0.00	0.00	0.36	2.42	2.06	1.32	0.00	0.00	0.00	0.00	0.002	0.080	0.077	0.028
7/31/2019	Wednesday	0.030	0.00	0.00	0.00	0.43	2.62	2.20	1.40	0.00	0.00	0.00	0.00	0.003	0.093	0.090	0.030
8/01/2019	Thursday	0.031	0.00	0.00	0.00	0.46	2.97	2.52	1.39	0.00	0.00	0.00	0.00	0.003	0.118	0.114	0.031
8/02/2019	Friday	0.032	0.00	0.00	0.00	0.60	3.16	2.57	1.41	0.00	0.00	0.00	0.00	0.006	0.133	0.127	0.032
8/03/2019	Saturday	0.028	0.00	0.00	0.00	0.37	2.40	2.03	1.31	0.00	0.00	0.00	0.00	0.002	0.078	0.076	0.028
8/04/2019	Sunday	0.029	0.00	0.00	0.00	0.35	2.58	2.23	1.33	0.00	0.00	0.00	0.00	0.002	0.090	0.088	0.029
8/05/2019	Monday	0.029	0.00	0.00	0.00	0.40	3.49	3.09	1.34	0.00	0.00	0.00	0.00	0.003	0.160	0.157	0.029

Attachment 3

Date of Reading (m/d/y)	Day of the Week (SMTWTFS)	Daily Flow (mgd) Rate (mgd)	Daily Rain (in) Rate (in/day)	Maximum Rain Rate (in/hr)	Maximum Surcharge (in)	Minimum Depth (in)	Maximum Depth (in)	Min - Max Difference (in)	Average Depth (in)	Minimum Velocity (fps)	Maximum Velocity (fps)	Min - Max Difference (fps)	Average Velocity (fps)	Minimum Flow Rate (mgd)	Maximum Flow Rate (mgd)	Min - Max Difference (mgd)	Average Flow Rate (mgd)
8/06/2019	Tuesday	0.035	0.00	0.00	0.00	0.50	2.47	1.97	1.51	0.00	0.00	0.00	0.00	0.004	0.083	0.079	0.035
8/07/2019	Wednesday	0.031	0.39	0.00	0.00	0.39	4.69	4.30	1.37	0.00	0.00	0.00	0.00	0.002	0.280	0.277	0.031
8/08/2019	Thursday	0.030	0.00	0.00	0.00	0.22	2.44	2.23	1.38	0.00	0.00	0.00	0.00	0.001	0.081	0.080	0.030
8/09/2019	Friday	0.029	0.00	0.00	0.00	0.39	2.48	2.09	1.35	0.00	0.00	0.00	0.00	0.002	0.083	0.081	0.029
8/10/2019	Saturday	0.028	0.00	0.00	0.00	0.43	2.61	2.19	1.32	0.00	0.00	0.00	0.00	0.003	0.092	0.089	0.028
8/11/2019	Sunday	0.028	0.00	0.00	0.00	0.32	2.48	2.17	1.32	0.00	0.00	0.00	0.00	0.002	0.084	0.082	0.028
8/12/2019	Monday	0.029	0.00	0.00	0.00	0.26	2.46	2.20	1.33	0.00	0.00	0.00	0.00	0.001	0.082	0.081	0.029
Totals:		1.973	5.06														
Maximum:		0.103		0.00	0.00	0.62	4.79	4.43	2.50	0.00	0.00	0.00	0.00	0.006	0.291	0.289	0.104
Minimum:		0.024				0.22	2.16	1.73	1.21	0.00	0.00	0.00	0.00	0.001	0.064	0.062	0.024
Average:		0.032				0.40	2.67	2.28	1.39	0.00	0.00	0.00	0.00	0.003	0.100	0.098	0.032
		31,824 gpd	(Partial days excluded.)														



Water Management and Analysis Report

Neighborhood 3 at Wind Crest

*3235 Mill Vista Road
Highlands Ranch, CO 80219*

By:





January 7, 2020

Redwood-ERC Littleton, LLC
C/O Mr. David A. Berrien
701 Maiden Choice Lane
Baltimore, MD 21228

RE: Water Management and Analysis for Wind Crest Neighborhood 3

Dear Mr. Berrien,

First, thank you and the Redwood-ERC Littleton, LLC team for providing AquaSan Network, Inc. (AquaSan) the opportunity to assist the Wind Crest Neighborhood 3 development with water management. This project will be an important addition to the Highlands Ranch community by providing much-needed affordable senior housing and services. AquaSan is pleased to be of assistance to this project by analyzing empirical data regarding annual water consumption, water end uses and peak water demands, while also providing information on how the Wind Crest Neighborhood 3 development can be efficient and proactive in the management of our community's valuable water resources.

AquaSan's report is an assimilation of data collected in response to the Centennial Water and Sanitation District's (CWSD) letter dated June 7, 2004 stating, "as planning information becomes available for the remaining portions of the property, please contact us so that we may determine how the proposed development will impact the level of water and sewer service available for this planning area", and on-going discussions CWSD and Highlands Ranch Metro District (HRMD).

The outline for this report is as follows:

- Project Synopsis
- Water Management Review
- Domestic Analysis
- Water Meter Sizing and Demand Profiling
- Predictive Analytics
- Centennial Water and Sanitation District and Highlands Ranch Metro District
- Conclusion
- Exhibit A

Project Synopsis

Executive Summary

Through AquaSan’s research, empirical analysis and custom water management program proposed for the Wind Crest Neighborhood 3 development located at 3235 Mill Vista Road in Highlands Ranch, CO 80129 (hereinafter referred to as “Neighborhood 3” or “Project”), the Project’s water and wastewater demands can be greatly reduced from their historical levels. These water savings are based upon AquaSan’s 35+ years of experience in water use research, review of water end use studies, recently collected water use data on similar senior living facilities, statistical analysis and implementation of the below described water management program. Under this process, AquaSan is able to determine the amount of water required to properly service Neighborhood 3 and provide facility savings for CWSD. As it is presented in this report, the following evidence supports AquaSan’s conclusions: (1) developments that properly manage their water supplies will have a much smaller impact on the demand placed on CWSD’s utility systems; (2) Neighborhood 3’s water demands are considerably different and should not be considered akin to multifamily or single family residences by the serving utility.

Project Description

According to the information provided to AquaSan, Neighborhood 3 will consist of five senior residential buildings and one Commons building. These building layouts are described below in Figure 1:

Figure 1: Building Layouts at Neighborhood 3

Building Name	Unit Count	Commercial Description
Commons 3.0	30	Market, conference center, restaurant and spa
Residential 3.1	111	NA
Residential 3.2	111	Restaurant
Residential 3.3	104	Restaurant
Residential 3.4	110	Restaurant
Residential 3.5	110	NA

If this description of Neighborhood 3 is incorrect, please notify AquaSan immediately as the water management program and recommendations are specifically designed to serve these intended uses. It should also be noted that irrigation demands are not analyzed for the Project, as Wind Crest has previously dedicated the water required to irrigate the entire Wind Crest development as part of an earlier agreement.

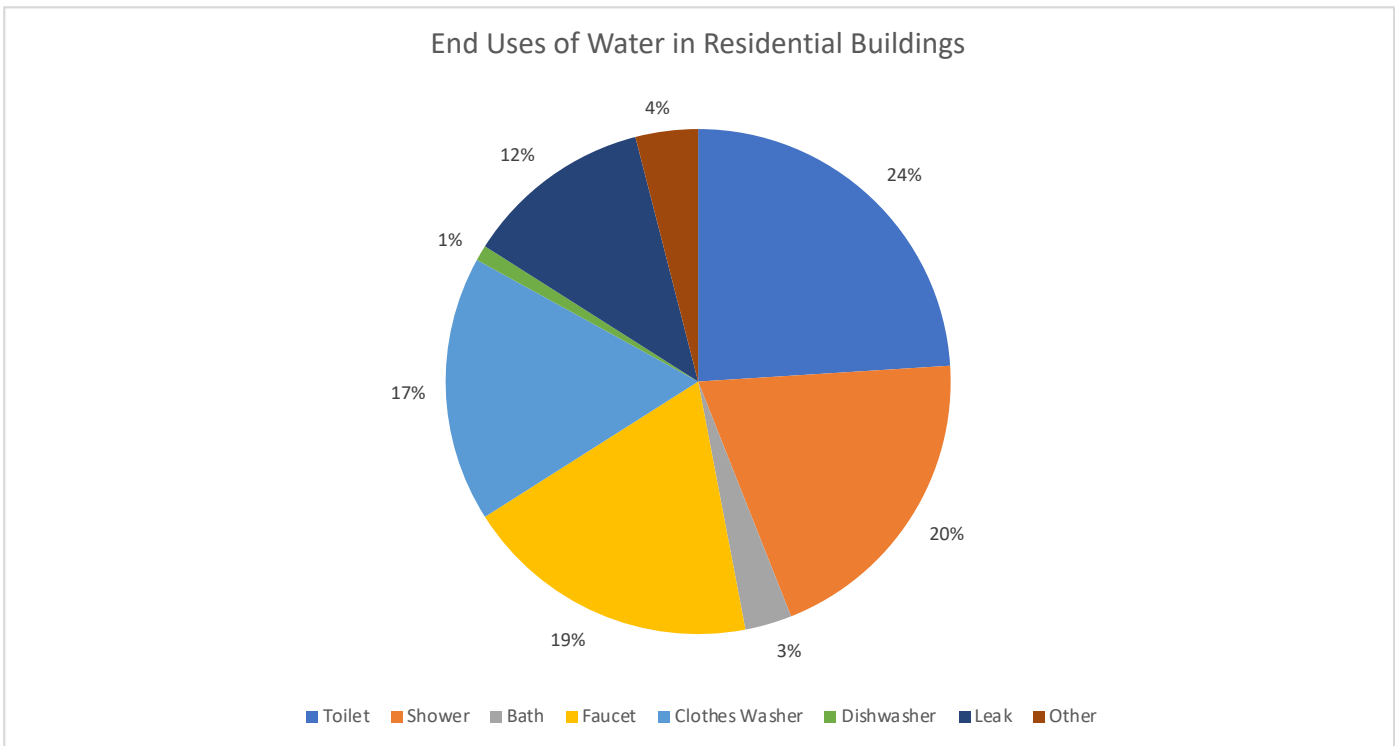
Water Management Review

End Uses of Water and Water Management Program

A very important part of AquaSan’s water analysis is accounting for and verifying the water savings through empirical water data collection. This empirical data results in the development of a personalized conservation program crafted for Neighborhood 3 that utilizes the best management practices available in today’s water technology, fixture and appliance market.

In reviewing water demands of residential buildings, the data collected from the American Water Works Association (AWWA) Research Foundation’s 2016 *Residential End Uses of Water: Version 2* study,¹ in conjunction with the Environmental Protection Agency (EPA),² detail the end uses of water by percentage for different building applications. As it pertains to Neighborhood 3, the disaggregation of residential end uses can be seen below in Figure 2:

Figure 2: End Uses of Water in Residential Buildings



¹ DeOreo, William B., et al. *Residential End Uses of Water, Version 2: Executive Report*. Water Research Foundation, 2016.

² <https://www.epa.gov/watersense/homes>

With this collective information about the end uses of water in residential applications, AquaSan can identify the most efficacious conservation practices to reduce Neighborhood 3's water demands through implementation of the following water management program:

Residential

1. Water closets are tank type and have a maximum of 1.00 gallon per reduced flush and 1.28 gallons per full flush.
2. Lavatories have a maximum flow rate of 0.50 GPM or equivalent high efficiency faucet aerator.
3. Shower heads have a maximum flow rate of 2.00 GPM and a minimum of 1.70 GPM at 40 psi.
4. Kitchen sinks have a maximum flow rate of 2.00 GPM or equivalent high efficiency faucet aerator.
5. Dishwashers have a maximum flow rate of 2.00 GPM, with a maximum of 4.00 gallons per normal cycle.
6. Clothes washers have a maximum flow rate of 3.50 GPM and are certified Tier 2 by Consortium for Energy Efficiency (CEE).
7. Mop service and utility sinks have a maximum flow rate of 2.50 GPM.
8. Hot water is available within 10 seconds to any fixture.
9. Installation of Advanced Metering Infrastructure (AMI) on each water meter that provides real-time water flow monitoring at no more than 5-minute intervals, advanced leak detection and shutoff system.
10. All water using fixtures and/or aerators have an equal or better rating than *ENERGY STAR* and/or *WaterSense*.

Commercial

1. Water closets are tank type or flushometer-valve and have a maximum of 1.00 gallon per reduced flush and 1.28 gallons per full flush with water sensor shutoff.
2. Urinals have a maximum of 0.125 gallons per flush with water sensor shutoff.
3. Lavatories have a maximum flow rate of 0.50 GPM or equivalent high efficiency faucet aerator and water sensor shutoff.
4. Shower heads have a maximum flow rate of 2.00 GPM and a minimum of 1.70 GPM at 40 psi.
5. Kitchen sinks have a maximum flow rate of 2.00 GPM or equivalent high efficiency faucet aerator.
6. Pre-rinse spray valves have a maximum flow rate of 1.00 GPM.
7. Dishwashers have a maximum flow rate of 2.00 GPM, with a maximum of 4.00 gallons per normal cycle.
8. Clothes washers have a maximum flow rate of 3.50 GPM and are certified Tier 2 by Consortium for Energy Efficiency (CEE).
9. Mop service and utility sinks have a maximum flow rate of 2.50 GPM.
10. Hot water is available within 10 seconds to any fixture.
11. Installation of Advanced Metering Infrastructure (AMI) on each water meter that provides real-time water flow monitoring at no more than 5-minute intervals, advanced leak detection and shutoff system.
12. Steam cookers, ice machines and freezers are air cooled.
13. All water using fixtures and/or aerators have an equal or better rating than *ENERGY STAR* and/or *WaterSense*.
14. Cooling towers must operate at greater than 6 cycles of concentration and be operated by a conductivity controller.

Landscape

1. All landscape irrigation is supplied by non-potable water sources.
2. Installation of Advanced Metering Infrastructure (AMI) on irrigation water meter that meets "Smart Irrigation Controllers" as defined by the Irrigation Association.
3. Installation of environmental sensors that coordinate irrigation system usage during dry and wet weather.

Using the above fixtures and management practices (see Exhibit A for several examples), Neighborhood 3 will benefit from a significant reduction in indoor potable water consumption by a minimum of 25% from standard fixtures and practices as demonstrated by the gallons/capita/day (GCD) values in Figure 3 below:

Figure 3: Standard Indoor Water Usage Compared AquaSan’s Efficient Indoor Water Usage

Fixture	Standard Usage (GCD) ³	AquaSan Efficient Usage (GCD)
Water Closet	14.06	8.90
Shower	11.72	10.80
Bath	1.76	1.50
Faucet	11.13	8.60
Clothes Washer	9.96	8.50
Dishwasher	0.59	0.40
Leak	7.03	1.20
Other	2.34	2.00
Total	58.60	41.90
GCD Reduction	$(58.26 - 41.90)/58.60 * 100\% = 28.50\%$	

³ DeOreo, William B., et al. *Residential End Uses of Water, Version 2: Executive Report*. Water Research Foundation, 2016.

Domestic Analysis

Residential Domestic Usage

In order to determine accurate residential domestic water usage rates for Neighborhood 3 using the prescribed water management program, AquaSan applied the efficient usage benchmark of 41.90 GCD to each senior living unit using their historical occupancy of rate of 1.1 persons per unit. Based on these data, AquaSan can determine baseline domestic water usage for Neighborhood 3, which is shown below in Figure 4:

Figure 4: Residential Domestic Water Usage Projection for Neighborhood 3

Residence Type	Unit Count	Capita	GCD	Annual Consumption (Gal)	Annual Consumption (Acre-Feet)
Commons 3.0	30	33	41.90	504,686	1.55
Residential 3.1	111	122	41.90	1,867,336	5.73
Residential 3.2	111	122	41.90	1,867,336	5.73
Residential 3.3	104	114	41.90	1,749,576	5.37
Residential 3.4	110	121	41.90	1,850,514	5.68
Residential 3.5	110	121	41.90	1,850,514	5.68
Total	576	634	NA	9,689,962	29.74

Commercial Domestic Usage

Commercial domestic demand is a more difficult metric to measure as water usage varies significantly based on the type of commercial building. In order to determine representative measurements for commercial domestic water usage, AquaSan collected water consumption bills from Wind Crest buildings with similar end uses. As it pertains to Neighborhood 3, the Parry Landing building at Wind Crest possessed nearly identical end uses with its residential units and full service restaurant/pub, office space, spa and salon. The monthly water bills for Parry Landing are shown below in Figure 5:

Figure 5: Monthly Domestic Water Usage at Parry Landing

Month	Total Gallons	Gal/Day	Gal/Day/Unit	GCD
August	172,000	5,548.39	74.98	59.98
September	170,000	5,312.50	71.79	57.43
October	167,000	5,387.10	72.80	58.24
November	228,000	8,142.86	110.04	88.03
December	267,000	8,343.75	112.75	90.20
January	262,000	8,451.61	114.21	91.37
February	214,000	7,925.93	107.11	85.69
March	302,000	8,882.35	120.03	96.03
April	217,000	8,037.04	108.61	86.89
May	286,000	9,225.81	124.67	99.74
June	291,000	9,093.75	122.89	98.31
July	207,000	7,137.93	96.46	77.17
Average	226,769	7,491	101.23	82.42

The above table demonstrates a total average consumption of 82.42 GCD. When compared to the average residential domestic consumption of 58.60 GCD as determined by the AWWA, commercial usage at Wind Crest adds approximately 25.82 GCD to the total water demand. Using the empirical data obtained from the water bills and the efficiency of a water management program, AquaSan is now able to accurately project the total annual water usage for Neighborhood 3.

Total Domestic Usage

Figure 6 below shows the additional 25.82 GCD usage for the Neighborhood 3 buildings that have commercial applications; however, AquaSan also includes a 15% contingency factor to allow flexibility in design changes or temporary increased unit density, resulting in an annual water consumption that totals 47.19 acre-feet:

Figure 6: Total Domestic Water Usage Projection for Neighborhood 3

Residence Type	Unit Count	Capita	GCD (+ commercial and 15% cont.)	Annual Consumption (Gal)	Annual Consumption (Acre-Feet)
Commons 3.0	30	33	77.88	938,041	2.88
Residential 3.1	111	122	48.19	2,147,437	6.59
Residential 3.2	111	122	77.88	3,470,750	10.65
Residential 3.3	104	114	77.88	3,251,874	9.98
Residential 3.4	110	121	77.88	3,439,482	10.56
Residential 3.5	110	121	48.19	2,128,091	6.53
Total	576	634	NA	15,375,673	47.19

Domestic Usage Data Validation

In order to validate the domestic annual water rates projected for Neighborhood 3 above, AquaSan reviewed nearly two years of water bills at the current Wind Crest buildings. The water usage recorded, along with descriptions of the commercial areas served, are detailed below in Figure 7:

Figure 7: Domestic Water Usage Validation Buildings at Wind Crest

Residence Type	Unit Count	Capita	Commercial Description	Average Gal/Day	GCD
CB 1.0 Clubhouse	NA	NA	Kitchen and dining areas; wellness area; employee lounge, salon; fitness center; convenience store and market	10,676	NA
CB 2.0 Highline Overlook	30	33	Stage and stadium seating; full service restaurant and pub area; community and meeting areas	2,132	64.61
RB 1.1 Cottonwood Ct & RB 1.2 Bluespruce Ridge	270	297	None	14,206	47.83
RB 1.3 Evergreen Crossing RB 1.4 Aspen Terrace	309	340	None	19,051	56.05
RB 2.1 McHenry's Crossing	102	112	Kitchen and dining areas; public use areas; café and café bar	9,866	87.93
RB 2.2 Parry's Landing	74	81	Full service restaurant and pub area; employee lounge; commercial office and reception; laundry facilities; spa and salon	7,491	82.42
RB 2.3 Longs Ridge	99	109	Kitchen and dining areas; classroom; creative arts	5,343	49.06
Mill Vista Lodge	80	88	Various commercial amenities	6,903	78.44

- *Observed Average GCD for Residential Buildings: $(47.83 \text{ GCD} + 56.05 \text{ GCD}) / 2 = 51.94 \text{ GCD}$*
- *Observed Average GCD for Residential/Commercial Buildings: $(64.61 \text{ GCD} + 87.93 \text{ GCD} + 82.42 \text{ GCD} + 49.06 \text{ GCD} + 78.44 \text{ GCD}) / 5 = 72.49 \text{ GCD}$*

AquaSan's projection of 48.19 GCD and 77.88 GCD (weighted average of 73.13 GCD) for the residential and the residential/commercial buildings compares very similarly to the observed usage at Wind Crest of 51.95 GCD and 72.49 GCD (weighted average of 71.36 GCD). It should also be noted that the current Wind Crest buildings do not conform to AquaSan's water management program; therefore, the Neighborhood 3 projections appear conservative when considering the potential water savings from implementation of such plan. Associating actual water usage data from Wind Crest with AquaSan's projections for Neighborhood 3 validates the correctness of the values used for determining the new Project's water consumption.

Water Meter Sizing and Demand Profiling

AWWA Meter Sizing Methodology

One of the key considerations of sizing water meters is that the meter must be sized to meet the peak continuous and instantaneous water demands of the building. Another way of expressing this concept is that the water meter can reach or exceed its continuous design capacity of the meter less than 1% of the time (displayed as the 99th percentile flow), but never the instantaneous or “intermittent” demand capacity of the meter (displayed as the maximum flow). Currently, the AWWA M22 Manual recognizes two methods for determining these demands and corresponding meter sizes: the Fixture Value method and the Demand Profiling method.

Although the Fixture Value method has been predominantly used for its convenience since the 1940s, when Roy Hunter first developed the “Hunter Curve,” it bases its calculations on large contingencies that overestimate peak demands. As such, the AWWA has placed greater emphasis on developing techniques that are better suited to project peak demands in new developments, such as the Demand Profiling method.⁴ The M22 Manual states,

“Demand profiles generated from existing accurate water meters are uniquely valuable, because a water meter represents the most precise means to measure potable water use...Flow recorders have been used to size meters since the 1930s, and although the technology has changed a great deal since then, recorders remain the most accurate meter sizing methodology when an accurate meter exists from which to record. Alternative methods to gauge water use, such as pipe size or fixture count, do not provide the actual usage patterns that are essential for determining the ideal meter type and size.”⁵

As referenced above, the most accurate water meter sizes are determined using the Demand Profiling method, which collects high resolution empirical water demand data using flow recorders, also known as “data loggers.” This process of sizing water services, however, is much more time consuming and requires years of data collection that AquaSan has amassed over decades of monitoring efforts. Using our proprietary data, AquaSan employed the AWWA endorsed Demand Profiling method to determine accurate water meter sizes for the Neighborhood 3 buildings by collecting flow trace data that identified peak water demands and overall usage from similar Wind Crest buildings. These flow traces were acquired using data loggers that were attached to the buildings’ water meters and set to record water flow through the meters at the recommended 10-second interval resolution. Once the monitoring periods were complete, the data from the loggers were reviewed for accuracy by comparing the actual meter reads and then input into AquaSan’s software for statistical analysis. In addition to the flow data, information was also obtained from site visits, water billing statements, fixture reviews and information exchanges with the building managers on the occupancy and water use patterns of the buildings. These empirical data were matched with Neighborhood 3’s end uses and used in conjunction with AquaSan’s research and analytics to form the basis for our peak water demand projections.

Empirical Data Collection

Figure 8A displays the basic information about each of the three properties AquaSan selected as being the most akin to the Neighborhood 3 buildings, to include the Fixture Values and water meters used in each building.

⁴ Mayer, Peter W., et al. *Sizing Water Service Lines and Meters*. 3rd ed., American Water Works Association, 2014. Page 30.

⁵ Mayer, Peter W., et al. *Sizing Water Service Lines and Meters*. 3rd ed., American Water Works Association, 2014. Pages 13-14.

Figure 8A: Data Logging Information from Monitored Properties in Comparison with Neighborhood 3

Building Name	Highline Overlook 30 Units	McHenry's Crossing 102 Units	Parry Landing 74 Units	Neighborhood 3 Commons	Neighborhood 3 Residences
Total Units	30	102	74	30	104 – 111
Occupied Units	30	98	73	Projected 30	Projected 104 – 111
Percent Occupancy	100.00%	96.08%	98.65%	Projected 100.00%	Projected 100.00%
Commercial Areas	Conference, stage, restaurant/pub	Cafeteria, café	Restaurant/pub, office, spa, salon	Conference, restaurant, market, spa	Restaurant
Fixture Value (M22)	883	2,506	1,878	900	2,500 – 2,800
Meter Make / Model	Sensus Omi C2	Sensus Omi C2	Sensus Omi C2	NA	NA
Meter Size (in)	3"	3"	3"	Projected 2"	Projected 2"
Peak Continuous Flow (GPM)	14.00	30.05	22.80	Projected 18.43	Projected 37.11 – 39.61
Peak Intermittent Flow (GPM)	36.00	38.64	32.00	Projected 54.94	Projected 69.48 – 74.16

Peak Continuous and Intermittent Demands

The first level of analysis involved is examination of the overall daily and hourly peak continuous and intermittent flows in gallons per minute (GPM). These flow profiles are important from the standpoint of comparing values across different buildings, as well as estimating the peak water demands and designing a water management program that would be effective in reducing these demands depending on their occurrence. Figures 8B – 8E show a summary of these daily and hourly demands at each building in table and graph form:

Figure 8B: Overall Daily Peak Continuous & Intermittent Flows in GPM

Day	Highline Overlook 30 Units		McHenry's Crossing 102 Units		Parry Landing 74 Units	
	99 th GPM	Max GPM	99 th GPM	Max GPM	99 th GPM	Max GPM
-						
Sunday	9.00	18.00	24.47	32.20	16.00	32.00
Monday	11.14	21.00	22.54	32.20	17.53	30.00
Tuesday	13.50	24.00	19.32	25.76	16.00	30.00
Wednesday	9.00	24.00	22.54	38.64	18.00	30.00
Thursday	10.80	36.00	19.32	25.76	18.00	24.00
Friday	9.00	18.00	27.37	38.64	18.00	24.00
Saturday	10.92	18.00	19.32	31.13	19.81	30.00
Peak Day	13.50	36.00	27.37	38.64	19.81	32.00

Figure 8C: Overall Daily Peak Continuous & Intermittent Flows in GPM

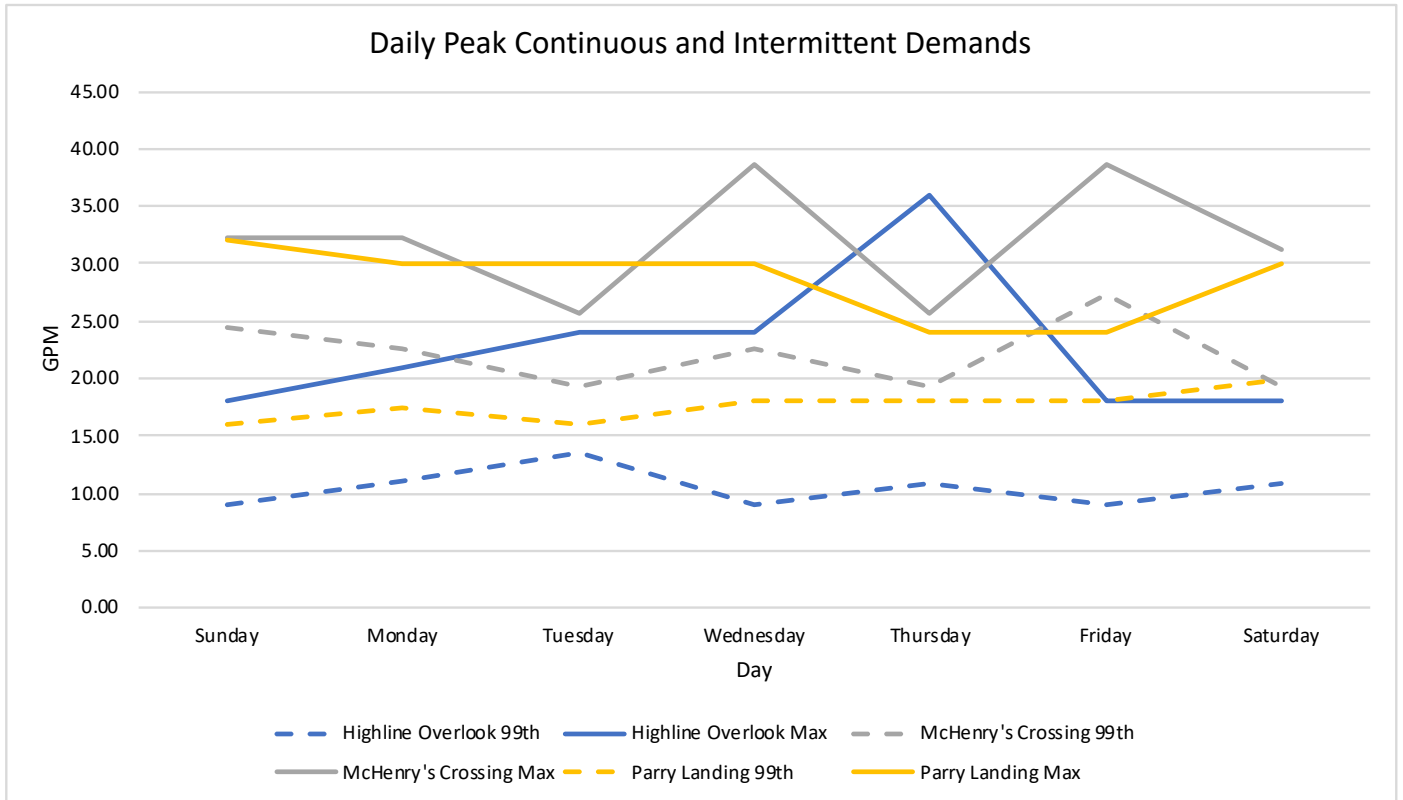
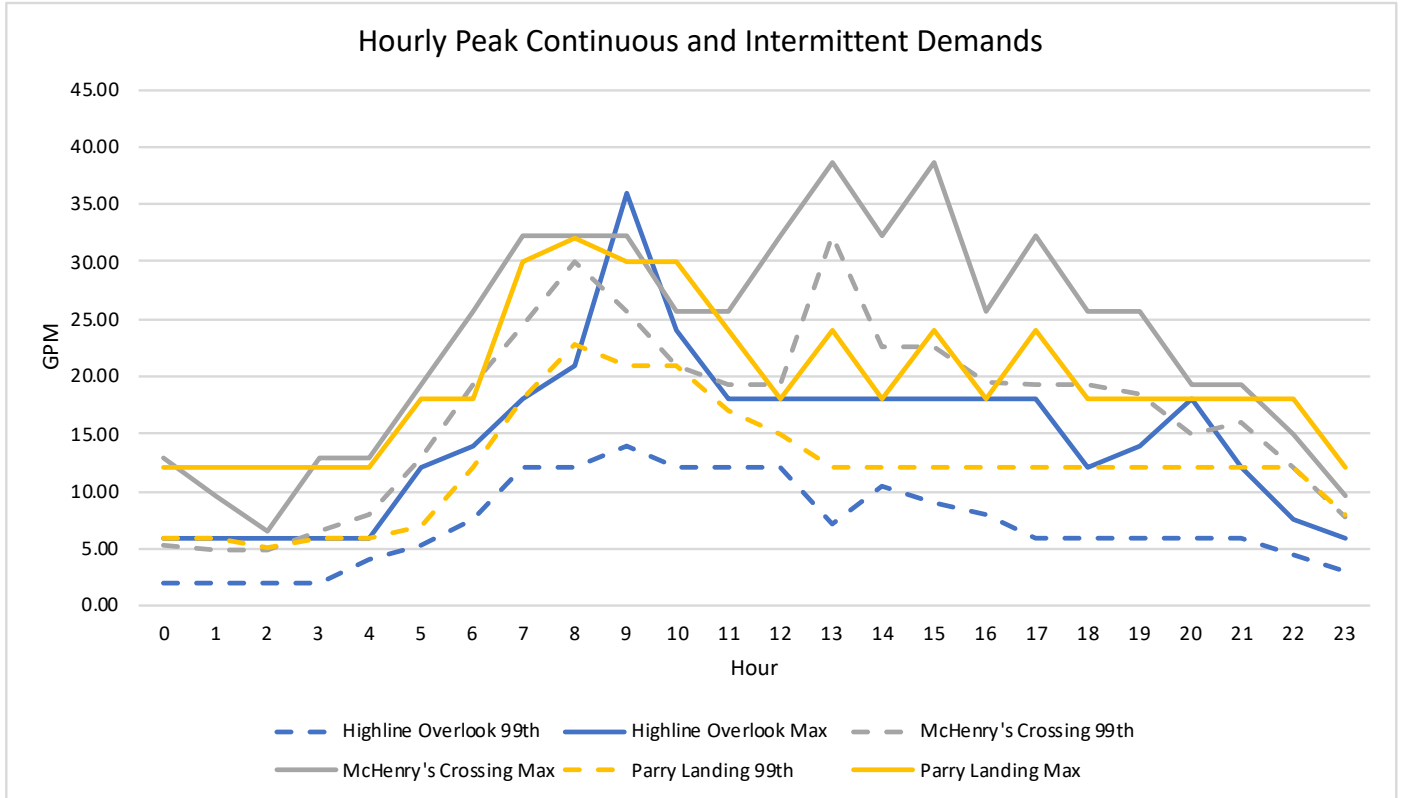


Figure 8D: Overall Hourly Peak Continuous & Intermittent Flows in GPM

Hour	Highline Overlook 30 Units		McHenry's Crossing 102 Units		Parry Landing 74 Units	
	99 th GPM	Max GPM	99 th GPM	Max GPM	99 th GPM	Max GPM
-						
0	2.00	6.00	5.37	12.88	6.00	12.00
1	2.00	6.00	4.83	9.66	6.00	12.00
2	2.00	6.00	4.83	6.44	5.00	12.00
3	2.00	6.00	6.44	12.88	6.00	12.00
4	4.00	6.00	8.05	12.88	6.00	12.00
5	5.25	12.00	12.88	19.32	6.86	18.00
6	7.50	14.00	19.32	25.76	12.00	18.00
7	12.00	18.00	24.47	32.20	18.00	30.00
8	12.01	21.00	30.05	32.20	22.80	32.00
9	14.00	36.00	25.76	32.20	21.00	30.00
10	12.00	24.00	20.86	25.76	21.00	30.00
11	12.00	18.00	19.32	25.76	17.00	24.00
12	12.00	18.00	19.32	32.20	15.00	18.00
13	7.20	18.00	32.20	38.64	12.00	24.00
14	10.50	18.00	22.54	32.20	12.00	18.00
15	9.00	18.00	22.54	38.64	12.00	24.00
16	8.00	18.00	19.60	25.76	12.00	18.00
17	6.00	18.00	19.32	32.20	12.00	24.00
18	6.00	12.00	19.32	25.76	12.00	18.00
19	6.00	14.00	18.40	25.76	12.00	18.00
20	6.00	18.00	15.03	19.32	12.00	18.00
21	6.00	12.00	16.10	19.32	12.00	18.00
22	4.50	7.50	12.15	15.03	12.00	18.00
23	3.00	6.00	7.73	9.66	8.00	12.00
Peak Hour	14.00	36.00	30.05	38.64	22.80	32.00

Figure 8E: Overall Hourly Peak Continuous & Intermittent Flows in GPM



Figures 8A – 8D demonstrate that cross referencing the peak flows in the daily and hourly time frames ensures that the most accurate and maximum peak water uses are identified for meter sizing. These recorded peak demand numbers are approaching the information needed for sizing the water meters at the Neighborhood 3 buildings, but they are still incomplete without accounting for the risk analysis simulations described in the next section.

Predictive Analytics

Monte Carlo Simulation

In order to verify the possibility of water flows exceeding the observed values for the three properties monitored, a statistical projection analysis tool, known as a *Monte Carlo Simulation*, was performed on each building's peak data. The purpose of a Monte Carlo Simulation is to model the probability of results (in this case, peak GPM values) while accounting for risk and uncertainty in the recorded values. Before the simulations were conducted, the daily peak flow rates were disaggregated from the data and tested for normality using the Shapiro-Wilk Test (alpha = 0.05). Once AquaSan concluded that the data were normally distributed, the simulations were conducted with 100,000 iterations of randomly generated numbers following each building's specific flow parameters. If the data from a building were not normally distributed, the peak demands were calculated with an additional 10% increase to account for right tailed skewness. The results of these statistical tests and simulations are displayed below in Figures 9A and 9B:

Figure 9A: Monte Carlo Simulation Results for Peak Continuous Flow

Statistical Measurement	Highline Overlook 30 Units	McHenry's Crossing 102 Units	Parry Landing 74 Units
Mean (GPM)	10.48	22.13	17.62
Standard Dev (GPM)	1.65	3.08	1.32
Shapiro-Wilk Test Statistic	0.84	0.87	0.89
Associated p-value	0.12	0.20	0.28
Distribution Factor	No	No	No
Simulated Peak Continuous Flow (GPM)	18.43	34.97	23.44

Figure 9B: Monte Carlo Simulation Results for Peak Intermittent Flow

Statistical Measurement	Highline Overlook 30 Units	McHenry's Crossing 102 Units	Parry Landing 74 Units
Mean (GPM)	22.71	32.20	28.57
Standard Dev (GPM)	6.45	5.27	3.21
Shapiro-Wilk Test Statistic	0.77	0.87	0.75
Associated p-value	0.03	0.23	0.02
Distribution Factor	Yes (+10%)	No	Yes (+10%)
Simulated Peak Intermittent Flow (GPM)	54.94	63.39	48.77

As derivative from the tables above, The Monte Carlo Simulations are useful in providing an overarching representation of possible peak demands when using risk generated flow data derived from the mean and standard deviation. Using the results generated from these simulations, as well as the initial recorded data, AquaSan is now able to confidently project the peak water demands at the Neighborhood 3 buildings.

Neighborhood 3 Peak Demand Projections

AquaSan’s simulated peak demand projections for the Neighborhood 3 buildings are established by formulating peak demands as they correspond to the number of occupied units for each property. These values are expressed as a ratio of continuous and intermittent peak demands to occupied units and are displayed below in Figure 10. AquaSan uses the values established from the Monte Carlo Simulations to project the uppermost limits of these ratios to ensure flows will not exceed the recommended meter requirements:

Figure 10: Simulated Peak Demands from Monitored Properties

Building Name	Highline Overlook 30 Units	McHenry’s Crossing 102 Units	Parry Landing 74 Units
Total Units	30	102	74
Occupied Units	30	98	73
Percent Occupancy	100.00%	96.08%	98.65%
Simulated Peak Continuous Demand (GPM)	18.43	34.97	23.44
Peak Continuous Demand per Unit (GPM/Unit)	6.14×10^{-1}	3.57×10^{-1}	3.21×10^{-1}
Simulated Peak Intermittent Demand (GPM)	54.94	63.39	48.77
Peak Intermittent Demand per Unit (GPM/Unit)	1.83	6.47×10^{-1}	6.68×10^{-1}

Of the three properties monitored, the maximum peak continuous and intermittent demands per unit equated to 6.14×10^{-1} GPM/unit and 1.83 GPM/unit respectively for the commercial building and 3.57×10^{-1} GPM/unit and 6.68×10^{-1} GPM /unit respectively for the residential buildings. Applying these values to the appropriate building layouts in Neighborhood 3 results in AquaSan’s peak demand projections as calculated below in Figure 11:

Figure 11: Simulated Peak Demands from Monitored Properties

Residence Type	Unit Count	Peak Continuous Demand (GPM)	Peak Intermittent Demand (GPM)
Commons 3.0	30	18.43	54.94
Residential 3.1	111	39.61	74.16
Residential 3.2	111	39.61	74.16
Residential 3.3	104	37.11	69.48
Residential 3.4	110	39.25	73.49
Residential 3.5	110	39.25	73.49

According to Table 6-1 in the AWWA M22 Manual, a 2” Turbine Class II water meter is required to have a high normal flow rate (continuous capacity) of at least 160 GPM and a maximum flow rate (intermittent capacity) of at least 190 GPM,⁶ though most meter manufactures exceed these demand requirements – for example, a 2” Badger

⁶ Mayer, Peter W., et al. *Sizing Water Service Lines and Meters*. 3rd ed., American Water Works Association, 2014. Page 70.

Recordall Turbo water meter has a continuous capacity of 200 GPM and an intermittent capacity of 310 GPM.⁷ Based on these water meter standards and the calculated peak demands above, **it is evident that a 2" water meter will fully meet all of the water demands for each building in Neighborhood 3.** However, it should be noted that most municipality engineering standards restrict continuous velocities to 10 feet per second, which results in a continuous demand capacity of 97.90 GPM for a 2" water meter; the maximum continuous flow rate calculations for each Neighborhood 3 building also fall within this standard.

⁷ <https://www.badgermeter.com/resources/7a583d27-65f0-4d0b-ae86-76768ebd932b/recordall%20turbo%20series%20meters%20-%20models%20160%20200%20450%201000%202000%203500%205500%206200%20product%20data%20sheet%20rts-ds-00320-en.pdf/>

Centennial Water and Sanitation District and Highlands Ranch Metro District

Overview

CWSD/HRMD are the serving authorities for water resources and tap fees associated with Neighborhood 3. In CWSD's letter dated June 7, 2004, they indicated that "the total of 546 SFEs for the entire planning will be reduced by the impact of the Erickson CRCC project. **As planning information becomes available for the remaining portions of the property, please contact us so that we may determine how the proposed development will impact the level of water and sewer service available for this planning area** [emphasis added]."

This letter invited the Wind Crest team to collect and share information with CWSD/HRMD to determine the level of impact caused by the proposed Neighborhood 3 buildings on CWSD/HRMD's water and sewer system. Presumably, if the empirical data demonstrated more water being used than anticipated in the letter, CWSD/HRMD would require increased water dedication or charge additional impact fees to offset the water and capacity needed for the Project. Conversely, if the empirical analysis showed less water or capacity being used, a reduction in impact fees would be assessed.

Fee and Usage Analysis

In their letter dated June 22, 2017, HRMD indicated that Neighborhood 3 will be assessed as a residential development based on their description of Wind Crest's Residential building 2.4. Presently, CWSD/HRMD has three separate fees for residential units: tap fees, meter fees and system development fees. Tap fees, which were recently reviewed to include multifamily developments, are \$7,690/unit for SFEs and \$5,510/unit for multifamily units (these values do not include any water transfer agreement costs). This fee structure assumes that multifamily units will use approximately 71.65% of the water and sewer capacity that a single family home uses. Meter fees, on the other hand, are based on the size of the water meter that serves a building, while system development fees incorporate a per acre usage of the site.

According to Centennial's Financial Report for 2016 shared with Wind Crest, CWSD expects an average SFE to use 291 gallons/day or approximately 0.33 acre-feet annually. Subsequently, a multifamily unit would use 71.65% of an SFE according to CWSD/HRMD's fee schedule, which is 208.50 gallons/day or approximately 0.23 acre-feet annually. This includes irrigation water, which Erickson, as mentioned earlier, has already been provided to CWSD/HRMD for the Wind Crest development.

As presently calculated, the Wind Crest Community would be required to allocate 464.30 acre-feet of water annually based on the complete buildout of 1,988 units under CWSD/HRMD's multifamily usage of 0.23 acre-feet/unit. To date, Wind Crest has purchased tap fees for 1,164 multifamily units, which equates to 271.85 acre-feet. Drawing upon both projected implementation of aggressive water management practices and empirical data collection from Wind Crest's existing facilities, AquaSan has demonstrated that senior housing units at Wind Crest will use a weighted average of 73.13 gallons/day or approximately 0.08 acre-feet annually, which also includes commercial usage. Based on these data, the entire Wind Crest Community comprised of 1,988 senior living units is projected to use only 162.85 acre-feet annually, which is significantly less than the 271.85 acre-feet paid to date, as well as the 464.20 acre-feet a multifamily development would use according to CWSD/HRMD.

Proposal

Based upon AquaSan's empirical data collection and the values established above, it is concluded that Neighborhood 3's water demand of 47.19 acre-feet will be more than sufficiently served by Wind Crest's surplus of

water that was purchased during earlier phases. The foregoing analysis indicates that the appropriate fee structure for senior living facilities should instead reflect potable consumption of 73.13 gallons/unit/day, or approximately 35% of CWSD/HRMD’s current multifamily usage and 25% of their SFE usage. The corresponding fees associated with these consumption values are shown below in Figure 12:

Figure 12: Water Fee Cost Analysis

Residence Type	Unit Count	CWSD/HRMD’s Multifamily Cost per Unit	CWSD/HRMD’s Total Cost	Senior Living Cost per Unit at 35% Usage of Multifamily	Senior Living Total Cost	Cost Difference
Phases 1-2	1,412	\$5,150	\$7,271,800	\$1,806	\$2,550,518	\$4,721,282
Neighborhood 3	576	\$5,150	\$2,966,400	\$1,806	\$1,040,438	\$1,925,962
Total	1,988	\$5,150	\$10,238,200	\$1,806	\$3,590,956	\$6,647,244

Figure 12 demonstrates that applying the current fee schedule to Neighborhood 3 would result in an overpayment of \$1,925,962, which does not include the water (a) already purchased at Wind Crest under CWSD/HRMD’s multifamily rates and (b) separately purchased and dedicated for irrigation.

The usage values determined for Neighborhood 3 find additional support in studies and policies from other jurisdictions as well. For instance, a study conducted by the Connecticut Department of Energy and Environmental Protection shows the mean water use per capita in elderly retirement communities was 63 GCD or 70 gallons/day/unit at 1.1 persons per unit.⁸ It is noted that this study reflects buildings without modern water conservation appliances, fixtures and non-potable irrigation, thus suggesting that Neighborhood 3’s usage projection is a conservative estimate. These findings are further reinforced by the percentages used by other municipalities in the Denver region for “senior housing,” such as the cities of Westminster (35%), Louisville (30%), and East Cherry Creek Valley (25%), along with other municipalities across the nation.⁹

Although there is general recognition that senior living facilities’ water usage differs from that of single family and multifamily dwelling units, neither CWSD nor HRMD currently employs a separate rate schedule for senior living facilities. AquaSan’s review indicates that Section 9.12, “Special Situations,” of HRMD’s Rules and Regulations provides a mechanism to address use classifications with unique demands that can be proven through empirical analysis, though Erickson has been advised that this authority will depend upon CWSD’s decisions regarding fee schedules.

In recognition of the risk to CWSD/HRMD associated with adopting an adjusted SFE schedule, AquaSan further proposes the adoption of a penalty rate for water used in excess of the predicted usage. This penalty rate would be set at a level commensurate with the capital value, to CWSD/HRMD, of the water. Although AquaSan does not presently have the information required to calculate that value, the penalty rate would likely form a multiple of CWSD/HRMD’s now-highest billing rate per SFE.

On the basis of the above, AquaSan concludes that this proposal, if pursued, will align CWSD/HRMD’s fee schedule with both the projected demands from Neighborhood 3 and the best water management practices adopted in nearby jurisdictions.

⁸ http://www.ct.gov/deep/lib/deep/water_regulating_and_discharges/subsurface/2006designmanual/completesec_3.pdf
⁹ Senior living tap fee reduction also observed in cities in Ohio, Washington, Florida and Virginia when compared to single-family homes.

Conclusion

In summary, this report is the denouement of the details from AquaSan's previous reports, which provides clear evidence of the benefits of efficiently managed water assets of the Wind Crest Neighborhood 3 development. Not only will this Project make better use of the community's water resources, it will avoid expensive acquisition and construction of new water rights and infrastructure by fully utilizing the existing infrastructure. If implemented successfully, Redwood-ERC Littleton, LLC and CWSD/HRMD should promote their success in conservation for the entire Denver Metropolitan area and demonstrate the efficacy of avoiding excessive uses of water.

Mr. Berrien, thank you again for this opportunity to work with you and the Redwood-ERC Littleton, LLC team regarding water management for your Project. Please contact us if you have any questions or need additional clarification regarding the information contained herein. Also, please recall that pursuant to our agreement, this report and the information contained herein is confidential.

Sincerely,
AquaSan Network, Inc.

A handwritten signature in black ink, appearing to read "C. Iadarola".

Carmine Iadarola
President

Exhibit A

Product Resources

1. Examples of *WaterSense* Approved Fixtures: <https://www.epa.gov/watersense/product-search>
2. Examples of *ENERGY STAR* Approved Appliances: <https://www.energystar.gov/productfinder/>
3. Examples of CEE Approved Appliances: <https://library.cee1.org/content/qualifying-product-lists-residential-clothes-washers>
4. Examples of Irrigation Smart Controllers: https://www.irrigation.org/IA/FileUploads/IA/Certification/SmartTechnologies_Final.pdf

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3. <http://www.iapmo.org/media/5275/3-hoffman-institutional-commercial-and-industrial-ici.pdf>
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7. <https://www.badgermeter.com/resources/7a583d27-65f0-4d0b-ae86-76768ebd932b/recordall%20turbo%20series%20meters%20-%20models%20160%20200%20450%201000%202000%203500%205500%206200%20product%20data%20sheet%20rts-ds-00320-en.pdf/>



Roseville Electric Utility
2090 Hilltop Circle
Roseville, California 95747-9704
Reliable Energy. Dependable Service.

Project: Erickson Senior Living
Baseline Rd at Westbrook Blvd
Roseville, CA 95747
SVSP Parcels KT41A & KT-41B

Electrical Capacity Study Findings

Roseville Electric (RE) is able to provide the requested electrical capacity to the Erickson Senior Living (ESL) project site contingent on infrastructure upgrades. Project development will be split into two phases per ESL's proposed site layout. Phase 1 development will primarily occur on parcel KT-41A with a designed load of 8.2MW and require the completion of several planned infrastructure segments prior to development. The segments are in varying stages of planning/construction and could potentially be completed by other developers prior to ESL development. However, if the improvements are not completed by others before the completion of the first building in Phase 1, it will be the responsibility of ESL to complete. Phase 2 will primarily occur on parcel KT-41B with an additional designed load of 11.1MW. This will require the extension of an existing 12kV underground circuit approximately 2000ft to the project location. A preliminary breakdown of responsibilities include:

Erickson Senior Living

- Obtain any necessary easements and complete designs per RE standards.
- Bore/trench and install all required conduit to project site.
- Install any necessary pull-boxes, junction boxes, switch vaults, capacitor pads, and transformer pads

Roseville Electric

- Procure and install 12kV cable, switches, transformers, and capacitors
- Estimated cost for all Roseville Electric work: \$1.9M

Planned Infrastructure Required to Support Serving Erickson Project Site

#	<u>Length (ft)</u>	<u>Start Location</u>	<u>End Location</u>	<u>Estimated Cost</u>
1	7800	Baseline/Fiddymont	Baseline/Westbrook	\$600,000
2	500	Sierra Vista Sub	Earl Rush/Westbrook	\$50,000
3	3000	Earl Rush Drive	Santucci/Vista Grande	\$250,000
4	4000	Sierra Vista Sub	Westbrook/Vista Grande	\$300,000
5	2000	Sierra Vista Sub	Westbrook/Vista Grande	\$150,000
6	3900	Blue Oaks	Westbrook	\$300,000

Required Infrastructure for Phase 2

7	2000	Santucci/Vista Grande	Sierra Village	\$200,000
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