6 ALTERNATIVES ANALYSIS

INTRODUCTION

The primary intent of the Alternatives Analysis in an EIR, as stated in Section 15126.6(a) of the CEQA Guidelines, is to "[…] describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." Furthermore, Section 15126.6(f) states, "The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice."

The CEQA Guidelines provide the following guidance for discussing alternatives to a proposed project:

- An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6[a]).
- Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (CEQA Guidelines Section15126.6[b]).
- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination […] Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts (CEQA Guidelines Section15126.6[c]).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison (CEQA Guidelines Section 15126.6[d]).

- The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (CEQA Guidelines Section 15126.6[e][1]).
- If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section15126.6[e][2]).

In addition, Section 15126.6(d) of the CEQA Guidelines states, "If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed."

PURPOSE OF ALTERNATIVES

The project alternatives need to feasibly attain most of the basic objectives of the proposed project, while avoiding or substantially lessening any of the significant effects of the project.

The following project objectives have been developed for the propose project.

- Map and develop a mixed-density residential development consistent with the prezoning and General Plan land use designations approved by Pittsburg voters with the approval of Measure I in 2011.

- Map and develop a mixed-density residential development consistent with the goals and policies of the General Plan for the Buchanan Subarea.
- Create a logical extension of the residential Highlands Ranch development to be served by existing, stubbed City services.

- Map and develop a mixed-density, large in-fill residential project with existing, planned and proposed residential development on all sides.

- Provide housing in order to meet the City of Pittsburg's current obligation set forth by the Regional Housing Needs Allocation.

- Provide market rate single family detached and multi-family development along with a 5.4 acre public park located in the center of the site.

Potentially significant environmental impacts of the proposed project, which would be reduced to less-than-significant levels with implementation of the mitigation measures set forth in each of the associated chapters of this EIR, include the following:

- ***Air Quality and Greenhouse Gas Emissions.*** Potentially significant impacts are identified for short-term construction-related emissions of NO_X and exposure of sensitive receptors to substantial levels of pollutant concentrations.

- ***Biological Resources.*** Potentially significant impacts are identified for the San Joaquin kit fox, western burrowing owl, and other raptors and migratory birds both covered and not covered under the East Contra Costa County HCP/NCCP. In addition, cumulative impacts related to the loss of biological resources in the City of Pittsburg were reduced to less-than-significant levels with mitigation.

- ***Geology, Soils, and Seismicity.*** Potentially significant impacts are identified for structural damage from unstable or expansive soils.

- ***Hazards and Hazardous Materials.*** Potentially significant impacts are identified for the upset or accidental release of hazardous materials into the environment.

- ***Land Use and Planning.*** Potentially significant impacts are identified for the project's compatibility with surrounding uses.

- ***Noise.*** Potentially significant impacts are identified for exposure of the project's proposed sensitive receptors to transportation-related noise levels as well as construction vibration levels in excess of City standards.

- ***Public Services, Recreation, and Utilities.*** Potentially significant impacts are identified for water supply and delivery, schools, and parks.

- ***Transportation, Traffic, and Circulation.*** Potentially significant impacts are identified for study roadway intersections under project-level, baseline, and cumulative conditions and alternative transportation facilities under project-level and cumulative conditions.

The proposed project's impacts that have been determined to remain significant and unavoidable, even after implementation of the feasible mitigation measures set forth in this EIR, include the following:

- ***Air Quality and Greenhouse Gas Emissions.*** Significant and unavoidable impacts are identified for long-term operational ROG emissions and cumulative emissions of criteria air pollutants related to regional air quality.

- ***Noise.*** Significant and unavoidable impacts are identified for long-term construction noise impacts to existing sensitive receptors in the project vicinity.

- ***Transportation, Traffic, and Circulation.*** Significant and unavoidable impacts are identified for study roadway intersections under project-level, baseline, and cumulative conditions.

SELECTION OF ALTERNATIVES

The requirement that an EIR evaluate alternatives to the proposed project or alternatives to the location of the proposed project is a broad one; the primary intent of the alternatives analysis is to disclose other ways that the objectives of the project could be attained while reducing the magnitude of, or avoiding, the environmental impacts of the proposed project. Alternatives that are included and evaluated in the EIR must be feasible alternatives. However, the CEQA Guidelines require the EIR to "set forth only those alternatives necessary to permit a reasoned choice." The CEQA Guidelines provide a definition for "a range of reasonable alternatives" and thus limit the number and type of alternatives that may need to be evaluated in a given EIR. According to the *CEQA Guidelines* Section 15126.6(f):

> The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determined could feasibly attain most of the basic objectives of the project.

First and foremost, alternatives in an EIR must be feasible. In the context of CEQA Guidelines Section 21061.1, "feasible" is defined as:

> ...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Finally, an EIR is not required to analyze alternatives when the effects of the alternative "cannot be reasonably ascertained and whose implementation is remote and speculative."

Alternatives Considered But Dismissed From Further Analysis

Consistent with CEQA, primary consideration was given to alternatives that could reduce significant impacts, while still meeting the basic project objective. Any alternative that would have impacts identical to or more severe than the proposed project, and/or that would not meet any or most of the project objectives were dismissed from further consideration. The alternatives considered but dismissed from further analysis in this EIR are discussed below.

One alternative, the Off-Site Alternative, was considered but dismissed. The major characteristics of the Off-Site Alternative are summarized below.

Off-Site Alternative

Section 15126.6(f)(2)(B) of the CEQA Guidelines states, "If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reason in the EIR." A feasible location for the proposed project that would result in substantially reduced impacts does not exist.

The CEQA Guidelines Section 15126.6(b) requires that only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR. The Off-Site Alternative would involve the construction of the proposed project on an alternative location. The Off-Site Alternative would locate the proposed project on other lands located within the vicinity of the proposed project site. However, other sites in the vicinity would likely have equal or greater impacts compared to the proposed project site. For example, the proposed project site is surrounded by existing development and is regularly disturbed, regraded and disced. A comparable off-site property could contain vegetation or other habitat types, thereby resulting in potentially greater impacts to biological resources.

In addition, the CEQA Guidelines state that, by definition, an alternative should avoid or substantially lessen one or more of the environmental effects of the project. Alternative locations within the City would generally contain characteristics similar to the proposed project site. Development of the project on another similar site would result in an equal area being graded and, therefore, similar physical environmental impacts would occur related to land disturbance activities. In addition, the development of the same number of residential units would result in traffic, air quality, and noise impacts that would likely be very similar, or even potentially worse than the proposed project, depending on site accessibility. Furthermore, the proposed project may not be consistent with the Pittsburg General Plan land use designation for another site, and land use and planning impacts could potentially be greater. Similarly, an Off-Site Alternative location could currently contain housing that would need to be removed, and displacement of housing or people could occur. Accordingly, potentially greater impacts related to population and housing could occur. Therefore, development of the project at an alternative location in the City of Pittsburg would be expected to result in the same impacts, or worse, when compared to the proposed project. As a result, an environmentally feasible off-site location that would meet the requirements of CEQA, as well as meet the basic objectives of the project, does not exist.

Alternatives Considered in this EIR

The following alternatives are considered and evaluated for the proposed project:

- No Project (No Build) Alternative;
- Reduced Intensity Alternative; and
- Clustered Trail Alternative.

CEQA requires the evaluation of the comparative impacts of the "No Project" alternative (CEQA Guidelines Section 15126.6[e]). Analysis of the No Project Alternative "… shall discuss […] existing conditions […] as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." (*Id.*, subd. [e][2]) "If the project is other than a land use or regulatory plan, for example a development project on identifiable property, the 'no project' alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in the property's existing state versus environmental effects that would occur if the project were approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed. In certain

instances, the no project alternative means 'no build,' wherein the existing environmental setting is maintained. However, where failure to proceed with the project would not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment." (*Id.*, subd. [e][3][B]).

Per the requirements of the CEQA Guidelines, the City has decided to evaluate a No Project (No Build) Alternative.

In addition, the City has decided to evaluate a Reduced Intensity Alternative, which includes the development of 611 units on the 135.6 acres designated as Low Density. The Reduced Intensity Alternative would reduce the number of low-density single-family units from 917 to approximately 611 and increase the average lot size from 4,400 square feet (sf) to approximately 6,400 sf. The Reduced Intensity Alternative would reduce the overall density of 6.76 dwelling units per acre (du/ac) by approximately two units per acre, resulting in a density of approximately 4.5 du/ac. In addition, consistent with the City's Green Building Design Guidelines, the Reduced Intensity Alternative would incorporate some of the subdivision design measures into the project design. The parcels and streets would be laid out in a grid with predominantly north-south streets so that the greatest possible number of parcels would be compatible with solar-oriented homes. Block sizes would average three acres, but be no larger than 12 acres, and an integrated bicycle and pedestrian system would be included. Under the Reduced Intensity Alternative, the 18.6-acre park parcel and the 14.6-acre high-density parcel would remain unchanged, resulting in up to 365 multi-family units. Overall, the Reduced Intensity Alternative would reduce the total number of residential units from 1,282 under the proposed project to 976 units.

Furthermore, the City has decided to evaluate a Clustered Trail Alternative. The Clustered Trail Alternative would reduce the amount of single-family units from 917 to 500 units on approximately 75 acres designated as Low Density resulting in a density of 6.7 du/ac. In addition, the high-density parcel would be expanded, resulting in up to 700 multi-family units on approximately 30 acres. The 700 multi-family units would include a variety of building types, such as standard multi-family apartment units and townhomes. Overall, the Clustered Trail Alternative would reduce the total number of residential units from 1,282 under the proposed project to 1,200 units. The Clustered Trail Alternative would increase the average single-family lot size from 4,400 square feet (sf) to approximately 5,400 sf and cluster the single-family and multi-family development in order to increase parks/open space on the project site. In addition, approximately 70 acres of parks and open space would be designed to connect to and expand the regional trail network of the East Bay Regional Park District. Specifically, the trails incorporated into the Clustered Trail Alternative would connect to the Black Diamond Mines Regional Preserve and the Delta/DeAnza Trail through the City of Pittsburg as well as planned connections within the City of Antioch.

The major characteristics of each of the alternatives are summarized below.

No Project (No Build) Alternative

The No Project (No Build) Alternative is defined in this section as the continuation of the existing conditions of the project site, which is currently disturbed, vacant land. The No Project (No Build) Alternative would not meet any of the project objectives. Because development of the site would not occur, land disturbance and any associated physical environmental impacts would not occur as a result of the No Project (No Build) Alternative. For example, transportation, traffic, and circulation in the project vicinity would not be modified under the No Project (No Build) Alternative; thus, all associated impacts such as increased vehicle traffic on area roadways, increase in mobile air pollutant emissions, and traffic-related noise increases would not occur. Therefore, impacts related to air quality and climate change, noise, and transportation, traffic, and circulation would be fewer than anticipated for the proposed project.

Because of the ongoing remediation activities, the site is regularly disturbed, regraded and disced, thereby removing any established vegetation. As such, impacts to any potential on-site biological resources or potential destruction of previously unknown cultural resources would continue to occur with ongoing remediation; thus, impacts would be equal to that of the proposed project.

Because the site would not introduce any new structures or buildings on the site under the No Project (No Build) Alternative, modifications to the existing visual character or quality of the site or surroundings, creation of any new sources of light or glare, changes to views of or from scenic vistas, or changes to scenic resources would not occur. Thus, impacts related to structures being affected by geology, soils, and seismicity would not occur, and on-site construction personnel or future residents would not be exposed to any potential hazardous materials on-site.

The No Project (No Build) Alternative would not alter the existing drainage pattern of the site or surrounding area and would not create or contribute an increase in runoff water that would exceed existing or planned stormwater drainage system capacity or violate water quality standards. Groundwater recharge would not be affected by the No Project (No Build) Alternative. Placement of housing or structures within a floodplain and any associated risks would not occur with the No Project (No Build) Alternative. Therefore, impacts related to hydrology and water quality would be fewer than that of the proposed project.

The No Project (No Build) Alternative would not involve the creation of housing and would not directly increase population or employment in the area. Accordingly, modifications to the population and/or housing in the area would not occur, and an associated increase in demand for public services and utilities would not occur. It should be noted, however, that the No Project (No Build) Alternative could result in potentially greater impacts than the proposed project related to land use and planning associated with compatibility issues and consistency with the Pittsburg General Plan, as the No Project (No Build) Alternative would result in the ongoing vacancy on a site that is currently designated and zoned for urban uses. Under the No Project (No Build) Alternative, the site would not be annexed into the City and would remain within the County's jurisdiction, which could allow the site to continue to be remediated. However, the site is immediately adjacent to currently developed areas with existing residential development and proposed future residential development. Thus, if the site continues to be vacant, compatibility

with the surrounding land uses could potentially become an issue as the cities of Pittsburg and Antioch continue to grow.

Because implementation of the No Project (No Build) Alternative would result in the site remaining under current conditions, physical environmental impacts would not occur. Therefore, implementation of the No Project (No Build) Alternative would result in fewer overall impacts compared to that of the proposed project.

The following areas would result in no impact if the No Project (No Build) Alternative were selected:

- Air Quality and Greenhouse Gas (GHG) Emissions;
- Biological Resources;
- Geology, Soils, and Seismicity;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Noise;
- Public Services, Recreation, and Utilities; and
- Transportation, Traffic, and Circulation.

Reduced Intensity Alternative

The Reduced Intensity Alternative would achieve most of the proposed project's objectives. The Reduced Intensity Alternative would include the construction of 611 low-density single-family with an average lot size of approximately 6,400 sf. Under the Reduced Intensity Alternative, the 14.6-acre high-density parcel would remain unchanged, resulting in up to 365 multi-family units, as proposed. In addition, the proposed 18.6-acres of parks would be provided on-site.

Air Quality and GHG Emissions

The Reduced Intensity Alternative would reduce the total number of dwelling units constructed on the project site by 306 dwelling units. Because the Reduced Intensity Alternative would involve fewer homes and future residents, emissions associated with vehicle trips, as well as area and energy sources, would be fewer than that of the proposed project. The California Emissions Estimator Model (CalEEMod) version 2013.2.2 software was utilized to estimate the Reduced Intensity Alternative's operational emissions. It should be noted that inherent defaults in CalEEMod, such as construction phasing and timing, were applied for the alternative analysis, with the exception of the anticipated trip rates, which were provided for the project by the traffic consultant. The CalEEMod results are presented in Table 6-1.

As shown in the table, the unmitigated construction-related emissions of ROG, PM_{10}, and $PM_{2.5}$ associated with the Reduced Intensity Alternative would be higher than those of the proposed project, and the emissions of NO_X would be lower. Similarly, the construction-related GHG emissions would be higher than those of the proposed project. The difference in emissions is most likely due to the default values used in the model for the alternative as opposed to the more

detailed, project-specific construction information applied in the model for the proposed project. Nonetheless, the construction-related emissions of ROG and NO_X would exceed the applicable thresholds of significance and would require mitigations similar to those required for the proposed project to reduce the potentially significant impact to less-than-significant levels. Thus, construction-related air quality impacts would be similar under the Reduced Intensity Alternative as the proposed project.

Table 6-1
Unmitigated Reduced Intensity Alternative Emissions

Pollutant	Unmitigated Reduced Intensity Alternative Emissions	Unmitigated Proposed Project Emissions	BAAQMD Thresholds of Significance (lbs/day)
CONSTRUCTION (lbs/day)			
ROG	83.62	14.81	54
NO_X	69.70	79.18	54
PM_{10}	21.33	6.78	82
$PM_{2.5}$	12.82	5.05	54
OPERATIONAL (lbs/day)			
ROG	1,430.18	2,056.36	54
NO_X	56.97	72.87	54
PM_{10}	314.98	422.82	82
$PM_{2.5}$	288.25	392.18	54
CUMULATIVE (tons/yr)			
ROG	13.59	18.74	10
NO_X	6.56	8.07	10
PM_{10}	7.60	9.04	15
$PM_{2.5}$	2.93	3.68	10
GHG ($MTCO_2e$/yr)			
Operational GHG Emissions	9,787.92	12,209.35	-
Total Construction GHG Emissions	13,881.38	484.67	-
Annual Construction GHG Emissions[1]	347.03	12.12	-
Total Annual GHG Emissions	10,134.95	12,221.47	-
Service Population[2]	3,026	3,975	-
Total Annual GHG Emissions Per Service Population	**3.35**	**3.07**	**4.6**

Notes:
1. Total construction GHG emissions amortized over an estimated 40-year lifetime.
2. Service populations calculated based on 3.1 persons per household.

Source: CalEEMod, June 2014.

The total GHG emissions were estimated to be lower than that of the proposed project, and the total annual GHG emissions per service population would still be below the applicable threshold of significance. Therefore, impacts related to GHG emissions would be slightly less under the Reduced Intensity Alternative than the proposed project.

The Reduced Intensity Alternative would result in fewer overall operational emissions, including daily and annual criteria air pollutant emissions. In addition, the operational emissions of the Reduced Intensity Alternative would be further reduced due to the incorporation of the Green Building Design Guidelines, which aim to conserve energy. However, the reduction from the Green Building Design Guidelines is difficult to quantify because the reductions depend on the number of solar panels to be installed and the amount of vehicle trips avoided by increasing pedestrian and bicycle connectivity. Although the operational emissions would be less than that of the proposed project, the emissions would still exceed the applicable thresholds of significance at project-level for all pollutants, as well as cumulatively for ROG. Thus, mitigation would still be required. Applying Mitigation Measure 4.1-2 in the Air Quality and Greenhouse Gas Emissions chapter of this EIR would result in mitigated emissions as presented in Table 6-1 for the Reduced Intensity Alternative.

Mitigation Measure 4.1-2 of this EIR would reduce the operational emissions, but the daily emissions of ROG would still exceed the applicable threshold of significance. Similar to the conclusion for the proposed project, because the majority of the ROG emissions are from area sources and feasible mitigation does not exist to further reduce area emissions of ROG, impacts would be expected to remain significant and unavoidable, similar to the proposed project. However, as shown in the table, implementation of Mitigation Measure 4.1-2 of this EIR would reduce cumulative emissions to below the applicable thresholds of significance. Thus, as opposed to the significant and unavoidable impact identified for the proposed project, the Reduced Intensity Alternative would result in a less-than-significant impact with mitigation applied related to cumulative emissions of ROG.

Table 6-2
Mitigated Reduced Intensity Alternative Emissions

Pollutant	Mitigated Reduced Intensity Alternative Emissions	Mitigated Proposed Project Emissions	BAAQMD Thresholds of Significance (lbs/day)
OPERATIONAL (lbs/day)			
ROG	54.73	73.33	54
NO_X	34.33	42.32	54
PM_{10}	39.41	45.72	82
$PM_{2.5}$	12.69	15.07	54
CUMULATIVE (tons/yr)			
ROG	9.30	12.47	10
NO_X	6.47	7.95	10
PM_{10}	6.64	7.64	15
$PM_{2.5}$	1.96	2.28	10

Source: CalEEMod, June 2014.

Because the Reduced Intensity Alternative would result in fewer trips than the proposed project, the alternative would result in less traffic on area roadways and, thus, a reduced contribution to localized CO concentrations at surrounding intersections. As the Reduced Intensity Alternative would consist of buildout on the same site in the same location as the proposed project with the

same land uses, the effects of the project, as well as on the project from nearby sources of TACs, would be similar to that of the proposed project.

Overall, the Reduced Intensity Alternative would result in fewer impacts than the proposed project related to air quality and GHG emissions, and would reduce the significant and unavoidable impact associated with cumulative ROG emissions to a less-than-significant level with incorporation of mitigation.

Biological Resources

The Reduced Intensity Alternative would dedicate a similar area to residential uses as compared to the proposed project. As such, the same potential exists for effects on existing habitat, interference with native or migratory wildlife species or corridors, confliction with policies or ordinance protecting biological resources, and confliction with provisions of an adopted habitat conservation plan. Therefore, impacts related to biological resources would be equal under the Reduced Intensity Alternative to the proposed project.

Geology, Soils, and Seismicity

Development of the Reduced Intensity Alternative would result in the same site disturbance as the proposed project, but would consist of buildout of 306 fewer residential units. Accordingly, the same potential for on-site hazards related to geology, soils, and seismicity, such as earthquakes, soil erosion, soil stability, and expansive soil, would occur under the Reduced Intensity Alternative. In addition, because the Reduced Intensity Alternative would involve fewer residential units, fewer homes and future residents would be exposed to the aforementioned potential geological hazards. Therefore, the Reduced Intensity Alternative would result in fewer impacts associated with geology, soils, and seismicity compared to the proposed project.

Hazards and Hazardous Materials

The Reduced Intensity Alternative would involve the same site disturbance as the proposed project. Therefore, impacts related to exposure to any existing on-site hazards or hazardous materials would be similar under the Reduced Intensity Alternative to the proposed project. As the Reduced Intensity Alternative, like the proposed project, would consist of residential uses, impacts related to the creation of hazards to the public or the environment related to the routine transport, use, or disposal of hazardous materials would be similar to that of the proposed project. Overall, the Reduced Intensity Alternative would result in equal impacts associated with hazards and hazardous materials as the proposed project.

Hydrology and Water Quality

Similar to the proposed project, land disturbance would occur during construction activities associated with the Reduced Intensity Alternative. The Reduced Intensity Alternative would alter the existing drainage pattern of the site and would result in the same impacts as the proposed project related to potential water quality and erosion issues. The Reduced Intensity Alternative

would involve the construction of 306 fewer residential units than the proposed project. As such, the amount of impervious surfaces under the Reduced Intensity Alternative would be expected to be less than that of the proposed project. As the site is not located within a floodplain, the same impacts related to placement of structures or housing within a floodplain and associated flooding risks would occur under the Reduced Intensity Alternative as the proposed project. Overall, the Reduced Intensity Alternative would result in fewer hydrology and water quality related impacts, as compared to the proposed project.

Land Use and Planning

The Reduced Intensity Alternative would, like the proposed project, require annexation to the City of Pittsburg, approval of an amendment to the City's Sphere of Influence, approval of the vesting tentative map, and approval of a development agreement, and subsequently, design review approval. Should the Pittsburg City Council approve the requested entitlements, the project would be consistent with the land use and zoning designations for the site.

Neither the proposed project nor the Reduced Intensity Alternative would displace any existing housing or people, and both would create housing on the site. The Reduced Intensity Alternative would reduce the total number of dwelling units built on the project site from 1,282 to 976. Therefore, the Reduced Intensity Alternative would include less of a population growth in the area than the proposed project. In conclusion, impacts related to land use and planning would be equal to that of the proposed project.

Noise

Development of the Reduced Intensity Alternative would include the development of 306 fewer dwelling units. A reduction in the total number of dwelling units could also reduce the amount of construction time, thereby reducing construction-related noise and vibration impacts. Furthermore, because the Reduced Intensity Alternative would involve fewer future residents, noise levels associated with an increase in project-generated vehicle trips would be fewer than that of the proposed project. Therefore, the Reduced Intensity Alternative would result in fewer noise-related impacts than that of the proposed project.

Public Services, Recreation, and Utilities

Because the Reduced Intensity Alternative would consist of buildout of 306 fewer residential units, the increase in demand for public services, recreation, and utilities including, but not limited to, water supply and delivery; wastewater collection and treatment, solid waste disposal, law enforcement, and fire protection would be less than that of the proposed project. However, because the project site is not currently within the Contra Costa Water District and Delta Diablo service districts, potentially significant impacts could result from the Reduced Intensity Alternative, similar to the proposed project. In addition, the Reduced Intensity Alternative would contribute to overcrowding at the elementary schools within the Antioch Unified School District and would dedicate the same amount of land to parks and open space. Therefore, development of the Reduced Intensity Alternative would result in equal impacts related to public services and utilities to that of the proposed project.

Transportation, Traffic, and Circulation

Development of the Reduced Intensity Alternative would result in the buildout of 306 fewer dwelling units than the proposed project, which would subsequently result in fewer project-generated vehicle trips. The Reduced Intensity Alternative would result in 7,832 average daily trips, which is approximately 2,108 less trips than the proposed project. Because fewer vehicle trips would be generated by the Reduced Intensity Alternative, the intensity of traffic-related impacts would be reduced, as compared to the proposed project. It should be noted, however, that the Reduced Intensity Alternative would still increase traffic on surrounding intersections and roadways. Furthermore, the Reduced Intensity Alternative would also require mitigation measures, such as installation of bus turnouts or a multi-use path, in order to reduce the potential impacts to alternative transportation to acceptable levels. Overall, the Reduced Intensity Alternative would result in fewer trips compared to the proposed project.

Clustered Trail Alternative

The Clustered Trail Alternative would achieve the proposed project's objectives. The Clustered Trail Alternative would include the construction of 500 single-family units on 75 acres and up to 700 multi-family units on 30 acres. However, the Clustered Trail Alternative would reduce the total number of dwelling units from 1,282 to 1,200, a reduction of approximately 6.4 percent. The Clustered Trail Alternative would incorporate park/open space on the project site and connect to the Black Diamond Mines Regional Preserve and the Delta/DeAnza Trail through the City of Pittsburg as well as planned connections within the City of Antioch. The trails would be woven throughout the development and coordinated with existing and proposed East Bay Regional Park District trails.

Air Quality and GHG Emissions

The Clustered Trail Alternative would reduce the total number of dwelling units constructed on the project site by 82 dwelling units. Because the Clustered Trail Alternative would involve fewer homes and future residents, emissions associated with vehicle trips, as well as area and energy sources, would be fewer than that of the proposed project. With the incorporation of the parks and open spaces on site, the land would need to continue to be maintained. The potential maintenance would not induce additional operational emissions to the site. Using CalEEMod, the Clustered Trail Alternative's operational emissions were estimated. It should be noted that inherent defaults in CalEEMod, such as construction phasing and timing, were applied for the alternative analysis, with the exception of the anticipated trip rates, which were provided for the project by the traffic consultant. The CalEEMod results are presented in Table 6-3.

As shown in the table, the unmitigated construction-related emissions of ROG, PM_{10}, and $PM_{2.5}$ associated with the Clustered Trail Alternative would be higher than those of the proposed project, and the emissions of NO_X would be lower. Similarly, the construction-related GHG emissions would be higher than those of the proposed project. The difference in emissions is most likely due to the default values used in the model for the alternative as opposed to the more detailed, project-specific construction information applied in the model for the proposed project.

Table 6-3
Unmitigated Clustered Trail Alternative Emissions

Pollutant	Unmitigated Clustered Trail Alternative Emissions	Unmitigated Proposed Project Emissions	BAAQMD Thresholds of Significance (lbs/day)
CONSTRUCTION (lbs/day)			
ROG	91.38	14.81	54
NO_X	74.93	79.18	54
PM_{10}	21.33	6.78	82
$PM_{2.5}$	12.82	5.05	54
OPERATIONAL (lbs/day)			
ROG	1,364.91	2,056.36	54
NO_X	64.46	72.87	54
PM_{10}	350.69	422.82	82
$PM_{2.5}$	320.01	392.18	54
CUMULATIVE (tons/yr)			
ROG	14.18	18.74	10
NO_X	7.33	8.07	10
PM_{10}	8.52	9.04	15
$PM_{2.5}$	3.15	3.68	10
GHG ($MTCO_2e$/yr)			
Operational GHG Emissions	10,848.69	12,209.35	-
Total Construction GHG Emissions	16,795.90	484.67	-
Annual Construction GHG Emissions[1]	419.90	12.12	-
Total Annual GHG Emissions	11,268.59	12,221.47	-
Service Population[2]	3,720	3,975	-
Total Annual GHG Emissions Per Service Population	**3.03**	**3.07**	**4.6**

Notes:
1. Total construction GHG emissions amortized over an estimated 40-year lifetime.
2. Service populations calculated based on 3.1 persons per household.

Source: CalEEMod, June 2014.

Nonetheless, the construction-related emissions of ROG and NO_X would exceed the applicable thresholds of significance and mitigation similar to those required for the proposed project would be necessary to reduce the potentially significant impact to less-than-significant levels. Thus, construction-related air quality impacts would be similar under the Clustered Trail Alternative as the proposed project.

The total GHG emissions were estimated to be lower than that of the proposed project, and the total annual GHG emissions per service population would still be below the applicable threshold of significance. Therefore, impacts related to GHG emissions would be slightly less under the Clustered Trail Alternative than the proposed project.

The Clustered Trail Alternative would result in fewer overall operational emissions, including daily and annual criteria air pollutant emissions. Although the operational emissions would be

less than that of the proposed project, the emissions would still exceed the applicable thresholds of significance at project-level for all pollutants, as well as cumulatively for ROG. Thus, mitigation would still be required. Applying Mitigation Measure 4.1-2 in the Air Quality and Greenhouse Gas Emissions chapter of this EIR would result in mitigated emissions as presented in Table 6-4 for the Clustered Trail Alternative.

Mitigation Measure 4.1-2 of this EIR would reduce the operational emissions, but the daily and cumulative emissions of ROG would still exceed the applicable thresholds of significance. Similar to the conclusion for the proposed project, because the majority of the ROG emissions are from area sources and feasible mitigation does not exist to further reduce area emissions of ROG, impacts would be expected to remain significant and unavoidable, similar to the proposed project. Therefore, similar to the proposed project, a significant and unavoidable impact would remain under the Clustered Trail Alternative related to operational emissions of ROG.

Table 6-4
Mitigated Clustered Trail Alternative Emissions

Pollutant	Mitigated Clustered Trail Alternative Emissions	Mitigated Proposed Project Emissions	BAAQMD Thresholds of Significance (lbs/day)
OPERATIONAL (lbs/day)			
ROG	60.97	73.33	54
NO_X	38.45	42.32	54
PM_{10}	45.17	45.72	82
$PM_{2.5}$	14.49	15.07	54
CUMULATIVE (tons/yr)			
ROG	10.33	12.47	10
NO_X	7.25	7.95	10
PM_{10}	7.60	7.64	15
$PM_{2.5}$	2.24	2.28	10

Source: CalEEMod, June 2014.

Because the Clustered Trail Alternative would result in fewer trips than the proposed project, the alternative would result in less traffic on area roadways and, thus, a reduced contribution to localized CO concentrations at surrounding intersections. As the Clustered Trail Alternative would consist of buildout on the same site in the same location as the proposed project with the same land uses, the effects of the project, as well as on the project from nearby sources of TACs, would be similar to that of the proposed project.

Overall, the Clustered Trail Alternative would result in fewer impacts than the proposed project related to air quality and GHG emissions, but would still result in significant and unavoidable impacts.

Biological Resources

The Clustered Trail Alternative would dedicate a substantially larger area to park/open space uses as compared to the proposed project. However, the same potential exists for effects on

existing habitat, interference with native or migratory wildlife species or corridors, confliction with policies or ordinance protecting biological resources, and confliction with provisions of an adopted habitat conservation plan. Therefore, impacts related to biological resources would be equal under the Clustered Trail Alternative to the proposed project.

Geology, Soils, and Seismicity

Development of the Clustered Trail Alternative would result in the same site disturbance as the proposed project, but would consist of buildout of 82 fewer residential units. Accordingly, the same potential for on-site hazards related to geology, soils, and seismicity, such as earthquakes, soil erosion, soil stability, and expansive soil, would occur under the Clustered Trail Alternative. In addition, because the Clustered Trail Alternative would involve fewer residential units, fewer homes and future residents would be exposed to the aforementioned potential geological hazards. Therefore, the Reduced Intensity Alternative would result in fewer impacts associated with geology, soils, and seismicity compared to the proposed project.

Hazards and Hazardous Materials

The Clustered Trail Alternative would involve the same site disturbance as the proposed project. Therefore, impacts related to exposure to any existing on-site hazards or hazardous materials would be similar under the Clustered Trail Alternative to the proposed project. As the Clustered Trail Alternative, like the proposed project, would consist of residential uses, impacts related to the creation of hazards to the public or the environment related to the routine transport, use, or disposal of hazardous materials would be similar to that of the proposed project. Overall, the Clustered Trail Alternative would result in equal impacts associated with hazards and hazardous materials as the proposed project.

Hydrology and Water Quality

Similar to the proposed project, land disturbance would occur during construction activities associated with the Clustered Trail Alternative. The Clustered Trail Alternative would alter the existing drainage pattern of the site and would result in the same impacts as the proposed project related to potential water quality and erosion issues. However, the Clustered Trail Alternative would involve the construction of 82 fewer residential units than the proposed project and the increased acreage dedicated to park/open space use would be pervious and would not result in an increase in stormwater runoff. As such, the amount of impervious surfaces under the Clustered Trail Alternative would be expected to be less than that of the proposed project. Therefore, development of the Clustered Trail Alternative would result in fewer impacts than that of the proposed project related to the effects on the existing stormwater drainage system capacity, contaminated runoff, and groundwater recharge.

As the site is not located within a floodplain, the same impacts related to placement of structures or housing within a floodplain and associated flooding risks would occur under the Clustered Trail Alternative as the proposed project. Overall, the Clustered Trail Alternative would result in fewer hydrology and water quality related impacts, as compared to the proposed project.

Land Use and Planning

The Clustered Trail Alternative would, like the proposed project, require annexation to the City of Pittsburg, approval of an amendment to the City's Sphere of Influence, approval of the vesting tentative map, and approval of a development agreement. Should the Pittsburg City Council approve the requested entitlements, the project would be consistent with the land use and zoning designations for the site.

Neither the proposed project nor the Clustered Trail Alternative would displace any existing housing or people, and both would create housing on the site. The Clustered Trail Alternative would reduce the total number of dwelling units built on the project site from 1,282 to 1,200. Therefore, the Clustered Trail Alternative would induce less of a population growth in the area than the proposed project. In conclusion, impacts related to land use and planning would be equal to that of the proposed project.

Noise

Development of the Clustered Trail Alternative would include the development of 82 fewer dwelling units. A reduction in the total number of dwelling units could also reduce the amount of construction time, thereby reducing construction-related noise and vibration impacts. Furthermore, because the Clustered Trail would involve fewer future residents, noise levels associated with an increase in project-generated vehicle trips would be fewer than that of the proposed project. With the incorporation of clustering on site, the park/open space areas would need to continue to be maintained. However, the potential maintenance would not induce substantial operational noise because of the small-scale nature (i.e., not maintained using large equipment, etc.). Therefore, the Clustered Trail Alternative would result in fewer noise-related impacts than that of the proposed project.

Public Services, Recreation, and Utilities

Because the Clustered Trail Alternative would consist of buildout of 82 fewer residential units, the increase in demand for public services and utilities including, but not limited to, water supply and delivery; wastewater collection and treatment, solid waste disposal, law enforcement, and fire protection would be less than that of the proposed project. However, because the project site is not currently within the Contra Costa Water District and Delta Diablo service districts, potentially significant impacts could result from the Clustered Trail Alternative, similar to the proposed project. In addition, the Clustered Trail Alternative would contribute to overcrowding at the elementary schools within the Antioch Unified School District but would dedicate over twice the amount of land to parks and open space. Overall, development of the Clustered Trail Alternative would result in fewer impacts related to public services and utilities than that of the proposed project.

Transportation, Traffic, and Circulation

Development of the Clustered Trail Alternative would result in the buildout of 82 fewer dwelling units than the proposed project, which would subsequently result in fewer project-generated

vehicle trips. The Clustered Trail Alternative would result in 8,945 average daily trips, which is approximately 995 less trips than the proposed project. Because fewer vehicle trips would be generated by the Clustered Trail Alternative, the intensity of traffic-related impacts would be reduced, as compared to the proposed project. It should be noted, however, that the Clustered Trail Alternative would still increase traffic on surrounding intersections and roadways. Furthermore, the Clustered Trail Alternative would also require mitigation measures, such as installation of bus turnouts or a multi-use path, in order to reduce the potential impacts to alternative transportation to acceptable levels. Overall, the Clustered Trail Alternative would result in fewer trips compared to the proposed project.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. Section 15126(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be designated and states, "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

Designating a superior alternative depends in large part on what environmental effects one considers most important. This EIR does not presume to make this determination; rather, the determinations of which impacts are more important are left to the reader and the decision makers. Generally, the environmentally superior alternative is the one that would result in the fewest environmental impacts as a result of project implementation. However, it should be noted that the environmental considerations are one portion of the factors that must be considered by the public and the decisionmakers in deliberations on the proposed project and the alternatives. Other factors of importance include urban design, economics, social factors, and fiscal considerations. In addition, the superior alternative would, ideally, still provide opportunities to achieve the project objectives.

A comparison of the proposed project to the three alternatives discussed in detail above is illustrated in Table 6-5 below. Aside from the No Project Alternatives, the development alternatives would meet the proposed project's objective. As shown in the table, the Reduced Intensity Alternative would result in fewer impacts than the proposed project in five resource areas, and equal impacts in four resource areas. The Clustered Trail Alternative would result in fewer impacts in six resource areas, and equal impacts in three resource areas. Although the Clustered Trail Alternative would result in fewer impacts than the proposed project in more resource areas than the Reduced Intensity Alternative, changes in the severity of impacts should also be evaluated in order to determine the Environmentally Superior Alternative.

The Reduced Intensity Alternative would reduce the significant and unavoidable impact identified for the proposed project related to cumulative emissions of ROG to less-than-significant levels with incorporation of mitigation set forth in this EIR. Therefore, because a significant and unavoidable impact identified for the proposed project would be reduced to a less-than-significant level with incorporation of mitigation under the Reduced Intensity Alternative, the Reduced Intensity Alternative would be considered the Environmentally Superior Alternative.

Table 6-5
Alternative Environmental Impacts Comparison

Resource Area	Proposed Project	No Project (No Build) Alternative	Reduced Intensity Alternative	Clustered Trail Alternative
Air Quality and GHG Emissions	Significant and Unavoidable	None	Fewer	Fewer*
Biological Resources	Less-Than-Significant with Mitigation	None	Equal	Equal
Geology, Soils, and Seismicity	Less-Than-Significant With Mitigation	None	Fewer	Fewer
Hazards and Hazardous Materials	Less-Than-Significant with Mitigation	None	Equal	Equal
Hydrology and Water Quality	Less-Than-Significant	None	Fewer	Fewer
Land Use and Planning	Less-Than-Significant with Mitigation	Greater	Equal	Equal
Noise	Less-Than-Significant with Mitigation	None	Fewer	Fewer
Public Services, Recreation, and Utilities	Less-Than-Significant with Mitigation	None	Equal	Fewer
Transportation, Traffic, and Circulation	Significant and Unavoidable	None	Fewer	Fewer

Notes:
No Impact = "None"
Less than Proposed Project = "Fewer"
Equal to Proposed Project = "Equal"
Greater than Proposed Project = "Greater"
* Significant and Unavoidable impact(s) determined for the proposed project would still be expected to occur under the Alternative.