Appendix F Noise Data

Appendices

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LOCAL REGULATIONS AND STANDARDS

Volume 3

ENVIRONMENTAL PERFORMANCE

IN THIS VOLUME

Conservation is at the crossroads of stewardship and equity. This Volume combines conservation of land with consideration of the natural resources that affect our health and well-being. Safety is an essential human need, and changes to the climate, Santa Ana winds, and the near year-round fire season make safety planning essential. Protecting people from less immediate danger such as poor air quality, flooding, and water quality impacts is equally important. The people most often affected by air quality impacts are those with the least resources. This Volume commits the City by design and by policy to ensuring that new development does not make air or water quality impacts worse in adjacent neighborhoods, or the city as a whole.

As new residents move in and existing residents move downtown the noises of city life will increase. Noises like sirens, train horns, garbage trucks, and leaf blowers will be balanced by good noise such as children laughing, outdoor music, and markets. The city is no longer a collection of homes surrounded by vineyards and farms, but rather a bustling center of commerce, employment, and transit. This Volume includes recognition that not everywhere can be quiet all the time and makes allowance for people to make a little noise while they are having fun.

RESOURCE CONSERVATION

IN THIS VOLUME (CONT'D)

SAFETY

NOISE

FIGURES & TABLES

RESOURCE CONSERVATION

SAFETY

NOISE

Resource Conservation

"A more environmentally friendly and energy efficient city should be our goal."

– Community Member
(Public input received from the PlanRC Survey #2, Summer 2020)

RESOURCE CONSERVATION IS...

the act of ensuring that the development and operation of the City does not undermine the health of its residents. People are part of nature and time spent in the natural environment is known to reduce stress and improve the wellbeing of people. In addition to natural resources, such as air and water, this Chapter also includes policies that respects the City's history. The discussion and policies that follow illustrate the commitment made by the City to resource conservation and the importance of the natural environment.

Our history defines how the city developed and provides a foundation for improvement. World-class cities embrace their history and incorporate elements of the past into the future. The act of re-purposing buildings for new use is as old as construction and can be more environmentally sound than new construction. There is something about a classic building or landscape that has withstood time to remain part of the neighborhood. Perhaps old buildings or things like Historic Route 66 are touchstones reminding people that even with change some vestige of the past remains. This General Plan celebrates the City's long history, recognizes all the historic and natural elements that comprise our neighborhoods and sees these things as assets to the community worthy of recognition.

Air and water are essential for life and should be accessible to everyone regardless of their economic status or location in the city. Some land uses can impact these resources, and often affect residents far from the buildings themselves. Regulations can only go so far to protect them so this General Plan requires an assessment of the community benefit to be realized by the land use before they can be approved.

STATE LEGAL REQUIREMENTS

California law requires that a General Plan include a conservation chapter that addresses the use of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, wildlife, minerals, and other natural resources. This Chapter considers the effect of development as described in the Land Use and Community Character Chapter and is the foundation for implementation methods designed to protect water quality and prevent flooding. This Chapter was prepared to meet the requirements of Government Code Section 65302(d) and identifies water courses, flood corridors, riparian habitats, and land that may accommodate floodwater for purposes of groundwater recharge and stormwater management.

This Chapter also addresses historic and cultural, and tribal cultural resources. In this context, historic and cultural resources consider the built environment since settling of the area. Tribal cultural resources are those of first residents of the area.

The exposure of residents to unclean air can be considered an environmental justice issue since the areas near major transportation routes are often lower income and are disproportionately affected by emissions from busy roadways and rail lines. The city is in the South Coast Air Basin (SCAB), where levels of airborne particulate matter (PM) from emissions and wildfires, and ozone related to both emissions and sunlight, exceed Federal and State air quality standards. Some types of industrial development concentrate truck traffic and their emissions can affect the health of nearby residents.

"I would like Rancho [Cucamonga] to be known for having the ideal balance between nature and infrastructure."

– Community Member
(Public input received from the PlanRC Visioning Survey, Spring 2020)

HEART OF THE MATTER

Although the entire city was once an agricultural area, few large open areas remain that would support commercial agricultural production today. While some agricultural uses are encouraged, and are allowed within all General Plan designations, the city today is too developed to support much in the way of large-scale agriculture. While this may change with time and technologies such as aeroponics, hydroponics, and indoor growing, agriculture is not a dominant land use in the city.

We know people thrive in a clean natural environment with fresh food and healthy choices. The less developed areas of the city see these benefits daily, while the more developed areas rely upon formal landscaping and small-lot gardens. Still other areas of the city lack these resources and it is important direction of this plan to improve the natural environment in these areas. This General Plan includes policies that support urban gardens, edible landscape, and similar close-to-consumer production of agricultural goods.

The air we breathe affects health and is often a visible measure of our quality of life. In general air quality has been improving since the 1970's, but there is still a long way to go. The city has air quality deficiencies that are partly a function of geography, and partly from trains, planes, automobiles, and trucks. During some weather conditions our air quality can adversely affect the health of children, senior citizens, and residents with respiratory health issues. Driving less, planting more, and generally becoming less dependent upon fossil fuels will help with some, but not all, of the air quality issues as the city is in a larger region and affected by emissions originating in other areas. For some projects, particularly those near busy roads, physical filtration may be the only way of ensuring healthy indoor air quality.

OVERVIEW OF THIS CHAPTER

The Resource Conservation Chapter ensures that development is done with care for the local and global resources that make this City special. The stewardship of natural resources is an important responsibility, and this Chapter ensures their consideration with every action.

The following overarching resource conservation goals serve to guide and direct long-term planning in the City of Rancho Cucamonga:

+ **Goal RC-1 Visual Resources.** A beautiful city with stunning views of the San Gabriel Mountains and the Inland Empire.

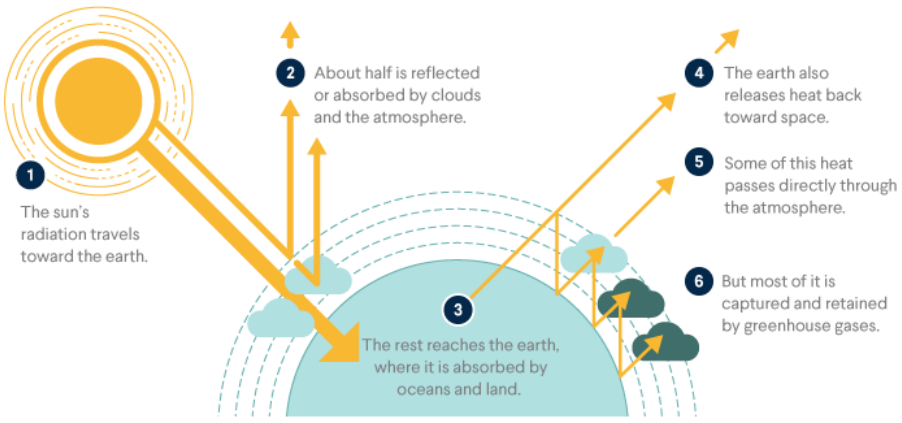
- **Goal RC-2 Water Resources.** Reliable, readily available, and sustainable water supplies for the community and natural environment.
- **Goal RC-3 Habitat Conservation.** Wildlife habitats that support various plants, mammals, and other wildlife species.
- **Goal RC-4 Cultural Resources.** A community rich with historic and cultural resources.
- **Goal RC-5 Local Air Quality.** Healthy air quality for all residents.
- **Goal RC-6 Climate Change.** A resilient community that reduces its contributions to a changing climate and is prepared for the health and safety risks of climate change.
- **Goal RC-7 Energy.** An energy efficient community that relies primarily on renewable and non-polluting energy sources.

Goal RC-1 reinforces the commitment made by the City to ensure that the grandeur of the views from the city are not overshadowed by new development. Goals RC-2 through RC-7 confirm the City's role as a world-class city in addressing both local and global issues such as air quality and climate change.

HEALTH EFFECTS

High particulate matter (PM) and ground-level ozone concentrations usually come from cars, trucks, and trains, but can also come from new industry. High particulate matter can result in adverse health effects for residents, including lung inflammation, reduced lung function, coughing, wheezing, chest pain, burning in the chest, and shortness of breath. These effects are especially severe in children, older adults, and people with asthma or other existing lung conditions. People in the city who live near heavily traveled roads and railroad tracks are exposed to pollutants at a greater level than other locations in the city. Land uses that generate a similar pollutant should need to demonstrate a community benefit that exceeds their damage to the community. These benefits should be seen in the areas of the city most affected by the increase in trucks or building emissions and discussed with those neighborhoods before approving the development. The community benefit should be included in a plan, publicly discussed, and adopted as part of any project. Anything less would be a disservice to the residents of this world-class city.

THE GREENHOUSE EFFECT



Historic Cucamonga Service Station

Climate change associated with greenhouse gases, may worsen air quality in the city with rising temperatures that will result in more ground-level ozone formation and result in more ozone accumulating in the air. A larger number of extreme heat days and heat wave events may result in more days when air quality standards are exceeded. Another impact of climate change is the potential for more frequent regional wildfire-events that will produce substantial amounts of smoke that contains unhealthy particulate matter.

Greenhouse gases contribute to climate change, which affects everyone. The State, and much of the world, is actively trying to reduce greenhouse gases to slow climate change. As the climate continues to change, we can anticipate more severe weather, longer droughts, hotter heat waves, and more severe storms.

CONSERVATION OF LAND & HISTORIC RESOURCES

HISTORIC RESOURCES

As Rancho Cucamonga developed out of vineyards and citrus groves into the existing residential neighborhoods and industrial and commercial centers, some of the City's long-standing historical buildings have been torn down. Other structures have been lost to disrepair, neglect, redevelopment, and fire. Recognizing that economic prosperity and growth can sometimes overrun the historic fabric of the community, historic preservation groups and the City have made efforts to protect the historical buildings and landmarks that remain. This General Plan reinforces this commitment to recognizing, protecting, and maintaining Rancho Cucamonga's past. While 50 years old is considered the starting point for consideration of historic structures, there is no age requirement for being deemed historic and even newer buildings or areas can be historic if considered so by the community. Several neighborhoods within the city will be turning 50 soon, and this may create challenges for both new construction and remodeling certain buildings within these older neighborhoods. There is no one set of policies or procedures that can be applied uniformly as each project is unique. Certainly not all that is old is worth preserving, but neither should it all be replaced. A balance and respect for the history of the City is the intent. Policies in this plan are designed to allow adaptive reuse of historic structures so that they can remain a part of the city. This is reflected in the Land Use and Community Character Chapter, as well as the context for this General Plan.

Foothill Boulevard is a unique historic route for the City of Rancho Cucamonga, Southern California, and the western United States. Officially, the numerical designation 66 was assigned to the Chicago-to-

Los Angeles route in the summer of 1926. From the outset, public road planners intended Route 66 to connect the main streets of rural and urban communities along its course for the most practical of reasons: most small towns had no prior access to a major national thoroughfare. Historic Route 66 runs east to west through Rancho Cucamonga and contains historic resources potentially significant for their association with Route 66.

TRIBAL RESOURCES

[Pending completion of SB-18 and AB-52]

North Etiwanda Preserve

CONSERVATION AREAS

As illustrated in Figure RC-1, Conservation Areas, there are several existing and proposed conservation areas within the city. The existing conservation areas, which are managed by several different entities, have been protected from development by the recordation of conservation deed restrictions, with some further protected by the preparation and adoption of conservation management plans.

These conservations areas protect habitats such as alluvial fan sage scrub, sycamore alluvial woodland, California walnut woodland, and freshwater marsh, providing important habitat and corridors for wildlife, ecosystem services, and recreational resources for the public. In total, these areas encompass approximately 1,812 acres of habitat within the General Plan Area and will remain critical to the survival of sensitive species and wildlife occupying these habitats.

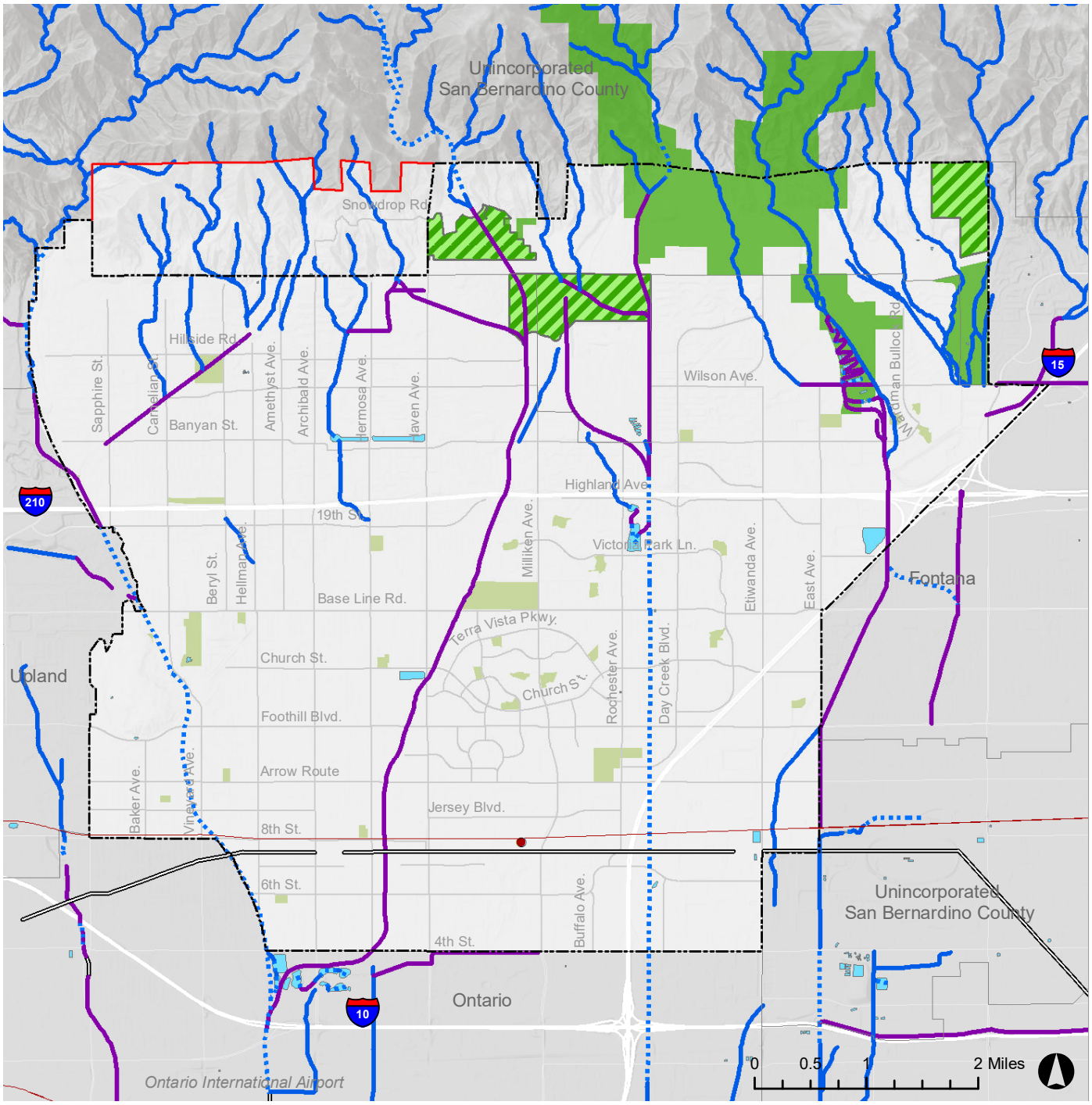
As part of the Etiwanda Heights Neighborhood and Conservation Plan (EHNCP), three new conservation areas are proposed, as identified in Figure RC-1. The EHNCP created a regulatory and management framework for securing, expanding, linking, and managing these areas, and systematically transforming areas of threatened habitat and rural open space with a few islands of partial conservation, to an area of permanently conserved, well-managed habitat with a few small islands of rural living in harmony with nature. As growth and development occur it will be essential that preservation remains a priority for sensitive land resources that have significant native vegetation and/or habitat value.

Habitat and vegetation types are shown in Figure RC-2, Habitat, and naturally favor the northern edge of the city along the base of the mountains. The city also has natural and man-made drainages that provide a means for wildlife to enter deep into the developed areas of the city. This General Plan continues the conservation and design attention provided to these areas for protection of nature and the enrichment of the people who enjoy the trails that provide entry into them. The City is committed to protecting natural drainages shown in Figure RC-1 and incorporating them into conservation areas and project design, including by requiring the clustering of development or enabling the transfer of development rights to protect these important resources. The drainages not only provide life through running water, but they allow groundwater recharge and are part of the larger water quality system that helps protect downstream waters from pollutants that may be in the stormwater runoff.

Transfer of Development Rights

Through the Etiwanda Heights Neighborhood and Conservation Plan and City Hillside Ordinance, the City can allow property owners to transfer their development rights for hillsides and future planning areas to preserve natural resources, and to avoid geologic and seismic hazards. This General

FIGURE RC-1 CONSERVATION AREAS



Raimi + Associates, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; ECORP Consulting, Inc, 2020

Riversidean Alluvial Fan Sage Scrub is a key vegetation community that supports biodiversity

Plan includes policies that would extend the potential for a transfer of development rights throughout the Sphere of Influence (See Figure RC-1) to encourage conservation and a more compact urban form.

Grading and the Natural Form

Modern construction is efficient at moving soil and building on flat surfaces. While people benefit from being able to move around easily on these flatter surfaces, we tend to lose topography and the natural beauty found in our hillsides and slopes. Construction also removes geographic features and elements of the landscape that have served as landmarks for generations. The irony is that after the grading, significant resources are spent in replanting and contouring to shadow the original landform. This General Plan requires that grading in hillside or slope areas result in a naturally appearing form and discourages the use of retaining walls or terracing that would destroy the natural beauty of the hills and change the character of these areas forever.

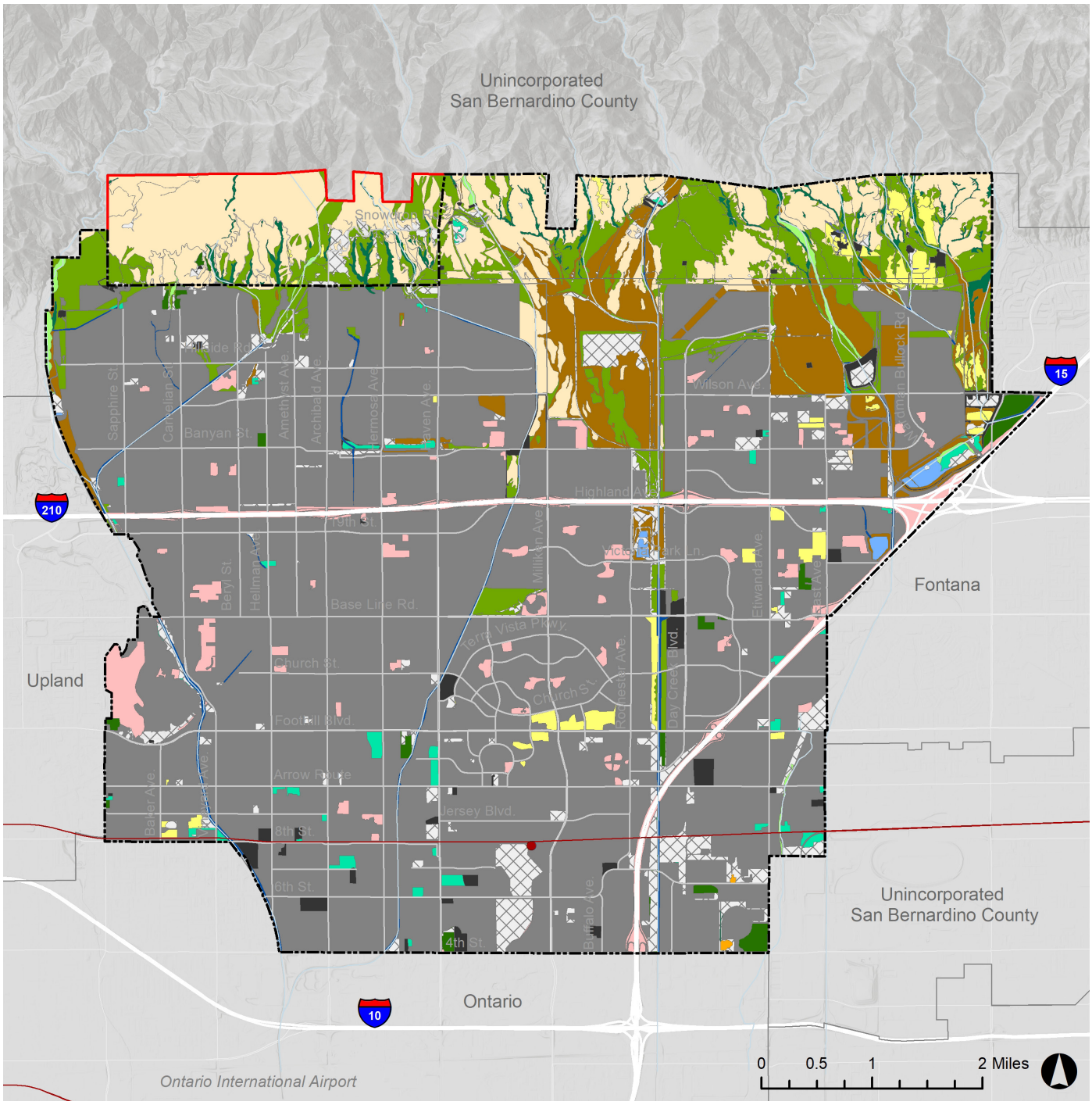
Protected Species

Habitat for several protected plant and animal species are known to occur within the General Plan Area. This General Plan includes policies to avoid or lessen impacts to these species and their habitats. [See Figure RC-2.] Regional connectivity between habitats is essential to the wellbeing of local wildlife. The northern periphery of the city plays an important role in connecting two expansive areas of the Angeles and San Bernardino National Forests. This mountainous area and its associated foothills include corridors, drainages, and open areas attractive to wildlife. With the existing and proposed conservation areas and supporting policies for hillside development and transfer of development rights, any future development in the northern portion of the city will consider and protect the regional flow of wildlife. The undeveloped Day Creek utility and flood control open space corridor may facilitate wildlife movement from the mountains north of the city south through the southern end of the city providing a throughfare for wildlife.

Urban Forest

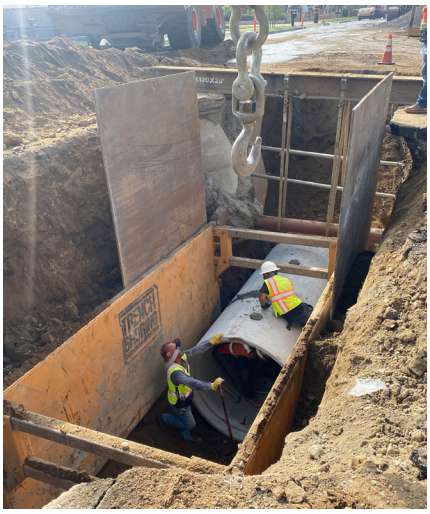
The urban forest and trees provide many great economic and environmental benefits to planned communities. Trees provide a wonderful aesthetic to the city and are also essential to physical and mental health. Not only our health, but that of migratory birds, raptors, songbirds, and mammals. Trees reduce building cooling costs and make it more inviting to walk along streets and pathways. Water shed trees protect water quality and help prevent flooding, help reduce climate change associated with greenhouse gases, and are our best natural filter for particulate pollution. Our urban forest also helps to mitigate summer air temperatures. As the climate changes, it will be important to replant trees with tree species that can handle the new conditions.

FIGURE RC-2 HABITAT



Raimi + Associates, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; ECORP Consulting, Inc, 2020

Open water catch basin



Upper Cucamonga storm drain

WATER RESOURCES

WATER QUANTITY

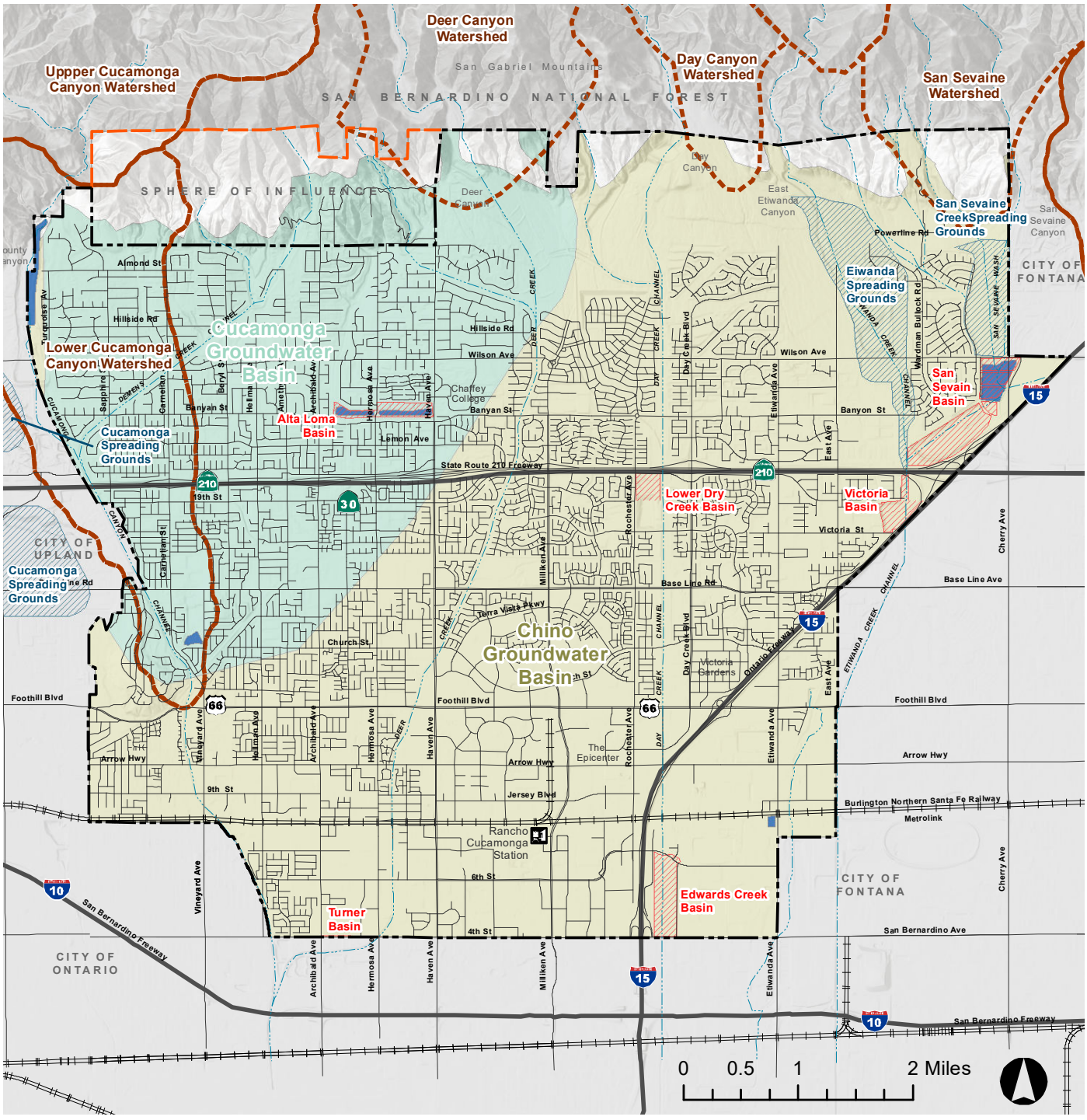
The city relies primarily upon the Cucamonga Valley Water District to provide water for development. A close working relationship between the City and the District is needed to ensure that our growth does not exceed their ability to provide service. In addition to a collaborative development process, the City also encourages water conservation and actively reviews policies to ensure that water is used efficiently in all development.

The City is also fortunate to contribute to groundwater recharge. Figure RC-3, Water Resources, shows several flood control basins and natural channels throughout the city that are designed to allow for recharge of groundwater through rainfall. This General Plan continues to conserve these areas and includes additional policies to preserve natural drainages. One key component of stormwater management as implemented by the City is that development is required to retain some stormwater on-site.

SURFACE WATER QUALITY

Unchecked, stormwater runoff from the city can pollute local waterways and even groundwater, causing contamination that can last for generations. Current stormwater retention and filtration requirements address this for new development, however large areas of the city have already been built and the stormwater capture requirements only take effect once additional construction is proposed. As a result, the city relies on stormwater basins to capture debris and slow the speed of runoff to reduce erosion. Many water quality issues can be addressed by providing information to residents on the importance of keeping pollutants out of the stormwater system. This General Plan continues and expands the City's public service announcements, advertisements, or signage that reminds people of the connection between water features in the city.

FIGURE RC-3 WATER RESOURCES



Groundwater Basins
- Chino Basin
- Cucamonga Basin

Recharge Basins and Spreading Grounds
- Recharge Basin
- Spreading Grounds

- Watersheds
- City Boundary
- Sphere of Influence
- Waterways

City of Rancho Cucamonga, 2020 | Sources: Caltrans Department of Water Resources, 1997 and California Resources Agency, 2006

Pacific Electric Inland Empire Trail

AIR RESOURCES

MOBILE EMISSIONS

Vehicles are the largest source of the pollutants that react in the air to form ozone. Several major freeways and roadways that run through Rancho Cucamonga, including Interstate 15 (I-15), State Route 210 (SR-210), and Foothill Boulevard, are major thoroughfares contributing to the poor air quality experienced by many residents of Rancho Cucamonga. This includes notably high levels of diesel particulate matter (diesel PM), especially in areas of the city within 500 feet of these freeways and major roadways. This increased exposure to toxic air contaminants (TACs) places city residents, and especially any sensitive individuals in these areas, at higher risk for experiencing adverse cancer and noncancer health effects.

Reducing the need to use a vehicle by siting goods and services near homes, and providing attractive, safe, and convenient ways to walk, bike, rollerblade or use other means of getting there without the need of an internal combustion engine, is the most effective way of improving local air quality. While there will always be a need for some trips, the expectation of this General Plan is that residents will have the multiple options for getting around. Policies in other chapters that require connectivity between neighborhoods, completion of road grids, trails, and paths, will all help to address both air quality and greenhouse gas emissions.

STATIONARY EMISSIONS

Large stationary sources emitting more than ten tons of at least one health-impacting pollutant per year within the City are rare and regulated by the South Coast Air Quality Management District (SCAQMD). New industrial development that would be a large emitter of pollutants is unlikely to be permitted within the city.

COMMUNITY BENEFIT PLAN

Large industrial projects require high volumes of trucks that are known to cause damage to local roadways, cause air pollution that affects the health and wellbeing of nearby residents through air pollution and an increase in noise. Unfortunately, the trend of these types of industry is to hire fewer workers and low paying wages, resulting in little social or fiscal benefit to the City. This General Plan requires larger industrial projects that generate significant truck traffic to demonstrate community benefit outside of their project boundaries. This can include improvements to neighborhoods most affected by the increase in truck traffic, reconstruction of roadways affected by the increase in traffic, or other offset features that allow the City to balance the negative impacts of the project with positive long-term benefits to the community.

CLIMATE

GREENHOUSE GASES

In 2016, the State passed Senate Bill (SB) 32, which sets a statewide goal of reducing emissions 40 percent below 1990 emission levels by the year 2030. The State has also set long-term goals for an 80 percent reduction by the year 2050, and recently, Executive Order B-55-18 set a steeper goal for the State to achieve economy-wide carbon neutrality by 2045. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions should be offset by equivalent net removals of carbon dioxide equivalent (CO_2-eq) from the atmosphere, including through sequestration in forests, soils, and other natural landscapes. The State's current goals and targets are listed in Table RC-1 below.

Metric tons of carbon dioxide equivalent or MTCO2e is the unit of measurement in this tool. The unit "CO2e" represents an amount of a GHG whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO2), based on the global warming potential (GWP) of the gas. A metric ton is equal to 1 kilogram or 2,204.6 pounds.

TABLE RC-1 STATE OF CALIFORNIA GHG EMISSIONS REDUCTION GOALS AND TARGETS

Target Year	Goal/Target	Authority
2020	Reduce GHG emissions to 1990 levels	Assembly Bill 32 (2006)
2030	Reduce GHG emissions 40 percent below 1990 levels	Senate Bill 32 (2016)
2045	Net carbon neutral emissions	Executive Order B-55-18 (2018)
2050	Reduce GHG emissions 80 percent below 1990 levels	Executive Order S-03-05 (2005)

In support of these newer GHG reduction targets and carbon neutrality goals, the State has funded and pursued research, program development and implementation, rulemaking, and incentives. The State's Building Energy Efficiency Standards, Green Building Code, and Appliance Efficiency Regulations have been and are expected to be updated every three years to meet the State's goals for zero net energy buildings as outlined in the State's Energy Efficiency Strategic Plan, further developed in Action Plans. In addition, the State has set zero emissions goals for the transportation sector, zero carbon goals for the energy sector, and related goals to support reductions in the waste sector and from climate pollutants.

GREENHOUSE EFFECT

The release of gases, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), creates a blanket around the earth that allows light to pass through but traps heat at the surface preventing its escape into space.

View toward the San Gabriel Mountains

These gases function similarly to the glass panes of a greenhouse, which allow sunlight to pass into the building but trap heat inside, hence the name for this process: the greenhouse effect. While the greenhouse effect is a naturally occurring process that is vital for the existence of life, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of greenhouse gases in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

In California, transportation, and the generation of electricity account for over half of all greenhouse gas emissions. Figure RC-4 shows the greenhouse gas emissions by sector in the city. The greenhouse gas generation for the City is like that of the State with transportation and building energy contributing most of the impact. It is important then, to realize that a reduction in trips and more efficient buildings will result in the largest reduction in greenhouse gas emissions.

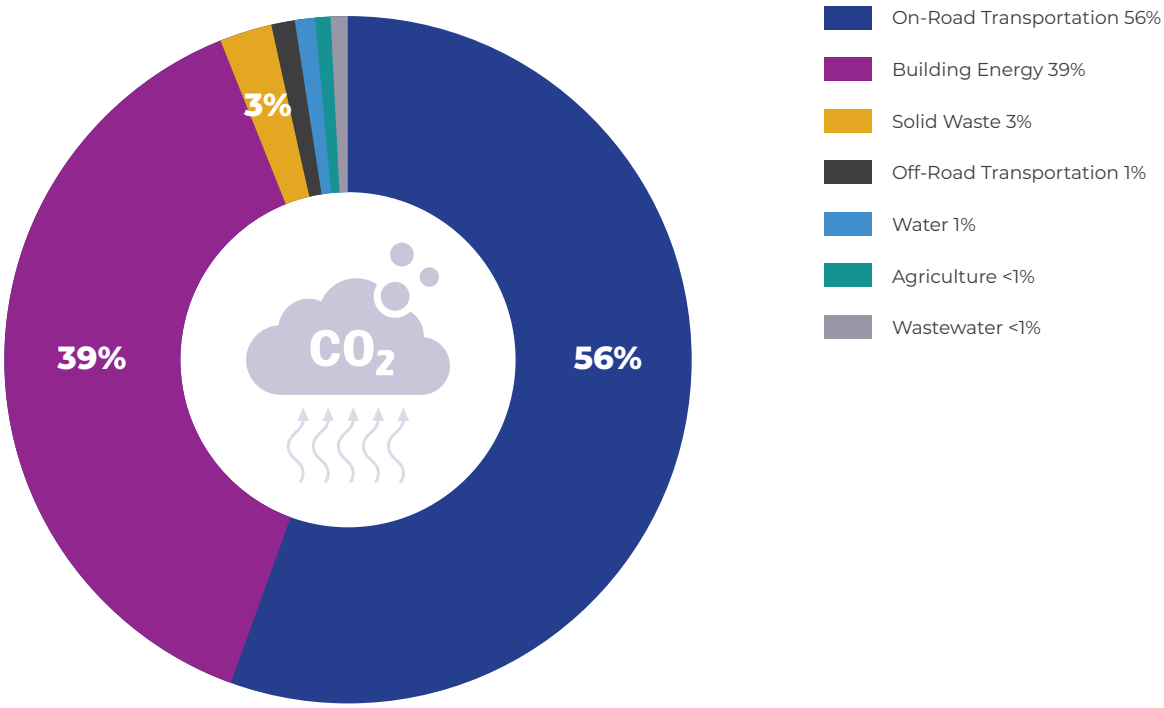
The development envisioned by this General Plan is intended to reduce the need to drive by improving access by sidewalk, pathway, and trail, and by, arranging land uses close to where people live to give them options for moving around with or without their vehicle. To a certain extent changes in vehicle technology, more energy efficient homes, education, and changes to the building code to encourage solar panels, will reduce greenhouse gas emissions. In addition to these technologies there are some low-tech methods of addressing this issue. These can include maintaining an urban forest of trees, parks, and landscaping, connecting pedestrian paths and bikeways throughout the city to encourage active transportation, giving priority to transit, and encouraging a more compact urban form, all of which are embedded in this General Plan.

This plan also allows for the City to create a program that would allow new development in one part of the city to offset some of its greenhouse gas emission by improving areas of the city where additional pedestrian trails, trees, and other modernization would reduce greenhouse gas emission. This is a smaller and local version of the statewide cap and trade program available to large industries.

CLIMATE CHANGE

Since the early 1990s, scientific consensus holds that the world's population is releasing GHGs faster than the earth's natural systems can absorb them. These gases are released as byproducts of fossil fuel combustion, waste disposal, industrial processes, land-use changes, and other human activities. While often used interchangeably, there is a difference between the terms "climate change" and "global warming." According to the National Academy of Sciences, climate change refers to any significant, measurable change of climate lasting for an extended period that can be caused by both natural factors and human activities. Global warming, on the other hand, is an average increase in the temperature of the atmosphere caused by increased GHG emissions. The use of the term "climate change" is more accurate because it encompasses all changes to climate, not just temperature.

FIGURE RC-4 2018 GREENHOUSE GAS GENERATION BY THE CITY



CLIMATE ACTION PLAN

The State of California Scoping Plan includes guidance for local jurisdictions to reduce GHG emissions through local planning and permitting. The State recommends that local governments evaluate and adopt robust and quantitative locally-appropriate GHG reduction goals that align with the statewide per capita targets of no more than six metric tons of carbon dioxide equivalent ($MTCO_2e$) per capita by 2030 and no more than two $MTCO_2e$ per capita by 2050. Recognizing that not all statewide emissions can be reduced at the local level, the guidance also states that it is appropriate for local jurisdictions to derive evidence-based local per capita goals based on local emissions sectors and population projections. Local GHG reduction strategies to achieve the statewide targets can be implemented through standalone documents such Climate Action Plans (CAPs) or can be integrated into other planning documents with policies that include GHG emissions reduction targets. The City has prepared a CAP as a companion to this General Plan. The updated CAP will contain locally set GHG goals and can serve as a performance metric for later projects. Additionally, a qualified climate action plan can help streamline project-level environmental review.

***Green Technology** is technology that is intended to mitigate or reverse the effects of human activity on the environment.*

GOALS AND POLICIES

GOAL RC-1 VISUAL RESOURCES. A beautiful city with stunning views of the San Gabriel Mountains and the Inland Empire.

RC-1.1 **View Corridors.** Protect and preserve existing signature public views of the mountains and the valleys along roadways, open space corridors, and at other key locations.

RC-1.2 **Orient toward View Corridors.** Encourage new development to orient views toward view corridors, valley and mountains.

RC-1.3 **Transfer of Development Rights.** Allow the transfer of development rights from conservation areas to select development areas throughout the city and Sphere of Influence to protect hillsides, natural resources, and views and to avoid hazards and further the City's conservation goals.

RC-1.4 **Dark Sky.** Limit light pollution from outdoor sources, especially in the rural, neighborhood, hillside, and open spaces to maintain darkness for night sky viewing.

RC-1.5 **Transit Corridor Views.** Require that new development along major transit routes and travel corridors include 360-project design and landscape or design screening of outdoor activity, and storage, including views from the transit routes and travel corridors.

RC-1.6 **Hillside Grading.** Grading of hillsides shall be minimized, following natural landform to the maximum extent possible. Retaining walls shall be discouraged and if necessary screened from view.

RC-1.7 **Preservation of Natural Land Features.** Preserve significant natural features and incorporate into all developments. Such features may include ridges, rock outcroppings, natural drainage courses, wetland and riparian areas, steep topography, important or landmark trees and views.

GOAL RC-2 WATER RESOURCES. Reliable, readily available, and sustainable water supplies for the community and natural environment.

RC-2.1 **Water Supplies.** Protect lands critical to replenishment of groundwater supplies and local surface waters (Figure RC-3).

RC-2.2 **Groundwater Recharge.** Preserve and enhance the existing system of stormwater capture for groundwater recharge.

RC-2.3 **Riparian Resources.** Promote the retention and protection of natural stream courses from encroachment, erosion, and polluted urban runoff.

RC-2.4 **Waterways as Amenities.** When considering new development applications and infrastructure improvements where waterways are on-site, adjacent, or nearby, incorporate the waterway into the design as a feature.

RC-2.5 **Water Conservation.** Require the use of cost-effective methods to conserve water in new developments and promote appropriate water conservation and efficiency measures for existing businesses and residences.

RC-2.6 **Irrigation.** Encourage the conversion of water-intensive turf/landscape areas to landscaping that uses climate- and wildfire-appropriate native or non-invasive plants, efficient irrigation systems, greywater, and water efficient site maintenance.

RC-2.7 **Greywater.** Allow and encourage the use of greywater to meet or offset on-site non-potable water demand.

GOAL RC-3 HABITAT CONSERVATION. Wildlife habitats that support various plants, mammals, and other wildlife species.

RC-3.1 **Sensitive Habitat.** Encourage the preservation of the integrity of sensitive land resources that have significant native vegetation and/or habitat value such as riparian habitat areas, creek corridors, Riversidean Alluvial Fan Sage Scrub (RAFSS), wetlands, and sensitive wildlife habitat that supports biological resources.

RC-3.2 **Biological Preserves.** Allow and encourage the expansion of sensitive biological preserve areas (e.g., North Etiwanda Preserve, Day Creek Preserve, and San Sevaine Preserve) and other important habitat areas with an emphasis on wildlife connectivity between habitats and connectivity to the national forest.

RC-3.3 **Wildlife Corridors.** Encourage the creation, maintenance, and protection of open space areas that provide strategic wildlife corridors and vital connectivity between habitat areas.

RC-3.4 **Landscape Design.** Encourage new development to incorporate native vegetation materials into landscape plans and prohibit the use of species known to be invasive according to the California Invasive Plant Inventory.

RC-3.5 **Buffers from New Development.** Require new developments adjacent to identified plant and wildlife habitat areas to establish and maintain a protective buffer.

RC-3.6 **Grading and Vegetation Removal.** Limit grading and vegetation removal of new development activities to the minimum extent necessary for construction and to reduce erosion and sedimentation.

RC-3.7 **Urban Forestry Plan.** Minimize damage associated with wind- and fire-related hazards and risks and address climate change and urban heat island effects through the development of an urban forestry plan that addresses and proper and appropriate landscaping, plant and tree selection and replacement, planting and vegetation management techniques.

GOAL RC-4 CULTURAL RESOURCES. A community rich with historic and cultural resources.

RC-4.1 **Disturbance of Human Remains.** In areas where there is a high chance that human remains may be present, the City will require proposed projects to conduct a survey to establish occurrence of human remains, and measures to prevent impacts to human remains if found.

RC-4.2 **Discovery of Human Remains.** Require that any human remains discovered during implementation of public and private projects within the city be treated with respect and dignity and fully comply with the California Native American Graves Protection and Repatriation Act and other appropriate laws.

RC-4.3 **Protected Sites.** Require sites with significant cultural resources to be protected.

RC-4.4 **Preservation of Historic Resources.** Encourage the preservation of historic resources, buildings, and landscapes.

RC-4.5 **Historic Buildings.** Encourage the feasible rehabilitation and adaptive reuse of older buildings.

RC-4.6 **Paleontological Resources.** Require any paleontological artifacts found within the city or the Sphere of Influence to be preserved, reported, and offered for curation at local museums or research facilities.

GOAL RC-5 LOCAL AIR QUALITY. Healthy air quality for all residents.

RC-5.1 **Pollutant Sources.** Minimize increases of new air pollutant emissions in the city and encourage the use of advance control technologies and clean manufacturing techniques.

RC-5.2 **Air Quality Land Use Compatibility.** Avoid siting of homes, schools, hospitals, and childcare facilities and land uses within 500 feet of land uses that are considered large emitters.

RC-5.3 **Barriers and Buffers.** Require design features such as site and building orientation, trees or other landscaped barriers, artificial barriers, ventilation and filtration, construction, and operational practices to reduce air quality impacts during

construction and operation of large stationary and mobile sources.

RC-5.4 **Health Risk Assessment.** Consider the health impacts of development of sensitive receptors within 500 feet of a freeway, rail line, arterial, collector or transit corridor sources using health risk assessments to understand potential impacts.

RC-5.5 **Impacts to Air Quality.** Ensure new development does not disproportionately burden residents, due to age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, with health effects from air pollution. Prioritize resource allocation, investments, and decision making that improves air quality for residents disproportionately burdened by air pollution because of historical land use planning decisions and overarching institutional and structural inequities.

RC-5.6 **Community Benefit Plan.** Require that any land use generating or accommodating more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week, provide a community benefit plan demonstrating an offset to community impacts of the truck traffic.

RC-5.7 **New Sensitive Receptors Near Existing Industrial Uses.** Avoid placing homes, schools, hospitals, and childcare facilities within 1,000 feet of a land use that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week.

RC-5.8 **New Localized Air Pollution Sources Near Existing Sensitive Receptors.** Avoid placing land uses that accommodate more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week within 1,000 feet of homes, schools, hospitals, and childcare facilities.

RC-5.9 **Truck Hook-Ups at New Industrial or Commercial Developments.** Require new industrial or commercial developments at which heavy-duty diesel trucks idle on-site to install electric truck hook-ups in docks, bays, and parking areas.

RC-5.10 **Clean and Green Industry.** Prioritize non-polluting industries and companies using zero or low air pollution technologies.

RC-5.11 **Dust and Odor.** Require new construction to include measures to minimize dust and odor during construction and operation.

GOAL RC-6 CLIMATE CHANGE. A resilient community that reduces its contributions to a changing climate and is prepared for the health and safety risks of climate change.

RC-6.1 **Climate Action Plan.** Maintain and implement a Climate Action Plan (CAP) that provides best management practices for reducing greenhouse gas emissions.

RC-6.2 **Renewable Energy.** Encourage renewable energy installations and facilitate green technology and business.

RC-6.3 **Reduce Energy Consumption.** Encourage a reduction in community-wide energy consumption.

RC-6.4 **Urban Forest.** Protect the city's healthy trees and plant new ones to provide shade, carbon sequestration, and purify the air.

RC-6.5 **GHG Reduction Goal.** Reduce emissions to 80 percent below 1990 levels by 2050 and achieve carbon neutrality by 2045.

RC-6.6 **Co-Benefits.** Prioritize the development and implementation of GHG reduction measures that also achieve economic, health, social, environmental, and other co-benefits for the City and its residents and businesses.

RC-6.7 **Structural Equity.** Encourage GHG reduction and climate adaptation measures such as trail completion, equipment upgrade, sidewalk connectivity, tree planting, and buffers be included in the City's Capital Improvement Program (CIP) to improve areas of the city where these features are lacking.

RC-6.8 **Reduce Vehicle Trips.** Require Transportation Demand Management (TDM) strategies, such as employer provided transit pass/parking credit, bicycle parking, bike lockers, high-speed communications infrastructure for telecommuting, and carpooling incentives, for large office, commercial, and industrial uses.

RC-6.9 **Access.** Require pedestrian, vehicle, and transit connectivity of streets, trails, and sidewalks, as well as between complementary adjacent land uses.

RC-6.10 **Green Building.** Encourage the construction of buildings that are certified Leadership in Energy and Environmental Design (LEED) or equivalent, emphasizing technologies that reduce GHG emissions.

RC-6.11 **Climate-Appropriate Building Types.** Encourage alternative building types that are more sensitive to and designed for passive heating and cooling within the arid environment found in Rancho Cucamonga.

RC-6.12 **Reduced Water Supplies.** When reviewing development proposals, consider the possibility of constrained future water supplies and require enhanced water conservation measures.

RC-6.13 **Designing for Warming Temperatures.** When reviewing development proposals, encourage applicants and designers to consider warming temperatures in the design of cooling systems.

RC-6.14 **Designing for Changing Precipitation Patterns.** When reviewing development proposals, encourage applicants to consider stormwater control strategies and systems for sensitivity to changes in precipitation regimes and consider adjusting those strategies to accommodate future precipitation regimes.

RC-6.15 **Heat Island Reductions.** Require heat island reduction strategies in new developments such as light-colored paving, permeable paving, right-sized parking requirements, vegetative cover and planting, substantial tree canopy coverage, and south and west side tree planting.

RC-6.16 **Public Realm Shading.** Strive to improve shading in public spaces, such as bus stops, sidewalks and public parks and plazas, through the use of trees, shelters, awnings, gazebos, fabric shading and other creative cooling strategies.

RC-6.17 **Offsite GHG Mitigation.** Allow the use of creative mitigation efforts such as offsite mitigation and in lieu fee programs as mechanisms for reducing project-specific GHG emissions.

RC-6.18 **Water Sources with Low GHG Emissions.** Encourage local and regional water utilities to obtain water from sources with low or no GHG emissions.

GOAL RC-7 ENERGY. An energy efficient community that relies primarily on renewable and non-polluting energy sources.

RC-7.1 **Electric Vehicle (EV) Charging on City Property.** As funding is available, encourage the installation of publicly available electric vehicle charging stations at City-owned buildings, facilities, property, and in the public right-of-way.

RC-7.2 **New EV Charging.** Require new multifamily residential, commercial, office, and industrial development to include charging stations, or include the wiring for them.

RC-7.3 **EV Charging Retrofits.** Encourage existing development to retrofit to include charging stations.

RC-7.4 **New Off-Road Equipment.** When feasible, require that off-road equipment such as forklifts and yard tugs necessary for the operations of all new commercial and industrial developments be electric or fueled using clean fuel sources.

RC-7.5 **Municipal Vehicle Fleet.** Reduce fossil fuel consumption of the City's vehicle fleet by increasing the number of electric or zero emissions vehicles.

RC-7.6 **Efficiency Retrofits.** Encourage existing private property owners to implement energy efficiency retrofits during substantial improvement as defined by the California Building Code.

RC-7.7 **Sustainable Design.** Encourage sustainable building and site design that meets the standards of Leadership in Energy and Environmental Design (LEED), Sustainable Sites, Living Building Challenge, or similar certification.

RC-7.8 **Farmers Market, Fork to Table.** Support microscale agriculture and farmers markets, and similar methods of encouraging locally grown and consumed produce.

RC-7.9 **Passive Solar Design.** Require new buildings to incorporate energy efficient building and site design strategies for the arid environment that include appropriate solar orientation, thermal mass, use of natural daylight and ventilation, and shading.

RC-7.10 **Alternative Energy.** Continue to promote the incorporation of alternative energy generation (e.g., solar, wind, biomass) in public and private development.

RC-7.11 **Community Development Subdivisions.** When reviewing applications for new subdivisions, require residences be oriented along an east-west access, minimizing western sun exposure, to maximize energy efficiency.

RC-7.12 **Solar Access.** Prohibit new development and renovations that impair adjacent buildings' solar access, unless it can be demonstrated that the shading benefits substantially offset the impacts of solar energy generation potential.

RC-7.13 **Energy-Efficient Infrastructure.** Whenever possible, use energy-efficient models and technology when replacing or providing new city infrastructure such as streetlights, traffic signals, water conveyance pumps, or other public infrastructure.

RC-7.14 **Energy Storage Facilities.** The City of Rancho Cucamonga supports the development of energy storage facilities on property owned or controlled by Southern California Edison and will cooperate with Southern California Edison on the development of such facilities in a manner that balances the interests of the community with the need for clean, reliable energy.

RC-7.15 **Utility Preservation.** Public and private development within the City, including multi-purpose trails, shall not interfere with safe and reliable transmission, storage, and generation of electricity. With the exception of utility infrastructure and other public improvements that do not interfere with such infrastructure, permanent structures are not allowed within utility corridors.

Electric Vehicle Charging Station

Solar panels in Central Park

Opening Day at Los Amigos Park

Pacific Electric Inland Empire Trail

Wind energy

Drought tolerant landscape

Safety

"Public safety needs to keep up with population growth; people want to move to a safe community."

– Community Member
(Public input received during Forum On Our Future, July 2020)

SAFETY IS...

recognizing that natural and human-caused hazards have the potential to harm people and things, the economic impact to people is another form of harm. It is prudent to plan for emergencies and uncertainty that can threaten the safety and security of residents and businesses. Three earthquake faults either bisect the City or pass-through areas nearby, and the city is adjacent to the Angeles and San Bernardino National Forests which increases the potential wildfire. Combined with these threats are the Santa Ana wind conditions that can cause damage even without wildfire. Making matters worse is climate change that could increase the intensity of these threats by resulting in drier and hotter weather. Wetter and more intense winter storms could inundate parts of the city that have never experienced flooding or result in slope instability causing landslides or mudslides.

This Chapter identifies hazards that would affect the city and supports plans to deal with the hazard. While it is not possible to prevent these hazards, the fact that this City has plans, and will allocate the resources to deal with the hazard, will provide comfort to the people affected by them.

STATE LEGAL REQUIREMENTS

State law requires that the General Plan include an element that identifies hazards such as flooding, wildfire, and ground disturbance (Government Code Section 65302 (g)). This Chapter meets the legal requirements for a Safety Element and includes policies intended to reduce injury to people and damage to the city. Relevant issues addressed in this Chapter include seismic and geologic hazards (seismically induced surface rupture, ground shaking, ground failure, slope instability leading to mudslides and landslides, and liquefaction), flooding (includes dam failure), wildland and urban fires, evacuation routes, climate adaptation, and human-caused hazards. Other issues required under this government code section do not apply to the city and are not addressed. The Chapter is also in alignment with other chapters, as required by State law, including: (1) Housing, (2) Land Use, (3) Mobility, and (4) Open Space and Conservation. Rancho Cucamonga has also developed and adopted a Local Hazard Mitigation Plan (LHMP), an Emergency Operations Plan (EOP), a Community Wildfire Protection Plan (CWPP), and an Evacuation Assessment, all of which allow the City to become eligible for federal grant funding to mitigate many of these natural hazards.

The Local Hazard Mitigation Plan (LHMP) serves to reduce injury, loss of life, property damage, and loss of services from natural disasters. This LHMP provides a comprehensive analysis of the natural and human-caused hazards that threaten the city, with a focus on mitigation, allowing the City to remain eligible to receive additional federal and state funding to assist with emergency response and recovery, as permitted by the federal Disaster Mitigation Act of 2000 and California Government Code Sections 8685.9 and 65302.6; and it complements the efforts undertaken by the Safety Element.

The LHMP complies with all requirements set forth under the federal Disaster Mitigation Act of 2000 and received approval from the Federal Emergency Management Agency (FEMA) in 2021. Sections of this Chapter are supplemented by the LHMP, incorporated by reference in this Chapter, as allowed by California Government Code Section 65302(g).

HEART OF THE MATTER

The people of this City will continue to be vulnerable to hazards. Based on current mapping and understanding, areas of greatest concern include portions of the city north of State Route 210 and properties adjacent to flood management infrastructure. Evacuation of these areas would be improved through better roadway connectivity as addressed in the Mobility and Access Chapter. Policies in this General Plan address new development near hazard areas. It is also important that existing and new infrastructure be ready for hazards and be designed for climate change resilience.

Key concerns include the following:

- Areas along the northern portion of the city are located within Special Study Zones due to active or potentially active earthquake faults. A better understanding of the location of these faults and historic seismic activity will allow the City to mitigate potential seismic hazards.
- Developed and undeveloped properties within the northern portion of the city are vulnerable to wildfire risks due to their proximity to forested lands and land adapted to periodic wildfire events. New and existing development should effectively manage vegetative fuel loads and maintain adequate fuel modification zones to reduce wildfire potential and spread.
- Areas of the city north of State Route 210 should be evaluated and analyzed for evacuation purposes to ensure that the circulation network is adequately designed and maintained for daily and emergency purposes.
- Investments in community amenities and infrastructure should anticipate changes in future conditions resulting from extreme weather events and climatic conditions that diminish these assets' effectiveness.
- Future developments and community investments should prioritize locations in reduced hazard areas, which will ensure safer future operations and risk reduction.

To better address the potential harm that could result in injury, loss of life, property damage, and monetary loss, Rancho Cucamonga has developed a comprehensive suite of plans and analyses that address these concerns. Each plan plays a critical role in protecting residents and businesses and ensuring continuity of operations and governance. For greater detail and understanding of the issues affecting Rancho Cucamonga along with plans to address those concerns, refer to the following documents:

- Natural Hazards Existing Conditions Report (2020)
- Rancho Cucamonga Local Hazard Mitigation Plan Update (2021)
- PlanRC Evacuation Assessment (2021)
- Rancho Cucamonga Emergency Operations Plan (2021)
- Rancho Cucamonga Community Wildfire Protection Plan (2021)

OVERVIEW OF THIS CHAPTER

Safety is a fundamental human need, and this Chapter ensures that people who live in the city, as well as those who will live here in the future, are protected. Constant training for disaster and vigilance for changing threats continues in the city, as will review of new development and the potential for threats.

The following safety goals serve to guide and direct long-term planning in the City of Rancho Cucamonga:

- **Goal S-1 Leadership.** A city that is recognized for its leadership role in resilience and preparedness.
- **Goal S-2 Seismic and Geologic Hazards.** A built environment that minimizes risks from seismic and geologic hazards.
- **Goal S-3 Wildfire Hazards.** A community where wildfire impacts are minimized or reduced through investments in planning and resilience.
- **Goal S-4 Flood Hazards.** A community where developed areas are not impacted by flooding and inundation hazards.
- **Goal S-5 Emerging Hazards.** A built environment that incorporates new data and understanding about changing hazard conditions and climate stressors.
- **Goal S-6 Human Caused Hazards.** A community with minimal risk from airport hazards and hazardous materials.

Goal S-1 affirms the leadership role of the City in the region for hazards planning. Goals S-2 through S-6 ensures that new development is aware of existing hazards and plans for changes anticipated over time. The overarching goal is to maximize training and preparation for unforeseen events and ensure that new development does not put people in harm's way.

The PlanRC Evacuation Assessment identifies the routes predominantly used by the City during emergency incidents that require evacuation. As part of this assessment, the City has identified the scenarios that are most likely to involve evacuation efforts and areas of the city that have limited evacuation routes and/or constraints in conformance with the requirements of Government Code Section 65302 (g) 5 [SB 99] and 65302.15 (AB 747).

Seismically damaged road

SEISMIC HAZARDS

Rancho Cucamonga is susceptible to earthquakes and other seismically induced effects. Seismic hazards can be categorized as primary or secondary, as indicated below. Primary seismic hazards refer to seismic shaking and fault rupture. Secondary seismic hazards refer to liquefaction and earthquake-induced landslides.

SEISMIC SHAKING (PRIMARY)

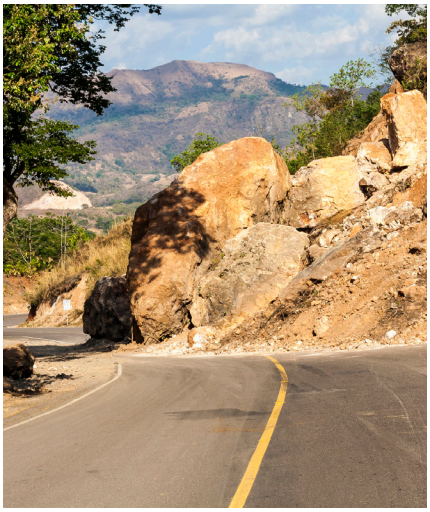
Seismic shaking is the movement of the Earth's surface during an earthquake, which is generally the primary cause of earthquake damage. Generally, the greater the earthquake magnitude and proximity to the epicenter, the greater the potential for damage and/or loss. The intensity of seismic shaking directly relates to the amount of energy released by the seismic event, which is dictated by the depth of the fault movement and the length of the fault that has moved. Shaking intensity is typically dictated by the proximity to the location of the seismic event. The closer to the epicenter (point of origin for an earthquake), the greater the shaking felt. Seismic shaking is of particular concern to Rancho Cucamonga due to the proximity to active faults like the Cucamonga Fault, Red Hill-Etiwanda Avenue fault (both located within the city), the San Andreas Fault (15.5 miles northeast of the city), and the San Jacinto Fault (14 miles northeast of the city). Both the San Andreas and San Jacinto faults can generate earthquakes with magnitudes greater than 7.0 on the Richter scale.

FAULT RUPTURE (PRIMARY)

Earth is covered in tectonic plates in constant movement, shifting and moving closer together, or further apart, or even past one another. This movement past one another commonly causes friction, resulting in plates that "stick." An earthquake is the release of built-up pressure from sticking plates, releasing the build-up of energy. These rapid movements can potentially cause earthquake fault rupture. Fault rupture is hazardous if structures are built on top of faults or if infrastructure crosses faults. If fault rupture occurs, structures within the area of movement could be damaged. Areas of known fault rupture hazard in California are identified in Alquist-Priolo Special Study Zones. For Rancho Cucamonga, two faults are identified within these zones (Cucamonga Fault and Etiwanda Fault Scarp), as depicted in Figure S-1, Rancho Cucamonga Special Study Fault Zones. The City has designated a fault hazard zone for the Red Hill Fault, which requires the same level of analysis required by the California Geological Survey in compliance with the Alquist Priolo Earthquake Zoning Act.

LIQUEFACTION (SECONDARY)

Liquefaction is a phenomenon that occurs when seismic shaking causes saturated soils to lose strength and behave like a liquid. This behavior poses significant difficulties for any building or structure in areas where liquefaction can occur. Additionally, underground structures, pipelines, or storage facilities are also vulnerable to liquefaction. Within the city, small areas near Hellman Avenue and Base Line Road, and west of Vineyard Avenue and south of Base Line Road (Figure S-2) are identified as having liquefaction potential requiring additional analysis and potential mitigation



Landslide

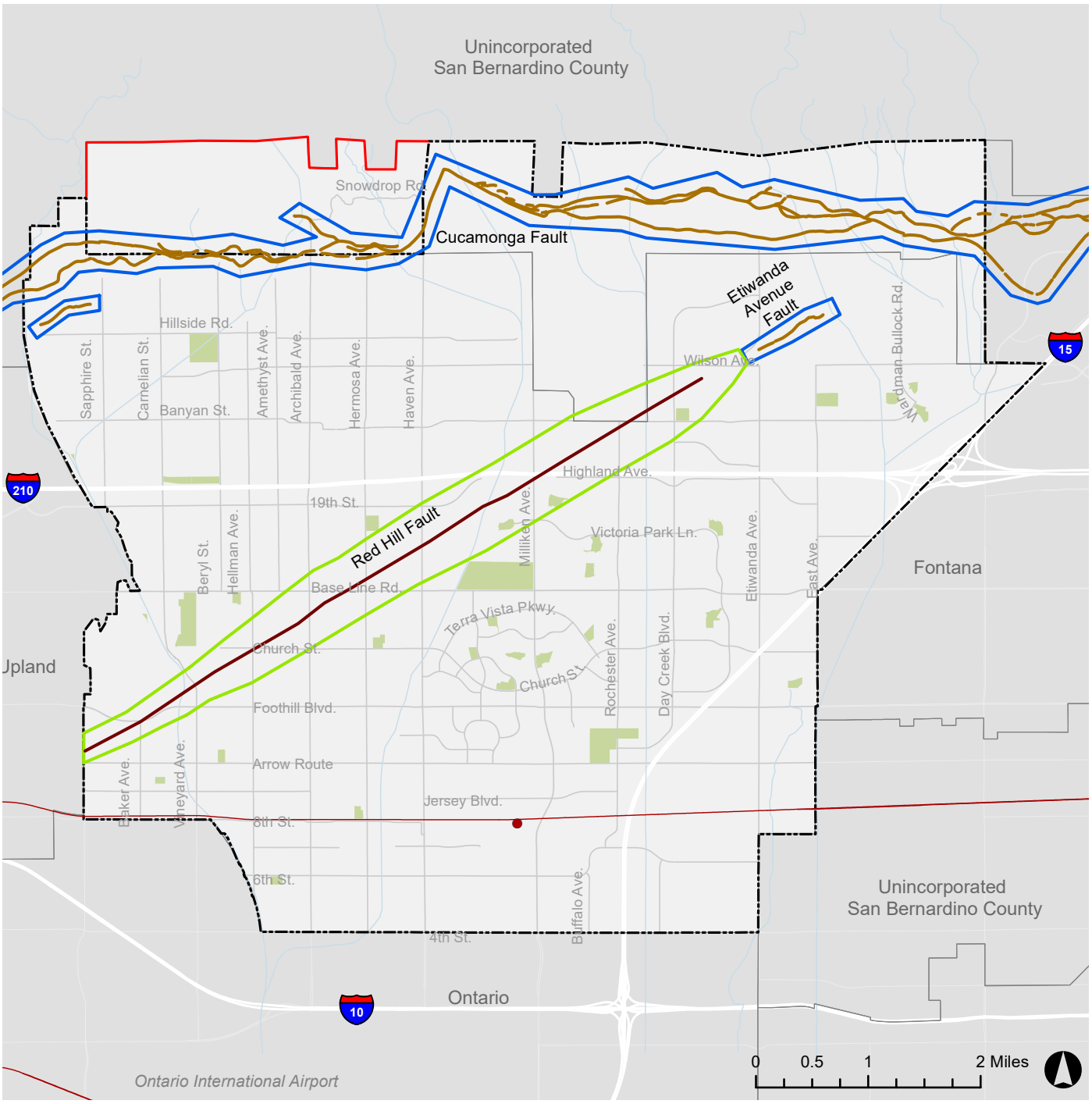
EARTHQUAKE-INDUCED LANDSLIDE (SECONDARY)

Earthquake-induced landslide areas are defined as steep topography areas and weak geologic formations that become unstable during an intense seismic event. These areas are predominantly located in the undeveloped northern portions of the city, as shown in Figure S-2, Potential Liquefaction and Earthquake-Induced Landslides. Additional analysis and potential mitigation may be required for lands within these areas. For additional details on slope stability issues and concerns, please refer to the Rancho Cucamonga Local Hazard Mitigation Plan Update.

WILDFIRE

The most common type of natural hazards in California are wildfires, which can burn large areas of undeveloped or natural land quickly. They often begin as smaller fires caused by lightning strikes, downed power lines, or unattended campfires. Small fires quickly become large fires when low humidity, high temperatures, and strong winds combine to create critical weather conditions. Santa Ana winds can carry burning embers over a mile, starting new fires well ahead of the main body of a wildfire. Periods of prolonged drought increase wildfire events at times when water for firefighting is scarcer. Typically, wildfires pose minimal threat to people and buildings in urban areas but increasing human encroachment into natural areas increases the likelihood of injury to people and animals, along with damage to structures and the environment. This encroachment occurs in areas identified as the wildland-urban interface which are locations where development meets undeveloped land with vegetation susceptible to wildland fires. These are the areas classified by Cal FIRE as high and very high fire hazard severity zones. While Rancho Cucamonga is primarily an urban environment, its geographical location and proximity to the chaparral ecosystem that dominates the foothills of the Angeles and San Bernardino National Forests increases the likelihood of wildfires in and near Rancho Cucamonga. All these factors increase the opportunity for wildfires to ignite, grow, and spread into the city.

FIGURE S-1 RANCHO CUCAMONGA SPECIAL STUDY FAULT ZONES

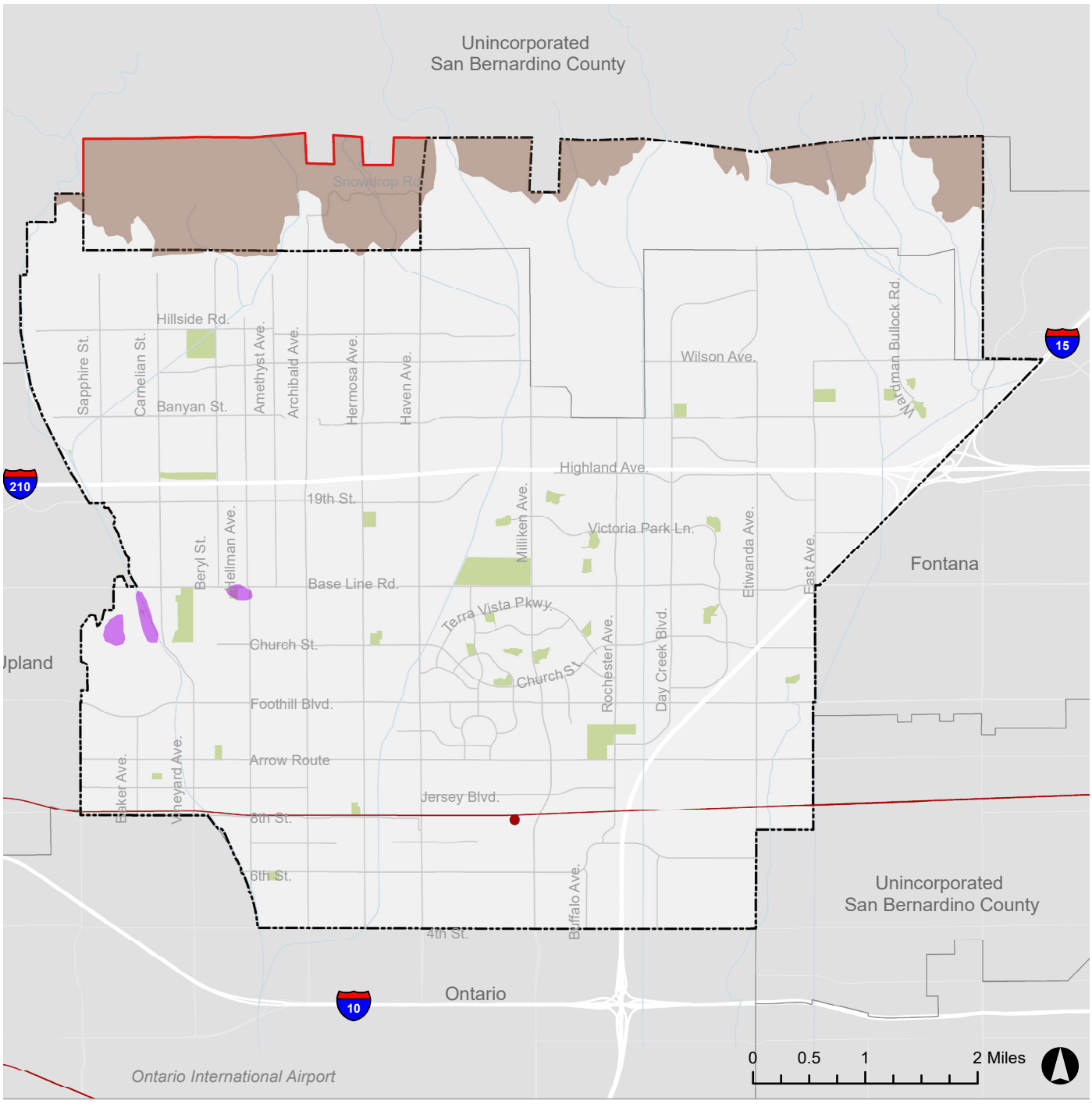


Fault Hazard Zones
- Alquist-Priolo Faults
- Alquist-Priolo Special Study Zone
- Red Hill Fault
- Red Hill Fault Special Study Zone

- City Boundary
- Sphere of Influence
- Adjacent City Limits
- Rancho Cucamonga Station
- Metrolink
- Parks
- Waterways

Atlas Planning Solutions, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; California Geological Survey, 2021

FIGURE S-2 POTENTIAL LIQUEFACTION AND EARTHQUAKE-INDUCED LANDSLIDES



Secondary Seismic Hazards
- Liquefaction Hazard Zone
- Earthquake-Induced Landslide Hazard Zone

- City Boundary
- Sphere of Influence
- Adjacent City Limits
- Rancho Cucamonga Station
- Metrolink
- Parks
- Waterways

Atlas Planning Solutions, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; California Geological Survey, 2021

Wildfire spreading along roadside

A key component of effective fire response and suppression is the ability to meet peak-load water supply requirements. The City and Fire Protection District require all developments to install adequate water conveyance facilities to meet these requirements. To ensure adequate water supplies are available, all development applications are required to verify with the appropriate water supplier (Cucamonga Valley Water District or Fontana Water Company) that adequate water supplies are available to serve the proposed development. If this requirement is not met, the proposed development cannot begin construction.

Figure S-3, Historic Wildfire Perimeters, displays the perimeters for key historic wildfires that have occurred within the city from 1970 through 2014. In 2003 the Grand Prix Fire and the Old Fire burned large portions of the Angeles and San Bernardino National Forests. The Old Fire burned over 91,000 acres destroying over 1,200 structures. The Grand Prix Fire burned over 69,000 acres and destroyed nearly 200 residences. This fire impacted the City, burning a large portion of the Wildland Urban Interface Areas (WUIFAs) areas adjoining the national forest and destroying 15 homes in the process.

Figure S-4, Wildland Urban Interface Fire Area (WUIFA), depicts the Rancho Cucamonga WUIFA along with the essential facilities located throughout the city. The WUIFA includes Cal FIRE Very High Fire Hazard Severity Zones within the City's Sphere of Influence (State Responsibility Area), the City's Local Responsibility Area, and other areas potentially threatened by wildfires based on historical fire activity and prevalent vegetation types. Properties located within these areas must adhere to State and Rancho Cucamonga Fire Protection District wildfire requirements.

Efforts to manage flooding

FLOOD HAZARDS

Floods occur when there is too much water on the ground to be held within local water bodies, causing water to accumulate in naturally dry areas. They are often caused by heavy rainfall, though floods can also occur after a long period of moderate rainfall or if unusually warm weather causes mountain snow to melt faster than expected. Worsening drought conditions caused by climate change may exacerbate the effects of flooding, as surfaces that normally absorb water can quickly dry out and become less permeable.

Rancho Cucamonga has a long history of flooding and is especially vulnerable during the winter storm season. Figure S-5, FEMA Flood Hazard Zones, identifies the significant flood areas of concern, which include both 100-year and 500-year FEMA floodplains. These floodplain designations depict areas of potential flooding based on the probability of occurring in a given year. The 100-year floodplain identifies areas that have a 1% probability (1 in 100) of flooding. The 500-year floodplain identifies areas that have a 0.2% probability (1 in 500) of flooding. Most of the 100-

year floodplains within the city are located within undeveloped areas or flood control basins and channels that convey waters through the city. While these flood control facilities are intended to retain and manage floodwaters, there is the potential for inundation of portions of the city if failure occurs. Figure S-6, Dam Inundation Zones, identifies the areas where inundation could occur if a flood control facility were to fail, causing downstream impacts.

Both the FEMA flood zones and dam inundation zones depicted in this Chapter are the known locations of potential flooding currently available to the City. If new data and information becomes available, the City will take it into consideration, where necessary.

"Specific care must be taken in order to adapt Rancho to the specific climate issues it will face in the future including drought, air pollution, excessive heat, and traffic."

– Community Member
(Public input received from the PlanRC Survey #2, Summer 2020)

CLIMATE ADAPTATION

Climate change is anticipated to result in increased average temperatures and precipitation pattern variability globally. These changes translate into specific impacts to the city that may include increased frequency and intensity of wildfires, severe weather events, flooding, landslides, and reduced water availability associated with droughts. Other impacts anticipated from climate change include food insecurity, increases in vector-borne diseases, degradation of air quality, reduced ability to enjoy outdoors, and potential economic impacts due to uncertainty and changing conditions. For additional discussion on climate change impacts refer to the Rancho Cucamonga Local Hazard Mitigation Plan Update (hyperlink added upon adoption).

While many residents within the city could adapt to these types of changes, vulnerable populations—including low-income communities, communities of color, senior citizens, linguistically isolated populations, individuals with disabilities or preexisting medical conditions, and individuals experiencing homelessness—are anticipated to be disproportionately affected by these effects.

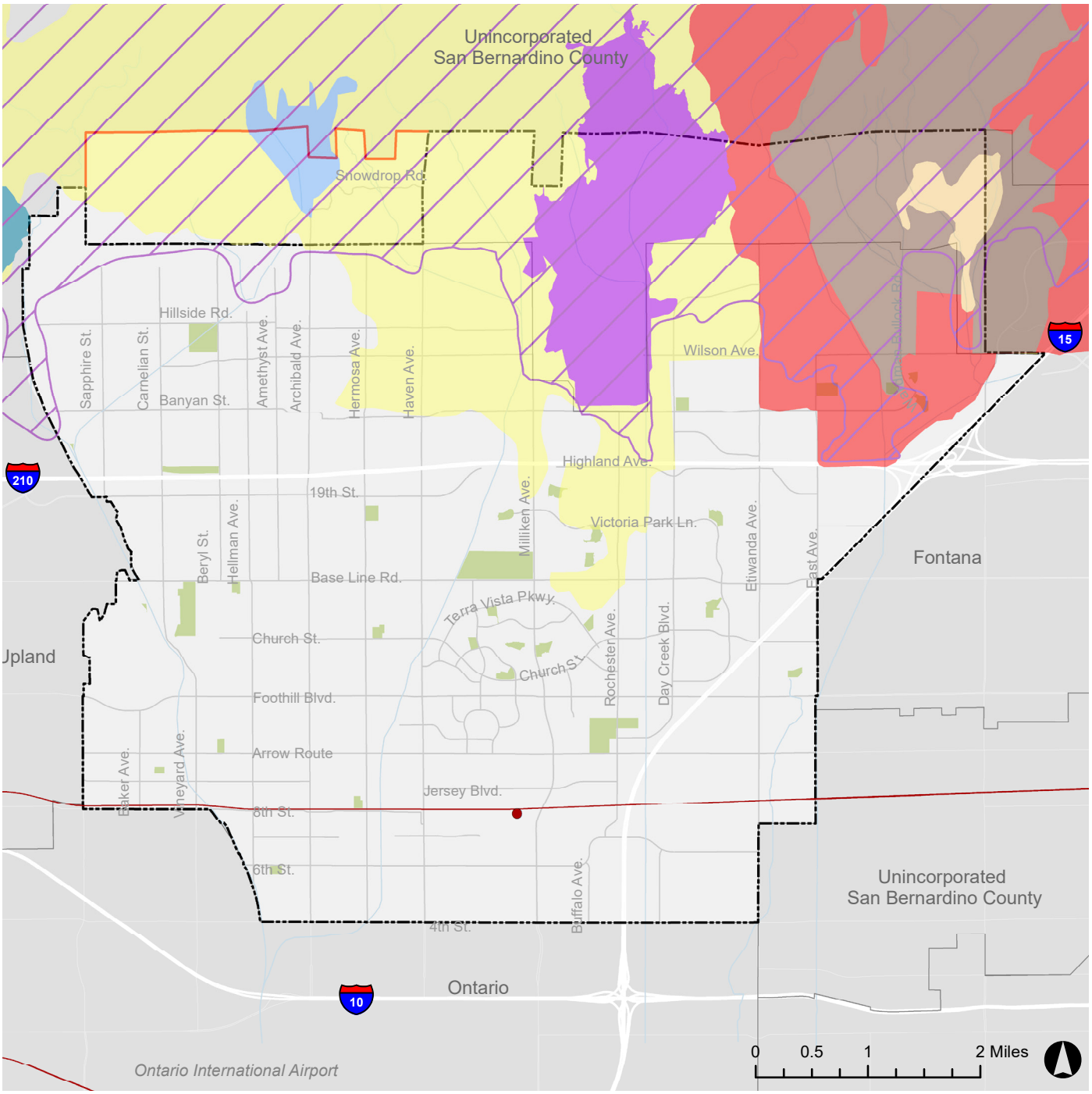
SEVERE WEATHER HAZARDS

Severe weather hazards in Rancho Cucamonga include drought, extreme heat, and severe wind. These hazards have affected plants and animals and damaged properties and vehicles. Future effects are anticipated due to climate change, which can contribute to the frequency and intensity of severe weather events. Please refer to the Greenhouse Gas Emissions and Climate Change Vulnerability Assessment Existing Conditions Report for additional detail.

Drought

A drought is a long period with substantially less precipitation than usual. The primary direct impact of a drought is the reduction of available water

FIGURE S-3 HISTORIC WILDFIRE PERIMETERS



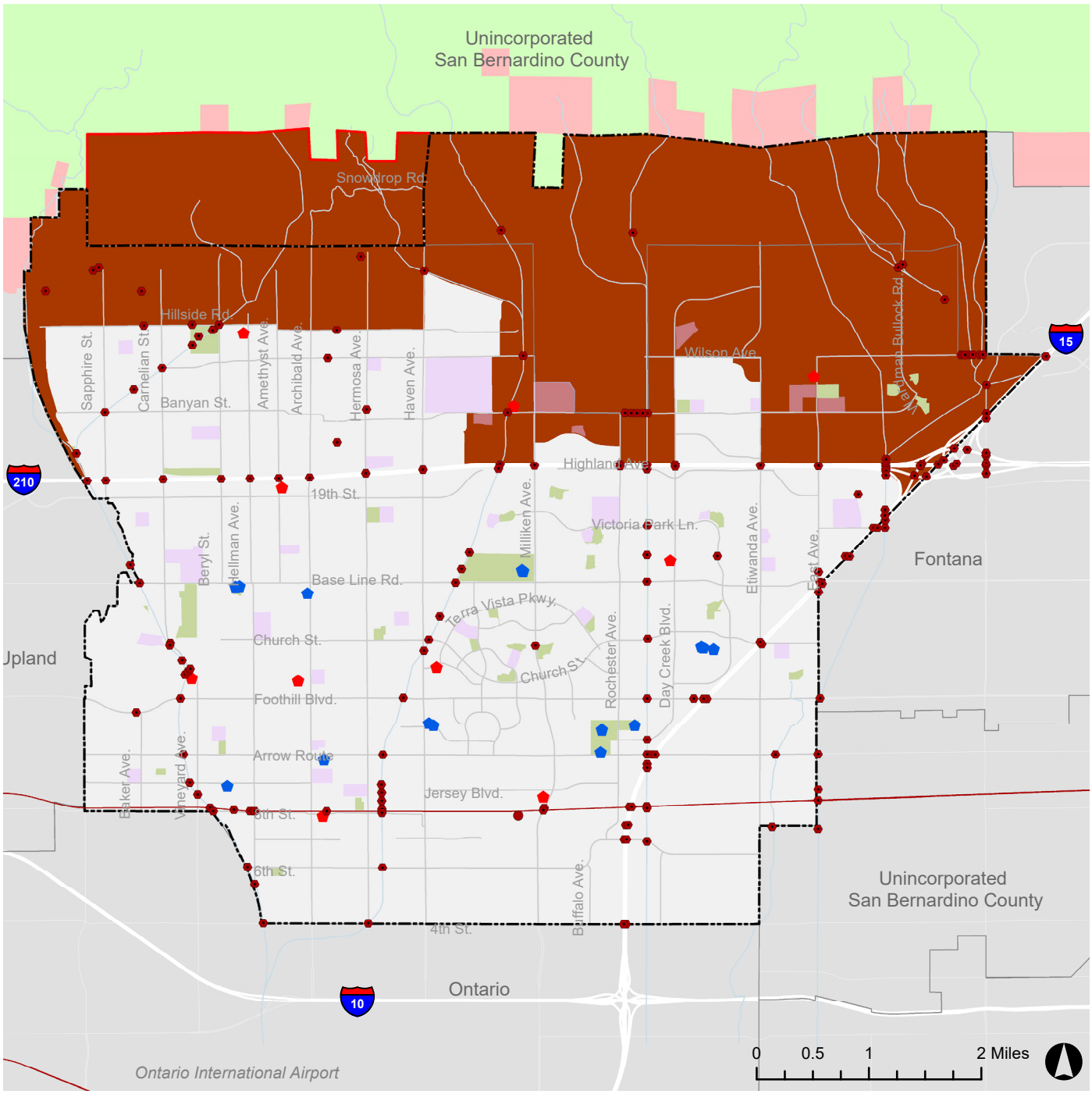
Historic Wildfire Perimeters

- 1970 Meyers Fire
- 1980 Summit Fire
- 1985 Archibald Fire
- 1988 Texas Fire
- 2003 Grand Prix Fire
- 2008 Foxborough Fire
- 2008 San Antonio Fire
- 2014 Etiwanda Fire

- City Boundary
- Sphere of Influence
- Adjacent City Limits
- Rancho Cucamonga Station
- Railway
- Parks
- Waterways

Atlas Planning Solutions, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; California Board of Forestry and Fire Protection, 2021

FIGURE S-4 WILDLAND URBAN INTERFACE FIRE AREA (WUIFA)



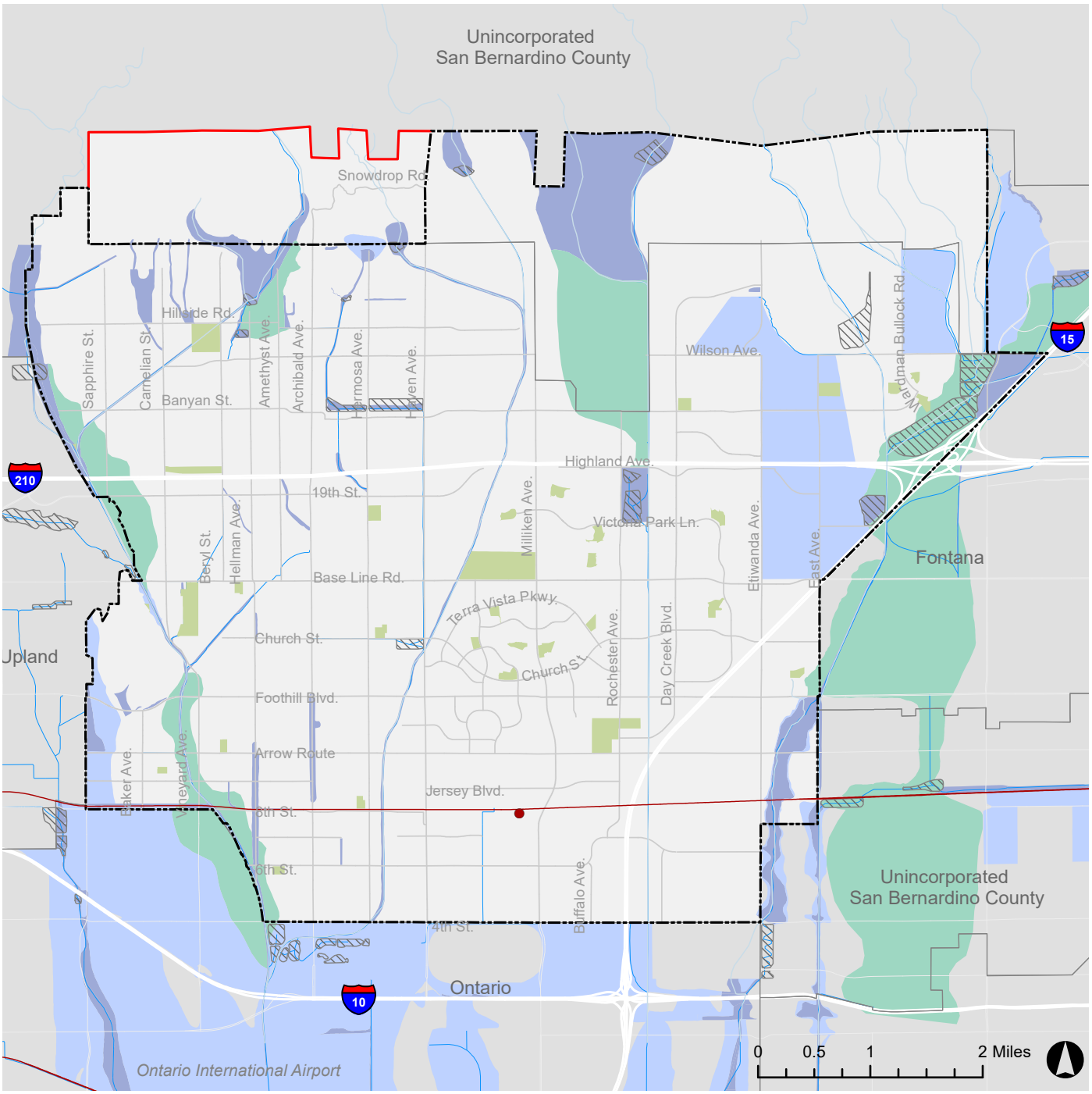
Fire Hazard Severity Zones
- National Forest (Federal Responsibility Area)
- Cal Fire State Responsibility Areas
- Wildland Urban Interface Fire Area

Essential Facilities
- Bridges
- Fire Stations
- City Facilities
- Schools

- City Boundary
- Sphere of Influence
- Adjacent City Limits
- Rancho Cucamonga Station
- Railway
- Parks
- Waterways

Atlas Planning Solutions, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; California Board of Forestry and Fire Protection, 2021

FIGURE S-5 FEMA FLOOD HAZARD ZONES

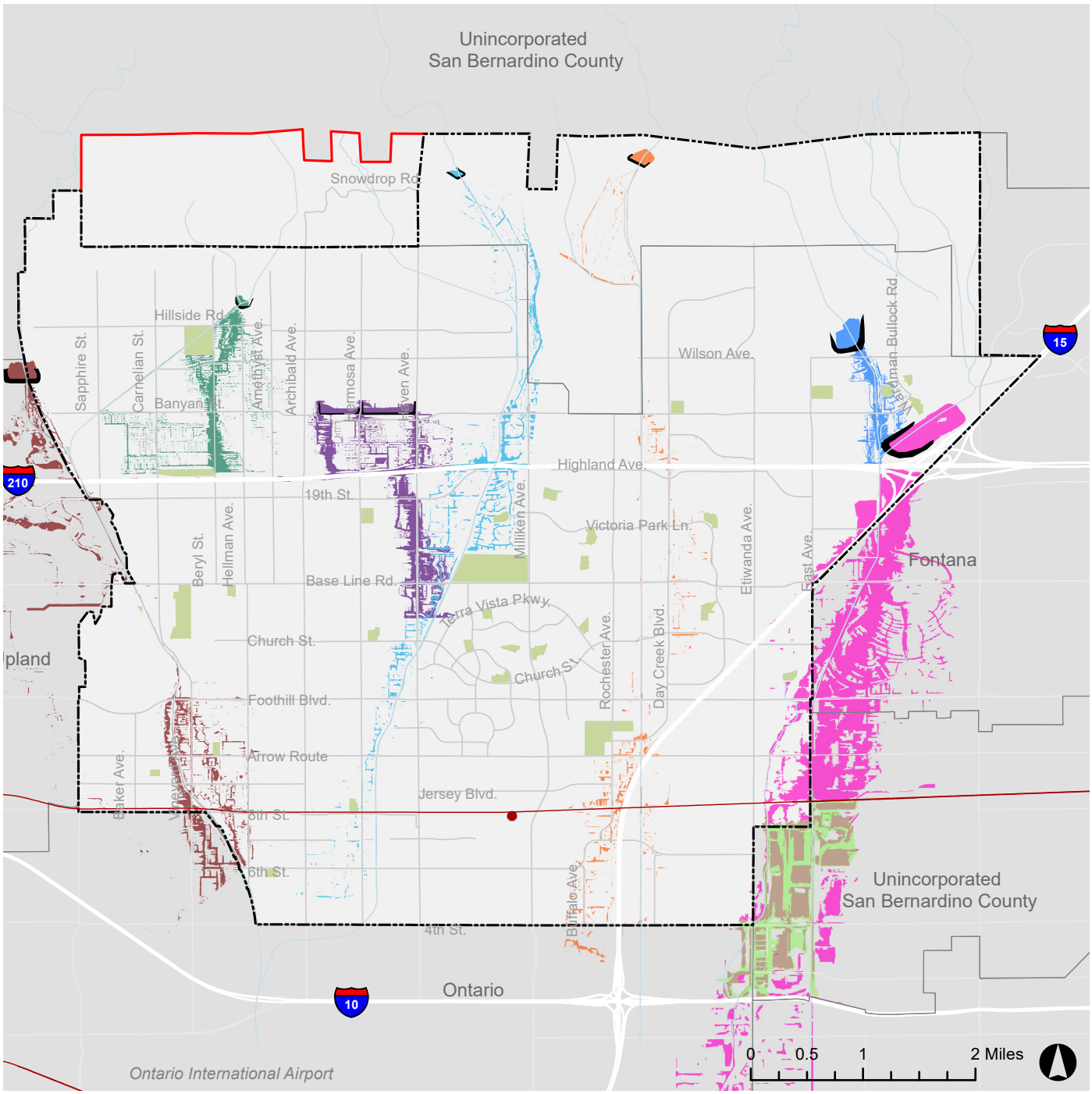


Flood Hazard Zones
- Flood Control Channels
- Flood Control Basins & Dams
- 100 Year Flood Zone
- 500 Year Flood Zone
- 500 Year Flood Zone (Protected by Levee)

- City Boundary
- Sphere of Influence
- Adjacent City Limits
- Rancho Cucamonga Station
- Metrolink
- Parks
- Waterways

Atlas Planning Solutions, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; Federal Emergency Management Agency, 2019

FIGURE S-6 DAM INUNDATION ZONES



Dam Inundation Zones
- Hickory Basin
- San Sevaine #5
- Etiwanda Basin
- Demens Creek
- Day Creek
- Deer Canyon
- Alta Loma Basins #1 & #2
- Cucamonga Creek

- City Boundary
- Sphere of Influence
- Adjacent City Limits
- Rancho Cucamonga Station
- Metrolink
- Parks
- Waterways

Atlas Planning Solutions, 2020 | Sources: City of Rancho Cucamonga, 2020; SCAG, 2020; County of San Bernardino, 2020; California Department of Water Resources, 2020

Fallen tree from severe winds

supplies. Water reduction is particularly concerning in agricultural areas and natural environments, but it can also affect landscaping in urban areas or affect human health in extreme cases. Droughts are generally regional events; however, some communities experience "long-distance drought" if the water source areas—potentially hundreds of miles away—are experiencing drought. Rancho Cucamonga currently receives nearly half of its water supply from imported sources that have historically been impacted by drought conditions.

Extreme Heat

Extreme heat is a period when temperatures are abnormally high relative to the normal temperature range. Extreme heat events include:

- **Extreme Heat Days:** a day during which the maximum temperature surpasses 98 percent of all historic high temperatures for the area,
- **Warm Nights:** a day between April and October when the minimum temperature exceeds 98 percent of all historic minimum daytime temperatures,
- **Extreme Heat Waves:** a successive series of extreme heat days and warm nights where extreme temperatures do not abate; typically, four successive extreme heat days and warm nights

According to Cal-Adapt, an extreme heat day for Rancho Cucamonga is when the temperature exceeds 103.9° F, and a warm night exceeds 68.7°F. Between 2006 and 2019, the city experienced an average of eight extreme heat days annually, which are projected to increase between 21 and 35 days by the end of the century.

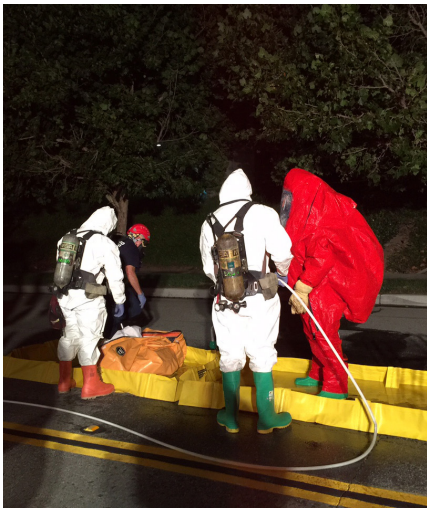
Severe Wind

Wind is simply the movement of air caused by differences in atmospheric pressure and temperature. High-pressure air will naturally move to areas of low pressure. During certain times of the year, these conditions can cause high-speed winds (Santa Ana Winds), which are fast and forceful enough to be dangerous to people, damaging to structures (public facilities, infrastructure, homes, and utilities), and could result in uprooted or damaged trees. Severe wind events can also cause the initiation of Public Safety Power Shutoff (PSPS) events by utility providers (Southern California Edison) that distribute electricity to the city. These events de-energize power grids in high fire risk areas during wind events to reduce the potential of wildfire ignition and spread. A significant Santa Ana wind event that impacted Rancho Cucamonga in 2020 had wind gusts of more than 70 miles per hour. When strong winds combine with warm temperatures and very low humidity, the potential for extreme fire conditions increases. Usually during these conditions, the National Weather Service issues, a red flag warning. The 2014 Etiwanda Fire occurred under these types of conditions, with wind gusts that reached 80 miles per hour.

HUMAN CAUSED HAZARDS

Rancho Cucamonga is located along major ground and air transportation corridors. As a result, a variety of human-caused hazards associated with air and ground transportation could impact the community. Proximity to airports requires consideration for land uses and development patterns to ensure airport operations will not conflict with surrounding uses. Since the city is located approximately 3.2 miles north of the Ontario International Airport and 4.5 miles east of Cable Municipal Airport in the City of Upland, portions of Rancho Cucamonga may be affected by these facilities. The southwestern portion of the city is located within the Ontario International Airport Influence Area, which will require compliance with applicable regulations of the Federal Aviation Administration (FAA) and consideration of the Airport Land Use Compatibility Plan.

The release of hazardous materials is another type of human-caused hazard that could impact residents and businesses. Numerous types of hazardous materials and chemicals are transported and used throughout homes and businesses within the city. A majority of the transportation routes used to transport these materials include major roadways, freeways, and rail lines. Interstate 15 (I-15) and State Route 210 (SR-210) are located within Rancho Cucamonga and Interstate 10 (I-10) is less than a mile south of the city limit.



Hazardous materials clean up

GOALS AND POLICIES

GOAL S-1 Leadership. A city that is recognized for its leadership role in resilience and preparedness.

S-1.1 **City Staff Readiness.** Ensure City staff and departments demonstrate a readiness to respond to emergency incidents and events.

S-1.2 **Culture of Preparedness.** Promote a culture of preparedness for businesses and residents that empowers them to increase their resilience to hazard related events and a changing climate.

S-1.3 **Evacuation Capacity.** Require new developments, redevelopments, and major remodels to enhance the City's evacuation network and facilities and comply with the City's Evacuation Assessment.

S-1.4 **WUIFA Access Points.** Require all new developments and redevelopments within the WUIFA to provide a minimum of two points of access by means of public roads that can be used for emergency vehicle response and evacuation purposes.

S-1.5 **Enhanced Circulation.** In areas of the city with limited access routes and circulation challenges, require additional roads

Emergency response to wildfire activity

and improvements to ensure adequate emergency vehicle response and evacuation.

S-1.6 **Evacuation Road Widths.** Require any roads used for evacuation purposes to provide at least 26 feet of unobstructed pavement width.

S-1.7 **Maintenance of Plans.** Maintain and regularly update the City's Local Hazard Mitigation Plan (LHMP) as an integrated component of the General Plan, in coordination with the Community Wildfire Protection Plan (CWPP), the Emergency Operations Plan (EOP), the Evacuation Plan, and Standardized Emergency Management System (SEMS) compliant disaster plans to maintain eligibility for grant funding.

S-1.8 **Regional Coordination.** Ensure regional coordination continues with neighboring jurisdictions, County, State, and Federal agencies on emergency management and risk reduction planning and activities.

S-1.9 **Mutual Aid.** Ensure mutual aid agreements with Federal, State, local agencies, and the private sector establish responsibility boundaries, joint response services, and multi-alarm and station coverage capabilities.

GOAL S-2 Seismic and Geologic Hazards. A built environment that minimizes risks from seismic and geologic hazards.

S-2.1 **Fault Setbacks.** Require minimum setbacks for structures proposed for human occupancy within State and City Special Study Zones. Setbacks will be based on minimum standards established under State law and recommendations of a Certified Engineering Geologist and/or Geo-technical Engineer.

S-2.2 **Building Functionality.** Require enhanced siting, design, and construction standards that focus on building functionality for new critical public facilities and key essential (private) facilities after a seismic event.

S-2.3 **Seismically Vulnerable Buildings.** Prioritize the retrofit by private property owners of seismically vulnerable buildings (including but not limited to unreinforced masonry, soft-story construction, and non-ductile concrete) as better information and understanding becomes available.

S-2.4 **Transfer of Development Rights.** Allow the transfer of development rights from areas of significant seismic and geologic hazards to select development areas throughout the City and Sphere of Influence.

S-2.5 **Hillside Hazards.** Prioritize regulations and strategies that reduce geologic hazard risk to properties and loss of life.

GOAL S-3 Wildfire Hazards. A community where wildfire impacts are minimized or reduced through investments in planning and resilience.

S-3.1 **Fire Risk Reduction.** Apply all state and local codes and regulations (fire safe design, adherence to Standard 49-1) to new development, redevelopment, and major remodels in the WUIFA.

S-3.2 **Fire Protection Plans.** All new development, redevelopment, and major remodels in the WUIFA will require the preparation of Fire Protection Plans (FPPs) to reduce fire threat, in accordance with Fire District policies and procedures.

S-3.3 **Vegetation Management.** Owners of properties and public/private roads within and adjacent to the WUIFA are required to conduct brush clearance and fuel modification to reduce fire ignition potential and spread.

S-3.4 **Buffer Zones.** Require development projects to incorporate buffer zones as deemed necessary by the City's Fire Marshal for fire safety and fuel modification.

S-3.5 **Water Supply.** All developments will meet fire flow requirements identified in the Fire Code.

S-3.6 **Coordination with Agencies.** Coordinate with State, regional, and local agencies and service providers on fire risk reduction planning and activities.

S-3.7 **Wildfire Awareness.** Assist residents and property owners with being better informed on fire hazards and risk reduction activities in the WUIFA.

S-3.8 **New Essential Facilities (WUIFA).** Prohibit the siting of new essential public facilities (including, but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities) within the WUIFA, unless appropriate construction methods or strategies are incorporated to minimize impacts.

A fire protection plan (FPP) approved by the fire code official, is required for all new development within the WUIFA. FPPs are required to include mitigation strategies that take into consideration location, topography, geology, flammable vegetation, sensitive habitats/species, and climate of the proposed site. FPPs must address water supply, access, building ignition and fire resistance, fire protection systems and equipment, defensible space, vegetation management, clearance around buildings and structures, and long-term maintenance. All required FPPs must be consistent with the requirements of the California Building and Residential Codes, The California Fire Code as adopted by the Fire District, and the City of Rancho Cucamonga Municipal Code.

GOAL S-4 Flood Hazards. A community where developed areas are not impacted by flooding and inundation hazards.

S-4.1 **New Essential Facilities (Flood).** Prohibit the siting and construction of new essential public facilities within flood hazard zones, when feasible. If an essential facility must be located within a flood hazard zone, incorporate flood mitigation to the greatest extent practicable.

S-4.2 **Flood Risk in New Development.** Require all new development to minimize flood risk with siting and design measures, such as grading that prevents adverse drainage

Bioswales help reduce stormwater runoff

impacts to adjacent properties, on-site retention of runoff, and minimization of structures located in floodplains.

S-4.3 **500-Year Floodplain.** Promote the compliance of 100-year floodplain requirements on properties located within the 500-year floodplain designation.

S-4.4 **Flood Infrastructure.** Require new development to implement and enhance the Storm Drain Master Plan by constructing stormwater management infrastructure downstream of the proposed site.

S-4.5 **Property Enhancements.** Require development within properties located adjacent, or near flood zones and areas of frequent flooding to reduce or minimize run-off and increase retention on-site.

S-4.6 **Regional Coordination.** Promote regional flood management and mitigation projects with other agencies (San Bernardino County Flood Control, Army Corps of Engineers, and adjacent jurisdictions) to address flood hazards holistically.

S-4.7 **Dam Operators.** Coordinate with agencies operating or managing dam facilities that can inundate the city, on operations, maintenance, and training activities and provide the latest Emergency Action Plans annually.

GOAL S-5 Emerging Hazards. A built environment that incorporates new data and understanding about changing hazard conditions and climate stressors.

S-5.1 **Future Conditions.** Ensure future climatic conditions and public health emergencies are considered as part of community resilience and investment efforts.

S-5.2 **Urban Forestry Plan.** Minimize damage associated with wind-related hazards and address climate change and urban heat island effects through the development of an urban forestry plan and proper landscaping planting and management techniques.

S-5.3 **Soil Transport.** Require that properties with high wind-blown soil erosion potential such as agricultural operations and construction sites prevent soil transport and dust generation wherever possible.

S-5.4 **Extreme Heat Vulnerabilities.** Require that new developments, major remodels, and redevelopments address urban heat island issues and reduce urban heat island effects for the proposed project site and adjacent properties.

S-5.5 **Resilience Resources.** Require new developments and redevelopments to incorporate resilience amenities such as,

but not limited to community cooling centers, emergency supplies, and backup power that can be used by residents and businesses within a 1/4-mile radius of the location.

S-5.6 **Underground Utilities.** Promote the under-grounding of utilities for new development, major remodels, and redevelopment.

S-5.7 **Future Adaptation.** Future climate adaptation-oriented projects will incorporate natural infrastructure to the greatest extent practicable.

S-5.8 **Climate Resiliency.** Address climate resiliency and inequities through the planning and development process.

S-5.9 **Address High Winds.** Require buildings and developments exposed to high wind conditions to incorporate design elements and features that minimize or reduce damage to people, structures, and the community.

Work to underground utility poles and wires

GOAL S-6 Human Caused Hazards. A community with minimal risk from airport hazards and hazardous materials.

S-6.1 **Planned Development.** Promote development patterns that integrate Crime Prevention Through Environmental Design (CPTED) principles that reduce the potential for human-caused hazards.

S-6.2 **Neighboring Properties.** Encourage properties that store, generate, or dispose of hazardous materials to locate such operations as far away as possible from areas of neighboring properties where people congregate.

S-6.3 **Site Remediation.** Encourage and facilitate the adequate and timely cleanup of existing and future contaminated sites and the compatibility of future land uses.

S-6.4 **Airport Planning.** Protect Rancho Cucamonga interests regarding land use and safety by participating in the airport land use planning process for Ontario International Airport.

S-6.5 **Height Restrictions.** Require proposed developments within the Ontario Airport Influence Area meet the height requirements associated with FAR Part 77 standards.

S-6.6 **Development Near Airport.** New development within the Ontario Airport Influence Area shall be consistent with the approved Airspace Protection Zones identified in the latest version of the Airport Land Use Compatibility Plan.

S-6.7 **Railroad Safety.** Minimize potential safety issues and land use conflicts when considering development adjacent to the railroad right-of-way.

Noise

NOISE IS...

energy overflow from the activities of people in a vibrant city. Certainly, noise can be unwelcome at times, but a world-class city never sleeps, and people make noise going about their daily routine. At the technical level, noise is simply unwanted sound. The sound of a concert for example, may be welcomed by the attendees, but perhaps not so much for those who cannot attend. Similarly, essential activities like street sweeping, must occur when few people are about, meaning that the noise may offend those who are trying to sleep. Urban places are noisy because they are full of life. The purpose of this Chapter is to ensure that noise is managed effectively and that there are still quiet places to sleep, relax, and recharge.

STATE LEGAL REQUIREMENTS

California law requires that a General Plan include an element that addresses noise. This Chapter was prepared to meet the requirements of Government Code Section 65302(f)) and addresses both noise and vibration. As required, this Chapter identifies noise in the community from a variety of sources and supports a pattern of land uses designed to minimize exposure of residents to excessive noise. This Chapter includes possible solutions to address existing and foreseeable noise problems and establishes areas where more noise may be acceptable.

HEART OF THE MATTER

People are noisy. We move about, use equipment, build things, talk, sing, shout, and laugh. People play music, cheer for sports, have dogs, and generally make themselves known. These are sounds of life and are welcome in most instances. Anyone with children, or experience near a school during recess, understands. To most, these are good sounds and would not be considered noise in the right context.

Where noise becomes an issue is when it regularly disturbs sleep, discourages the enjoyment of the outdoors, and affects the daily routine of people. When this occurs, it is essential to lower the level of noise. Ideally, this is done with project design that keeps people away from noisy areas. However, sometimes it is both prudent, and desirable, to live near noise. For example, living near transit gives people the opportunity to ride rather than drive to their destination, yet trains are noisy. Another example would be living in an area with lively restaurants and outdoor music. Wonderful, yet at times also noisy. In these instances, the level of noise can be lowered by building and site design so that people can both sleep and play.

The most difficult noise to reduce is from transportation. Cars, trucks, and trains all generate noise that affect those who live close by and can often be heard by people who live far from the source. Walls and other physical distancing are effective; however, they are often impractical as they must be solid to be effective. Accompanying transportation noise is vibration that shows up as annoying window rattling, and unwelcome motion by people. Vibration can be unsettling to people, and in extreme instances cause physical damage to buildings.

As the city develops, the combination of demolition and new construction will add to the background noise and vibration of the city. While normal, this can be unsettling to those who already live here. While some of the noise can be managed by limiting when and where construction can occur, building things makes noise, and not all of it can be contained. In these instances, talking with the neighborhood, and limiting the timing of some construction activities may be the only way of getting things built.

Finally, it is important to differentiate between the 'good noises' associated with a vibrant city full of life, and 'bad noises' that occur infrequently as a part of that life. Noise levels in the City of Rancho Cucamonga will increase as more people move in and live their lives. There will be more children laughing, more music playing, and more people singing along. There will also be more garbage trucks, street sweeping, trains, leaf blowers, and car alarms. Regulations can only go so far in reducing noise levels, the rest is understanding that life in a city is noisy, and provided we still have quiet spaces to sleep and relax, we should embrace the good noise.

Outdoor Festival at Victoria Gardens Cultural Center

OVERVIEW OF THIS CHAPTER

While more noise may be inevitable in a growing city, there are things that can be done with design to provide quite places for people to relax. Design is also important in providing places for people to make noise, and as noise-friendly places are often near people, their need for peace and quiet need to be addressed.

The following noise goal serves to guide and direct long-term planning in the City of Rancho Cucamonga:

+ **Goal N-1 Noise.** A city with appropriate noise and vibration levels that support a range of places from quiet neighborhoods to active, exciting districts.

As the city grows and more people live closer together, the excitement and energy that this brings needs to be balanced with the very real need for quiet space. The approach to noise in this Chapter is to differentiate between the good noise and the annoying noise. Letting people know that an area will have good noise gives them a choice to live nearby and limiting the annoying noise will help with their quality of life.

NOISE SOLUTIONS

The problem with noise is that most of the solutions to reducing it exclude people. Noise is a line-of-sight energy meaning that if you can see the noise source, you can likely hear it. Noise dissipates over distance, but in a city, increasing distances between noise sources and people is not practical. The 'standard' solution has been to add noise walls between the noise source and the people. Regardless of how attractive or not they may be, the issue with noise walls is that they also prevent access and obstruct views into and out of neighborhoods. From a design perspective this is less than ideal, and from a circulation perspective walls inhibit connecting trails sidewalks and people to the parts of the city they need to reach.

This General Plan acknowledges that some areas of the city are going to be noisier than others because of the types of activities that happen there. It is unreasonable to expect that a walk along a busy roadway would be quiet, but entirely reasonable to expect quiet walk through a neighborhood. These are different locations, with different levels of activity and therefore require different noise regulations. Accepting a higher exterior noise level in the corridors and centers of the city would eliminate the need for noise walls along busy roads. Ensuring that noise generating land uses are not allowed in neighborhoods, would ensure that noise walls were unnecessary.

Not all outdoor space is used in the same fashion, therefore it is acceptable to allow secondary outdoor space like parking lots, front lawns, and other features that face a busy road to have higher acceptable noise levels than

primary open space like back yards, or recreation areas. People tend to spend very little time in the secondary open space areas so a higher noise level there should be acceptable.

Technically

Sound intensity is measured and expressed by decibels (dB), with an adjustment referred to as the A-weighted measure (dBA) to correct for the relative frequency response of the human ear. Decibels are measured on a logarithmic scale, representing points on a sharply rising curve. For example, a noise level of 10 decibels is 10 times more intense than one decibel, 20 decibels represent a noise 100 times more intense, and 30 decibels reflects a noise condition 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than a zero-decibel level. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10-decibel increase in sound level is perceived by the human ear as only doubling of the loudness of the sound. Usually, changes in noise that are less than 3 dBA are not noticed by people. Ambient sounds in the urban environment generally range from 30 dBA (very quiet) to 100 dBA (very loud), as indicated in Figure N-1, Typical Sound Levels. Context is everything with noise, and people are more sensitive to noise during the evening, so noise regulations adjust limits to account for this.

NOISE STANDARDS

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, California Building Code. These noise standards are applied to new construction for the purpose of providing suitable interior noise environments. Noise studies must be prepared when a project seeks to place people near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. A project must demonstrate that structures have been designed to limit interior noise in habitable rooms to meet the Noise Compatibility Standards set forth in Table N-1, Noise Compatibility Standards for People.

Table N-1 provides the City with a tool to gauge the compatibility of land uses relative to existing and future noise levels. The noise standards can be modified for areas that already have higher noise, and for activities like festivals, markets, and outdoor performances. Generally, there is more flexibility for outdoor noise than indoor, and design features such as berms, walls, windows, and setbacks will all be factored into the project.

***Ambient Noise** = The existing level of noise at a given location. Often averaged over a period of time.*

***CNEL** = Community Noise Equivalent Level, a weighted average of noise level over time.*

TABLE N-1 NOISE COMPATIBILITY STANDARDS FOR PEOPLE

Type of Development	Exterior Noise Standard (CNEL)	Interior Noise Standard (CNEL)
Low Density Residential (single-family, duplex, mobile-home)	60[b]	45
Medium or High Density Residential (Multifamily, Apartments)	65[c]	45[d]
Lodging (Motels/Hotels)	65	45[d]
Mixed Use/Infill Development	70	45[d]
Schools, Libraries, Community Centers, Religious Institutions, Hospitals, Nursing Homes	70	45
Auditoriums, Concert Halls, Amphitheaters	70	N/A
Playgrounds, Neighborhood Parks	70	N/A
Outdoor Recreation (Commercial and Public)	75	N/A
Commercial (Office/Retail)	70	60
Industrial, Manufacturing, and Utilities	75	70

NOISE CONTOURS

Figure N-2, Noise Contours, shows the projected noise contours for the transportation noise sources in the city. These contours are calculated using predicted traffic data for the city roadways and do not factor in topography, other buildings, or noise attenuation. As such, the contours may not predict noise, but are used as a general guide to ensure that noise is considered with new projects.

FIGURE N-1 TYPICAL ENVIRONMENTAL NOISE LEVELS (dBA)

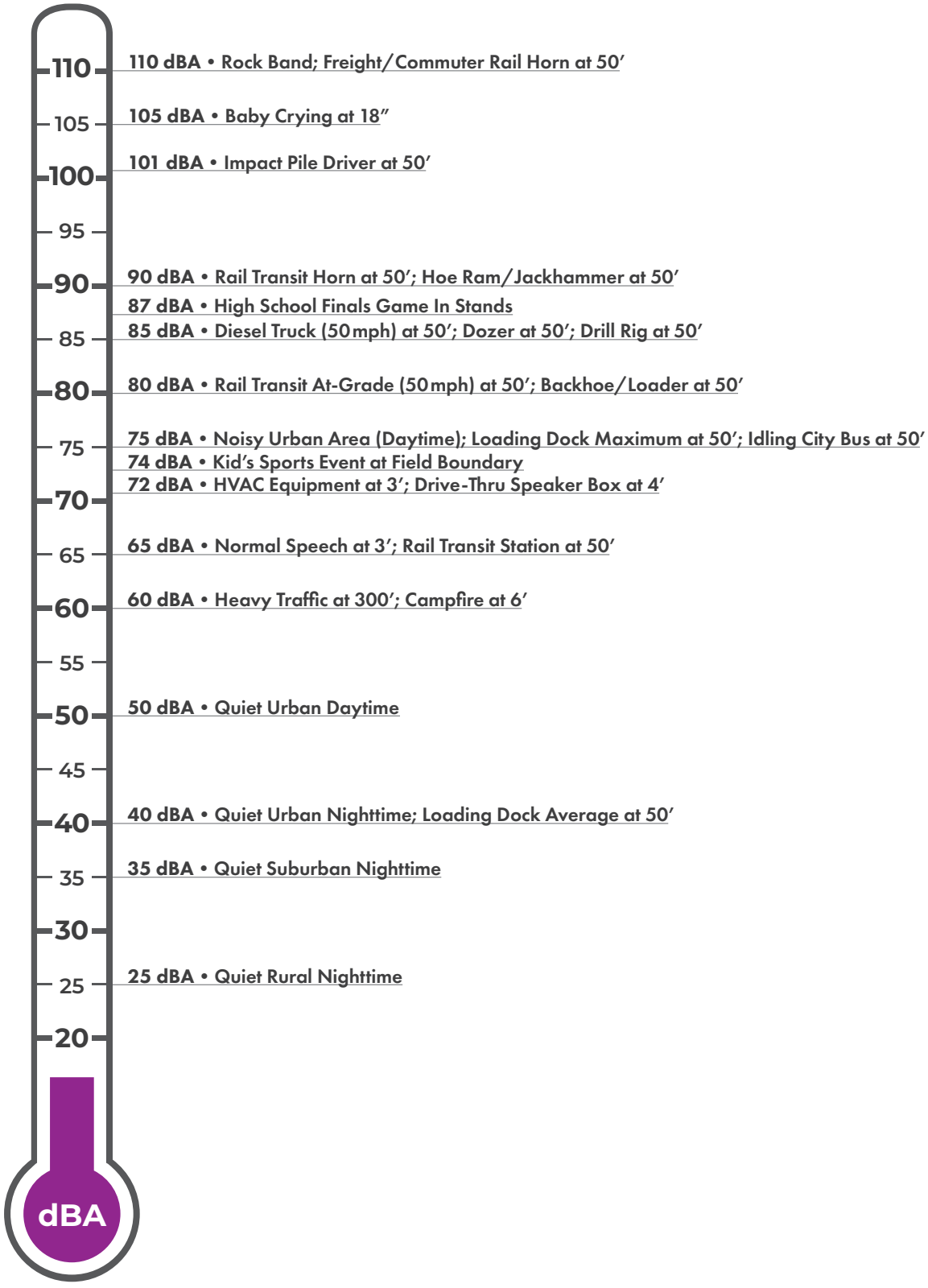
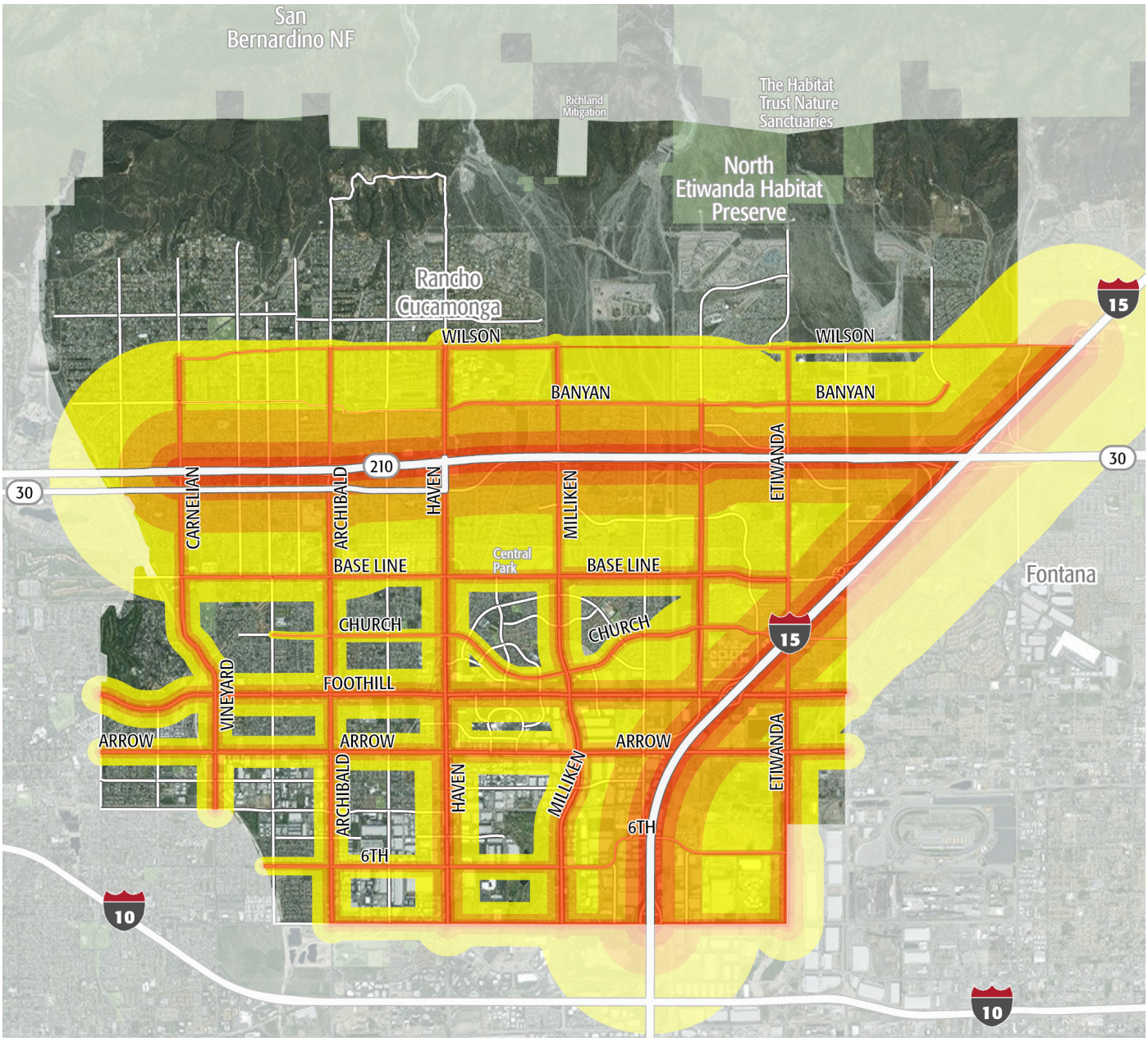


FIGURE N-2 NOISE CONTOURS



Noise Contours
- 75 dBA CNEL
- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL
- 55 dBA CNEL

- City Boundary
- Sphere of Influence
- Roads
- Railroads

Sources: City of Rancho Cucamonga, 2020; Esri, 2021; Ascent, 2021

AIRCRAFT NOISE LEVELS

The closest airport to Rancho Cucamonga is the Ontario International Airport (ONT), located approximately one mile south of the city's southern border. According to the latest noise contour (4th Quarter 2009 by Los Angeles World Airports), Rancho Cucamonga's southern planning boundary is approximately 1 mile north of the Ontario International Airport's 65 dBA CNEL noise contour. Therefore, while aircraft overflight will be heard, the noise generated does not result in the need to adjust land uses or activities in the city.

Aircraft overflight from Ontario International Airport

TRAFFIC NOISE LEVELS

Several major roadways run through the city that contribute a notable amount of noise to the ambient environment. These roadways include the Interstate 15 and State Route 210 freeways, as well as Foothill Boulevard and Base Line Road, which are major local roadways. Additionally, the Interstate 10 freeway lies approximately 0.7 miles south of the city and vehicles traveling along this route may also noticeably contribute to the City's ambient noise during quieter periods, such as evenings.

More traffic on a roadway does not necessarily equate to more noise. Traffic noise is usually related to tire friction on the roadway which is higher when the speeds increase. While motors and vehicle exhaust systems also contribute noise, studies show that above 25 miles per hour both electric vehicles and internal combustion vehicles generate similar road noise. As a result, traffic calming on streets that slows traffic has the side benefit of reducing noise from vehicle tires. There may still be noise from loud exhaust, stereos, and driving style, but the slower the vehicle, the quieter the tire noise.

RAILROAD NOISE AND VIBRATION LEVELS

Passenger trains and BNSF freight trains run along a corridor (eastbound and westbound) located just north of East 8th Street. During normal service conditions a total of 38 trains pass through the City of Rancho Cucamonga each weekday, with an additional late-night train on Fridays. Noise levels along these railways are dependent on several factors, including the location of railroad crossings, where noise levels are greater due to train signal horns. Where horn use is more frequent, levels are as high as 81.7 dBA at 50 feet from the center of the tracks. CNEL noise levels along other portions of the track, segments at least 1,000 feet from any crossings, are as low as 64.5 dBA at 50 feet from the tracks.

High-speed rail

Housing is encouraged near transit hubs to reduce vehicle miles traveled and activate the office, commercial and public space around the hubs. This will result in more people who will be affected by the noise of the train horn as it signals the trains approach to the crossing. The Federal Railroad Administration allows the City to request establishment of a full or partial quiet zone. A partial quiet zone would likely apply to the City's nighttime hours of 10:00 PM to 7:00 AM. While a quiet zone will not eliminate the train noise, and not all crossings may qualify, a full or partial quiet zone would benefit the surrounding development.

As the proposed high-speed rail from Rancho Cucamonga to Las Vegas will run within the existing right of way in the city, it is not expected to generate noise beyond that of the existing rail operations. Within town, the number of crossings will keep speeds, and therefore noise levels, about the same as existing trains. The higher speeds possible for the rail line, and the higher noise levels, will occur outside of the city. It is possible that the addition of the high-speed rail that more trains will run which could increase noise levels in the city.

STATIONARY SOURCES OF NOISE

Industrial operations comprise the primary stationary noise sources that contribute to local community noise levels. These stationary sources (e.g., loading areas, large mechanical equipment, fabrication) are often located in commercially and industrially zoned areas and may be isolated from people, but not always. Other noise sources that affect people, include commercial land uses or those often associated with and/or secondary to residential development including, but not limited to, nightclubs, outdoor dining areas, gas stations, car washes, drive-thrus, fire stations, air conditioning units, swimming pool pumps, school playgrounds, athletic and music events, and public parks.

Certain land uses generate noise as a normal part of business. Whether by the business or industrial process, shipping by truck or rain, or simply having several people working in the same area. Over time it will be important for the City to protect the existing noise generating uses from projects that will add people nearby. As the stationary noise source will have been built first, it will be the responsibility of a new project where people will live and work, to demonstrate that the existing noise will not affect them. This is important because encroachment of people into existing noise environments often shortens the longevity of the noise generating land use. This is often seen when houses encroach into airport noise contours and the resulting noise complaints curtailing airport operations.

For future noise generating uses, a project that cannot contain its noise within the property boundaries will need to include physical and operational features designed to address their noise. Ideally, measures designed to address the noise would be integrated into the overall project design and not added as an afterthought.

CONSTRUCTION NOISE

As the city develops, infill and rebuilding of sites will occur more frequently. The construction process can be noisy and affect people who live and work nearby. Construction is part of any city and while it can be considered temporary, construction can also last for several years if the project is large. Regardless of duration, construction noise impacts are real and will need to be considered along with the project. Simple things like setting reasonable construction times, ensuring that mufflers and noise suppression features of equipment are working, can help limit the noise intrusion into the neighborhood. The most important aspect will be to work with the affected neighborhood to explain the project and listen to their ideas about how best to address noise.

VIBRATION

Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., construction). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

***Vibration** is the periodic oscillation of a medium or object with respect to a given reference point.*

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate enough ground vibrations to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants.

Indoor sources of vibration can come from heating, ventilation, and air conditioning (HVAC) equipment, and manufacturing processes. Even the fan on a personal computer can cause a small vibration. Most of the interior sources can be screened, or isolated to avoid affecting people who live and work near the source.

Usually vibration is an annoyance, but with fragile buildings, addressing vibration impacts is important. Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in inches per second (in/sec) or in millimeters per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings.

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB). The typical background vibration-velocity level in residential areas is approximately 50 VdB. Ground vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels.

One of the impacts of construction is vibration that can be felt by people. Vibration can be a short-term sensation like when a heavy truck passes, however if several trucks were to pass by, or machinery nearby creates a constant vibration, the vibration can have negative effects on people. What starts as a minor irritation in people from vibration, over time turn into feelings of unease, disruption of sleep, and result in a constant annoyance that reduces the enjoyment of their home. Vibration can also disrupt delicate procedures such as surgery and manufacturing.

Vibrations generated by construction activity can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table N-2 describes the general human response to different ground vibration-velocity levels.

TABLE N-2 HUMAN RESPONSE TO DIFFERENT LEVELS OF GROUND NOISE AND VIBRATION

Vibration-Velocity Level	Human Reactions
65 VdB	Approximate threshold of perception
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 micro inch per second and based on the root-mean-square (RMS) velocity amplitude.

Source: FTA 2018

GOALS AND POLICIES

GOAL N-1 NOISE. A city with appropriate noise and vibration levels that support a range of places from quiet neighborhoods to active, exciting districts.

N-1.1 **Noise Levels.** Require new development to meet the noise compatibility standards identified in Table N-1.

N-1.2 **Noise Barriers, Buffers and Sound Walls.** Require the use of integrated design-related noise reduction measures for both interior and exterior areas prior to the use of noise barriers, buffers, or walls to reduce noise levels generated by or affected by new development.

N-1.3 **Non-Architectural Noise Attenuation.** Non-architectural noise attenuation measures such as sound walls, setbacks, barriers, and berms shall be discouraged in pedestrian priority areas (or other urban areas or areas where pedestrian access is important).

N-1.4 **New Development Near Major Noise Sources.** Require development proposing to add people in areas where they may be exposed to major noise sources (e.g., roadways, rail lines, aircraft, industrial or other non-transportation noise sources) to conduct a project level noise analysis and implement recommended noise reduction measures.

N-1.5 **Urban and Suburban Development Near Transit.** Allow development located in infill areas, near transit hubs, or along major roadways an exemption from exterior noise standards for secondary open space areas (such as front yards, parking lots, stoops, porches, or balconies), if noise standards can be met for primary open space.

N-1.6 **Rail Crossing Quiet Zones.** Allow the establishment of a full or partial at-grade rail crossing or quiet zone near transit hubs or residential development.

N-1.7 **Entertainment.** Establish different standards for exterior noise consistent with the place type.

N-1.8 **Vibration Impact Assessment.** Require new development to reduce vibration to 85 VdB or below within 200 feet of an existing structure.

17.66.050 Noise standards.

A. *Purpose*. In order to control unnecessary, excessive, and annoying noise and vibration in the city, it is hereby declared to be the policy of the city to prohibit such noise generated from or by all sources as specified in this section. The provisions apply within all jurisdictions within all zoning districts. Provisions apply based on the designated noise zones:

Noise Zone I: All single- and multiple-family residential properties.

Noise Zone II: All commercial properties.

B. *Decibel measurement criteria*. Any decibel measurement made pursuant to the provisions of this section shall be based on a reference sound pressure of 20 micropascals as measured with a sound level meter using the A-weighted network (scale) at slow response.

C. *Exterior noise standards*.

1. It shall be unlawful for any person at any location within the city to create any noise or allow the creation of any noise on the property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured on the property line of any other property to exceed the basic noise level as adjusted below:

a. Basic noise level for a cumulative period of not more than 15 minutes in any one hour; or

b. Basic noise level plus five dBA for a cumulative period of not more than ten minutes in any one hour; or

c. Basic noise level plus 14 dBA for a cumulative period of not more than five minutes in any one hour; or

d. Basic noise level plus 15 dBA at any time.

2. If the measurement location is a boundary between two different noise zones, the lower noise level standard shall apply.

3. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, the measured noise level obtained while the noise is in operation shall be compared directly to the allowable noise level standards as specified respective to the measurement's location, designated land use, and for the time of day the noise level is measured. The reasonableness of temporarily discontinuing the noise generation by an intruding noise source shall be determined by the planning director for the purpose of establishing the existing ambient noise level at the measurement location.

D. *Special exclusions*. The following activities shall be exempted from the provisions of this section:

1. City- or school-approved activities conducted on public parks, public playgrounds, and public or private school grounds including, but not limited to, athletic and school entertainment events between the hours of 7:00 a.m. and 10:00 p.m.

2. Occasional outdoor gatherings, dances, shows, and sporting and entertainment events, provided said events are conducted pursuant to the approval of a temporary use permit issued by the city.

3. Any mechanical device, apparatus, or equipment used, related to, or connected with emergency machinery, vehicle, work, or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within 30 minutes in any hour of its being activated.

4. Noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities:

a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.

b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.

5. All devices, apparatus, or equipment associated with agricultural operations, provided:

a. Operations do not take place between 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday.

b. Such operations and equipment are utilized for protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

c. Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by, or regulations enforced by, the state department of agriculture.

6. Noise sources associated with the maintenance of real property, provided said activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day.

7. Any activity to the extent regulation thereof has been preempted by state or federal law.

E. *Schools, churches, libraries, health care institutions*. It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or similar health care institution, church, or library while the same is in use, to exceed the noise standards specified in this section and prescribed for the assigned noise zone in which the school, hospital, church, or library is located.

F. *Residential noise standards*.

1. Table 17.66.050-1 (Residential Noise Limits) includes the maximum noise limits in residential zones. These are the noise limits when measured at the adjacent residential property line (exterior) or within a neighboring home (interior).

TABLE 17.66.050-1 RESIDENTIAL NOISE LIMITS

Location of Measurement	*Maximum Allowable*	
	10:00 p.m. to 7:00 a.m.	*7:00 a.m. to 10:00 p.m.*
Exterior	60 dBA	65dBA
Interior	45 dBA	50dBA

Additional:

(A) It shall be unlawful for any person at any location within the city to create any noise or to allow the creation of any noise which causes the noise level when measured within any other fully enclosed (windows and doors shut) residential dwelling unit to exceed the interior noise standard in the manner described herein.

(B) If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, each of the noise limits above shall be reduced five dBA for noise consisting of impulse or simple tone noise.

2. *Other residential noise limitations*.

a. *Peddlers; use of loud noise, etc., to advertise goods, etc*. No peddler or mobile vendor or any person in their behalf shall shout, cry out, or use any device or instrument to make sounds for the purpose of advertising in such a manner as to create a noise disturbance.

b. *Animal noises*. No person owning or having the charge, care, custody, or control of any dog or other animal or fowl shall allow or permit the same to habitually howl, bark, yelp, or make other noises, in such a manner as to create a noise disturbance.

c. *Radios, television sets, musical instruments, and similar devices*. No person shall operate or permit the operation or playing of any device which reproduces, produces, or amplifies sound, such as a radio, musical instrument, phonograph, or sound amplifier, in such a manner as to create a noise disturbance.

i. Across any real property boundary or within Noise Zone I, between the hours of 10:00 p.m. and 7:00 a.m. on the following day (except for activities for which a temporary use permit has been

issued).

ii. At 50 feet from any such device, if operated on or over any public right-of-way.

G. *Commercial and office noise provisions*. All operations and businesses shall be conducted to comply with the following standards:

1. All commercial and office activities shall not create any noise that would exceed an exterior noise level of 65 dBA during the hours of 10:00 p.m. to 7:00 a.m. and 70 dBA during the hours of 7:00 a.m. to 10:00 p.m. when measured at the adjacent property line.

2. *Loading and unloading*. No person shall cause the loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m., in a manner which would cause a noise disturbance to a residential area.

3. *Vehicle repairs and testing*. No person shall cause or permit the repairing, rebuilding, modifying, or testing of any motor vehicle, motorcycle, or motorboat in such a manner as to increase a noise disturbance between the hours of 10:00 p.m. and 8:00 a.m. adjacent to a residential area.

H. Industrial noise provision included in Table 17.66.110-1 (Industrial Performance Standards). (Code 1980, § 17.66.050; Ord. No. 855, § 4, 2012)

17.66.070 Vibration.

Uses that generate vibrations that may be considered a public nuisance or hazard on any adjacent property shall be cushioned or isolated to prevent generation of vibrations. Uses shall be operated in compliance with the following provisions:

A. No vibration shall be produced that is transmitted through the ground and is discernible without the aid of instruments at the points of measurement specified in section 17.66.030 (Points of Measurement) of this chapter, nor shall any vibration produced exceed 0.002g peak at up to 50 CPS frequency, measured at the point of measurement specified in section 17.66.030 (Points of Measurement) of this chapter using either seismic or electronic vibration measuring equipment. Vibrations occurring at higher than 50 CPS frequency of a periodic vibration shall not induce accelerations exceeding 0.001g. Single-impulse periodic vibrations occurring at an average interval greater than five minutes shall not induce accelerations exceeding 0.01g.

B. Uses, activities, and processes shall not generate vibrations that cause discomfort or annoyance to reasonable persons of normal sensitivity or which endangers the comfort, repose, health, or peace of residents whose property abuts the property line of the parcel.

C. Uses shall not generate ground vibration that interferes with the operations of equipment and facilities of adjoining parcels.

D. Vibrations from temporary construction/demolition and vehicles that leave the subject parcel (e.g., trucks, trains, and aircraft) are exempt from the provisions of this section. (Code 1980, § 17.66.070; Ord. No. 855, § 4, 2012)

View the mobile version.

CONSTRUCTION NOISE MODELING

CCCD-01.1 Construction Noise Modeling Attenuation Calculations

Off-Campus **Exterior Levels in dBA Leq**

Phases	RCNM Reference Noise Level	Nearest Residences to the North	Nearest Residences to the East	Nearest Residences to the South	Nearest Residences to the West Across Haven
Distance in feet	*50*	*525*	*350*	*585*	*550*
Phase 1-5	85	65	**68**	64	64

Phase	RCNM Reference Noise Level	Church of Jesus Christ	Banyan School	Shepherd of The Hills
Distance in feet	*50*	*600*	*665*	*580*
Phase 1-5	85	63	63	64

On-Campus **Interior Levels in dBA Leq**

Phase	RCNM Reference Noise Level	Screening Distance to Achieve interior		
Distance in feet	*50*	*150*		
Phase 1-5	60	50		

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/10/2022
Case Description: CCCD-01.1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Construction Phase 1	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Concrete Saw	No	20	89.6	50.0		0.0
Excavator	No	40	80.7	50.0		0.0
Dozer	No	40	81.7	50.0		0.0
Tractor	No	40	84.0	50.0		0.0
Front End Loader	No	40	79.1	50.0		0.0
Grader	No	40	85.0	50.0		0.0
Scraper	No	40	83.6	50.0		0.0
Backhoe	No	40	77.6	50.0		0.0
Crane	No	16	80.6	50.0		0.0
Man Lift	No	20	74.7	50.0		0.0
Generator	No	50	80.6	50.0		0.0
Welder / Torch	No	40	74.0	50.0		0.0
Pavement Scarafier	No	20	89.5	50.0		0.0
Paver	No	50	77.2	50.0		0.0
Roller	No	20	80.0	50.0		0.0
Compressor (air)	No	40	77.7	50.0		0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	74.0	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	90.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/10/2022
Case Description: CCCD-01.1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Construction Phases 2-5	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Compressor (air)	No	40	77.7	50.0		0.0
Backhoe	No	40	77.6	50.0		0.0
Drum Mixer	No	50	80.0	50.0		0.0
Concrete Saw	No	20	89.6	50.0		0.0
Crane	No	16	80.6	50.0		0.0
Excavator	No	40	80.7	50.0		0.0
Man Lift	No	20	74.7	50.0		0.0
Front End Loader	No	40	79.1	50.0		0.0
Generator	No	50	80.6	50.0		0.0
Grader	No	40	85.0	50.0		0.0
Paver	No	50	77.2	50.0		0.0
Pavement Scarafier	No	20	89.5	50.0		0.0
Roller	No	20	80.0	50.0		0.0
Dozer	No	40	81.7	50.0		0.0
Scraper	No	40	83.6	50.0		0.0
Tractor	No	40	84.0	50.0		0.0
Welder / Torch	No	40	74.0	50.0		0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drum Mixer	80.0	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	74.0	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	90.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/20/2022
Case Description: CCCD-01.1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Rough Grading P1	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Scraper	No	40	83.6		50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/20/2022
Case Description: CCCD-01.1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Demolition P2	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Concrete Saw	No	20	89.6	50.0		0.0
Dozer	No	40	81.7	50.0		0.0
Tractor	No	40	84.0	50.0		0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	85.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/20/2022
Case Description: CCCD-01.1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Grading P3	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Day Limits (dBA) Lmax	Day Limits (dBA) Leq	Evening Limits (dBA) Lmax	Evening Limits (dBA) Leq	Night Limits (dBA) Lmax	Night Limits (dBA) Leq	Day Exceedance (dBA) Lmax	Day Exceedance (dBA) Leq	Evening Exceedance (dBA) Lmax	Evening Exceedance (dBA) Leq	Night Exceedance (dBA) Lmax	Night Exceedance (dBA) Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/20/2022
Case Description: CCCD-01.1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Demolition P4	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Concrete Saw	No	20	89.6	50.0		0.0
Dozer	No	40	81.7	50.0		0.0
Tractor	No	40	84.0	50.0		0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	85.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 01/20/2022
Case Description: CCCD-01.1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Grading P5	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Scraper	No	40	83.6		50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

CCCD-01.1 Vibration Annoyance Attenuation Calculations

Levels in in/sec PPV

Distance in feet	**Vibration Reference Level at *25 feet***	**Residential to east** *120*
Vibratory Roller	0.21	0.020
Large Bulldozer	0.089	0.008
Caisson Drilling	0.089	0.008
Loaded Trucks	0.076	0.007
Jackhammer	0.035	0.003
Small Bulldozer	0.003	0.000

TRAFFIC NOISE INCREASE CALCULATIONS

CCCD-01.1

Traffic Noise Calculations

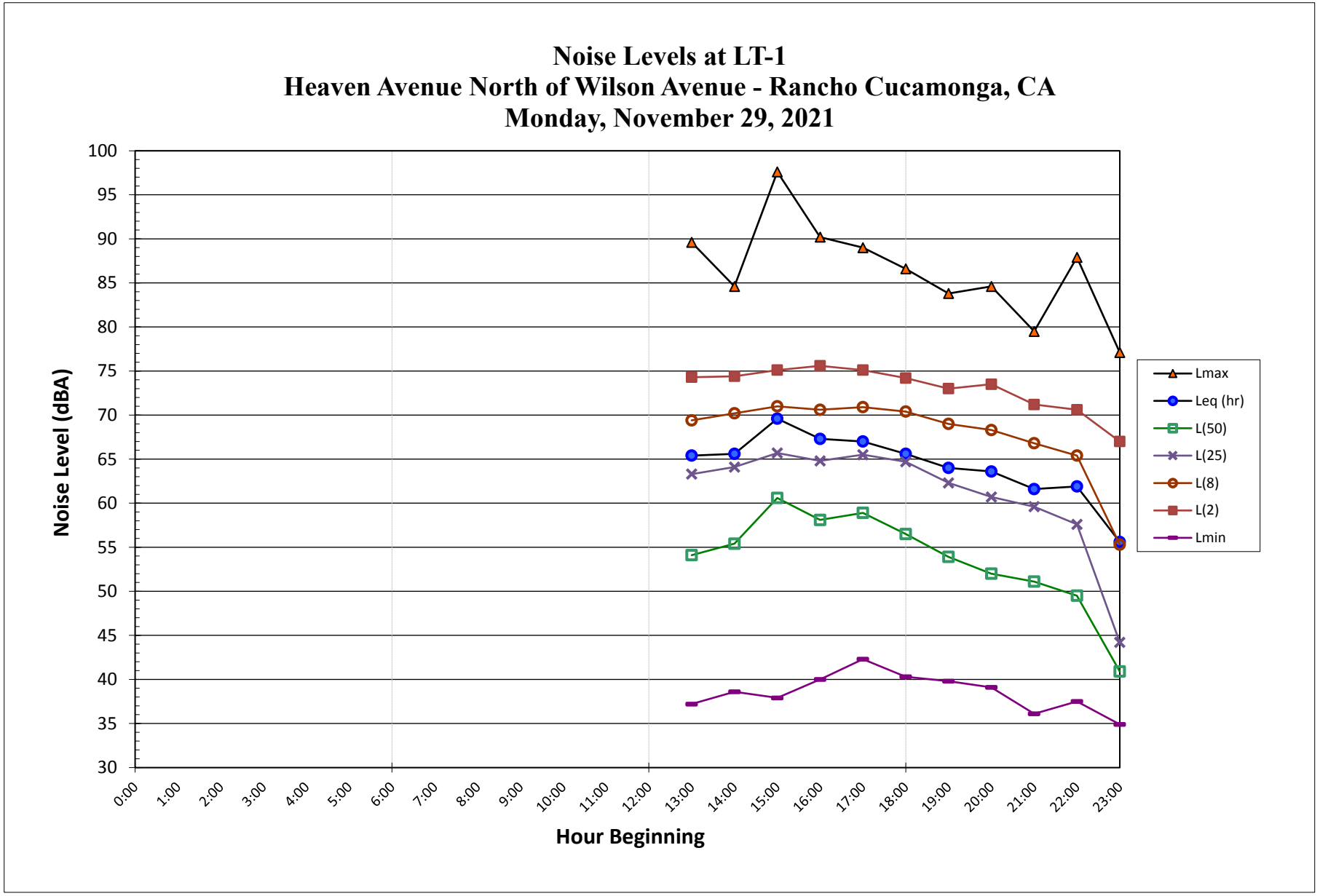
	ADT Volumes				dBA CNEL Increae		
Roadway Segment	Existing No Project	Existing Plus Project	Future No Project	Future Plus Project	Project Noise Increase	Cumulative Increase	Project Cumulative Contribution
Haven Avenue - north of Wilson Avenue	5,915	5,947	6,442	6,474	0.0	0.4	0.0
Haven Avenue - south of Wilson Avenue	9,713	9,755	11,365	11,407	0.0	0.7	0.0
Wilson Avenue - east of Haven Avenue	8,386	8,428	12,755	12,797	0.0	1.8	0.01
Wilson Avenue - west of Haven Avenue	5,617	5,669	7,027	7,079	0.0	1.0	0.0
Haven Avenue - north of Driveway 1	9,711	9,753	11,388	11,430	0.0	0.7	0.0
Haven Avenue - south of Driveway 1	10,090	10,154	11,832	11,896	0.0	0.7	0.0
Haven Avenue - north of Olive Way north	10,091	10,154	11,833	11,896	0.0	0.7	0.0
Haven Avenue - south of Olive Way north	10,468	10,553	12,275	12,360	0.0	0.7	0.0
Olive Way north- east of Haven Avenue	571	603	670	702	0.2	0.9	0.2
Haven Avenue - north of Olive Way south	11,616	11,701	13,622	13,707	0.0	0.7	0.0
Haven Avenue - south of Olive Way south	13,318	13,505	15,617	15,804	0.1	0.7	0.1
Olive Way south - east of Haven Avenue	2,247	2,359	2,635	2,747	0.2	0.9	0.2
Haven Avenue - north of Amber Lane	13,316	13,503	16,271	16,458	0.1	0.9	0.0
Haven Avenue - south of Amber Lane	28,222	29,154	33,470	34,402	0.1	0.9	0.1
Amber Lane - east of Haven Avenue	15,300	16,097	11,011	11,808	0.2	-1.1	0.3
Amber Lane - west of Haven Avenue	636	636	791	791	0.0	0.9	0.0
Haven Avenue - north of Lemon Avenue	35,599	36,465	22,424	23,290	0.1	-1.8	0.2
Haven Avenue - south of Lemon Avenue	40,500	41,302	28,568	29,370	0.1	-1.4	0.1
Lemon Avenue - east of Haven Avenue	7,200	7,210	7,106	7,116	0.0	-0.1	0.0
Lemon Avenue - west of Haven Avenue	8,004	8,058	8,587	8,641	0.0	0.3	0.0
Haven Avenue - north of I-210 WB Ramps	51,474	52,277	54,476	55,279	0.1	0.3	0.1
Haven Avenue - south of I-210 WB Ramps	48,414	48,842	50,470	50,898	0.0	0.2	0.0
I-210 WB Ramps - east of Haven Avenue	15,447	15,608	15,001	15,162	0.0	-0.1	0.0
I-210 WB Ramps - west of Haven Avenue	16,522	16,736	16,572	16,786	0.1	0.1	0.1
Haven Avenue - north of I-210 EB Ramps	48,417	48,846	50,473	50,902	0.0	0.2	0.0
Haven Avenue - south of I-210 EB Ramps	48,638	48,692	51,956	52,010	0.0	0.3	0.0
I-210 EB Ramps - east of Haven Avenue	20,667	20,828	22,126	22,287	0.0	0.3	0.0
I-210 EB Ramps- west of Haven Avenue	10,117	10,331	8,940	9,154	0.1	-0.4	0.1

Wilson Avenue - east of Driveway 2	8,391	8,433	9,839	9,881	0.0	0.7	0.0
Wilson Avenue - west of Driveway 2	8,391	8,433	9,839	9,881	0.0	0.7	0.0
Wilson Avenue - east of Driveway 3	8,387	8,429	9,835	9,877	0.0	0.7	0.0
Wilson Avenue - west of Driveway 3	8,387	8,429	9,835	9,877	0.0	0.7	0.0
Wilson Avenue - east of Driveway 4	8,387	8,429	9,834	9,876	0.0	0.7	0.0
Wilson Avenue - west of Driveway 4	8,387	8,429	9,834	9,876	0.0	0.7	0.0
College Drive - south of Wilson Avenue	539	571	336	368	0.3	-1.7	0.4
Wilson Avenue - east of College Drive	8,542	8,596	19,586	19,640	0.0	3.6	0.01
Wilson Avenue - west of College Drive	8,383	8,425	12,750	12,792	0.0	1.8	0.01

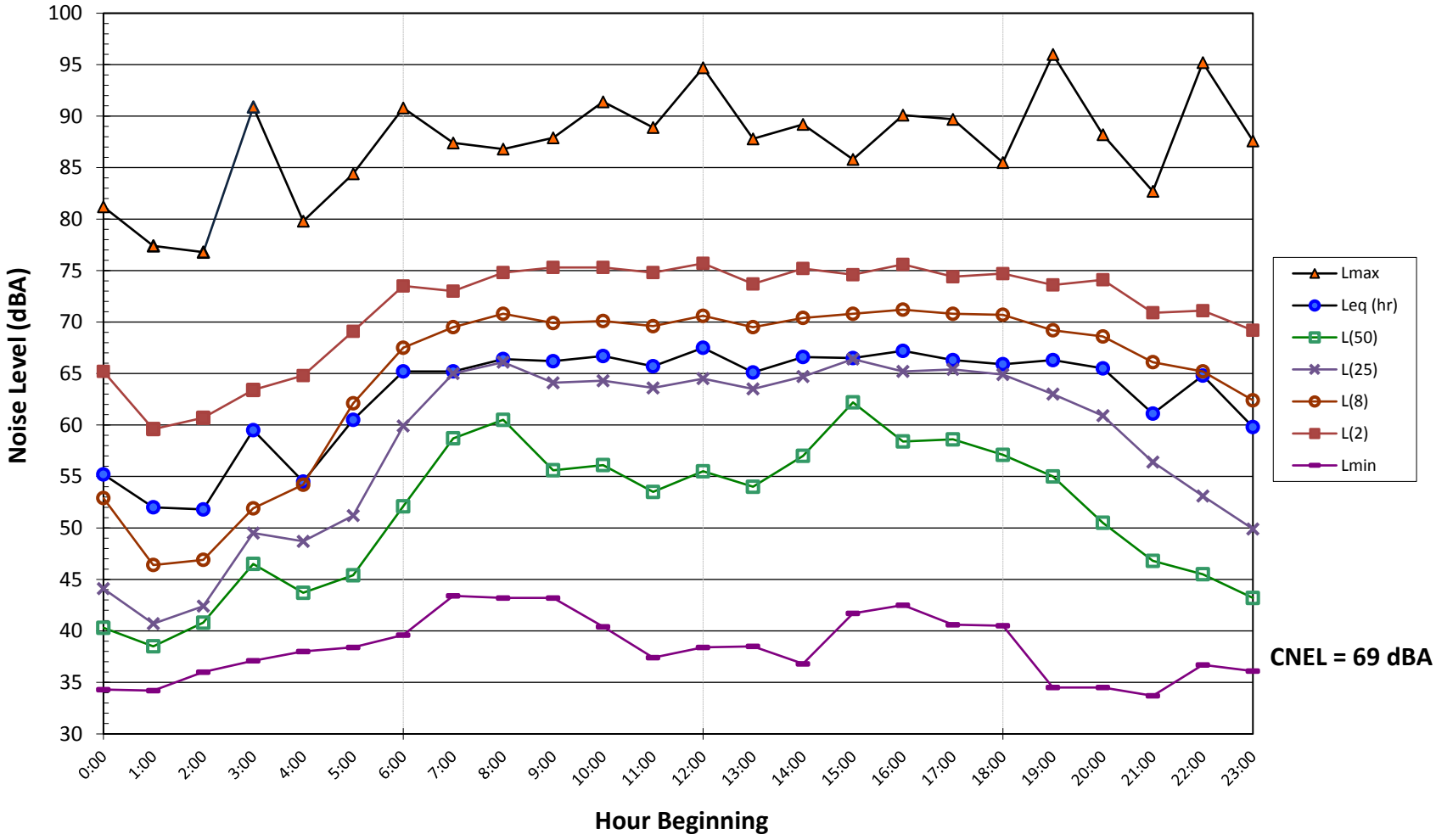
Traffic Noise Calculator: FHWA 77-108 **Project Title: Existing Oak Springs WILD-01.0**

	Output						Inputs												
	dBA at 50 feet			Distance to CNEL Contour															
ID	$L_{eq-24hr}$	L_{dn}	CNEL	70 dBA	65 dBA	60 dBA	Roadway	Segment	ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Reciever
1	63.7	66.5	67.2	26	83	263	Wilson Avenue	east of Haven Avenue	8,542	45	0.0%	98.1%	1.5%	0.5%	75.0%	15.0%	10.0%	4	Hard	50
2	63.6	66.3	67.0	25	80	252	Wilson Avenue	east of College Drive	8,383	45	0.0%	98.0%	1.5%	0.5%	75.0%	15.0%	10.0%	1	Hard	50
3	63.6	66.4	67.1	26	81	256	Wilson Avenue	west of College Drive	8,383	45	0.0%	98.0%	1.6%	0.5%	75.0%	15.0%	10.0%	3	Hard	50

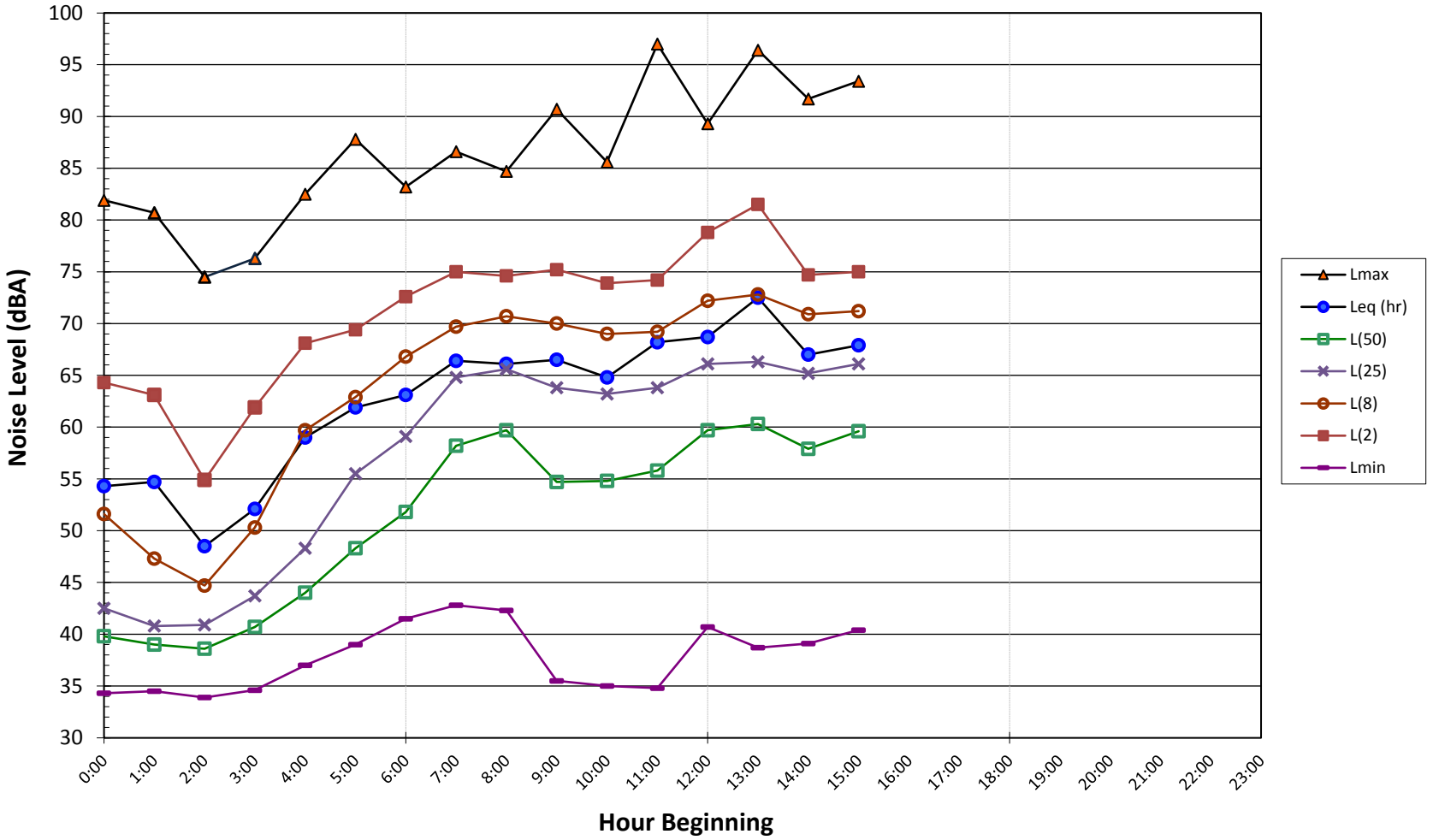
NOISE MONITORING LONG-TERM GRAPHS


Noise Levels at LT-1
Heaven Avenue North of Wilson Avenue - Rancho Cucamonga, CA
Monday, November 29, 2021
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Hour Beginning
Lmax
Leq (hr)
L(50)
L(25)
L(8)
L(2)
Lmin

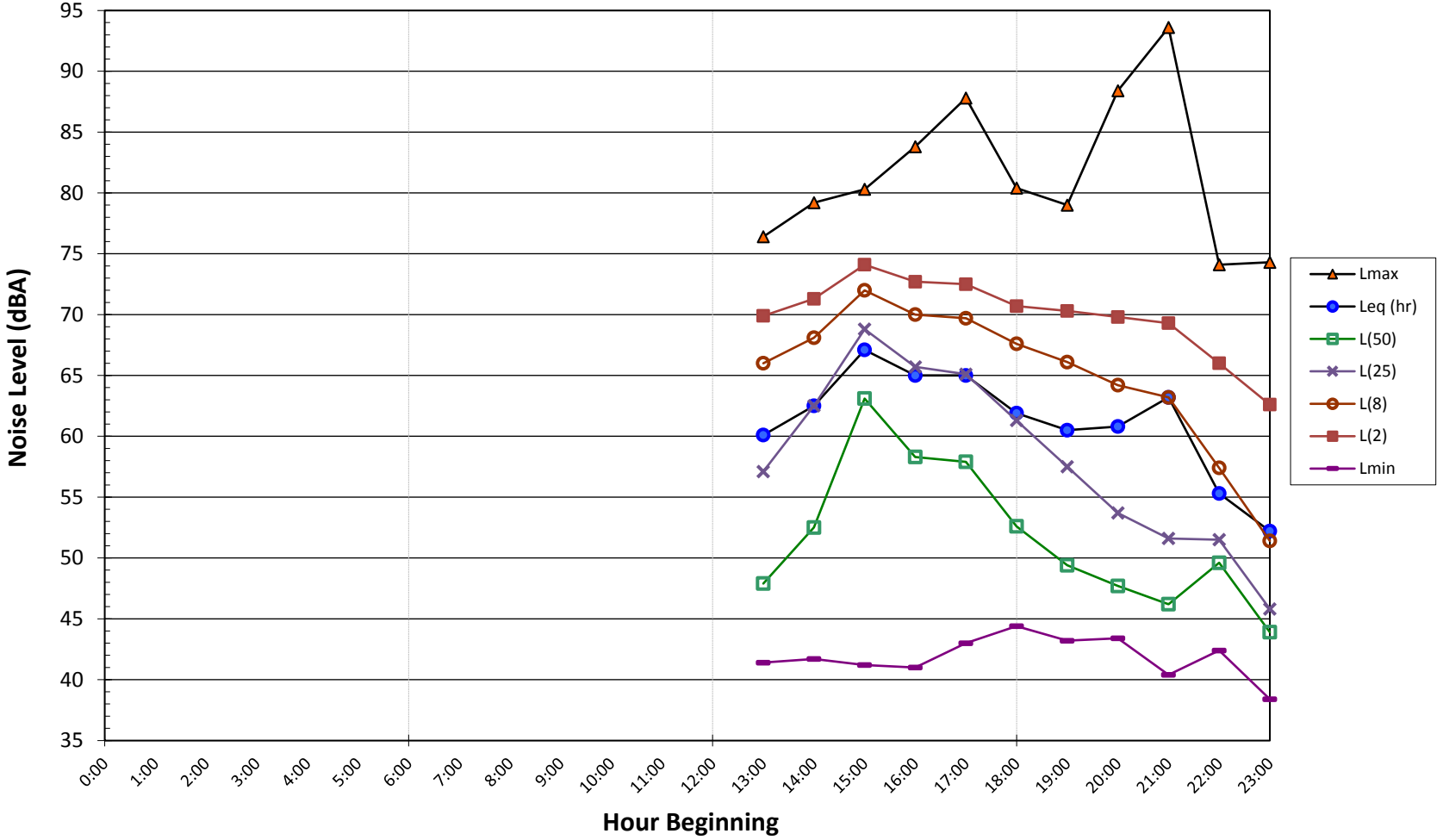
Noise Levels at LT-1
Heaven Avenue North of Wilson Avenue - Rancho Cucamonga, CA
Tuesday, November 30, 2021



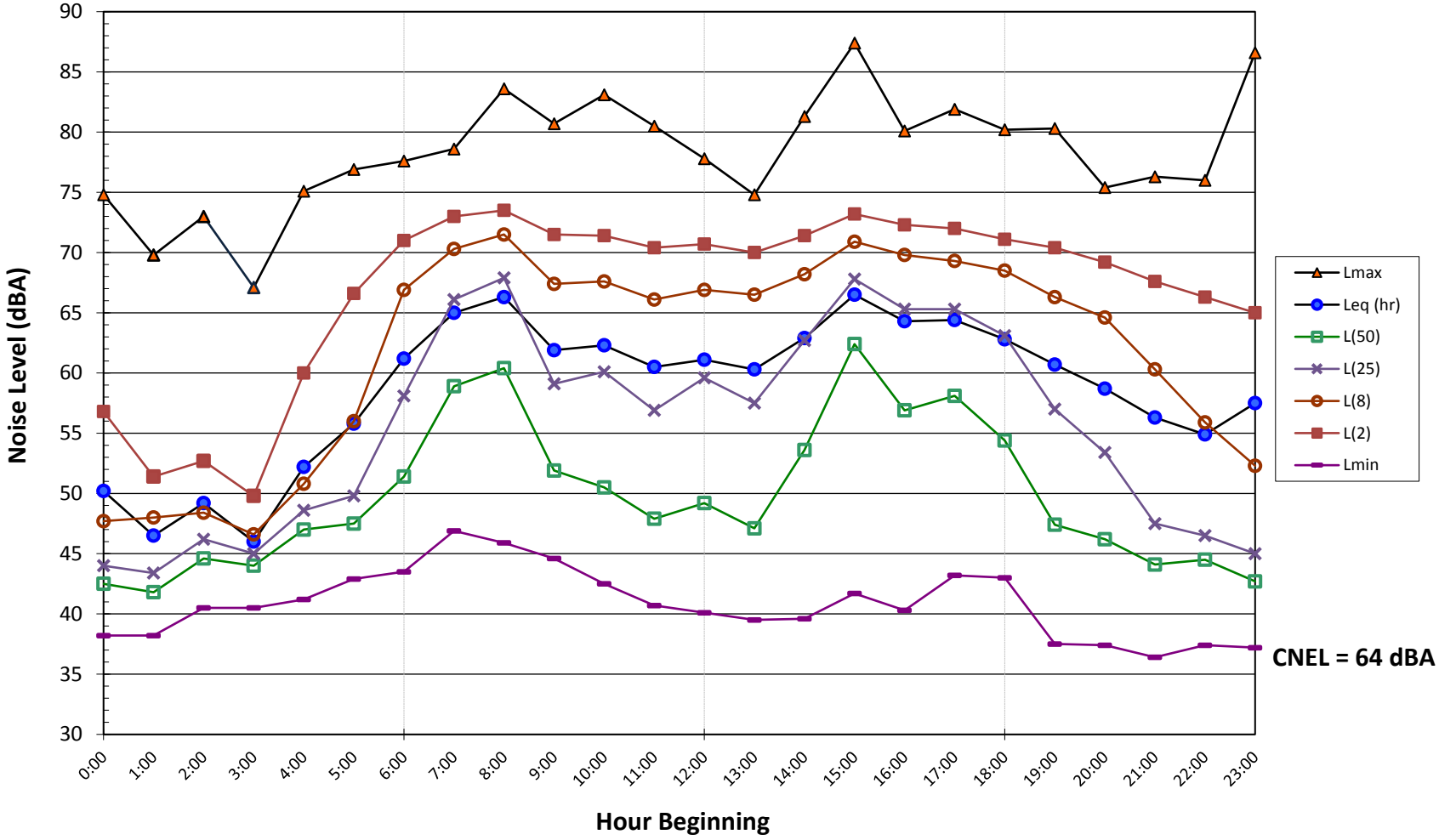
Noise Levels at Noise Measurement Site LT-1
Heaven Avenue North of Wilson Avenue - Rancho Cucamonga, CA
Wednesday, December 1, 2021



Noise Levels at LT-2
Wilson Avenue East of Haven Avenue - Rancho Cucamonga, CA
Monday, November 29, 2021

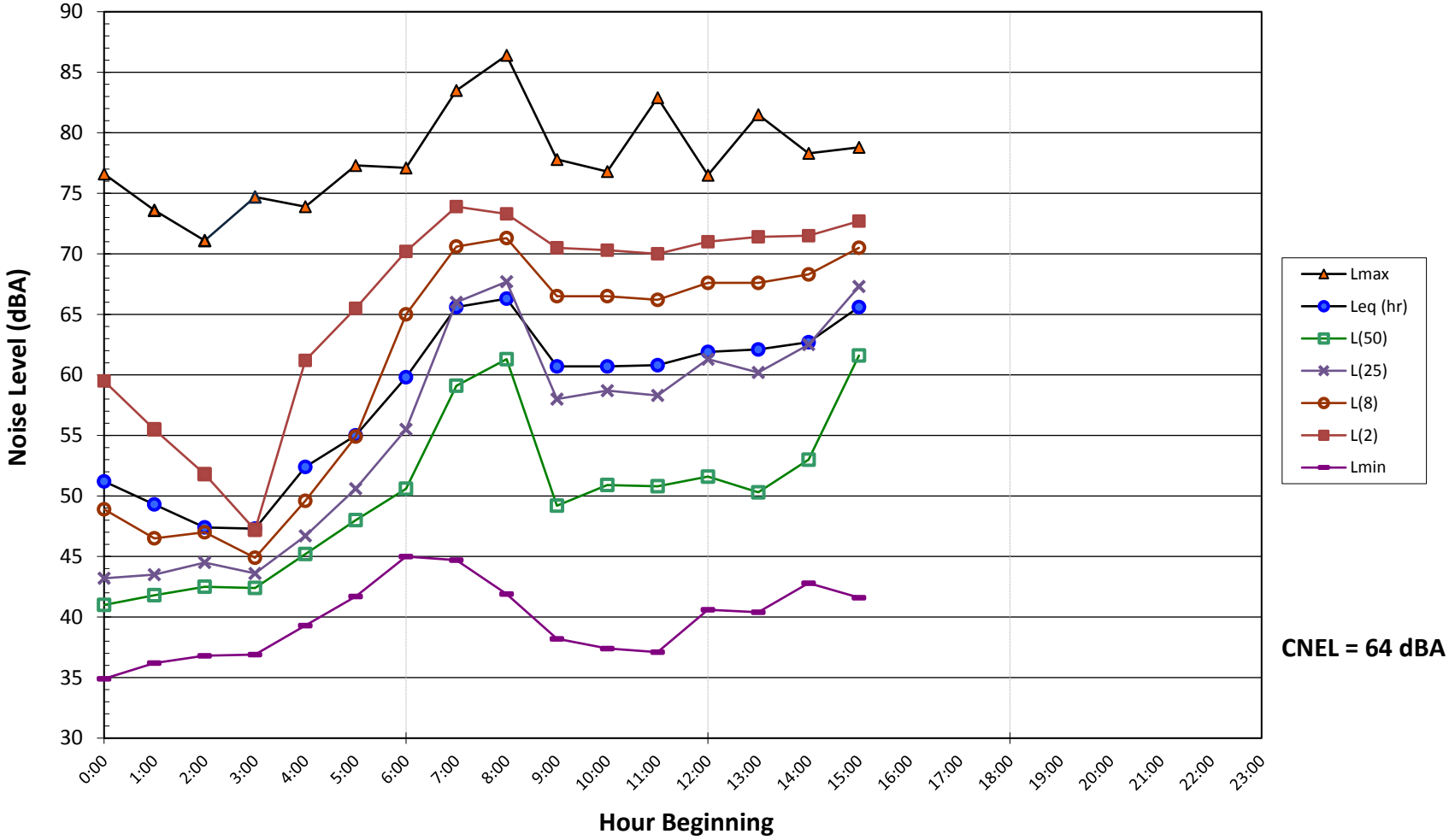


Noise Levels at LT-2
Wilson Avenue East of Haven Avenue- Rancho Cucamonga, CA
Tuesday, November 30, 2021



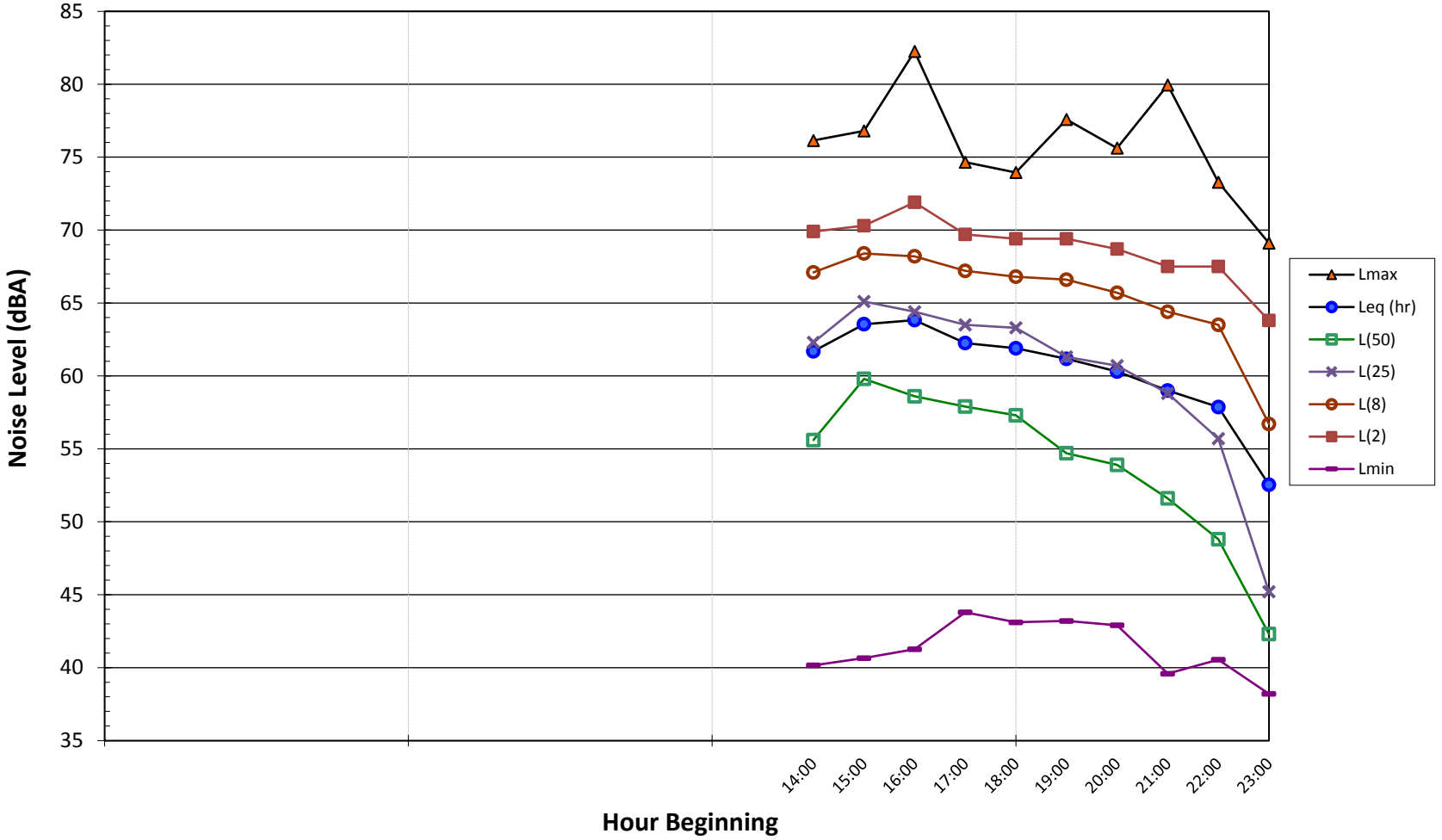
CNEL = 64 dBA

Noise Levels at Noise Measurement Site LT-2
Wilson Avenue East of Haven Avenue- Rancho Cucamonga, CA
Wednesday, December 1, 2021

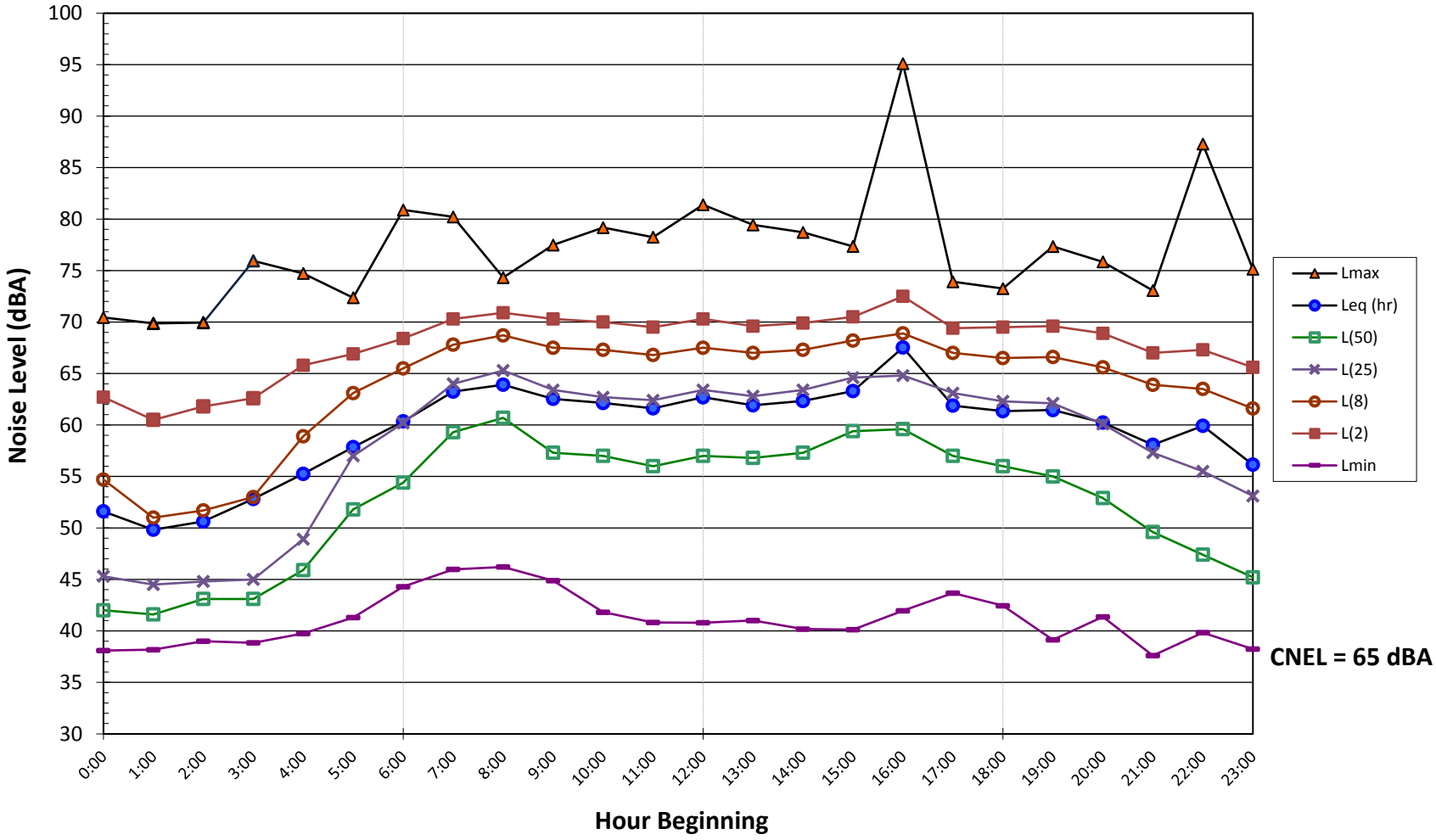


CNEL = 64 dBA

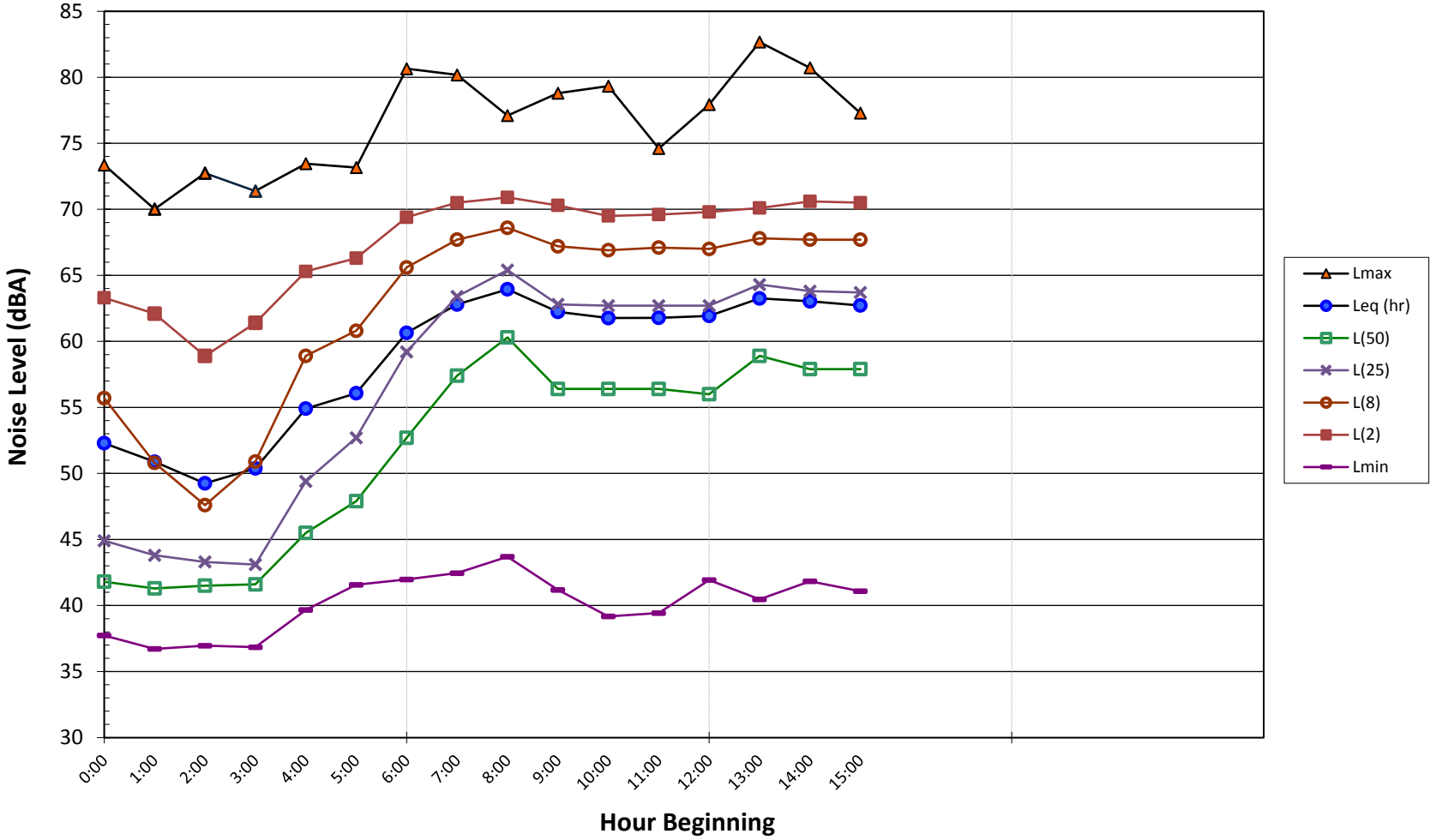
Noise Levels at LT-3
Haven Avenue South of Wilson Avenue- Rancho Cucamonga, CA
Monday, November 29, 2021



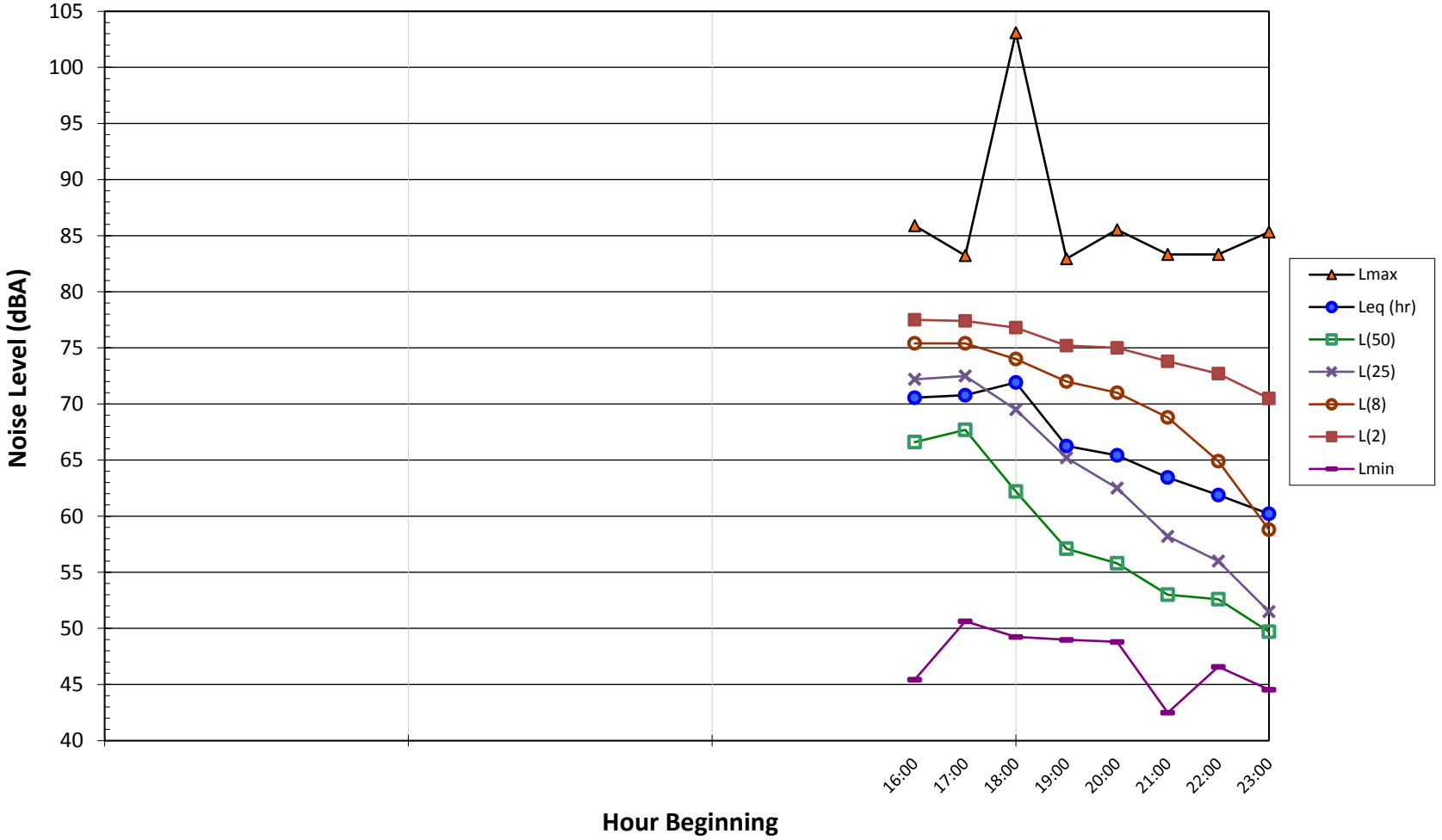
Noise Levels at LT-3
Haven Avenue South of Wilson Avenue - Rancho Cucamonga, CA
Tuesday, November 30, 2021



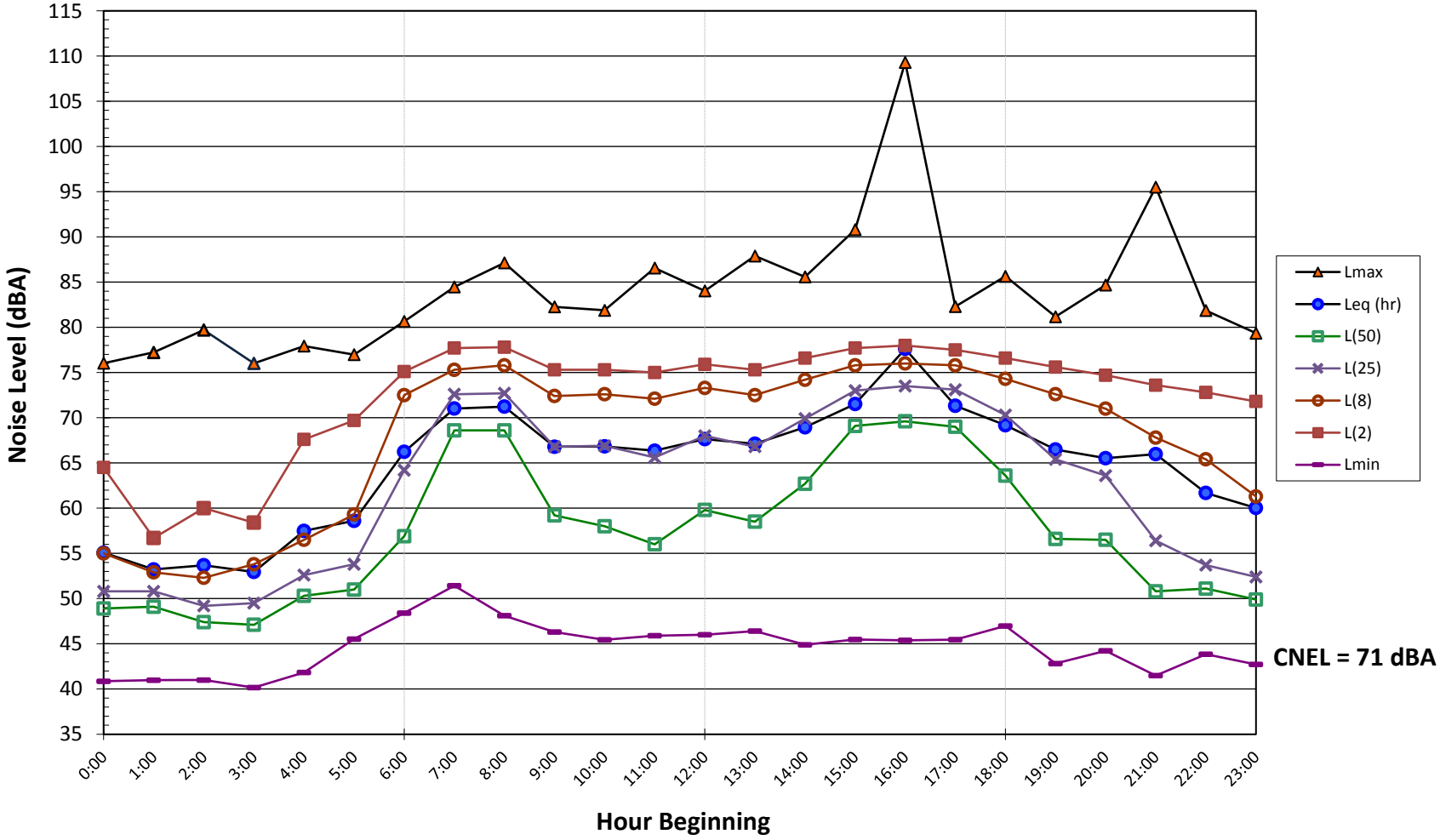
Noise Levels at Noise Measurement Site LT-3
Heaven Avenue South of Wilson Avenue - Rancho Cucamonga, CA
Wednesday, December 1, 2021



Noise Levels at LT-4
Banyan Street East of Haven Avenue - Rancho Cucamonga, CA
Monday, November 29, 2021



Noise Levels at LT-4
Banyan Street East of Haven Avenue - Rancho Cucamonga, CA
Tuesday, November 30, 2021



CNEL = 71 dBA

Noise Levels at Noise Measurement Site LT-4
Banyan Street East of Haven Avenue- Rancho Cucamonga, CA
Wednesday, December 1, 2021