

5 Natural Resources and Sustainability

The Natural Resources and Sustainability Element addresses the protection and management of Piedmont’s earth, water, air, and biologic resources. It provides policies and actions on important issues such as creek protection, hillside grading, air and water quality, and management of the city’s “urban forest.” These policies are essential not only to protect the health of Piedmont’s natural environment, but also to protect the health and well-being of its residents.

State law requires that the General Plan includes a *Conservation Element* addressing a variety of environmental topics—from farmland preservation to fishery management. Many of the state requirements do not apply to Piedmont since the city is urbanized and landlocked. However, the city still has a unique ecology that requires careful, deliberate management. Piedmont’s natural landscape is part of its beauty and identity. The city is also part of a larger East Bay ecosystem that includes hundreds of species of plants and animals. Decisions made at the local level affect the health of San Francisco Bay, the quality of the region’s air, and even the supply of water and energy available to California residents.

The issue of climate change has made this element of the General Plan even more relevant to Piedmont residents. The state of California has set an ambitious goal of reducing greenhouse gas emissions to 1990 levels by 2020 and to 80 percent of 1990 levels by 2050. Accordingly, this element includes recommendations to make Piedmont more sustainable—in other words, a city that consumes fewer natural resources and produces fewer environmental impacts. The Natural Resources and Sustainability Element includes policies to encourage “greener” construction, water conservation, energy conservation, alternative energy sources, and solid waste reduction.

Goals, policies, and actions in this element address the following major topics:

- Protection of natural features
- Management of Piedmont’s urban forest
- Air and water quality
- Sustainable development
- Resource conservation

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EARTH RESOURCES



Piedmont's landscape rises gently from west to east, reaching 704 feet above mean sea level above the Corporation Yard on Moraga Avenue.

Landform

Figure 5.1 illustrates Piedmont's topography and landform, including the location of steep slopes. The city's terrain rises gently from west to east, with the steepest slopes located along canyons and ravines. The combination of knolls, low ridges, and valleys creates scenic vistas throughout the city and is an important part of Piedmont's character.

Most of Piedmont consists of gentle slopes between zero and 20 percent, requiring a small to moderate amount of grading to support construction. The city's vacant and undeveloped land is steeper, with slopes exceeding 50 percent in some cases. Development on such land may require extensive cutting and filling of hillsides, and special techniques to ensure the stability of structures. The City maintains design review guidelines, grading regulations, and building code requirements to control the amount of excavation that may occur when such sites are developed.

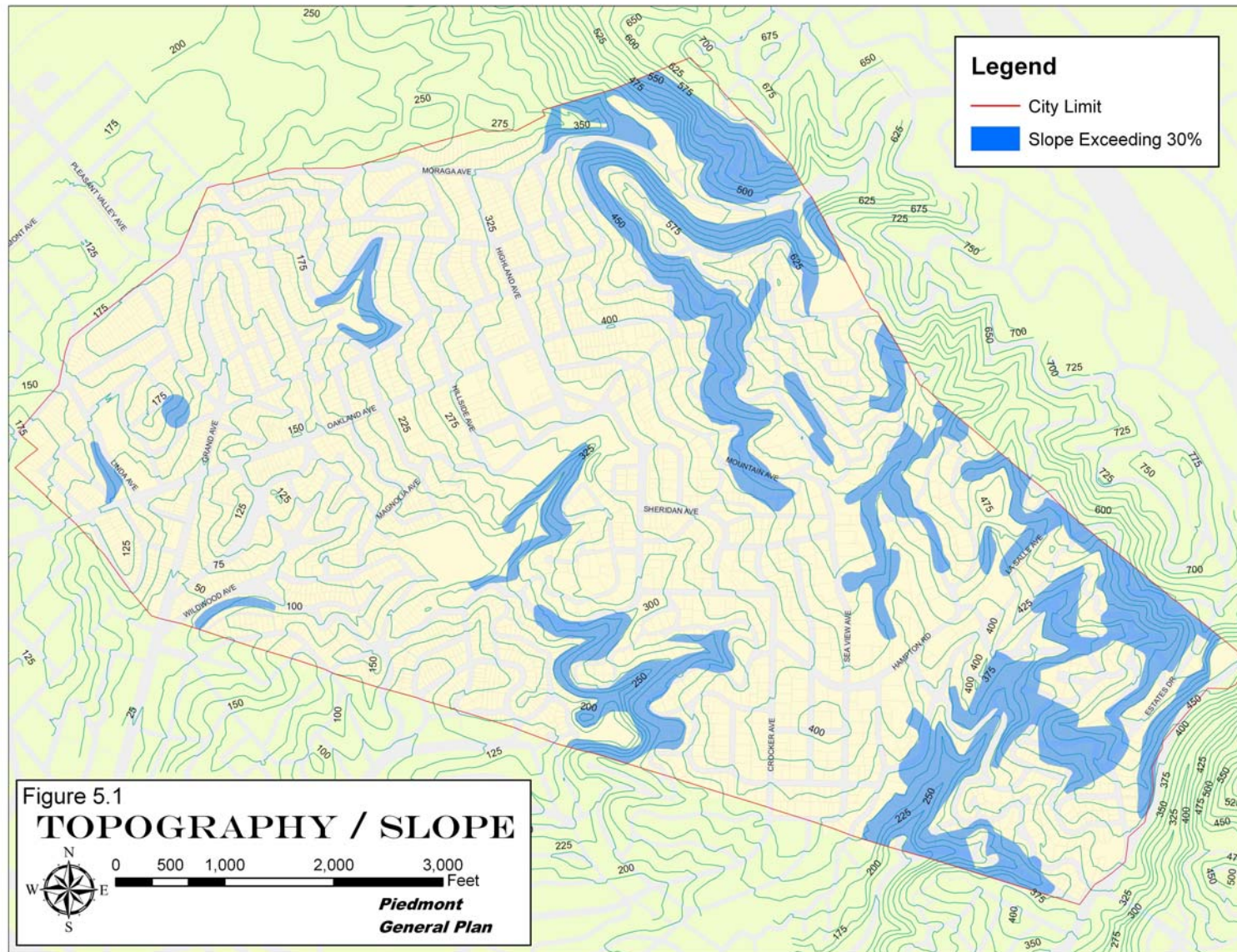
Soils

Soil affects the capability of land to support different activities and uses, including homes and businesses as well as landscaping and gardens. Good soil management is essential to reduce erosion, sediment runoff and landslide hazards.

There are two predominant soil types in Piedmont. The first consists of alluvial deposits created by hundreds of thousands of years of erosion from the East Bay Hills. These soils are found in the city's lower elevations and on flatter terrain. They tend to be rich in nutrients and are relatively stable. The second type consists of residual material from sandstone and shale. These soils are shallower, less fertile, and more prone to erosion. These clay-like soils are also prone to "shrinking" during dry weather and "swelling" during wet weather, affecting design requirements for foundations.

Piedmont has no agricultural land or land subject to the Williamson Act or Timberland Productivity Act. It is classified as "Urban and Built-Up Land" by the California Department of Conservation.

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Mineral Resources

Piedmont's principal mineral resources are volcanic rocks. Basalt, andesite, and rhyolite were mined during the East Bay's early development and were used for building roads, curbs, and foundations. During the early 1900s, stone quarries operated on the sites of what are now Davies Tennis Stadium, Dracena Park, and the Corporation Yard. A large sandstone aggregate quarry once existed just north of the city limits on Pleasant Valley Road—a remnant quarry lake still exists adjacent to the Rockridge Shopping Center parking lot.

Piedmont's quarries were converted to other uses as the land around them became urbanized. The dust, noise, vibration, water pollution, and landscape scarring made their operation infeasible. Quarrying is not expected to resume anywhere in the city during the life of this General Plan due to the city's built up, residential character and the lack of suitable sites.

Piedmont has no known oil, gas, or geothermal resources suitable for extraction. The State Mining and Geology Board has identified no regionally significant aggregate or other mineral resources in the city.



This sandstone and basalt formation in Dracena Park is a reminder of Piedmont's geologic history, as well as the site's former use as a stone quarry.

Piedmont's Creeks



Indian Gulch (Trestle Glen) originates near the Sotelo-Glen Alpine loop and flows parallel to Sea View Avenue before flowing through Crocker Highlands to Lake Merritt.

Wildwood Creek flows from Wildwood Gardens to Oakmont Avenue, and continues under Lakeshore Avenue to Lake Merritt.

Bushy Dell Creek begins in Piedmont Park and flows under Witter Field, then under Magnolia Avenue to Grand.

Pleasant Valley Creek originates in Dracena Park and flows under Grand Avenue to Lake Merritt.

Cemetery Creek follows Moraga Avenue and crosses Mountain View Cemetery, becoming Glen Echo Creek in the Piedmont Avenue neighborhood.

Sausal Creek is outside Piedmont but drains a small area along Park Blvd. It flows through the Dimond and Fruitvale Districts of Oakland.

WATER RESOURCES

Creeks

Figure 5.2 shows the location of Piedmont's creeks and watersheds. The city's creeks (profiled in the text box at left) are fed by a combination of natural springs, rain water, groundwater, and runoff from urban activities. The entire city, with the exception of a narrow strip of land along Park Boulevard, drains to Lake Merritt. Piedmont represents about one-quarter of the Lake Merritt watershed.

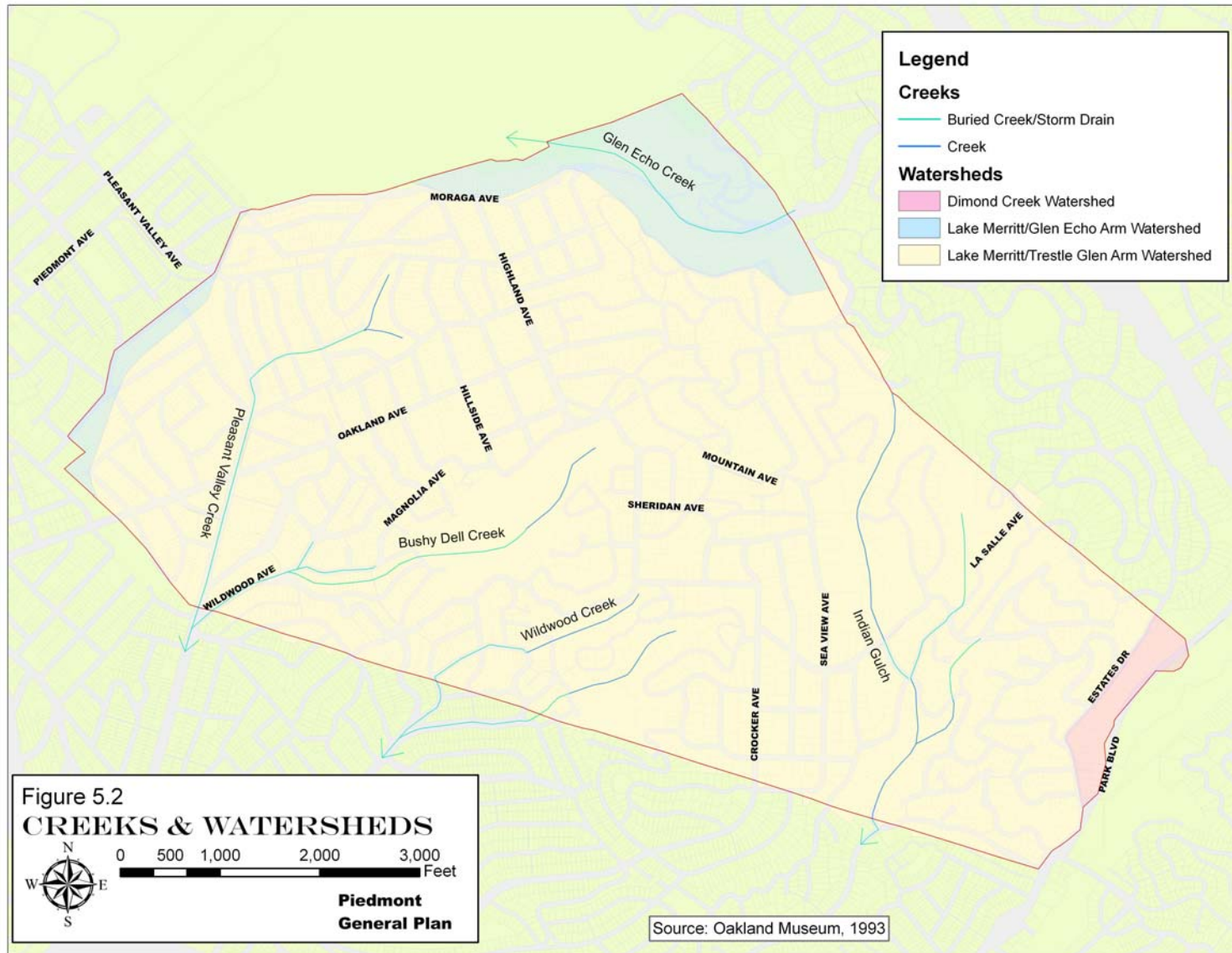
The city's creeks not only carry rainwater runoff, they also support plant and animal life and provide physical beauty. Canyon bottoms contain some of Piedmont's richest natural habitat. Over the years, the integrity of Piedmont's creeks has been compromised. Much of the native vegetation has been removed and many segments have been rerouted into buried storm drains. Untreated runoff flows to the storm drains, carrying pollutants to Lake Merritt. As noted on Page 5-8, the City is actively involved in efforts to reduce stormwater pollution in the lake.

There are limited opportunities for "daylighting" (uncovering buried creeks) in Piedmont. The City is committed to preserving the remaining unchannelized segments of creek and protecting native vegetation in these areas.

Lakes

The only surface water body in Piedmont is Tyson Lake, a privately-owned man-made lake near LaSalle Avenue at the Oakland city limits. Tyson Lake is in the Indian Gulch watershed. It has a mean depth of 18 feet and a volume of 3,000,000 gallons of water.

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Accumulated grease, gasoline, animal waste, pesticides, household cleaners, dirt, and pollutants wash off roads and lawns during rainstorms and flow into the city's storm drains. Ultimately, these materials end up in Lake Merritt and San Francisco Bay, where they can cause substantial water quality degradation.

Groundwater

Piedmont is underlain by a permeable layer of water-bearing rock and soil known as an aquifer. Water is contained in scattered pockets of permeable soil called lenses. In most parts of Piedmont, the upper level of the aquifer, or water table, is more than 20 feet below the ground.

Early settlers of Piedmont relied on the aquifer for farming and drinking water, and one of Piedmont's first attractions was a mineral spring in modern-day Piedmont Park. Once the area became urbanized, city wells were no longer adequate and a public water source was developed. There are still several wells in Piedmont today, but they are not used for potable water.

Water Quality

Most of the pollution entering Piedmont's creeks cannot be traced to specific points or sources. Accumulated grease, gasoline, animal waste, pesticides, household cleaners, dirt, and pollutants washes off roads and lawns during rainstorms and flow into the city's storm drains. Ultimately, these materials end up in Lake Merritt and San Francisco Bay, where they degrade water quality. Piedmont works collaboratively with other cities in the Bay Area and with regulatory agencies to reduce such pollution.

Water quality in the Bay Area is regulated by the Regional Water Quality Control Board (RWQCB). The RWQCB was created to protect the Bay and its tributaries and to implement programs to control "point source" (e.g., open pipe) and "non-point source" pollution. One of its responsibilities is to issue federal National Pollution Discharge Elimination System (NPDES) permits for surface water discharges.

Since 1987, the federal government has required NPDES permits for stormwater discharges in large urban areas that do not meet federal water quality standards. All jurisdictions draining to San Francisco Bay were included. For more efficient compliance in Alameda County, the RWQCB granted a joint permit to a consortium that included the County and its 14 cities. One of the conditions of this permit was development of a countywide stormwater management program, to be implemented by each jurisdiction (see text box on next page).

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The Stormwater Quality Management Plan



Piedmont is one of 14 cities responsible for implementing the Alameda County Stormwater Quality Management Plan. The 2002 Plan is the third Countywide water quality plan prepared since 1991 when the Clean Water Program was initiated. The Plan includes the following eight components:

- Planning and Regulatory Compliance
- Watershed Assessment
- Monitoring and Special Studies
- Public Information and Participation
- Municipal Maintenance Activities
- New Development and Construction Controls
- Illicit Discharge Controls
- Industrial and Commercial Discharge Controls

The Plan established new standards called TMDLs (Total Maximum Daily Load) which limit the total quantity of a pollutant that may be discharged to a water body during a specified time period. The Plan also includes a watershed management program that focuses on cooperative solutions among cities.

One of the most important aspects of the plan are recommended "Best Management Practices" (BMPs) to reduce stormwater pollution. These include techniques to limit the amount of silt and sand that runs off from construction sites, guidelines for litter control and road repair, and programs to educate residents about the importance of clean water. The program also requires "Standard Urban Stormwater Mitigation Plans (called SUSMPs) to control the effects of development projects on water quality.

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The City of Piedmont will continue to carry out programs to improve water quality during the lifetime of this General Plan. This will include efforts to reduce the use of toxic pesticides and fertilizers, maintain and improve the storm drainage system, and continue public education on pollution control.

Piedmont was a partner to the original countywide permit in 1991 and was included in the renewed permits in 1997 and 2002. As a co-permittee, the City's Public Works Department staff attends regular countywide meetings to discuss pollution control activities. The City also conducts regular street sweeping and cleaning of storm drain inlets, responds to complaints of illicit discharges, files periodic Clean Water Program reports with the RWQCB, and sponsors storm drain stenciling and other educational programs to reduce pollution. No specific pollution "hot spots" have been identified in the city.

The Countywide Clean Water Program also has a local permitting requirement. Projects that create or replace more than 5,000 square feet of impervious surface or which alter runoff patterns must include best management practice (BMP) measures to control stormwater. Changes to impervious surface coverage are also tracked by the city. Piedmont has also adopted a Stormwater Management Ordinance that prohibits most non-stormwater discharges to the storm drain system and bans illicit connections to the system. The ordinance includes provisions for watercourse protection, including a prohibition on altering the flow of water in a natural drainage course.

The City of Piedmont will continue to implement programs to improve water quality during the lifetime of this General Plan. This will include efforts to reduce the use of toxic pesticides and fertilizers, maintain and improve the storm drainage system, and continue public education on pollution control. Successful implementation will require ongoing cooperation with Oakland, Alameda County, and other jurisdictions in the region.

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Major Air Pollutants (*)

Air pollutants regulated by the state and federal governments include:

Ozone, or smog, formed by chemical reactions involving reactive organic compounds and nitrogen oxides. The primary sources are motor vehicle emissions, power plants, refineries, and solvents.

Carbon Monoxide (CO), an odorless, colorless gas formed by the incomplete combustion of fuels and other organic substances. Motor vehicles are the main source.

Suspended Particulate Matter (PM_{2.5} and PM₁₀). Particulates include a range of solid and liquid inhalable particles—air quality standards differentiate between particles less than 10 microns and less than 2.5 microns in diameter. Major sources include road dust, agriculture, soot, fires, and construction and demolition.

Nitrogen dioxide is a brown-colored gas that is a byproduct of the combustion process.

Sulfur dioxide is a colorless gas with a strong odor. It is generated through the combustion of fuels containing sulfur, such as oil and coal.

Lead is a widely used metal that can contaminate air, food, water, or soil.

AIR RESOURCES

Piedmont is located in the San Francisco Bay Air Basin. Although the city does not have major emission sources such as smokestacks or freeways, it is impacted by air pollution from stationary and mobile sources throughout the region. Residents also contribute to regional air quality problems as they drive cars, use gasoline-powered equipment and electric appliances, burn wood, barbecue, and carry out other routine household activities.

Air pollution is a contributor to asthma and other respiratory problems, suppressed resistance to disease, and heart ailments. It can also harm vegetation, impair photosynthesis, reduce visibility, and even damage buildings. To protect public health and reduce pollution levels, the state and federal governments have adopted air quality standards.

Air Quality Standards

Air pollution is regulated using state and federal ambient air quality standards and emission standards for individual sources. Since the passage of the Clean Air Act in 1970, the federal government (EPA) has developed standards for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead (see text box at left). California has had its own standards for these pollutants since 1969 but it was not until 1989 that the state enacted legislation requiring the standards to be achieved by a particular date.

The major agencies regulating air quality in the Bay Area are the California Air Resources Board (CARB) and the Bay Area Air Quality Management District (BAAQMD). CARB prepares statewide plans to meet air quality standards and regulates “tailpipe” emissions from motor vehicles. The BAAQMD regulates emissions from stationary sources (such as power plants and refineries) and conducts air quality planning, permitting, monitoring, and enforcement. The BAAQMD works collaboratively with agencies like the Alameda County Congestion Management Agency and Metropolitan Transportation Commission to develop air quality improvement strategies.

(*) List excludes toxic air contaminants such as asbestos, benzene, beryllium, mercury, and vinyl chloride.

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Improving Air Quality at the Local Level



Cars and trucks are the major source of air pollution in the Bay Area. Although controlling vehicle emissions is a regional challenge, local governments can do their part by implementing "Transportation Control Measures." Even in a small, residential community like Piedmont, TCMs can make a difference.

Typical TCMs include:

- Carpool programs
- BART Shuttles
- Improved provisions for bicycles and pedestrians
- Converting City vehicles to electric "plug ins" or hybrids
- Transit service improvements
- Transit incentives for City and School District employees
- Public education
- Mixed use development (reducing the need to drive by placing housing, workplaces, and services close together)

Under *federal* law, the San Francisco Air Basin is considered a non-attainment area for ozone, meaning it does not meet the federal ozone standards. The Bay Area is considered to be in attainment with federal standards for carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Its federal attainment status for fine particulate matter is presently unclassified and will not be determined until late 2009. Under *state* law, the Bay Area is considered a non-attainment area for ozone, PM_{2.5}, and PM₁₀. It is in attainment with state standards for all other pollutants.

Table 5.1 indicates air quality measurements at the monitoring sites closest to Piedmont from 2001-2007. There were no exceedances of the ozone standard in the Central Bay Area during this period. Ozone violations typically occur in the inland valleys where the summer heat is more intense and air circulation is less influenced by the marine layer. Standards for fine particulate matter (PM_{2.5}) were violated five times during 2007 at the San Francisco monitoring station.

Piedmont and other Bay Area cities are susceptible to other forms of air pollution, including odors and toxic air contaminants. The BAAQMD maintains a data base of air quality complaints filed by residents and businesses across the region. Typical complaints relate to foul odors, smoke, spraying, and construction dust. The Air District investigates each complaint and issues citations where necessary. During the three most recent years of record, no complaints were received from persons giving Piedmont addresses. Presently, the only sites in Piedmont with BAAQMD emission permits are the City's Corporation Yard and two gasoline stations.

Planning for Cleaner Air

The BAAQMD is required to prepare plans showing how the Bay Area will meet state and federal air quality standards. In 2005, it adopted an Ozone Strategy that included new emission controls, mobile source programs, and transportation strategies. More recently, the California Air Resources Board (CARB) has prepared a plan showing how the state will achieve the greenhouse gas reduction goals set by AB 32.

Local governments play an important role in carrying out state and regional air quality plans. Their greatest contribution can be made by planning for communities that are less auto-dependent. The text box at left highlights "Transportation Control Measures" (TCMs) that are applicable to Piedmont.

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Table 5.1: Piedmont Area Pollutant Summary, 2001-2007									
Pollutant		State Standard ¹	Concentrations by Year						
			2001	2002	2003	2004	2005	2006	2007
Ozone ²									
	Highest 1-hr average concentration, ppm	.09	.07	.05	.08	.08	.068	.088	.071
	Number of violations of state standard		0	0	0	0	0	0	0
	Highest 8-hr average concentration, ppm	.07	.04	.04	.05	.06	.045	.066	.054
	Number of violations of state standard		0	0	0	0	0	0	0
Carbon Monoxide ³									
	Highest 1-hr average concentration, ppm	20.0	5.0	4.4	3.9	3.5	3.4	2.7	2.5
	Number of violations of state standard		0	0	0	0	0	0	0
	Highest 8-hr average concentration, ppm	9.0	4.0	3.3	2.8	2.6	2.4	2.1	1.6
	Number of violations of state standard		0	0	0	0	0	0	0
Suspended Particulates (PM-10) ⁴									
	Highest 24-hour average concentration, ug/m ³	50	67	74	52	52	46	61	70
	Number of Violations		7	2	1	1	0	3	2
	Annual Geometric Mean, ug/m ³	20	22.9	21.0	22.7	22.5	20.1	22.9	21.9
Suspended Particulates (PM-2.5) ⁵									
	Highest 24-hour average concentration, ug/m ³	35	N/A	70	42	46	43.6	54.3	45.2
	Number of Violations		N/A	4	0	0	0	3	5
Nitrogen Dioxide ⁶									
	Highest 1-hr average concentration, ppm	0.18	.07	.08	.07	.06	.066	.107	.069
	Number of Violations		0	0	0	0	0	0	0

Source: BAAQMD, 2007, Barry Miller AICP, 2008

Notes:

- (1) Standards shown are for California, except for PM-2.5 where the national standard is used
- (2) Ozone readings for 2001-2005 are from Oakland; 2006-07 reading is from San Leandro
- (3) Carbon monoxide readings for 2001-2005 are from Oakland; 2006-07 readings are from San Francisco
- (4) PM-10 readings are from San Francisco, as PM-10 was not monitored in Oakland between 2001-2007
- (5) PM-2.5 was not monitored until 2002. PM-2.5 readings are for the San Francisco station, since PM-2.5 was not monitored in Oakland between 2001-2007. PM-2.5 standard was changed from 65 ug/m³ to 35 ug/m³ in 2006.
- (6) Nitrogen Dioxide readings are from San Francisco, as NO₂ was not monitored in Oakland.

Piedmont's urban habitat consists of a mosaic of lawns, gardens, backyards, street trees, and parks. This "urban forest" provides nesting areas for birds, moderates temperatures, enhances property values, stabilizes slopes, reduces noise, absorbs air pollutants, and is a source of inspiration and beauty.

PLANT AND ANIMAL RESOURCES

Habitat

Piedmont's natural landscape has been twice transformed in the past two centuries. In the 1800s, its rolling hills were converted to ranches, orchards, and dairies. Cattle grazing eliminated most native species and invasive European grasses took root. In the 1900s, the agricultural landscape was urbanized with homes and gardens. Ornamental trees were planted along streets, flowering plants and shrubs were planted in private yards, and exotic plants such as eucalyptus and Himalayan blackberry appeared along streambeds.

Despite the altered state of Piedmont's landscape, the city still has many natural open spaces and distinct ecological communities. Piedmont's flora provides important aesthetic, environmental, and psychological benefits.

The principal habitat types in Piedmont are:

- **Woodlands.** These areas are generally located in Piedmont Park, along creeks and ravines, and on larger lots in the Estate Zone. Common trees include live oak, black oak, redwood, bay laurel, buckeye, alder, willow, and sycamore. An understory of shrubs such as poison oak, blackberry, and English ivy is often present. In Piedmont, these areas support deer, opossums, skunks, raccoons, squirrels, and many types of birds.
- **Grasslands.** These areas occur in the small portion of Mountain View Cemetery within the Piedmont city limits. A variety of oat grasses, rye grasses, herbs, forbs, and bromes are common. Wildlife is similar to woodland species, but also includes snakes, lizards, wild turkeys, and raptors such as turkey vultures and red-tailed hawks.
- **Wetlands.** The US Fish and Wildlife Service (USFWS) maintains an inventory of wetlands across the United States. Their data base shows a *freshwater forested shrub wetland* on a linear five-acre area along Indian Gulch to the rear of residences in the 100 block of St. James Drive, the unit block of LaSalle, and the 200 block of Indian Road. No other areas in the city of Piedmont appear in the inventory. One could expect to find frogs, newts, snails, water insects, and turtles in freshwater wetland areas. Wetlands are governed by a complex set of state and federal regulations designed to discourage their alteration and mitigate impacts of their disturbance.

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Piedmont's Urban Forest



Piedmont maintains over 7,000 trees on 85 streets and has a regular program to plant, trim, and replace these trees. Spraying, cutting, pruning or trimming trees may only be done by the City's Public Works Department.

Many streets are planted on both sides, with trees extending the full length of the block. Seventeen varieties are predominant: acacia, birch, camphor, carob, cherry, chestnut, elm, ginkgo, hawthorne, linden, liquidambar, magnolia, mulberry, pepper, plum, poplar, and sycamore. The sycamores outnumber the other trees by far, and are the predominant tree on 35 of the city's streets.

- **Urban.** Piedmont's urban habitat consists of a mosaic of lawns, gardens, backyards, street trees, and parks. This "urban forest" provides nesting areas for birds, moderates temperatures, enhances property values, stabilizes slopes, reduces noise, absorbs air pollutants, and is a source of inspiration and beauty. Urban habitat in the city supports many of the species found in woodland and grassland areas.

The City currently does not regulate tree removal on private property. City trees may generally be removed if they are diseased or dying, or if the tree represents a safety hazard. The Parks Commission may recommend areas in need of street tree planting. Piedmont residents may request street trees and may donate funds to the Piedmont Beautification Foundation, which organizes tree planting in Piedmont Park and elsewhere in the City.

Special Status Species

Special status species are those which have been identified by the federal or state governments and conservation organizations as requiring protection due to their rarity, scarcity, or danger of extinction. They include rare, endangered, and threatened species, as well as species that are candidates for official listing. When the City of Piedmont makes decisions affecting land use and development, it must determine if the project might impact any listed species or its habitat. State and federal laws prohibit projects which would significantly impact such species without appropriate mitigation measures.

The habitat of each special status species has been catalogued by the California Department of Fish and Game and is mapped in the California Natural Diversity Data Base (CNDDB). The only species mapped as being potentially present in Piedmont is the silver-haired bat, a coastal forest dweller that feeds over streams, ponds, and open brushy areas. The bat was last observed in Piedmont in October 1920. There are no plant species within the Piedmont City limits indicated on the CNDDB.

Additional CNDDB plant and animal species are listed in Oakland, around Lake Merritt, Lake Temescal, and in the hills above Montclair. Because Piedmont contains habitat conditions that are similar to these areas, the presence of these species in Piedmont cannot be completely ruled out. These species include Western pond turtle, California red-legged frog, Bay checkerspot butterfly, Alameda whipsnake, pallid bat, hoary bat, golden eagle, and Coopers hawk. Some of these species have not been observed since the 1930s, when the Oakland Hills were less intensively developed.

“LEED-ing” the Way

The US Green Building Council has established a rating and certification system for green buildings known as LEED (Leadership in Energy and Environmental Efficiency). Buildings are rated as “certified”, “silver”, “gold”, or “platinum” based on the degree to which they achieve environmental goals. In 2008, the Piedmont City Council adopted an ordinance requiring all City-owned or operated buildings to meet LEED standards.

In July 2008, the California Building Standards Commission amended the state’s building code standards to incorporate green building principles. The new code incorporates higher energy efficiency standards, along with new moisture control, indoor air quality, water conservation, and waste reduction measures. Piedmont will implement these measures as it updates its Building Code, and will consider additional steps to promote greener construction in the city.

SUSTAINABILITY

The basic concept behind sustainability is that natural resources should be managed so they are not permanently depleted or lost for future generations. The concept goes beyond environmental concerns and touches many social, economic, and public health issues. More recently, sustainable development has been embraced as a response to global issues such as climate change, dependence on foreign oil, and rising energy and food costs.

Sustainability is one of the overarching goals of this General Plan, and has been incorporated in all of the Plan’s elements. For example, by encouraging second units (Housing Element), Piedmont will provide affordable housing opportunities close to the region’s major job centers and reduce the need for long commutes. By encouraging carpooling and walking (Transportation Element), the city is helping to reduce vehicle emissions. The following sections highlight other ways Piedmont will reduce its carbon footprint and become a greener community during the years ahead.

Green Building

“Green buildings” incorporate recycled materials, advanced energy and water conservation systems, and are designed through a process that considers not only a building’s function but also its use of natural resources, its impact on the environment, and the well-being of its occupants. Typical green building strategies include the use of light-colored paving materials to reduce heat build-up, motion-activated light switches to save energy, greywater recycling systems, and solar panels. Green buildings are also designed to avoid indoor air quality problems and to encourage pedestrian and bicycle accessibility.

Piedmont has already started taking steps to require greener construction, starting with City-owned and operated buildings (see text box at left). In the future, amendments to the building code and other locally-sponsored initiatives may be considered.

Reducing the amount of solid waste that ends up in landfills is one of the most effective ways that Piedmont can “go green.” Landfill space in California is limited, and the amount of waste generated by residents and businesses cannot be sustained.

Low Impact Development

“Low Impact Development” (LID) refers to construction methods that reduce stormwater run off. Allowing rainwater to percolate into the soil rather than flowing to storm drains provides many benefits. It reduces the risk of flooding, allows the aquifer to be recharged, and reduces the flow of pollutants to creeks. Stormwater can also provide a secondary water source for landscaping.

Piedmont implements LID practices in two ways. First, the city maintains impervious surface standards in most zoning districts. On single family lots, 30 percent of the surface area must be vegetated (not covered by pavement or a structure). On estate lots, the requirement is 40 percent. Second, the city participates in the Countywide Clean Water Program, which requires stormwater containment and treatment measures for new construction.

Solid Waste Reduction and Recycling

Reducing the amount of solid waste that ends up in landfills is one of the most effective ways that Piedmont can “go green.” Landfill space in California is limited, and the current per capita volume of waste generated by residents and businesses cannot be sustained. A 1989 mandate from the California legislature required all cities to reduce the amount of landfilled solid waste by 50 percent by 2000. Piedmont achieved this target; as of July 2008, 70 percent of its waste was diverted. Along with other cities in Alameda County, the city has set a 75 percent waste diversion target for 2010.

Piedmont has an aggressive solid waste reduction and recycling program to reach its 2010 goal. In 2007, the City signed a new 10-year agreement with Richmond Sanitary Service to provide trash, recycling, and green waste services. These services include backyard collection of garbage, green waste, and recyclable materials (with the option of curbside service provided), and four-times yearly bulk waste and e-waste collection. The range of recyclables has been expanded to include plastic products and food scraps. Improved recycling containers are also being provided. The City has also implemented measures to increase the percentage of construction and demolition debris that is recycled.

NATURAL RESOURCES AND SUSTAINABILITY

“Make it worth people’s time and money to make things greener...

incentives for planting trees, buying a hybrid or electric vehicle, changing to energy-efficient light bulbs...”

“Plant more native plants which are more water-conserving and will support indigenous insects and birds.”

“Let’s use the high baseball fence and light towers at Witter Field for large propellers and make our own electricity. Now *that’s* a cool idea!”

- General Plan Survey Responses

Water Conservation

California’s water supply has always been precarious. Today, it is subject to increasing demand by a growing population and constrained supply due to drought and changing climate patterns. Simply building more reservoirs will not solve the problem.

Over the past three decades, conservation has become an integral part of the state’s water management strategy. The City of Piedmont has worked with East Bay Municipal Utility District to implement programs to reduce water waste, encourage drought-tolerant landscaping, encourage the use of low-flow showers and toilets, and promote public education. These programs must be continued—and expanded—in the future.

New measures may include adoption of “bay-friendly” landscape guidelines or standards to reduce water use and encourage native planting. The City may also explore the use of recycled water systems for landscaping its medians and parks, and encouraging gray water reuse systems, cisterns, and other water reducing measures in private construction.

Energy Efficiency

Piedmont residents devote large portions of their incomes to lighting, heating, and cooling their homes and running computers and appliances. Changing technology has led to higher per capita energy consumption over the last few decades, despite the emphasis on conservation.

Although energy supply and demand are national issues, there is much that can be done at the local level. Piedmont currently enforces Title 24 of the California Code of Regulations. These are energy efficiency standards that apply to heating, cooling, water heating, and lighting in new construction. The City also works with PG&E to promote education on energy efficiency and to support PG&E’s weatherization and conservation programs.

Piedmont can become more self-reliant in the future by increasing its use of solar power. Climatic conditions in the city are favorable to the use of solar energy for small-scale applications such as domestic water heating. Through good site planning and design, many of the city’s homes can be retrofitted to incorporate solar panels, solar pool heaters, and other solar devices. The City can also support energy conservation through education and outreach, and by exploring home energy retrofit and energy-efficient lighting installation measures.

NATURAL RESOURCES AND SUSTAINABILITY

As noted in the Transportation Element, Piedmont will also strive to reduce energy consumption in the transportation sector. This could include preferential parking for hybrid or electric cars, improved access to BART, and even installing bio-fuel or other alternative fuel pumps at the city's gas stations.

Greening the Government

The City of Piedmont needs to set high standards for its own operations if it expects others in the community to follow suit. It should be a role model in recycling, green building construction, and environmentally sound landscaping. It should lead the way by composting clippings from medians and parks, procuring recycled materials, and deploying hybrid vehicles for City use. These changes will not happen overnight—but they should be implemented gradually as funds allow. During the annual budgeting cycle and capital improvement process, the City will explore ways it can embrace sustainable development and business principles.

Behavioral Changes

Some of the most basic steps to becoming a more sustainable city take place in our own homes and backyards. Simple actions such as taking transit on “spare the air” days, walking more, reducing pesticide use, planting home vegetable gardens, and even using canvas grocery bags can make a big difference when everybody participates. Again, the City can lead the way by providing education and outreach on the steps Piedmont residents can take to reduce their impacts on the environment around them.

NATURAL RESOURCES AND SUSTAINABILITY

City of Piedmont Sustainability Policy

It is the intent of the City of Piedmont to be a sustainable community - one which meets its current needs without compromising the ability of future generations to meet their own needs. In adopting this policy, the City of Piedmont accepts its responsibility, through its operations, programs and services, to:

- Continuously improve the quality of life for all Piedmont residents without adversely affecting others.
- Enhance the quality of air, water, land and other natural resources through conservation, reduced pollution, increased efficiency, and protection of native vegetation, wildlife habitat and other ecosystems.
- Reduce greenhouse gas emissions, specifically by reducing landfilled waste, energy consumption, and water consumption, and by encouraging walking, bicycling and other alternative travel modes.
- Encourage greener methods of construction.
- Support small local businesses that use sustainable practices in their own operations
- Promote public education and awareness of sustainability issues.
- Align and partner with community groups, businesses, residents, non-profits, and neighboring communities where appropriate to work toward these goals

The above policy is incorporated by reference into this General Plan and is intended to complement the other goals, policies, and objectives in all Plan Elements.



GOALS, POLICIES, AND ACTIONS

Goal 13: Natural Features

Protect and enhance Piedmont's natural features, including its hillsides, creeks, and woodlands.

Policies and Actions

Policy 13.1: Respecting Natural Terrain

Maintain the natural topography of Piedmont by avoiding lot splits and subdivisions that would lead to large-scale grading and alteration of hillsides. Planning and building regulations should ensure that any construction on steep slopes is sensitively designed and includes measures to stabilize slopes, reduce view blockage, and mitigate adverse environmental impacts.

Policy 13.2: Erosion Control

Reduce soil loss and erosion by following proper construction and grading practices, using retaining walls and other soil containment structures, and development control measures on very steep hillsides.

Policy 13.3: Creek Protection

Retain creeks in their natural condition rather than diverting them into man-made channels or otherwise altering their flow. Riparian vegetation and habitat along the city's creeks should be protected by requiring setbacks for any development near creek banks. These setbacks should be consistent with state and federal laws governing stream alteration. Figure 5.2 should be used as a general guide for identifying creeks subject to this policy, but it is not intended to be a comprehensive inventory of all watercourses in the city.

Policy 13.4: Conserving Native Vegetation

Require new development (including expansion of existing residences and major landscaping projects) to protect native vegetation, particularly woodland areas that support birds and other wildlife.

Policy 13.5: Protection of Special Status Species

Ensure that local planning and development decisions do not damage the habitat of rare, endangered or threatened species, and other species of special concern in Piedmont and nearby areas.

NATURAL RESOURCES AND SUSTAINABILITY

“Push stormwater runoff controls—support creek protection and restoration.”

“Take advantage of hillside locations to divert and capture stormwater into cisterns or bio-swales that can be used to irrigate parkway strips, parks, and school grounds.”

**- General Plan Survey
Responses**

- **Action 13.A: Biological Assessment Requirements**
Require a biological assessment (wildlife or botanical surveys) for any project which could alter or damage the habitat of special status species, as defined by the California Department of Fish and Game or the US Fish and Wildlife Service.
- **Action 13.B: Hillside Development Guidelines**
Consider revising the Piedmont Residential Design Guidelines to include guidelines for the sensitive development of hillside sites.
- **Action 13.C: Development Standards for Hillside Sites**
Consider modifications to the current zoning setback and floor area ratio requirements for large or subdividable lots in Zones A and E where portions of the lot have slopes that exceed 30 percent (see Figure 5.1).
- **Action 13.D: Enforcement of Watercourse Protection Standards**
Enforce the watercourse protection provisions of the City’s Stormwater Management Ordinance to protect and enhance Piedmont’s creeks and drainage ways. The Ordinance requires a permit to modify the natural flow of a watercourse, carry out development within a watercourse setback, discharge into a watercourse, or add or remove any unconsolidated material in a watercourse. Federal regulations also apply to any project which would obstruct the flow of water in a creek.

See the Design and Preservation Element for additional policies on view preservation.

Goal 14: Urban Forest

Conserve and expand Piedmont’s tree canopy to create visual beauty, provide shade, prevent erosion and absorb runoff, reduce noise and air pollution, and provide habitat for birds and other wildlife.

Policies and Actions

Policy 14.1: Street Tree Maintenance

Maintain the city’s street trees and recognize their essential contribution to the character and environmental health of Piedmont. The City should continue to perform pruning and tree care on a regular basis to ensure the long-term health of trees and to address conflicts with views, utilities, and public safety.

NATURAL RESOURCES AND SUSTAINABILITY

Ensure that street trees are appropriate for their settings, given considerations such as maintenance and pruning requirements, planting strip width, water requirements, and potential for sidewalk damage and view blockage.

Policy 14.2: Tree Removal and Replacement

Where appropriate and feasible, require replacement trees when trees on public property are removed. When non-native trees such as eucalyptus and acacia are removed, they should be replaced with native species or other species that are more appropriate to Piedmont's vegetation management and infrastructure maintenance goals.

Policy 14.3: Selecting Appropriate Street Trees

Ensure that street trees are appropriate for their settings, given considerations such as maintenance and pruning requirements, planting strip width, water requirements, and potential for sidewalk damage and view blockage.

Policy 14.4: Retention of Healthy Native Trees

Encourage the retention of healthy native trees as new construction takes place, including home additions and landscaping projects. Existing significant trees should be conserved where feasible when development takes place.

Policy 14.5: Landscaping

Encourage the use of landscaping to beautify the city, enhance streets and public spaces, reduce stormwater runoff, and enhance community character. To the extent possible, landscaping practices should minimize the use of pesticides and herbicides, reduce the need for pruning, and incorporate native, drought-tolerant species rather than exotic or invasive species. Landscaping and tree planting should also reinforce Piedmont's fire prevention and vegetation management goals.

Policy 14.6: Trees and Views

Encourage property owners, the Park Commission, and the Planning Commissions to find amicable solutions that balance tree preservation and view preservation goals.

▪ *Action 14.A: Street Tree Standards*

Review existing City standards for street tree planting to ensure that they address public concerns about sidewalk breakage, leaf litter, view blockage, and maintenance. Periodically consult the Piedmont Park Commission to review practices and procedures for tree management.

▪ *Action 14.B: Replacement of Hazardous Trees*

Continue the ongoing City program to replace liquidambar and other potentially hazardous trees with alternative species that are less likely to damage sidewalks and pavement.

NATURAL RESOURCES AND SUSTAINABILITY

**“Green means using less.
To be truly green, society
needs to stop unnecessary
consumption.”**

**“Adopt organic practices
on parks and landscaped
areas—especially since
runoff goes to the Bay.”**

**“Offer a discount
program on golf cart type
electric vehicles for
running around
town...some of us
parents are just driving
up and down Oakland
Avenue all day.”**

**- General Plan Survey
Responses**

▪ **Action 14.C: Tree Planting Initiatives**

Support the efforts of non-profit organizations such as the Piedmont Beautification Foundation to plant trees and undertake landscaping projects on public space.

See also Action 29.A regarding use of the Residential Design Guidelines to achieve landscaping and tree planting objectives.

Goal 15: Air and Water Quality

Actively participate in efforts to improve air and water quality in the San Francisco Bay Area.

Policies and Actions

Policy 15.1: Transportation Control Measures

Implement transportation control measures (TCMs) to reduce air pollution emissions at the local level. This should include measures to promote walking and bicycling, continue casual carpooling, sustain or increase public transit service to Piedmont, and coordinate with other jurisdictions to create a more balanced and integrated transportation system.

Policy 15.2: Alternative Fuel Vehicles

Encourage the use of cleaner-burning fuels and low-emission vehicles. This could include providing infrastructure for “plug-in” vehicles; hydrogen fuel pumps at the city’s gas stations; and a gradual switch to hybrid, electric, or alternative fuel vehicles for the City fleet.

Policy 15.3: Urban Runoff

Protect the quality of groundwater and surface water in Piedmont and the watersheds it shares with Oakland. Support the efforts of state, federal, county, and adjacent city agencies to control urban runoff, thereby improving water quality in local creeks, Lake Merritt, and San Francisco Bay.

Policy 15.4: Countywide Clean Water Program Participation

Participate in the Alameda Countywide Clean Water Program and continue to be a co-permittee on the NPDES permit for urban runoff. This will require ongoing measures to monitor stormwater pollution, regulate construction runoff, sweep local streets and clean storm drain inlets, promote education and outreach programs (such as storm drain stenciling), enforce regulations and penalties for illicit discharges, and participate in County meetings to discuss water quality issues.

NATURAL RESOURCES AND SUSTAINABILITY

Policy 15.5: Integrated Pest Management

To the extent feasible and appropriate, use integrated pest management techniques when maintaining City parks, medians, and public facilities. These techniques minimize the use of pesticides, herbicides, and other toxic materials that could potentially pollute surface water and groundwater.

- **Action 15A: Bay-Friendly Landscape Ordinance**
Consider adopting a civic Bay-friendly landscape ordinance which anticipates a gradual shift toward drought-tolerant landscaping on public property, including parks, public buildings, and medians. Promote public education to encourage bay-friendly landscape practices in private yards.
- **Action 15B: Construction Dust Controls**
Require local construction activities, including remodeling and landscaping as well as new construction, to minimize airborne dust and particulate matter. This should include requirements to cover stockpiled soil, avoid earthmoving on windy days, and cover trucks that are hauling dirt and debris.
- **Action 15C: Wood-burning Fireplaces and Stoves**
Ensure compliance with EPA standards for wood-burning fireplaces and stoves, and consider incentive-based programs to replace or retrofit existing fireplaces and stoves with lower emission alternatives.
- **Action 15D: Gas-Powered Leaf Blowers**
Enforce the existing ban on gasoline-powered blowers by private parties. Adopt a policy for municipal use of gas-powered blowers.

See the Transportation Element for additional measures to improve air quality and reduce greenhouse gas emissions.

Goal 16: Sustainable Development

Encourage building and construction practices that minimize environmental impacts and natural resource consumption.

Policies and Actions

Policy 16.1: Linking Land Use and Transportation Choices

Consistent with the Land Use and Transportation Elements of this plan, retain walkable neighborhoods, reliable public transportation, safe cycling, carpooling, convenient access to shops and services, and other measures which reduce the need for driving and fuel consumption in Piedmont.

Maintain development standards and building requirements that encourage the efficient use of water. These requirements should include the use of plumbing fixtures designed for water efficiency and irrigation systems designed to minimize water waste.

Policy 16.2: Green Building

Support the use of green building methods in new construction and rehabilitation projects, including both public agency projects and private projects undertaken by homeowners.

Policy 16.3: Water Conservation

Maintain development standards and building requirements that encourage the efficient use of water. These requirements should include the use of plumbing fixtures designed for water efficiency, irrigation systems designed to minimize water waste, and allowances for graywater use in residential construction, where feasible.

Policy 16.4: Permeable Pavement

Encourage the use of permeable materials for parking lots, driveways, walkways, and other paved surfaces as a way to absorb stormwater, recharge the aquifer, and reduce urban runoff.

Policy 16.5: Hardscape Surface Standards

Maintain hardscape (impervious) surface standards in the Piedmont Municipal Code as a way to retain stormwater absorption capacity and reduce runoff to the storm drainage system. Consider other methods to reduce runoff, such as green roofs, rain barrels, and cisterns.

Policy 16.6: Reclaimed Water Use

Support the use of reclaimed water (“gray water”), including treated effluent from the EBMUD wastewater facility, for landscape irrigation in Piedmont’s parks and on medians. Periodically consider the feasibility of reclaimed water use based on EBMUD’s capital improvement plans, cost factors, water supply, and other considerations.

▪ **Action 16A: Title 24**

Implement Title 24 of the California Code of Regulations (energy efficiency standards).

▪ **Action 16.B: Building Code Amendments**

Regularly evaluate any obstacles to green building construction in Piedmont. Periodically amend the building code to incorporate green building principles, respond to changes in state law which promote green building, and match the steps being taken by nearby Alameda County cities to encourage green construction.

NATURAL RESOURCES AND SUSTAINABILITY

“How about a Piedmont “green tour”? Local residents could show what they are doing. Piedmont High School could form a student group that systematically evaluates every property in Piedmont for its green potential. What’s the low-hanging fruit for each home? This could be done as a fundraiser.”

- General Plan Survey
Response

- **Action 16.C: LEED Requirements for Public Buildings**
Periodically evaluate the City’s recently adopted LEED certification requirements for public buildings to determine whether they are achieving the desired outcomes. Encourage the Piedmont Unified School District to adopt similar standards.

Goal 17: Resource Conservation

Conserve non-renewable resources for future generations through solid waste reduction and energy management.

Policies and Actions

Policy 17.1: Solid Waste Reduction

Actively promote recycling, composting, and other programs that reduce the amount of solid waste requiring disposal in landfills. The City of Piedmont will strive to exceed the waste diversion targets set by State and County waste management agencies.

Policy 17.2: Energy Conservation

Strongly advocate for increased energy conservation by Piedmont residents, businesses, and other public agencies such as the Piedmont Unified School District. Support PG&E in their education and outreach efforts and encourage Piedmont residents to participate in PG&E weatherization and appliance rebate programs.

Policy 17.3: Alternative Energy Sources

Encourage the use of alternative energy sources, such as solar power and wind energy, by Piedmont residents.

Policy 17.4: Greening the Government

Ensure that the City of Piedmont follows conservation practices in its day-to-day operations and is a role model for residents and local businesses in the arena of conservation. The City should encourage the use of recyclable or reusable goods in its purchasing policies and implement other conservation measures that can be emulated by Piedmont residents.

Policy 17.5: Collaboration with Other Jurisdictions

Encourage collaborative efforts with other jurisdictions to address sustainability and conservation issues, recognizing the greater results and efficiencies that can be achieved by pooling resources with other communities.

NATURAL RESOURCES AND SUSTAINABILITY



Student poster, Wildwood School

- **Action 17.A: Climate Action Plan**
Complete and adopt a Piedmont Climate Action Plan that identifies the steps the City can take to reduce greenhouse gas emissions and achieve the emission reduction targets established by Assembly Bill 32.
- **Action 17.B: Moving Beyond 75 Percent Waste Diversion**
Implement programs to increase the city's solid waste diversion rate to—and beyond—75 percent, including bulk waste pick-up, e-waste pick-up, construction and debris recycling, food waste recycling, and yard waste composting . Periodically review the city's solid waste collection rate structure to ensure that it supports the city's waste reduction goals.
- **Action 17.C: Environmental Education and Outreach**
Together with the Piedmont Unified School District and local media, sponsor education and outreach programs designed to increase awareness of environmental and conservation issues. Outreach programs could include “green” tours, classes and workshops, informational articles, Arbor Day tree planting and Earth Day activities, brochures on green building at the City Planning counter, promotional campaigns, cooperative ventures with groups such as the Piedmont Beautification Foundation and the Boy Scouts, and similar activities.
- **Action 17.D: Additional Recycling Receptacles**
Place additional recycling receptacles in public places, especially City parks, as a strategy for reducing solid waste disposal.
- **Action 17.E: Solar Panel Study**
Undertake a “best practices” study of design and permitting issues related to solar panels, wind turbines, and other alternative energy sources. The intent is to accommodate and encourage alternative energy sources in Piedmont without compromising public safety or the design integrity of the city's architecture and landscapes.
- **Action 17.F: Community Buying Groups**
Consider a collaborative effort with other cities to form “community buying groups” for the joint purchase of solar panels at reduced costs.
- **Action 17.G: Best Management Practices**
Implement “best management practices” (BMPs) that reduce pollution and waste. Typical BMPs include household hazardous waste collection drives, proper storage of pesticides and household chemicals, prevention of illicit discharges into storm drains, and erosion control measures.

NATURAL RESOURCES AND SUSTAINABILITY

- *Action 17.H: Environmentally Friendly Purchasing*
Consider adopting an Environmentally Preferable Purchasing (EPP) policy for municipal purchases. An EPP would promote the cost-effective use of recyclable products and products made of recyclable materials, and would help the City achieve other goals, such as energy efficiency, water efficiency, transportation efficiency, and reduction of toxics.

NATURAL RESOURCES AND SUSTAINABILITY

