4

INFRASTRUCTURE

IN THIS CHAPTER

4.1 Infrastructure Findings

4.2 Infrastructure Goals and Policies

chapter 4
infrastructure

This chapter of the Community Plan describes infrastructure goals and policies for North Fair Oaks, including water distribution, storm drainage and flood control, sewer service, and dry utilities. The infrastructure goals and policies address both existing infrastructure conditions and needs in North Fair Oaks, and infrastructure improvements needed to support future development in the community.

The Existing Conditions Analysis in Appendix A assesses the current condition of infrastructure in North Fair Oaks and identifies a number of existing deficiencies and improvements needed to adequately serve the existing population and current development in North Fair Oaks, including, in particular, improvements to storm drainage and flood control. In addition, the potential changes in the type and density of development within North Fair Oaks reflected in Chapter 2: Land Use Designations will depend on the reliability and capacity of key infrastructure elements, including water distribution, storm drainage facilities and flood control, sanitary sewer, and other infrastructure. This chapter includes the utility infrastructure goals and policies required to address current needs, and to support the levels of development proposed by the Community Plan. An analysis that supports the infrastructure findings and recommendations in this chapter can be found in Appendix D: Infrastructure Analysis.




Example of infrastructure projects in the North Fair Oaks

This chapter contains the following sections:

4.1 Infrastructure Findings

4.2 Infrastructure Goals and Policies

4.1 INFRASTRUCTURE FINDINGS

The Existing Conditions Analysis (see Appendix A) presents a comprehensive study of infrastructure conditions in North Fair Oaks. The analysis includes the following Key Findings, which are the basis for the goals, policies, and implementation measures included in this chapter.

Finding 1: The current potable water system in North Fair Oaks consists mainly of older conveyance pipes, and the portion of the study area within Redwood City's jurisdiction lacks emergency storage facilities.

Finding 2: The current storm drain system in North Fair Oaks lacks sufficient underground facilities (storm drain pipes) to convey stormwater runoff to downstream facilities such as the Bayfront Canal during large storm events.

Finding 3: Portions of North Fair Oaks, particularly the areas near the Southern Pacific railroad tracks where garages are located below the street elevation, experience regular flooding.

Finding 4: The majority of North Fair Oaks lacks passive stormwater treatment facilities (i.e., bioretention areas, vegetated swales, rain gardens, etc.), which remove pollutants from stormwater runoff before they enter the storm drain system and flow to creeks and the Bay.

Finding 5: The sanitary sewer system within North Fair Oaks has conveyance limitations in four separate sanitary sewer mains located in El Camino Real, Middlefield Road, 6th Avenue, and Bay Road; and treatment limitations associated with capacity rights at the South Bayside System Authority treatment plant.

Finding 6: Recycled water is currently not available in North Fair Oaks. The closest existing point of connection from North Fair Oaks to a recycled water system is east of the US 101/Woodside Road junction.

Example of permeable paving along residential streets and innovative energy generation through solar panels in the industrial areas in North Fair Oaks

Ensure emergency water storage is available

Encourage landscaping that reduces impact on water demand

4.2 INFRASTRUCTURE GOALS AND POLICES

The following goals and policies address the conditions and issues identified in the Existing Conditions Analysis, as well as the improvements required to support the type and extent of potential new development in North Fair Oaks identified in Chapter 2: Land Use Designations.

Goal 4.1: Improve the potable water system, which currently contains older conveyance pipes and lacks emergency storage facilities.

Policy 1A: Pursue agreements with the City of Redwood City and California Water Service Company to ensure that emergency water storage is available in North Fair Oaks. The agreements should include a discussion of both the timing and funding of any future emergency water storage facilities. Any such new storage or distribution systems should be located such that cost and environmental impact to surrounding areas is minimized. A separate study should be undertaken for any future water tank locations.

Policy 1B: Pursue a new standard to ensure that any future street improvements within North Fair Oaks include replacing existing water lines with new cast iron (or non-asbestos-containing water line materials suitable for the existing soil condition) water lines. Since water service is provided by the City of Redwood City and California Water Service Company, the County should coordinate the new standard with these water purveyors.

Policy 1C: Require that any future developments that will result in an increase of water usage equivalent or greater than the water usage of 500 dwelling units must complete a Water Supply Assessment (WSA), to determine if adequate water supply is available prior to issuance of any development permits.

Policy 1D: Create new landscaping and building design criteria for new developments to reduce water use. The design criteria shall include incentives for all major new developments to provide dual-plumbing for future recycled water use, use the latest water efficient technologies (i.e., low-flow fixtures, infrared detectors, waterless urinals, etc.), and plant drought tolerant and native non-invasive landscaping.

Policy 1E: Engage in discussions with the California Water Service Company and the City of Redwood City to develop a suitable, proactive replacement plan for the existing water distribution system. This replacement plan should identify older and/or undersized water lines that need to be repaired or replaced, and ensure that such lines within North Fair Oaks are prioritized for replacement.

Goal 4.2: Improve conveyance and treatment capability of sanitary sewer system facilities within North Fair Oaks.

Policy 2A: Negotiate with adjacent sanitary sewer jurisdictions, such as the City of Redwood City and the South Bayside System Authority wastewater treatment plant, to secure additional sewer allocations at the earliest opportunity possible. Obtaining additional sewer allocations will allow larger new developments to be located in North Fair Oaks.

Policy 2B: Revise existing County water demand and sewer generation standards to reflect the latest water efficient technologies. Incentives programs should also be created for new developments that implement more stringent water demand and sewer generation standards. This will promote water reduction measures and reduce the amount of sewage generated.

Policy 2C: Perform regular inspections of sanitary sewer facilities to identify leaks within the system. Identify priority lines and structures within the sanitary sewer system, on an annual basis, that need repair and/or replacement. High priority should be given to existing facilities that receive high infiltration and inflow, to mitigate unnecessary flows downstream. In addition, continue existing routine and maintenance repairs of the collection system.

Policy 2D: Pursue new standards requiring that each new development minimize infiltration and inflow into the sewer system by contributing to replacement of existing sanitary sewer laterals and/or mains. The extent of the replacements should be based on the new development's net increase in sewage generation.

Policy 2E: Reassess sanitary sewer maintenance costs annually and update connection and usage fees accordingly, to ensure that both new and existing users of the sanitary sewer system contribute their fair share of sanitary sewer costs.

Policy 2F: Create a new program to share and gather sewage conveyance data from Redwood City and the South Bayside System Authority treatment plant on an annual basis. This information can then be used for planning and determining the basis for cost-sharing and/or fee adjustments.

Stormwater planters can improve stormwater quality and slow peak flow volume

Goal 4.3: Improve stormwater treatment facilities.

Policy 3A: Continue to implement all local and state mandated stormwater treatment controls (C.3 requirements), including requiring that all new developments adhere to the current thresholds for requiring stormwater treatment and that all new developments provide a Stormwater Maintenance Agreement that will be recorded with the property deed to ensure on-going maintenance of these private stormwater treatment areas is being performed. Continue to require all new developments to comply with the Countywide Stormwater Pollution Prevention Program (SWPPP) and to provide erosion and sediment control plans and Best Management Practices (BMPs) for all construction activities.

Policy 3B: Create a new program to perform regular inspections of stormwater treatment facilities at all new developments. These inspections should be performed by Public Works, and the frequency and extent of such inspections will depend on the size of new developments and potential for pollutants to enter the storm drain system.

Policy 3C: Create a new program for existing public streets to be redesigned with integrated stormwater treatment areas such as bioretention areas, vegetated swales, rain gardens, and other passive retention and filtration facilities. These stormwater treatment areas will remove pollutants from stormwater runoff that would otherwise have flowed from public street surfaces directly into the storm drain system and then the Bay. The new program should also consider adopting a regional green street program that requires stormwater treatment areas in all new developments.

Policy 3D: Pursue new Low Impact Development (LID) standards that promote both treatment and storage of stormwater runoff. These Low Impact Development standards should require new developments to minimize impervious surfaces, use stormwater as a resource (rain water harvesting for irrigation or other select uses), and preserve/re-create natural landscape features. New developments could adhere to these standards through the use of rain gardens/bioretention areas, green roofs, cisterns, permeable pavement, or other tools.

Policy 3E: Create new incentive programs for the County's Planning, Building, and Engineering staff to continue stormwater treatment education, as technology and treatment techniques change continuously.

Goal 4.4: Improve the conveyance facilities of the current storm drain system within North Fair Oaks.

Policy 4A: Pursue new standards that require new developments in areas where there are no existing storm drain lines to install new lines and extend them to downstream connection points. The size and length of the new storm drain lines will vary based on the new development's location, size, and potential for future development at adjacent parcels. All new developments should also be required to provide on-site detention facilities (tank or oversized pipes) so that the new development does not cause an increase of flow into the storm drain system and contribute to local and regional flooding.

Policy 4B: Support increasing the capacity of the current Athlone storm drain pump/lift stations to increase conveyance capability. The increased capacity should take into account both existing conditions and potential future improvements to the storm drain system. This will allow future storm drain lines to be connected to the upgraded pump station.

Policy 4C: Discuss joint upgrades of regional storm drainage facilities with the City of Redwood City, the Town of Atherton, and other appropriate jurisdictions. These regional upgrades, such as improvements at the Bayfront Canal located downstream from North Fair Oaks, are a necessary component of any efforts to reduce local flooding in North Fair Oaks.

Policy 4D: Continue to implement all local and state mandated stormwater treatment controls (C.3 requirements), ensuring that new developments implement stormwater treatment measures to reduce peak flows in the storm drain system and maximize on-site retention and reuse of storm water for irrigation purposes.

Creative on-site retention facilities to detain, treat and reuse stormwater for irrigation are required for new development

Detention ponds can be incorporated as design features in parks and plazas within the urban environment

New development can incorporate permeable paving in surface parking areas that allow stormwater infiltration

Goal 4.5: Reduce the impact of flooding in North Fair Oaks.

Policy 5A: Work with adjacent jurisdictions to find workable solutions to mitigate regional flooding. Since several factors outside of North Fair Oaks contribute to local and regional flooding, working closely with these adjacent jurisdictions is critical to implementing a solution to the existing flooding issues.

Policy 5B: Create a new program for existing public streets to be redesigned with integrated stormwater treatment areas such as bioretention areas, vegetated swales, rain gardens, and other features to reduce the peak storm flows. The new stormwater treatment areas should also be designed to provide stormwater retention, which will hold back stormwater runoff for a period of time so that downstream flooding is reduced.

Policy 5C: Continue to require new developments that might result in an increase in stormwater runoff to provide on-site detention facilities to address increased flows. The on-site detention facilities (tank, oversized pipes, or other facilities) shall be sized so that the new development does not cause an increase of flow into the storm drain system.

Policy 5D: Pursue new Low Impact Development (LID) standards that require new developments to reduce stormwater runoff. LID strategies include, but are not limited to, the use of permeable pavement, green roofs, rainwater cisterns, and landscaping that is designed appropriately to capture and retain stormwater.

Goal 4.6: Establish infrastructure to enable the use of recycled and "gray" water within the North Fair Oaks community.

Policy 6A: Pursue new standards that require new developments to provide dual plumbing in anticipation of available recycled water.

Policy 6B: Negotiate with the City of Redwood City and South Bayside System Authority (SBSA) regarding the timing of improvements and proposed pipe routing to address the possibility of bringing recycled water to North Fair Oaks.

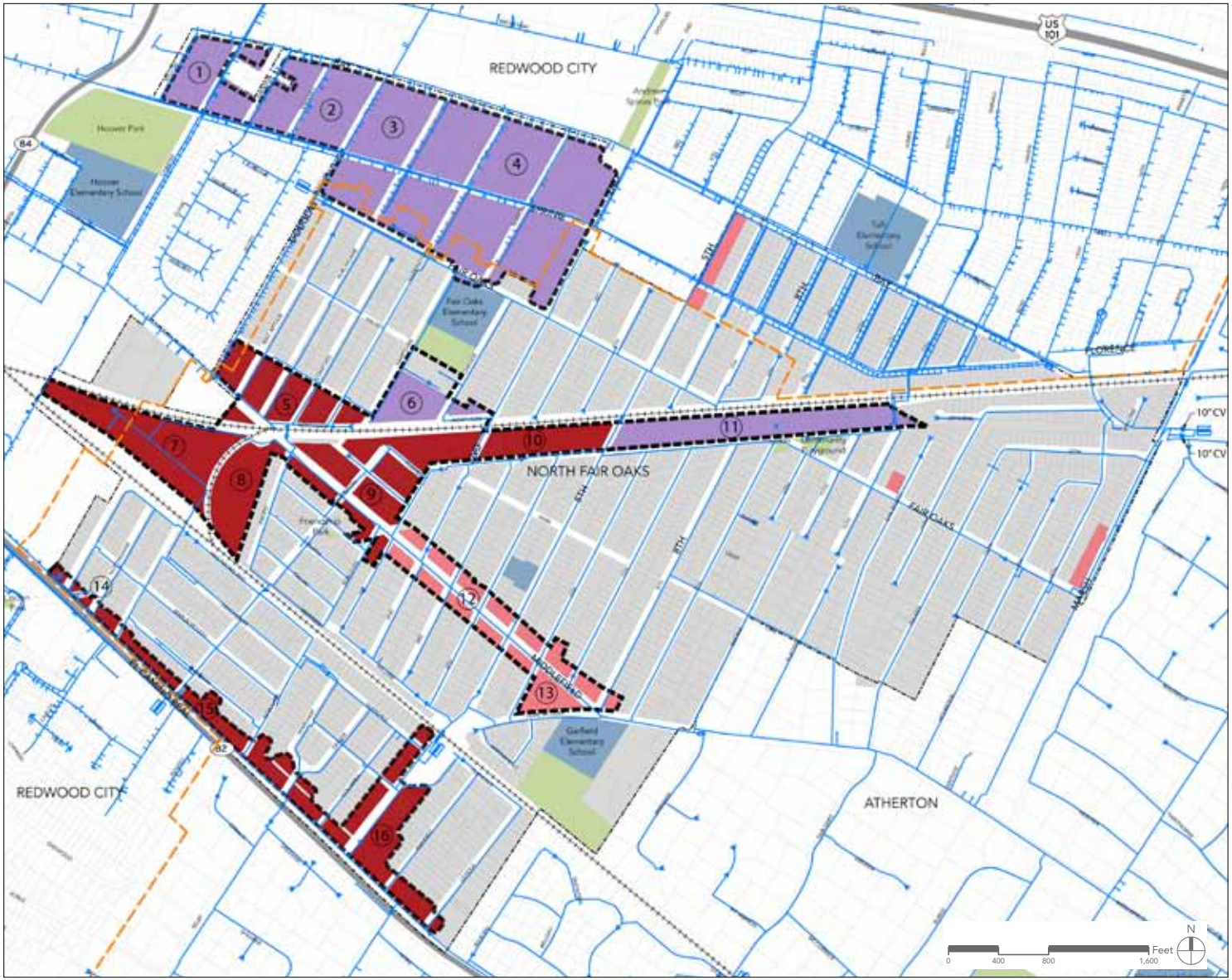
Policy 6C: Create a new program to provide funding sources to bring recycled water to North Fair Oaks.

Policy 6D: Create new incentive programs to encourage new developments to use gray water or harvested rainwater for irrigation purposes.

Policy 6E: Create a new program to identify existing users with large water demands who would benefit from the availability of recycled water. These users should be on a high priority list of recycled water users and should be considered when planning future recycled water line expansion.

A range of stormwater facility improvements both in the private and public realms can be utilized to reduce stormwater runoff and improve the quality of the environment.

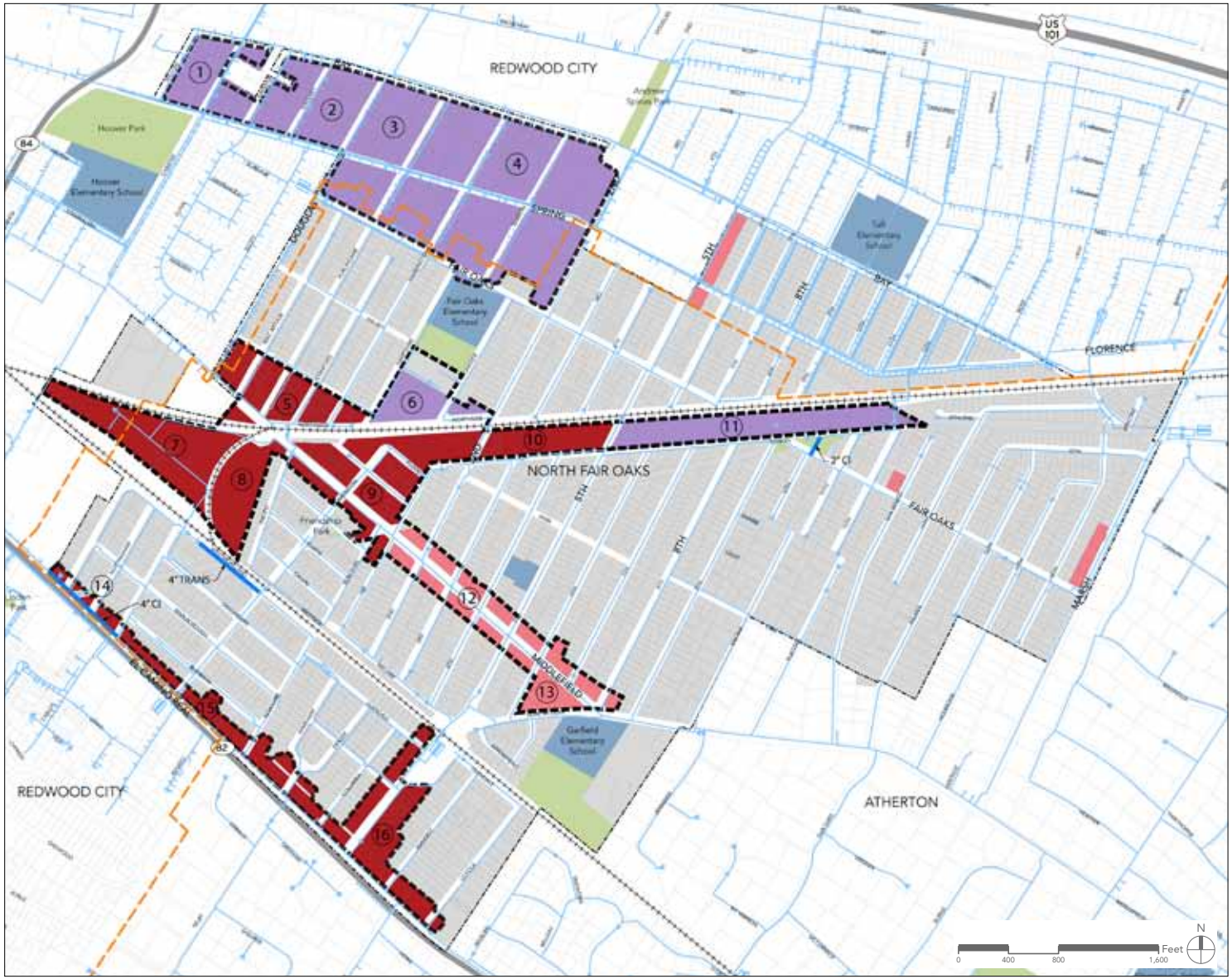
FIGURE 4.1: Existing Water System



North Fair Oaks
Parcel
Highway
Rail Line
Park
School
Commercial Mixed-Use
Industrial Mixed-Use
Neighborhood Mixed-Use
⑯ Specific Area #
Existing Water Line
Water Service Area Boundary

NOTES:
1. EXISTING UTILITY INFORMATION BASED ON CALWATER AND REDWOOD CITY UTILITY SYSTEM MAPS.

FIGURE 4.2: Proposed Potable Water System



- North Fair Oaks
- Parcel
- Highway
- Rail Line
- Park
- School
- Commercial Mixed-Use
- Industrial Mixed-Use
- Neighborhood Mixed-Use
- (16) Specific Area #
- Existing Water Line
- Small Lines to be Upsized
- Water Service Area Boundary

NOTES:
1. EXISTING UTILITY INFORMATION BASED ON CALWATER AND REDWOOD CITY UTILITY SYSTEM MAPS.

FIGURE 4.3: Proposed Recycled Water System Improvements

NOTES:
1. EXISTING UTILITY INFORMATION BASED ON CALWATER AND REDWOOD CITY UTILITY SYSTEM MAPS.

FIGURE 4.4: Existing Sanitary Sewer System

- North Fair Oaks
- Parcel
- Highway
- Rail Line
- Park
- School
- Commercial Mixed-Use
- Industrial Mixed-Use
- Neighborhood Mixed-Use
- (16) Specific Area #
- Existing Sanitary Sewer Trunk Line
- Existing Sanitary Sewer Line

NOTES:
1. EXISTING UTILITY INFORMATION BASED ON SAN MATEO COUNTY AND REDWOOD CITY UTILITY SYSTEM MAPS.

FIGURE 4.5: Proposed Sanitary Sewer System Improvements

- North Fair Oaks
- Parcel
- Highway
- Rail Line
- Park
- School
- Commercial Mixed-Use
- Industrial Mixed-Use
- Neighborhood Mixed-Use
- (16) Specific Area #
- Existing Sanitary Sewer Trunk Line
- Existing Sanitary Sewer Line
- Priority Lines

NOTES:
1. EXISTING UTILITY INFORMATION BASED ON SAN MATEO COUNTY AND REDWOOD CITY UTILITY SYSTEM MAPS.

FIGURE 4.6: Existing Storm Drain System

- North Fair Oaks
- Parcel
- Highway
- Rail Line
- Park
- School
- Commercial Mixed-Use
- Industrial Mixed-Use
- Neighborhood Mixed-Use
- ⑯ Specific Area #
- Existing Storm Drain Line

NOTES:
1. EXISTING UTILITY INFORMATION BASED ON SAN MATEO COUNTY AND REDWOOD CITY UTILITY SYSTEM MAPS.

FIGURE 4.7: Proposed Storm Drain System Improvements

- North Fair Oaks
- Parcel
- Highway
- Rail Line
- Park
- School
- Commercial Mixed-Use
- Industrial Mixed-Use
- Neighborhood Mixed-Use
- ⑯ Specific Area #
- Existing Storm Drain Line
- Storm Drain Improvements

NOTES:

1. Existing utility information based on San Mateo County and Redwood City utility system maps.

2. Four sections of sanitary sewer mains in NFO are identified as deficient by the County of San Mateo, Fair Oaks Sewer Maintenance District, Sewer Master Plan (September, 2000) and have yet to be repaired and/or replaced. These sections are labeled as Bay Road #3, 6th Avenue, Middlefield Road, and El Camino Real #1 by the Sewer Master Plan. These lines should be replaced to meet current County standards.

3. Priority #3 locations are defined as "Sewer lines with minor to major structural deficiencies" by the County of San Mateo, Fair Oaks Sewer Maintenance District, Sewer Master Plan (September, 2000).

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