

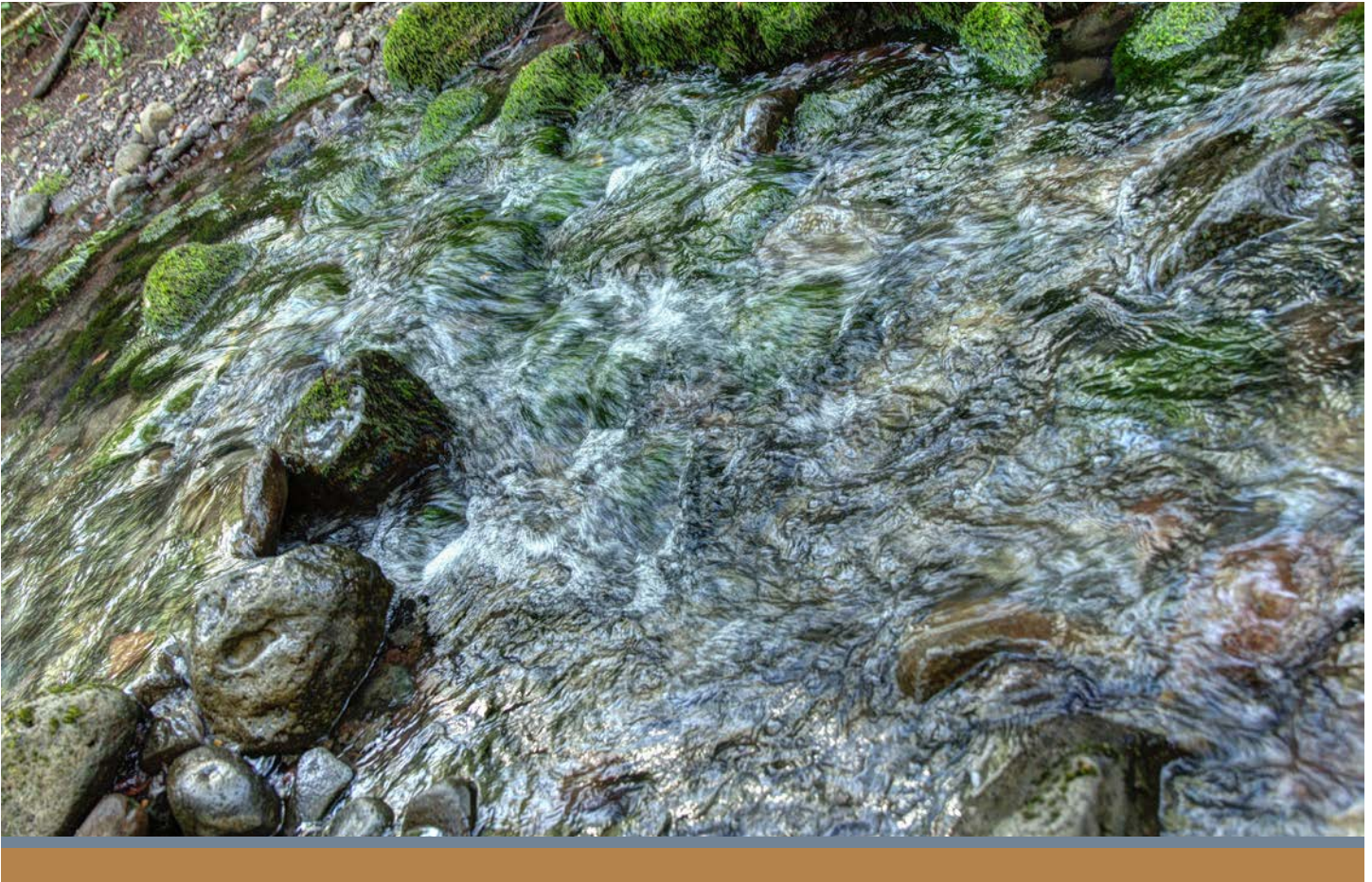


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Infrastructure & Public Facilities Plan

Chapter 6 - Infrastructure & Public Facilities Plan

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6.1 Introduction

This Chapter describes the major infrastructure improvements and utilities that will be necessary for the build-out of the Valley's Edge Specific Plan (VESP). The descriptions and illustrations in this Chapter are provided with the understanding that exact sizing, location, and other specific design details will be determined at the subdivision design and improvement plan stage.

Utilities that will be required to serve Valley's Edge include domestic water, wastewater, storm drainage, as well as dry utilities such as gas, electric, telephone, cable, and data/communication. Public services supporting residents and businesses will include a community park, elementary school, fire protection, police, and solid waste disposal.



6.2 Water Overview

The California Water Service Company (Cal Water) is a private company and the sole domestic water provider in the City of Chico. Cal Water operates under the Urban Water Management Plan (UWMP) for the Chico-Hamilton City District, and is responsible for providing safe and reliable water for the area shown on Figure 3-2 of the UWMP's (Service Area Boundaries Map). The following information is intended to complement the Water Supply Assessment (WSA) prepared for the Valley's Edge Specific Plan EIR.

6.2.1 Planned Water Infrastructure

The infrastructure components planned for the VESP's water delivery system include conventional underground piping together with potential underground wells, booster pumps, and pressure reducers. The final design and engineering of the system will occur incrementally as the various phases of the VESP area are planned and engineered in detail prior to construction.

An on-site permanent water storage tank may be required. Depending on the sequence of development, the tank will be constructed at one of two higher-elevation locations near the eastern boundary of the planning area. Placement of the tank on either of these locations maximizes system pressure which improves system operations, including wildland fire protection and suppression. Prior to installation of the permanent storage tank, smaller interim water storage facilities may be utilized to serve portions of the Planning area.

Two connection points to Cal Water's existing facilities will be required; northerly at the present terminus of East 20th Street, and southerly via a main-line extension at Skyway. Depending on the sequence of development within the plan area, the initial connection(s) may be at either location. Water infrastructure improvements will ultimately result in a fully looped system, owned and operated by Cal Water. Refer to Figure 6-1 for proposed water facilities.

6.2.2 Raw Water

Two agricultural wells exist on the property, a north well located near the community park, and a south well located near the Village Core. These wells may be utilized for irrigation and/or water-related amenities, including recreational pond features which would also provide a source of water for wildland fire suppression.

6.2.3 Water Conservation

The recognition of water as a valuable natural resource is reflected in both the overall land use plan and VESP policies.



Valley's Edge will implement the current required water-conserving technologies and practices. Additional water conservation guidelines are detailed in Appendix A; several examples may include, but are not limited to:

Residential:

- Low flow water efficient toilets;
- Water efficient shower heads;
- Water efficient dishwasher;
- Landscaping must comply with the California Department of Water Resources (MWELO);
- Drought Tolerant Plants suitable for Valley's Edge soils type and micro-climate zone;
- Limited turf areas;
- 'Smart' programmable irrigation control system with rain sensors; and
- Drip and overhead irrigation that attain minimum 70% effectiveness.

For Community and Common Areas:

- Turf limited to parks, dog parks, yoga lawns, event spaces, and other functional use areas where turf treatment is preferred;
- 'Smart' programmable irrigation control system with rain sensors;
- Drip and overhead irrigation that attain minimum 70% effectiveness; and
- Common areas, medians and landscape buffers will utilize low-flow fixtures, drip irrigation and monitoring systems in predominantly drought-tolerant landscapes. Turf areas will be limited to active play fields, developed parks, private yards, accent features and other limited applications.

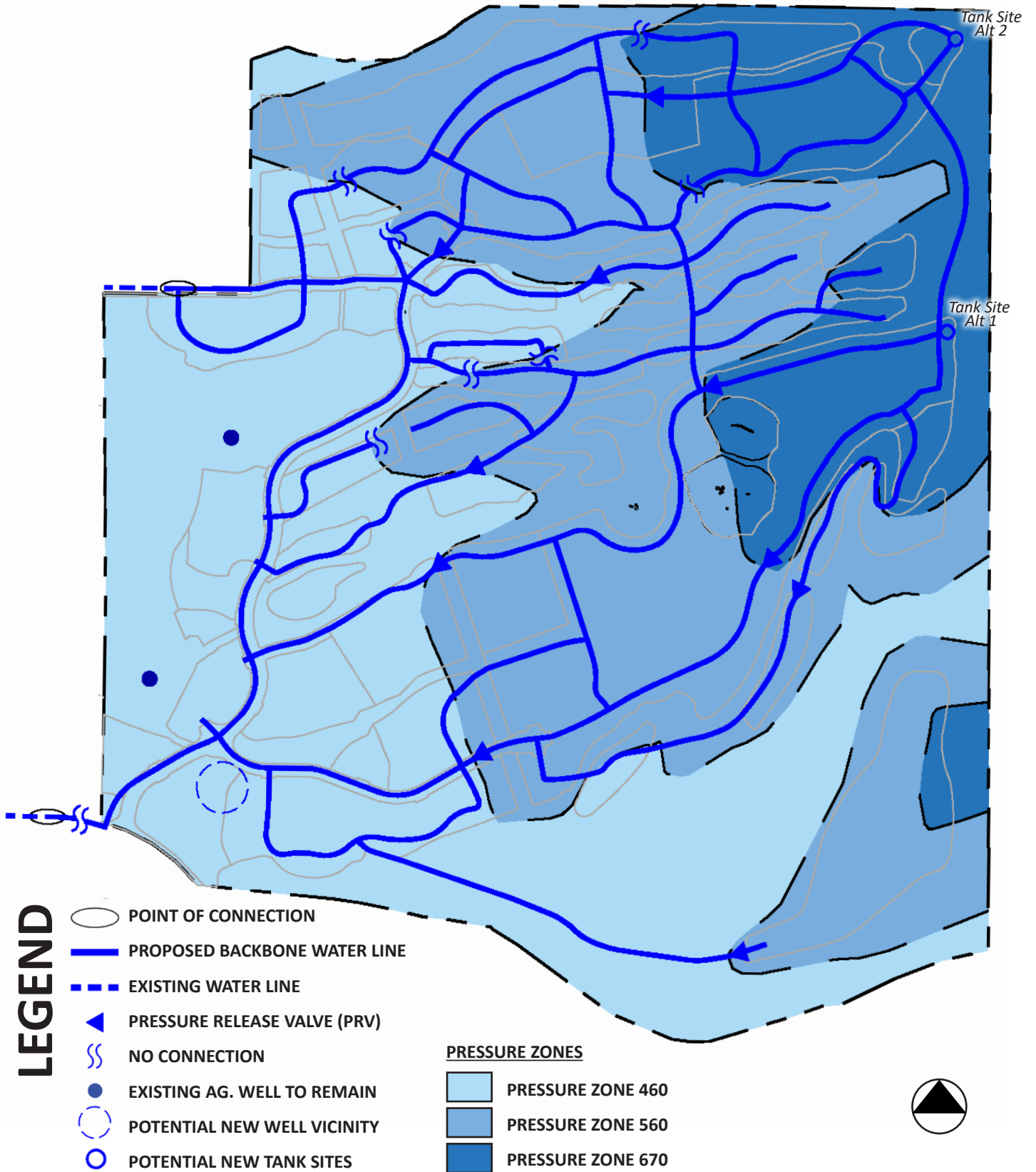


Figure 6-1: Proposed Water Facilities



6.3 Wastewater

The City of Chico will provide sanitary sewer service to the VESP area from the City's Water Pollution Control Plant (WPCP) located about four miles southwest of the City on Chico River Road. The WPCP is a secondary treatment facility and has a capacity of 12 million gallons per day (MGD) with the ability to expand to 15 MGD capacity in the future, according to the City of Chico's WPCP web page.

6.3.1 Planned Wastewater Infrastructure

As anticipated in the City of Chico's Sanitary Sewer Master Plan (SSMP), two points of connection to Chico's existing sewer system will be required; one on the north side of the Planning area at the eastern terminus of East 20th Street, and another south along Skyway. Depending on the sequence of development, the initial sewer connection may be at either location.

The north connection will tie into the existing 8-inch sewer pipe on East 20th Street. The SSMP identifies the probable need, based on available capacity, for an additional sewer line referred to in the SSMP as the "Doe Mill Trunk Sewer" from the boundary of the Planning area west to Bruce Road, a distance of roughly 0.75 miles.

The southerly sewer connection of the Planning area will ultimately tie into the City's 18-inch main sewer trunkline referred to in the SSMP as the "Honey Run Trunk Sewer" which serves the VESP area as well as other areas south of Skyway planned for commercial development. Depending on the timing of Valley's Edge development relative to the City's installation of the Honey Run Trunk Sewer, an interim connection to a 10-inch sewer pipe near Skyway and Bruce Road may be utilized. If segments of the City's Honey Run Trunk Sewer along Skyway east of Bruce Road are insufficient to enable connection at or near the Planning area's primary entry, an alternative and interim means of conveyance may be utilized, such system conditioned upon the approval of the Director of Public Works.

The VESP's sewer network will primarily be comprised of 6-inch to 12-inch sewer mains, designed in a manner responsive to the site's topography. In instances where gravity-fed sewer lines are not feasible, lift stations and associated force-mains or siphon systems may be utilized, conditioned upon the approval of the Director of Public Works or their designee. Private residential sewer pumps may also be necessary to manage topographical constraints.

Figure 6-2 illustrates the distribution of anticipated future sanitary sewer facilities at a master plan level, the final design of which will occur incrementally as various areas of the VESP area are further planned and developed.

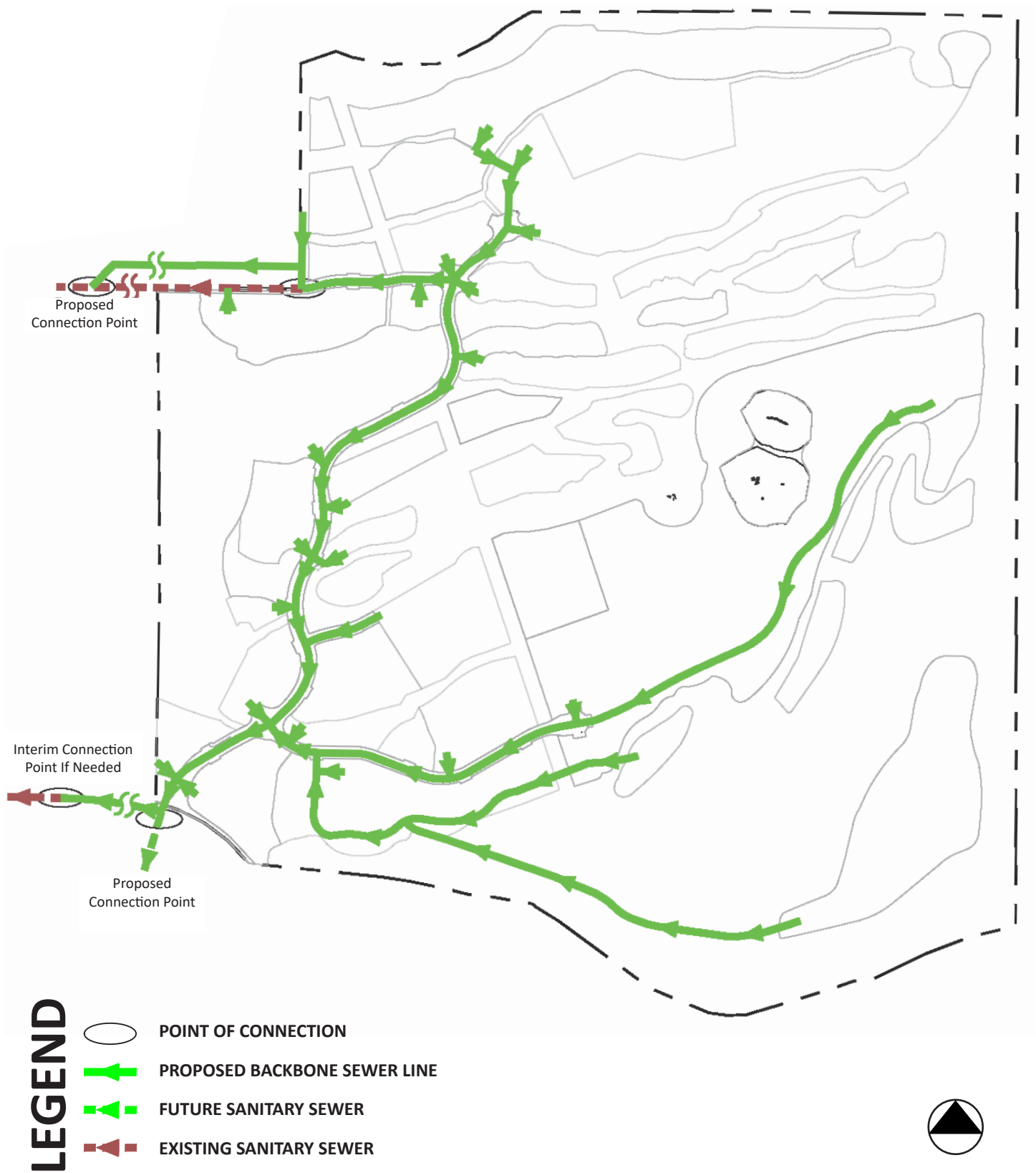


Figure 6-2: Proposed Wastewater Facilities



6.4 Storm Drainage & Flood Control

6.4.1 Drainage Overview

VESP area drainage system involves a combination of conventional surface and subsurface drainage systems, including underground pipe conveyances, drainage basins, bioswales, outfalls, existing natural swales, and existing seasonal creeks. In addition, development within the VESP area will incorporate water quality treatment methods for urban runoff, described in Section 6.4.5 (Stormwater Quality).

6.4.2 Site Hydrology

Valley's Edge is located within the Butte Creek watershed, and is transected by three westward-flowing seasonal drainage courses originating in the lower foothills east of the Planning area. The majority of surface geology consists of relatively thin soil overlaid with prehistoric mud and volcanic flows, referred to as "lahar", or "lava cap", of the Tuscan formation unit C.

The relative impermeable nature of lahar coupled with limited fracturing represent conditions which limit infiltration and groundwater recharge. Natural streambeds are preserved as open space and may provide some potential for increased permeability.

"Site planning will consider and protect groundwater recharge areas."

- CHICO GENERAL PLAN APPENDIX
C -DOE MILL/HONEY RUN SPECIAL
PLANNING AREA

The VESP area existing watershed is comprised of four drainage sheds; North, Middle, South and Comanche Creek, along with corresponding sub-sheds as illustrated on Figure 6-3.

6.4.3 Drainage Collection & Conveyance

The VESP's backbone storm drainage features, culverts and conveyances are depicted on Figure 6-4 at a master plan level. The final design of these drainage facilities will be determined at the subdivision improvement stage as specific areas of the VESP area are planned and developed.

Design considerations for stormwater collection and conveyance will vary depending on the intensity of land use, slope, geology, proximity to natural drainage courses and other factors. It is anticipated that some rear draining lots may utilize privately-maintained open swales for conveyance, whereas the majority of the development will rely on underground pipes within the subdivisions and developed areas in order to deliver the storm water to the open space for treatment and or discharge. Regardless of the specific conveyance system, all stormwater from developed areas will be treated for quality before being discharged into creeks, the vast majority of flows leading to the Butte Creek Diversion Channel with near negligible conveyances into the Comanche Creek drainage course. Except as otherwise noted, the drainage system improvements will be designed and constructed pursuant to City of Chico standards.

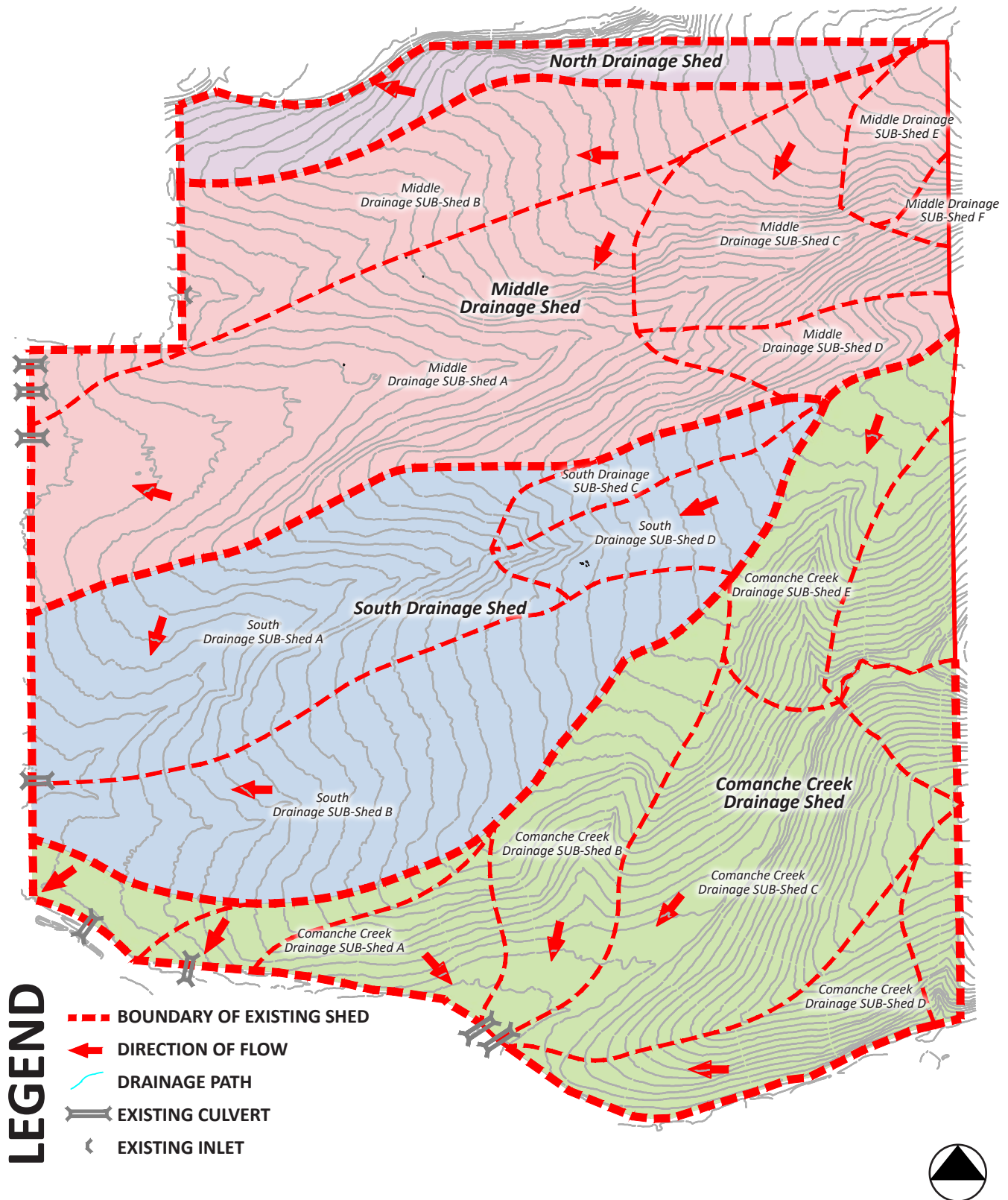


Figure 6-3: Existing Shed Map



6.4.4 Stormwater Detention and Retention

Under current regulations development projects are required to detain on-site any increase in the rate of post-project runoff. In accordance with both City and State requirements, detention may also occur in-channel by way of downsizing culverts to purposefully restrict flows to match desired downstream release rates. The VESP's drainage system may include series of appropriately-sized on-site detention basins to attenuate post-project peak flow rates for storms up to the 100-year, 24-hour event. On-site detention features will employ accepted methodologies to slow water, filter out contaminants, and encourage infiltration and evapotranspiration. The VESP area will be designed in compliance with all applicable stormwater regulatory requirements, including water quality.

6.4.5 Stormwater Quality

Low Impact Development

Low Impact Development (LID) seeks to reduce stormwater runoff, maximize infiltration (where feasible), provide for beneficial reuse, eliminate pollutant loading, and encourage symbiotic environmental planning. The VESP includes a range of green and sustainable features that are integral to maintaining a high degree of water quality, which, together with evolving LID principles, tools and techniques, will be implemented throughout the incremental development of the Planning area.

All water quality treatment methods will be in accordance with local requirements and the State Water Resources Control Board's National Pollutant Discharge Elimination System (NPDES) Phase II requirements.

Planning Area Design Elements

Stormwater quality solutions will vary based on site geology, notably naturally impermeable lahar surfaces. Bio-filtration of surface runoff is one effective way to treat surface runoff and could be incorporated in the open space and landscape areas. Source level LID tools for the VESP area may include the implementation of techniques such as drainage basins, reduced hardscape, amended soil, bioretention cell or rain garden, disconnected roof drain, tree planting, native vegetation preservation, and natural drainage flow. Solutions such as porous pavement and reduced hardscape aim to maximize infiltration and slow runoff, the application of which would, as with other techniques, be conditioned upon appropriate geological conditions. Amended soil, bioretention cells, and rain gardens also lessen and slow runoff, as well as reduce irrigation water use. Native vegetation reduces summer irrigation demand. Enhanced natural drainage serves to slow and meter runoff to pre-development conditions, while enhancing retention in a visually pleasing setting.

VESP may utilize Stormwater Quality Basins (SQB) and Water Quality Swales (WQS) due to the ability to process stormwater while considering and respecting the open space environment. SQBs are low-gradient, often vegetated surface detention / retention basins into which surface water runoff is directed for cleaning. WQs are similar in purpose, but do not have detention features.

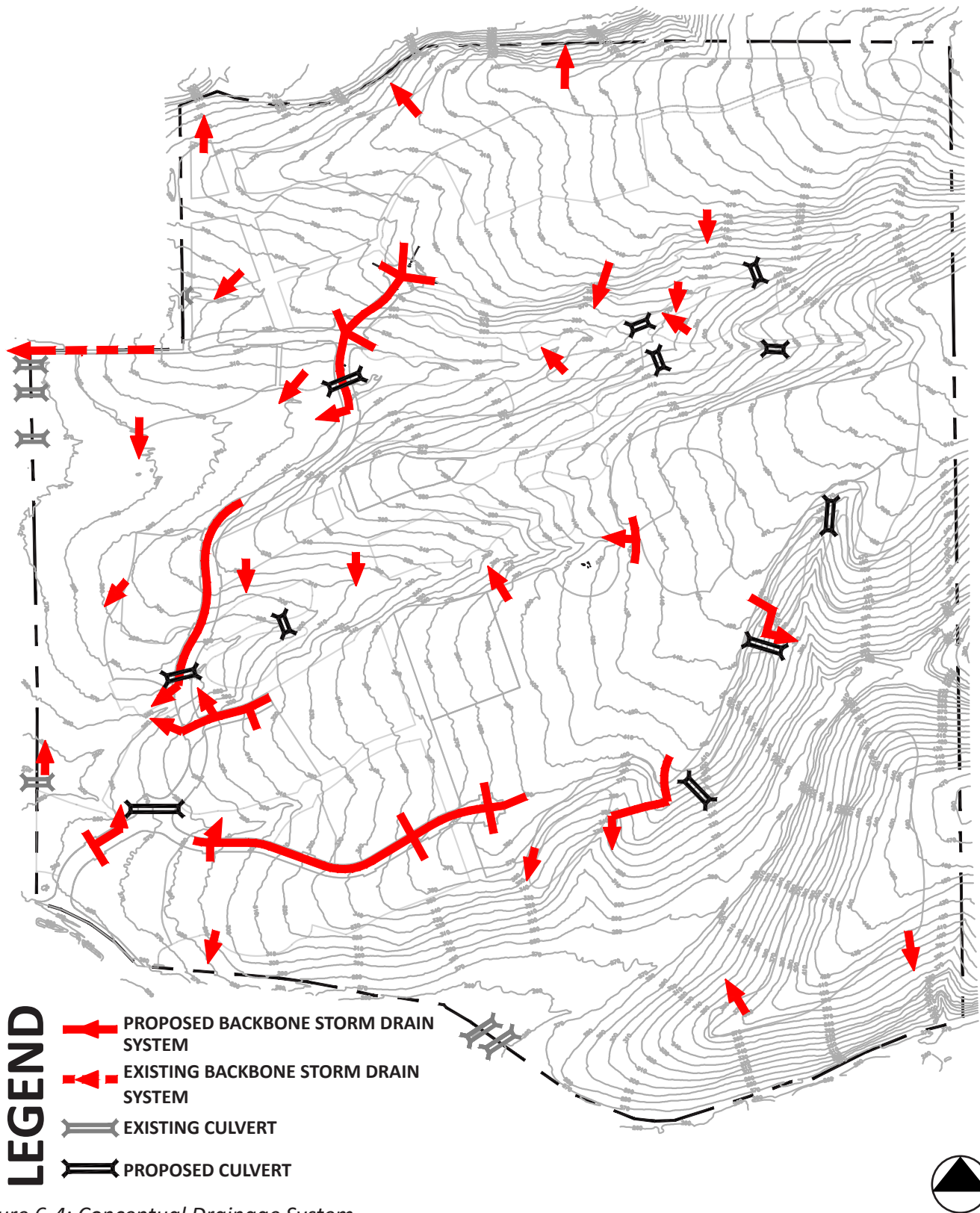


Figure 6-4: Conceptual Drainage System



Technology

The function of SQB/WQS is to treat runoff from developed areas for pollutants such as bacteria, nutrients, heavy metals, fine sediment, and residual oil and grease. Vegetation in an SQB/WQS helps to dissipate terminal water velocity and encourage deposition and filtration of fine sediment, organic debris, and heavy metals. These pollutants are then immobilized and do not affect or impact downstream water quality. When water carrying pollutants infiltrate into the soil, elements of the pollutants are decomposed by bacteria. Pollutants that can be broken down in this way are typically oils from road and parking lot runoff, along with pesticides and herbicides. Excess nutrients from fertilizers are taken up by the plants growing in the soil. The concentration of these bacteria is reduced through the breakdown by solar radiation when runoff is treated in a bioswale.

In addition to the LID tools and methods listed above, buffer zones adjacent to wetlands and/or sloughs, including bio-filtration and storm water detention/retention basins (where applicable) and various park and recreational facilities within the Planning area may involve some aspect of stormwater management. Similarly, open space areas and landscape corridors will be utilized to control storm water runoff as close to the source as possible, slowing and conveying the flow of surface water. In some cases these methods of conveyance mimic the natural hydrological process, maintaining the wildlife habitat while enhancing water quality.

Mechanical systems may also be utilized to achieve LID related objectives. The use of mechanical treatment and advancing technology may also be implemented, subject to permitting authority of the State Water Regional Control Board (SWRCB) and City of Chico. Mechanical methods may include such systems as Oil/Water Grit Separators (OWS), and Continuous Deflective Separation (CDS). OWS systems remove free and dispersed non-emulsified oil and some settled solids from waste streams. CDS units trap pollutants in underground vaults for periodic maintenance and removal of the trapped pollutants.

Bioretention may also be used in the open space or buffer areas. Bioretention areas function as soil and plant-based filtration methods that work to remove pollutants through a variety of physical, biological, and chemical treatment processes.

6.5 Dry Utilities

Dry utilities, including electricity, natural gas, communication (telephone services), and solid waste will be provided by extending and utilizing existing facilities and services by regional utility companies that are already in place within the City. A wireless telecommunications tower may also be placed within the VESP area to meet wireless service coverage, subject to a Conditional Use Permit (CUP).

6.5.1 Electricity

Pacific Gas & Electric (PG&E) will service the VESP area with an adequate supply of electrical power. New underground electrical infrastructure and facilities will be engineered and installed as incremental phases of the Planning area are developed.



6.5.2 Natural Gas

Pacific Gas & Electric (PG&E) or equivalent utility provider will serve the VESP area with an adequate supply of natural gas. New underground natural gas infrastructure and facilities will be engineered and installed as incremental phases of the Planning area are developed.

6.6 Existing Utility Easements

Overhead PG&E transmission lines traverse from north of the East 20th Street entrance and continue southeasterly through the VESP area near the middle of the southern boundary along Honey Run Road. A secondary overhead PG&E line intersects the north to south utility line, crossing the property from the Skyway intersection and travels southeast until encountering the main line and continuing to the east.

Electric power lines and poles are located within a 100-foot wide easement along the main north to south line and do not cross residential parcels, while the secondary utility line is within a 40-foot wide easement. This easement traverses through residential neighborhoods, but maintains the easement from individual parcels and will be delineated and avoided in subdivision mapping. Additional utility easements exist along the Skyway, along Honey Run Road, and within the Regional Park.

6.7 Public Facilities & Services

The VESP area is served by an extension of the City of Chico's existing public facilities and services including schools, fire protection, police and solid waste disposal. These services are described below.

6.7.1 Public Schools

Within the VESP area, public school services will be provided by the City of Chico Unified School District (CUSD). The VESP includes land along the western edge to accommodate an elementary school serving the plan area and surrounding developments, thereby relieving demand on Chapman Elementary School located three miles away. Other nearby public schools include Marsh Junior High School two miles to the north, and Sierra View Elementary School five miles away.

6.7.2 Fire Protection

The City of Chico Fire Department will provide fire protection and emergency response services for the VESP area. Primary emergency vehicle access is designated at the Planning area entries on Skyway and East 20th Street. The nearest station is Fire Station 4, approximately 1.6 miles from the Planning area entrance on East 20th Street.



6.7.3 Police

Law enforcement services will be provided by the City of Chico Police Department. The Chico Police Department is located four miles from the VESP area at 1460 Humboldt Road, Chico.

6.7.4 Solid Waste Disposal

The City of Chico solid waste disposal is transported to the Neal Road Landfill, located southeast of the City of Chico. The landfill is owned and operated by Butte County and has a permitted capacity of 25 million cubic yards.

In 2017, the City adopted a new ordinance altering the structure of its solid waste municipal services to a citywide solid waste, recycling and organics collection services franchise system and initiated franchise agreements with two private companies (North Valley Waste Management and Recology) to provide solid waste services and curbside recycling for City residents to the Neal Road Landfill. These companies and/ or future companies operating under the City franchise system will be responsible for ensuring adequate hauling capacity to serve the City, including Valley's Edge.

North Valley Waste Management and Recology also provide curbside recycling and green yard waste service for the City of Chico. Yard waste is transported either to the Neal Road Landfill or to the City's Compost Facility near the Chico Municipal Airport. The City also provides a leaves collection service for residents who place leaves in the streets between mid-October and mid-January.

6.7.5 Communication Services

Any communication services (telephone services) for the VESP area will be provided through either a direct City provision, contract, or franchise. A cell tower and/or receiver(s) may also be placed within the VESP area. The Master Developer may, subject to applicable permitting and regulatory protocol, identify an appropriate site within the Planning area for either repeater Base Transmission Stations (BTS), or a multi-tenant tower, and arrange for its installation, operation and maintenance.