

# Part 1 Background

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## 1.0 Introduction

The McKinleyville Community Services District (MCSD, the District) maintains and operates a Wastewater Management Facility (WWMF) that serves the community of McKinleyville in Humboldt County, California (Figure 1-1). The WWMF discharges to surface waters, and the District is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit that sets forth specific discharge requirements to ensure protection of public health, environmental health, and water quality. This permit is renewed every five years by the California Regional Water Quality Control Board (RWQCB). At each renewal, the permit may incorporate new treatment objectives and discharge standards that require an upgrade or modification to the facility to meet new regulatory requirements.

The current permit for the MCSD Wastewater Management Facility (WWMF), NPDES Permit No. CA0024490, Order No. WQ 2011-0008-DWQ, was adopted April 19, 2011, and includes Waste Discharge Requirements (WDRs) for effluent treatment, discharge, and reclamation. The current permit went into effect on April 19, 2011, and expires on April 18, 2016. The previous NPDES permit for the WWMF, Order No. R1-2008-0039, was adopted by the RWQCB on June 12, 2008, and became effective on August 1, 2008. Order No. R1-2008-0039 was set to expire on August 1, 2013; however, the permit was superseded by the new NPDES permit effective April 19, 2011. A copy of the NPDES permit is included in Appendix A.

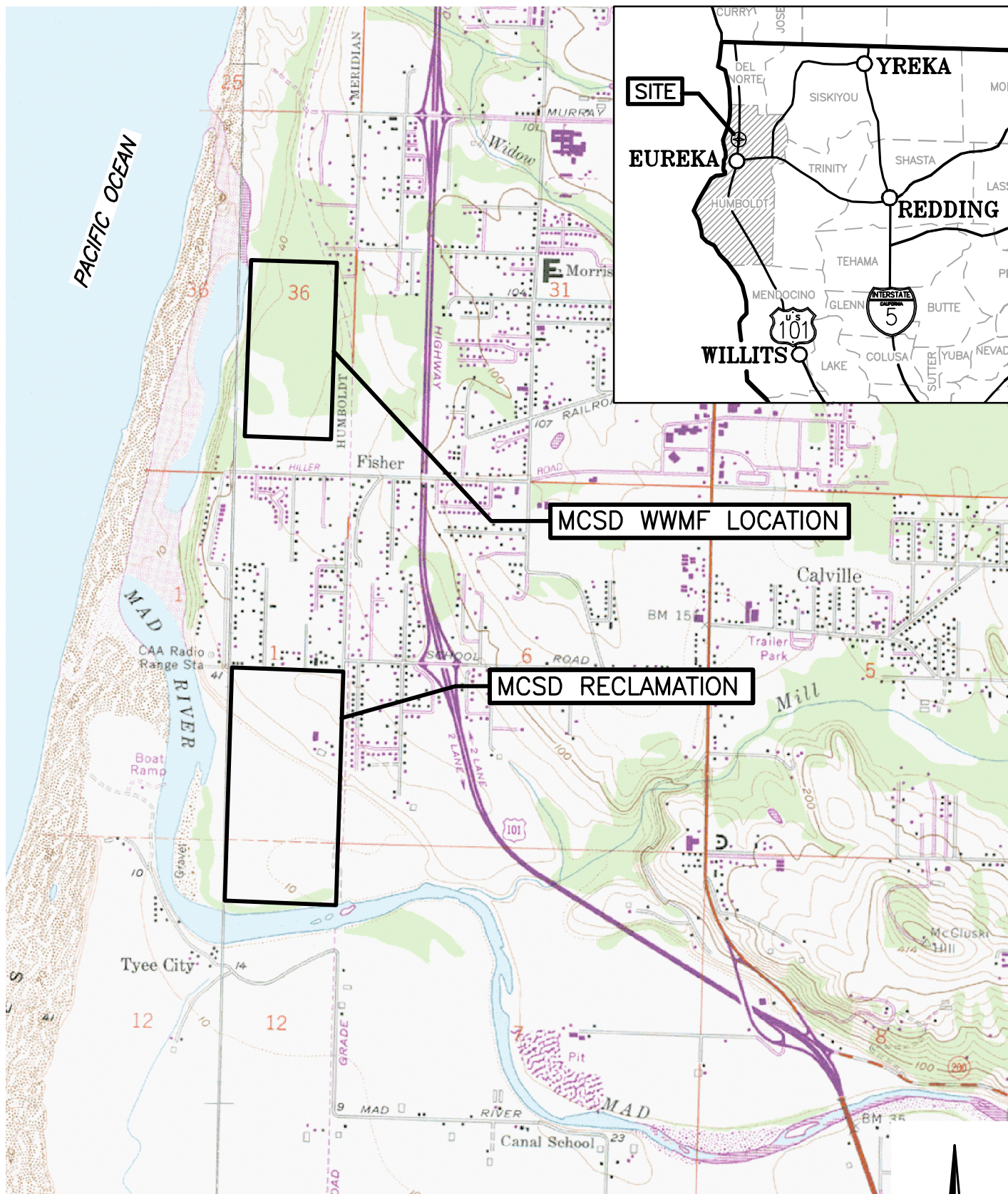
Figure 1-2 shows the existing treatment, surface water discharge, groundwater discharge, and reclamation areas for the MCSD WWMF. Figure 1-3 is a general site plan for the existing treatment system and Figure 1-4 presents a general overview of the collection system.

## 1.1 Facilities Planning Process

A wastewater facilities plan is a comprehensive document that examines the existing wastewater system from collection through discharge. The goal of a facilities plan is to identify, evaluate, and select the most reasonable wastewater treatment and disposal options to address not only the immediate permit requirements, but also provide for the long term needs of a community.

This facilities plan evaluates viable options for the District's wastewater collection, treatment, and disposal facilities. This facilities plan also provides the following benefits:

- serves as an educational tool for the public, community decision makers, and state and federal funding and regulatory agencies;
- documents, investigates, and addresses environmental and regulatory issues associated with the WWMF; and
- provides the research, data, and analyses necessary to develop the next NPDES permit.



SOURCE: ARCATA NORTH & TYEE CITY  
USGS 7.5 MINUTE QUADRANGLE

1"=2,000'±



Consulting Engineers  
& Geologists, Inc.

McKinleyville Community Services District  
Wastewater Management Facility  
McKinleyville, California

August 2011

Site Location Map

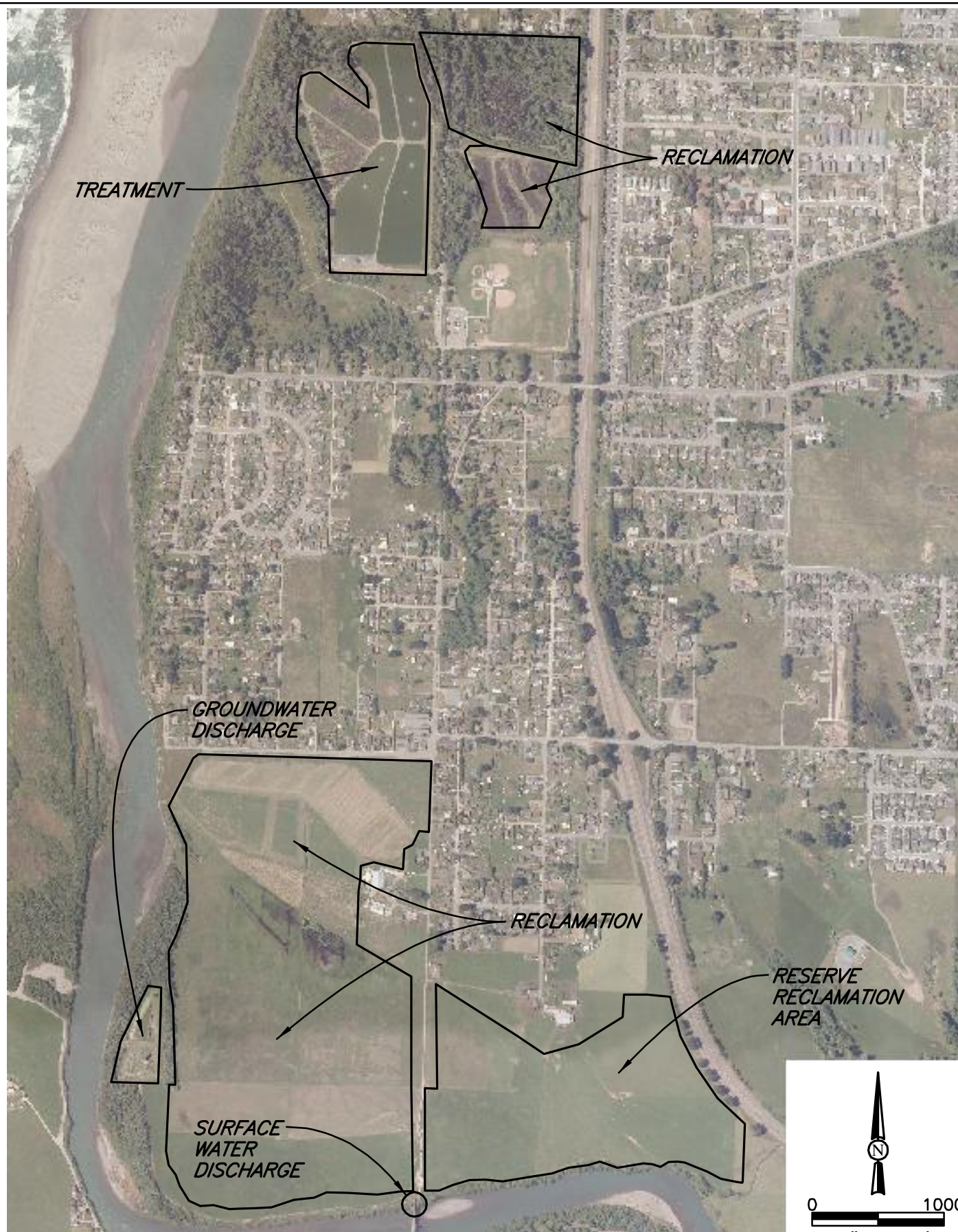
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008189-SITE-LCTN

Figure 1-1

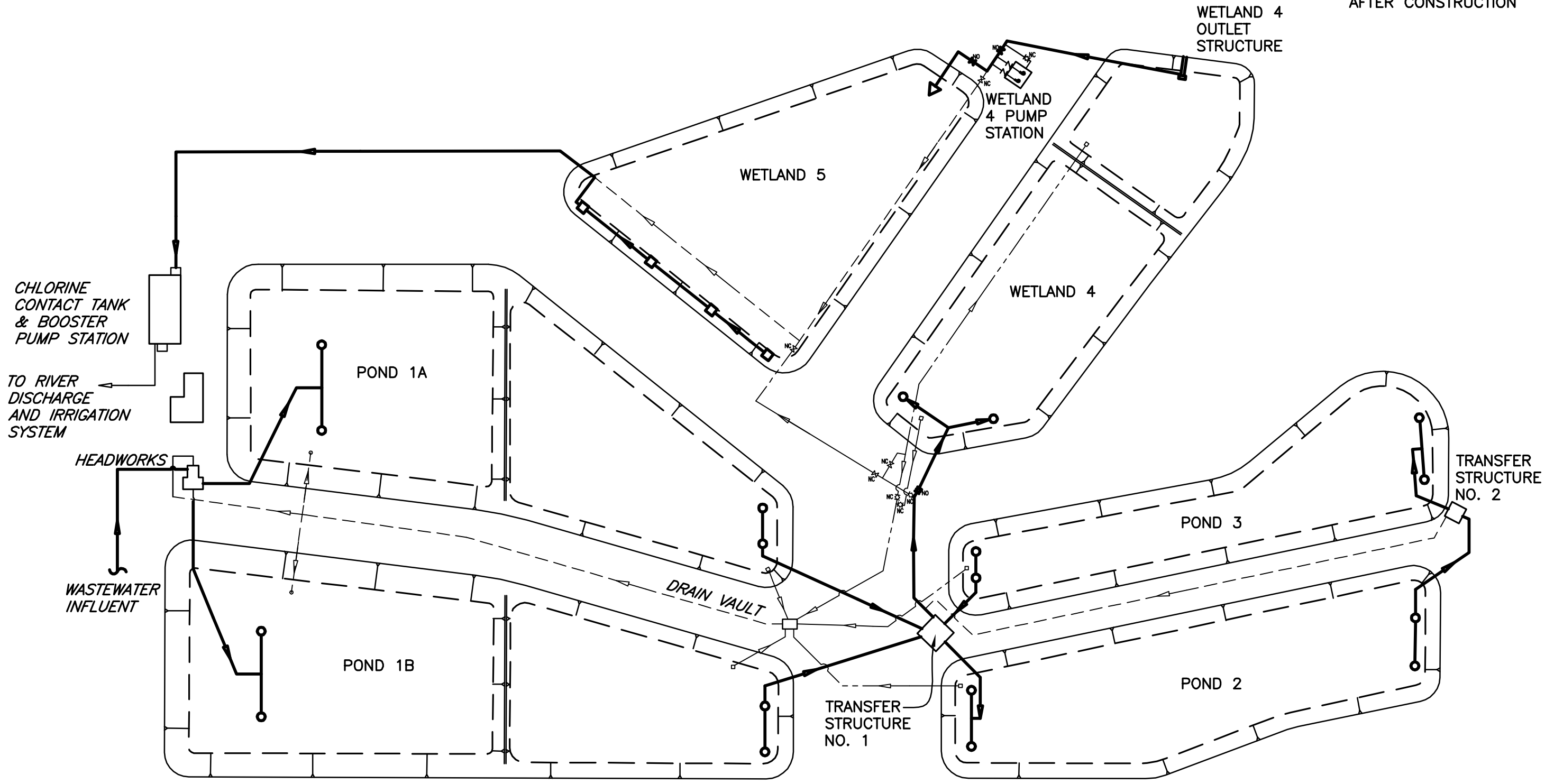


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SOURCE: 2010 NAIP IMAGERY

**NOTE:**  
FLOW PATH SCHEMATIC  
BASED ON CONFIGURATION  
AFTER CONSTRUCTION



BASE MAP PROVIDED BY :  
WINZLER & KELLY, DATED JUNE 2005

	McKinleyville Community Services District Wastewater Management Facility McKinleyville, California		Existing Wastewater Treatment System	
	August 2011	008189-300-SITE-PLAN	SHN 008189 Figure 1-3	

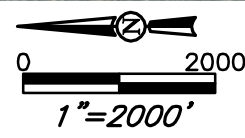
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SOURCE: 2010 NAIP IMAGERY



 Consulting Engineers & Geologists, Inc.	McKinleyville Community Services District Wastewater Management Facility McKinleyville, California		Existing Wastewater Collection System SHN 008189	
	August 2011	008189-300-E-WWCS	Figure 1-4	



This facilities plan document is statutorily exempt from the California Environmental Quality Act (CEQA), because it is a planning study that will be accepted by the MCSD Board without any legally binding requirements (California Code of Regulations Title 14, Chapter 3, Article 18, Section 15262).

## **1.2 Purpose and Need**

The objective of this facilities plan is to provide a clear, feasible, and appropriate “road map” to capital improvements, upgrades, and maintenance of the District’s wastewater collection, treatment, and disposal facilities for the next 20 years. The plan is designed to be used in the development of a wastewater management system that addresses immediate permit requirements, anticipates future permit and regulatory requirements, accommodates anticipated growth and community needs, and provides flexibility for future expansion.

### **1.2.1 System Ownership**

Wastewater collection, treatment, and disposal services are provided in McKinleyville by the MCSD. The District was formed in 1970 as an independent governmental unit organized under the Community Services District Law, pursuant to Title 6 Division 3 of the Government Code Section 61000 et seq. The District is governed by a five-member Board of Directors locally elected on four-year rotating terms (MCSD, 2011). Currently, the District serves approximately 6,100 customers. There are 5,315 lateral water connections, and the District maintains 6,042 active water accounts. The number of current sewer connections is 4,495 (Willdan, 2011).

### **1.2.2 Capital Improvement Program**

The District maintains a multi-year Capital Improvement Program (CIP) that identifies capital equipment purchases and project funding needs for a 10-year planning period. A copy of the most recent CIP approved for Fiscal Year (FY) 2012 is included in Appendix B.

A water and sewer capacity fee study was also recently completed by Willdan Financial Services for the District’s water and wastewater systems (Willdan, 2011). The study includes a detailed review of the sewer CIP allocation based on capital project requirements to meet projected growth. A copy of the 2011 Final Water and Sewer Capacity Fee Study is included in Appendix C. The District is also currently working on developing a water and sewer rate study (MCSD, 2011).

This facilities plan includes recommendations for improvements to the collection and treatment systems and estimated operation and capital costs. As applicable, updates to the CIP planning documents presented in Appendices B and C will be addressed to account for any differences between estimated project costs and the costs presented in this study for the preferred project.

### **1.2.3 Project Funding Sources**

Publicly owned wastewater utilities in California have sources of public funds for grants and loans available to them for the planning design and construction of wastewater systems. This facilities plan will be instrumental if the MCSD decides to pursue funding from such sources as the Clean Water State Revolving Fund and the U.S. Department of Agriculture’s Rural Development loan

programs. A facilities plan that has been approved by the RWQCB is required by all funding agencies in order for the utility to be able to obtain funding. This wastewater facilities plan has been structured to meet the requirements of the RWQCB, which administers the Clean Water State Revolving Fund (CWSRF). It also complies with the requirements for a Preliminary Engineering Report (PER) as outlined by the Rural Utilities Services (RUS, 2008).

## 2.0 Study Area Characteristics

This section of the facilities plan provides an overview of the characteristics for the general McKinleyville study area. Information presented in this section is based on review of the following documents and additional special studies where referenced in the text:

- Draft Program Environmental Impact Report for the 1999 McKinleyville Community Plan Update of the Humboldt County General Plan prepared by Humboldt County (June 7, 1999) (Humboldt County, 1999)
- McKinleyville Community Plan prepared by Humboldt County in December 2002 (Humboldt County, 2002)
- Draft Municipal Service Review prepared by the Local Agency Formation Commission (LAFCo) in January 2009 (LAFCo, 2009)

### 2.1 Study Area

McKinleyville is an unincorporated community located in Humboldt County, California, approximately five miles north of Humboldt Bay. McKinleyville is situated along the Pacific Ocean on a coastal terrace located between the Mad River and Little River drainage basins. Elevations range from approximately 50 feet to 500 feet above Mean Sea Level (MSL). The coastal terrace is crossed by six creeks: from north to south – Bullwinkle Creek, Patrick Creek, Strawberry Creek, Norton Creek, Widow White Creek, and Mill Creek (Humboldt County, 1999).

The MCSD service area encompasses approximately 12,140 acres and extends north from the Mad River to Patrick Creek and east from the Pacific Ocean to the foothills bordering the community of Fieldbrook (LAFCo, 2009). The MCSD service area encompasses both an Urban Study Area (USA) and a Water Study Area (WSA), as delineated by Humboldt County and shown on Figure 1-5. The McKinleyville USA encompasses approximately 5,521 acres, and the WSA encompasses 1,683 acres. Water and sewer services are provided by MCSD within the USA and only water services are provided within the WSA.

The existing collection system network currently extends throughout most of the USA as shown on Figure 1-5. However there are areas in the USA where the existing collection system network would need to be extended to provide sewer collection services.

MCSD's present economic base is primarily that of a residential community with local and regional commercial services along a centralized strip. Limited agricultural production and light manufacturing is also pursued in the area. McKinleyville is the site of the County's only regional airport facility, the Arcata-Eureka Airport.

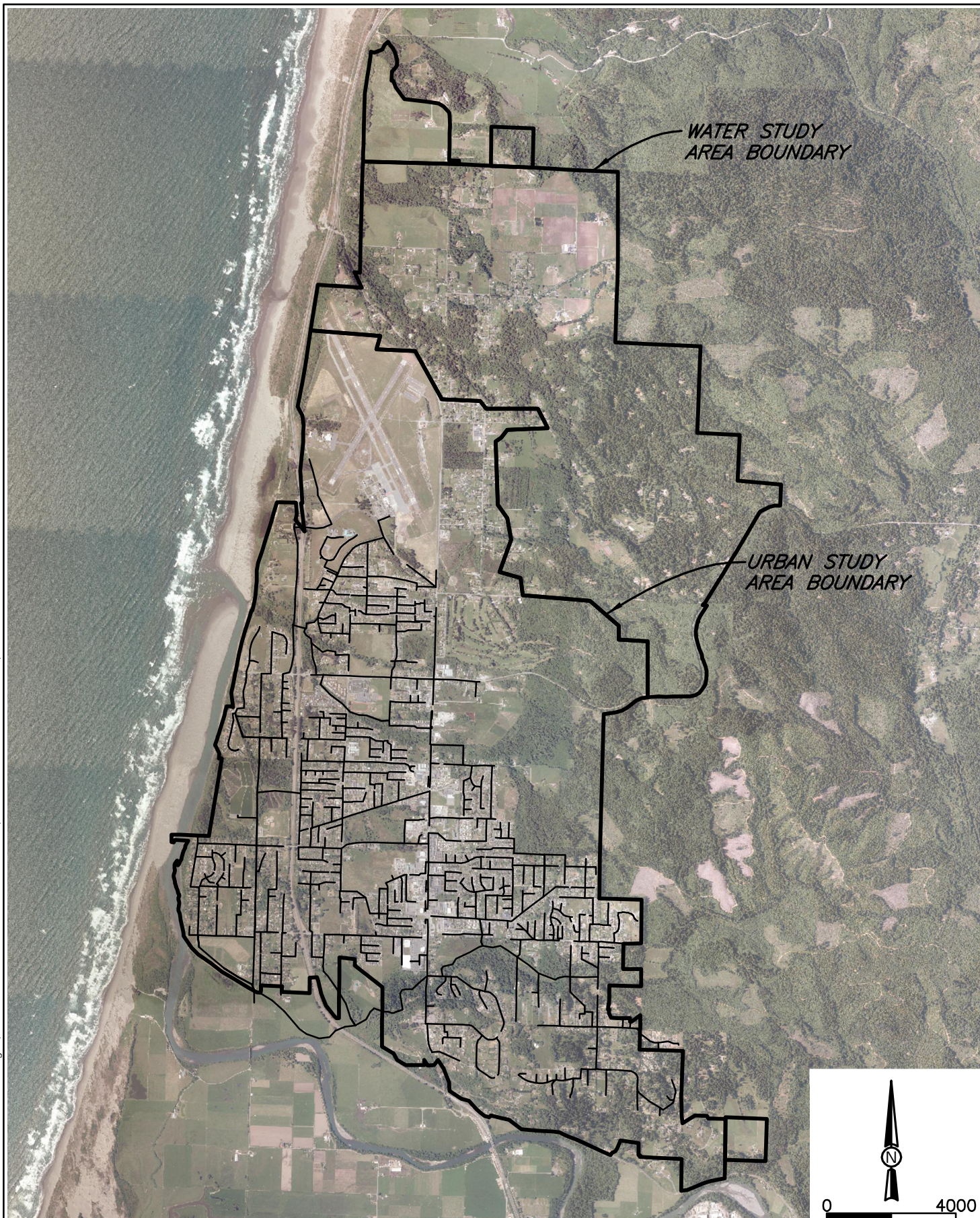
### 2.2 Physical Environment

#### 2.2.1 Climate

The climate of the vicinity is characterized by mild, rainy winters and cool, dry summers, with an average temperature of 55 °F (13 °C). Average daily temperatures range from about 48 °F during



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SOURCE: 2010 NAIP IMAGERY

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Consulting Engineers  
& Geologists, Inc.

McKinleyville Community Services District  
Wastewater Management Facility  
McKinleyville, California

MCSD Study Area Boundaries

SHN 008189

October 2011

008189-300-MCSD-STUDY-BOUND

Figure 1-5



the winter to about 60 °F during the summer. The extreme low observed temperatures in the winter are in the range of 20 °F and the extreme high temperatures in the summer are in the vicinity of 90 °F. The dominant climatic features of the area are governed by the Pacific Ocean.

The greatest precipitation generally occurs in the month of December with an average rainfall of 6.35 inches. The least occurs in July. The wet weather season is considered to be November through April, and the dry weather season is considered to be May through October. Average annual precipitation is approximately 38.1 inches per year. Coastal fog is common throughout the year. The morning fog is influenced by the presence of the ocean, and develops as the moist air above the sea meets the cooler land surfaces when the breeze moves the air onshore.

Generally, the wind direction is from the northwest during the drier months of the year (May through September) and from the east from October through April, with the northwesterly winds being slightly stronger than the northeasterly winds. The presence of the Pacific Ocean to the west directly affects prevailing local wind patterns in the region. As the land mass heats during the day, warmer air temperatures inland establish a convective pattern that leads to the development of onshore winds. Cooling of the landmass during the night results in the reverse thermal pattern and a local offshore breeze develops.

## 2.2.2 Soils, Geologic Resources, and Geologic Hazards

Basement rock in the McKinleyville region is composed of late Jurassic to late Cretaceous age *mélange* of the Franciscan Complex (McLaughlin et al, 2000; Clarke, 1992). The *mélange* is part of the Central belt subunit of the Franciscan Complex, and typically consists of blocks of conglomerate, graywacke sandstone, radiolarian chert, blueschist facies metamorphic rock, greenstone, and ophiolitic plutonic rock in an intensely sheared argillite matrix. Throughout the region, Franciscan basement rock is overlain by a variety of late Cenozoic age sedimentary rocks. In the northern Humboldt Bay/McKinleyville region, Franciscan bedrock is unconformably overlain by early to middle Pleistocene age marine and continental deposits of the Falor formation (Carver, Stephens, and Young, 1985).

In coastal central Humboldt County, Franciscan basement rock and Falor formation deposits are overlain by a series of late Pleistocene marine terraces. McKinleyville is located on a particularly well-developed flight of marine terraces, which extend from the modern coastline to the hills along the eastern margin of town. These terraces typically consist of an abrasion platform cut across bedrock, covered by sediments typically consisting of near-shore marine deposits and terrestrial alluvial, colluvial, and eolian deposits. No datable material has been recovered from the marine terraces, so age assignments are based on elevation distributions and comparisons with global sea level chronologies, as well as comparisons of relative amounts of pedogenic soil development. Based on these analyses, the McKinleyville terrace sequence is correlated to the Sangamon interglacial period, between approximately 83,000 and 125,000 years ago.

The terrace underlying central McKinleyville correlates to the 96,000-year-old Stage 5b sea level high stand by Carver and Burke (1992); this surface is referred to as the “McKinleyville terrace.”

The most comprehensive soil survey work performed within McKinleyville remains the *Soils of Western Humboldt County* (U. C. Davis, 1965). Numerous soil series occur in McKinleyville,



including “prime” agriculturally productive members of the Arcata, Ferndale, and Rohnerville series. Many of these productive areas have already undergone conversion to non-agricultural uses, mainly for residential subdivisions and commercial uses within the central McKinleyville terraces, and public facility development at the Arcata-Eureka Airport. The remaining areas of intact prime soils are located primarily in the Dows-Prairie-Crannell area, between Strawberry and Patrick Creeks. These areas are planned and zoned for agricultural and timber production as their “highest and best use.”

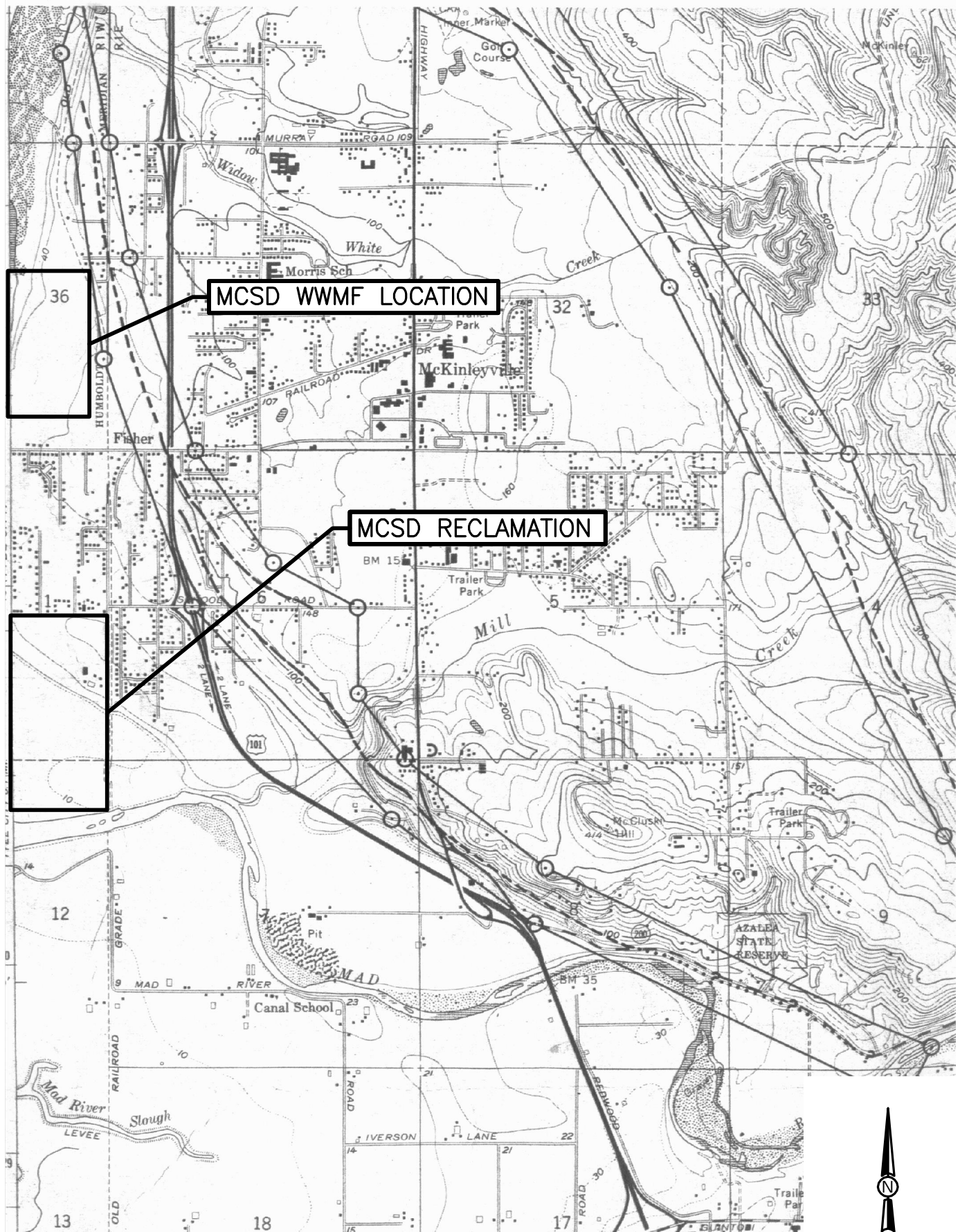
### 2.2.2.1 Seismic Hazards

The Humboldt Bay region occupies a complex geologic environment characterized by very high rates of active tectonic deformation and seismicity. The area lies just north of the Mendocino Triple Junction, the intersection of three crustal plates (the North American, Pacific, and Gorda plates). North of Cape Mendocino, the Gorda plate is being actively subducted beneath North America, forming what is commonly referred to as the Cascadia Subduction Zone (CSZ). In the Humboldt Bay region, secondary deformation associated with plate convergence is manifested on-land as a series of northwest-trending, southwest-vergent thrust faults, and intervening folds (“fold and thrust belt”). The geomorphic landscape of the Humboldt Bay region is largely a manifestation of the active tectonic processes and the setting in this dynamic coastal environment.

McKinleyville is located within the Mad River fault zone (MRfz). This zone consists of several major northwest-trending thrust faults and numerous minor, secondary synthetic and antithetic faults. Major faults within the MRfz include, from north to south, the Trinidad, McKinleyville, Mad River, and Fickle Hill faults. The McKinleyville and Mad River faults both pass through McKinleyville. Earthquake Fault Zones (EFZs), as defined by the State’s “Alquist-Priolo Earthquake Fault Zoning Act,” are associated with both of these faults. Individual faults within the MRfz commonly exhibit variable strikes, which is common along thrust faults, and shallow to moderate dips ranging from as little as 10° to 55°. At least 5 kilometers (3 miles) of middle and late Pleistocene displacement has occurred across the MRfz since deposition of the Falor formation (Carver, 1987). In the McKinleyville area, the MRfz crosses, and displaces, the flight of marine terraces described above. The faults typically are well expressed across the terraces as west- and southwest-facing scarps separating the displaced, relatively flat terrace surfaces. Antithetic faults within the MRfz typically are associated with lesser amounts of cumulative displacement, and form subtle northeast-facing scarps. Figure 1-6 shows the location of MCSD facilities relative to the active faults in the McKinleyville area.

Only one moderate historic earthquake may have been generated within the MRfz, but all the faults within the zone are considered active based on deformation of Holocene-age soils overlying the faults. By association, the principal faults within the MRfz are considered active by the State of California, and are included within Alquist-Priolo Earthquake Fault Zones. Of primary concern relative to MCSD facilities, the Mad River fault passes through the “Hiller Reclamation” area, just east of the WWMF treatment ponds. If a moderate or large magnitude earthquake were to occur along the Mad River fault, ground shaking at the facilities would be severe. In addition, if fault rupture were to be generated in such an event, it would presumably significantly impact piping and other infrastructure that crosses the fault trace.

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Due to the proximity to active seismic sources, localized areas in McKinleyville may be subject to secondary seismic effects, such as liquefaction, lateral spread, and seismically-induced landsliding. Liquefaction is the sudden loss of soil shear strength due to a rapid increase of soil pore water pressures caused by cyclic loading from a seismic event. In simple terms, it means that a liquefied soil acts more like a fluid than a solid when shaken during an earthquake. In order for liquefaction to occur, the following are needed:

- granular soils (sand, silty sand, sandy silt, and some gravels),
- a high groundwater table, and
- a low density of the granular soils (usually associated with young geologic age).

In the McKinleyville area, these conditions generally are confined to recent alluvial deposits along streams, and recent beach deposits. The adverse effects of liquefaction include local and regional ground settlement, ground cracking and expulsion of water and sand, the partial or complete loss of bearing and confining forces used to support loads, amplification of seismic shaking, and lateral spreading. Lateral spreading is defined as lateral earth movement of liquefied soils, or competent strata riding on a liquefied soil layer, downslope toward an unsupported slope face, such as a creek bank, or an inclined slope face. For the most part, lateral spreading has been observed on low to moderate gradient slopes, but has been noted on slopes inclined as flat as one degree.

#### **2.2.2.2 Landslides**

Slope stability hazards are a significant concern in Humboldt County, due to the steeply sloping terrain and unconsolidated bedrock, combined with heavy seasonal rains. The majority of McKinleyville is located on the flat, relatively stable McKinleyville Terrace, where slope stability concerns are negligible. The potential for instability increases on steep slopes along creeks, in the upland areas of eastern McKinleyville, and along coastal bluffs. Landsliding relative to MCSD facilities is primarily a concern relative to water tanks and other storage or transmission facilities that may occupy upland areas east of McKinleyville. Figure 1-7 shows the locations of MCSD facilities relative to known geologic and geomorphic features in the McKinleyville area.

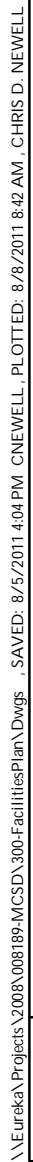
#### **2.2.2.3 Tsunami and Seiche**

Tsunamis are very large ocean waves produced by underwater earthquakes, landslides, or volcanic eruptions. Bores are high, often dangerous waves, traveling up river valleys caused by water surges in narrowing estuaries associated with tsunamis or tides. Seiches are oscillating waves in confined bodies of water, such as lakes, bays, or gulfs, generated by seismic activity.

McKinleyville coastal regions and river valley areas less than 100 feet MSL are susceptible to the effects of large tsunami waves. Portions of McKinleyville, including the WWMF's percolation ponds, lie within the Tsunami Inundation Zone, as identified on available maps (Redwood Coast Tsunami Working Group). Figure 1-8 shows the location of MCSD facilities relative to the Tsunami Inundation Zone for the McKinleyville area.

#### **2.2.2.4 Flooding**

Low lying areas along the Mad River are subject to flooding impacts. These floods may result from natural high flow conditions, or more severely, from a dam failure at Matthews Dam (Ruth Lake

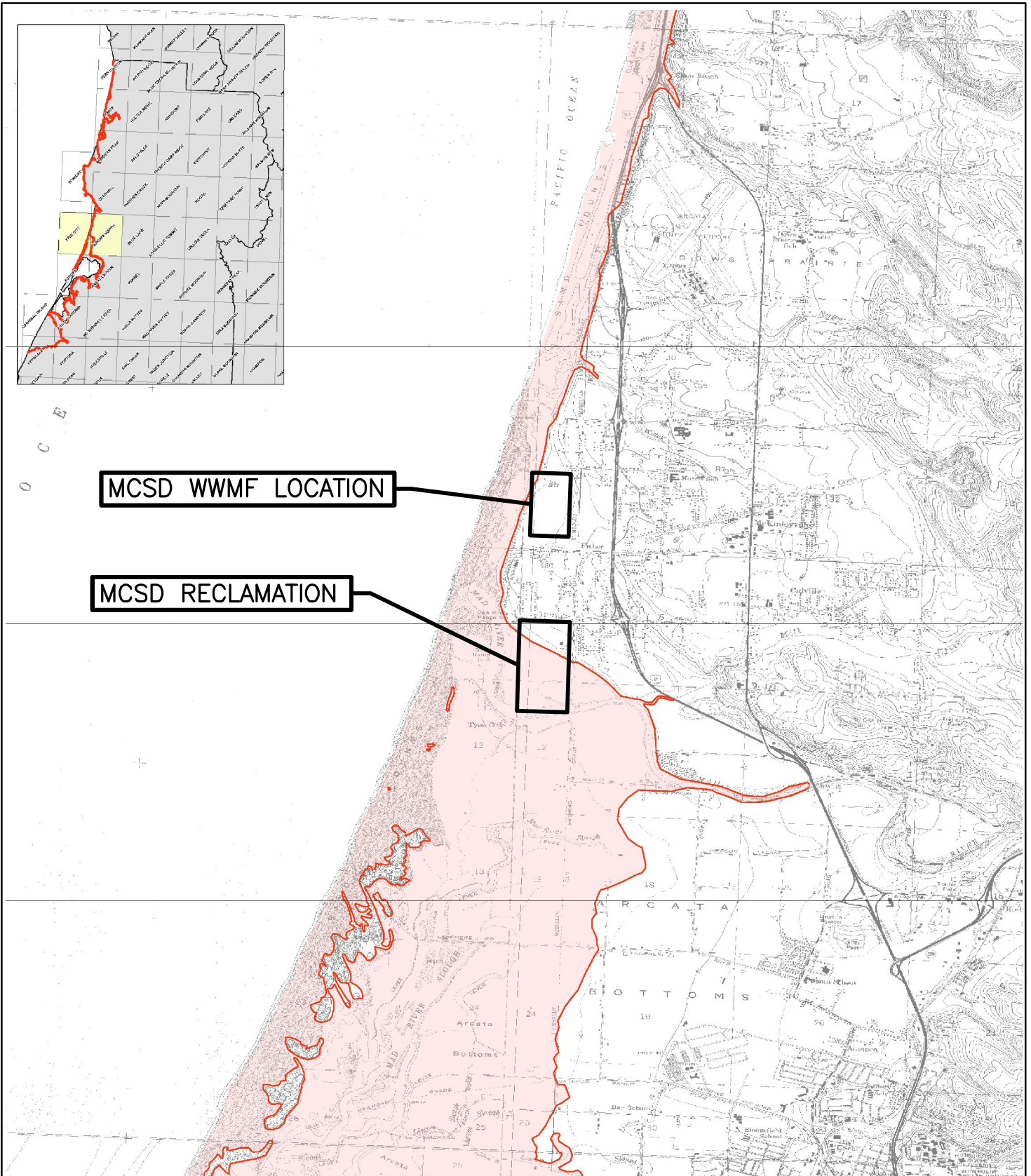
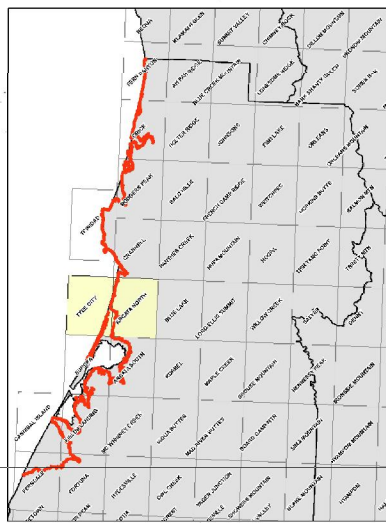


<i>S</i>	<i>SCARP</i>
<i>LD</i>	<i>LINEAR DRAINAGE</i>
<i>WT</i>	<i>WARPED TERRACE</i>
<i>DT</i>	<i>DOWN THROWN</i>



Figure 1-7





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impoundment structure). Flood levels are defined by mapping produced by the Federal Emergency Management Authority (FEMA) and on a special map outlining the potential effects of a Matthews Dam failure. Figure 1-9 shows the locations of MCSD facilities relative to potential flood areas.

### **2.2.3 Public Health Hazards**

There are several potential sources of hazardous conditions or material releases within McKinleyville in addition to the naturally-occurring hazards discussed in Section 2.2.2.

The MCSD WWMF contains more than the California-Occupational Health and Safety Administration (Cal-OSHA) threshold limit of extremely hazardous materials, in the form of chlorine gas. Chlorine is regulated under the California Accidental Release Prevention (CalARP) Program, as found in the California Code of Regulations (CCR), Title 19, Division 2, Chapter 4.5; and the Cal-OSHA Process Safety Management standards found in CCR Title 8, Section 5189, and Code of Federal Regulations (CFR) , Title 29, Section 1910.119.

The proximity of residential areas to Highway 101 increases the likelihood of impacts from releases of hazardous materials from truck shipments transported on Highway 101.

The Arcata-Eureka Airport is located in McKinleyville; therefore the MCSD service areas are located within the Airport Analysis and Safety Analysis Zones. Primarily, the airport is a commercial service airport providing airline and general aviation services to the community and the flying public. Additionally, the U.S. Coast Guard Search and Rescue Base is located on the airport grounds. Crashes and fires associated with aircraft landing, take-off, and fueling operations near the airport are a potential source of hazardous conditions and material releases.

### **2.2.4 Energy Production and Consumption**

There are no power generation facilities within the boundaries of McKinleyville. Natural gas and electric service is provided by Pacific Gas and Electric Company (PG&E). McKinleyville is served from a 60 kilovolt (kV) transformer line running from the Janes Creek substation in Arcata toward the City of Trinidad, between McKinleyville and Fieldbrook. The 8-inch natural gas main runs north to south along Central Avenue. Electric services provided by PG&E are provided in accordance with current rates and rules approved by the California Public Utilities Commission.

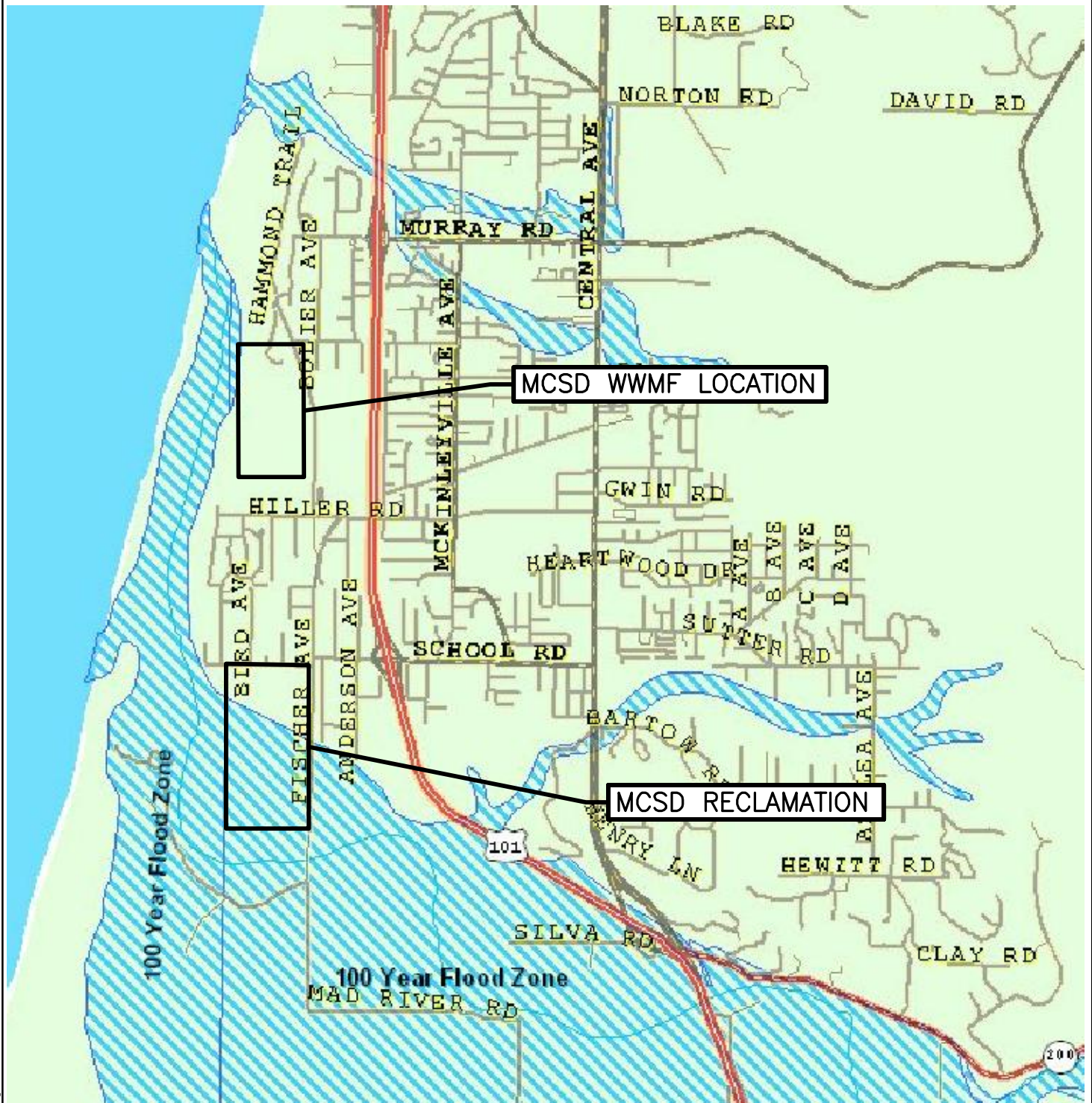
### **2.2.5 Water Resources**

MCSD currently relies on the Mad River as a resource for domestic and fire supply water. Water is purchased under long-term contract from the Humboldt Bay Municipal Water District (HBMWD). Drinking water that is supplied to MCSD is withdrawn from the bed of the Mad River through four radial-arm "Ranney collectors."

Water is gravity-fed from HBMWD's facility on the Mad River to the Ramey Pump Station. Water is then pumped to MCSD's six storage tanks from which it is gravity-fed to MCSD's customers. The total combined system storage capacity is 5.25 million gallons. The delivery system, from storage tanks to individual users, consists of about 84 miles of water mains.



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Currently, the District has 5,315 lateral water connections, serving approximately 6,042 active water accounts. Two new 3-million gallon tanks are planned for construction. New tanks will increase the District's storage capacity, enhance fire flows during peak summer usage, and provide additional system capacity for new growth, especially in northern McKinleyville (MCSD, 2011).

The RWQCB's *Water Quality Control Plan for the North Coast Region* (Basin Plan) (RWQCB, 2007) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Beneficial uses applicable to the Mad River and its tributaries include municipal and domestic water supply. Discharges of municipal wastewater to the Mad River from the WWMF are regulated under NPDES Permit No. CA0024490, Order No. WQ 2011-0008-DWQ. The NPDES permit implements the applicable regulations for protection of beneficial uses as specified in the basin plan for this region.

## **2.2.6 Biological Resources**

### **2.2.6.1 Environmental Setting**

The environmental setting within McKinleyville is characterized by the presence of the Mad River and Pacific Ocean in conjunction with the residential and commercial development. Natural resources are primarily confined to the Mad River and surrounding riparian corridor, along with the coastal areas to the west and timberlands to the east. The environmental setting within McKinleyville is predominantly affected by the mild maritime climate, and current and historical development. Influence from these factors is evident in the variety of habitat types found in the vicinity, which include freshwater and estuarine wetlands, coastal prairie, coastal strand, scrub-shrub, and North Coast coniferous forest. Habitat within McKinleyville has been altered by historical development and current land uses.

Streams and riparian corridors, wetlands, and forested areas containing habitat and/or nesting sites for rare, threatened, and endangered species and species of concern have been designated as environmentally sensitive habitat areas due to their importance for providing fish and wildlife value.

### **2.2.6.2 Vegetation Habitat**

Natural vegetation within McKinleyville includes a diverse mixture of forested swamps, riparian woodlands and grasslands, and is dominated by the presence of Sitka spruce. Beach Pine Forest, Northern Coastal Coniferous Forest, Perennial Grassland, Redwood Forest, Northern Coastal Scrub, Coastal Dunes, and Red Alder Riparian Forest habitats can also be found within McKinleyville. The extent of these naturally occurring habitats has been actively altered over time by human manipulation, agriculture, and settlement. A large portion of the original coniferous forest that once occurred in McKinleyville has been cleared, leaving the community covered with grassy areas and fewer trees. Historically, blue-gum eucalyptus, Monterey pine, and cypress, are non-natives and have been planted in rows as windbreaks. Other exotic plants have taken hold in McKinleyville with effects ranging from cumulative displacement of crucial habitat-providing native species, to weedy species presenting nuisances to agriculture, landscaping, and open space.



### 2.2.6.3 Special Status Species

Potentially occurring species identified as candidate or listed as rare, threatened, or endangered (herein referred to as Special Status) by local, state, and federal regulations, were reviewed by querying the California Natural Diversity Database (CNDDDB) RareFind 3 program (CDFG, 2011) for historical and/or existing occurrences of sensitive species and habitats within McKinleyville and all immediately adjacent United States Geological Survey (USGS) quadrangles. All plant species included on Lists 1 and 2 of California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (Tibor, 2001) were also reviewed to determine potential presence in McKinleyville. Tables D-1 and D-2, included in Appendix D, present a summary of the regionally occurring special status animal species and plant species, respectively for the McKinleyville area. Site-specific habitat evaluations are necessary to determine actual species composition within a proposed project area.

### 2.2.6.4 Wetlands

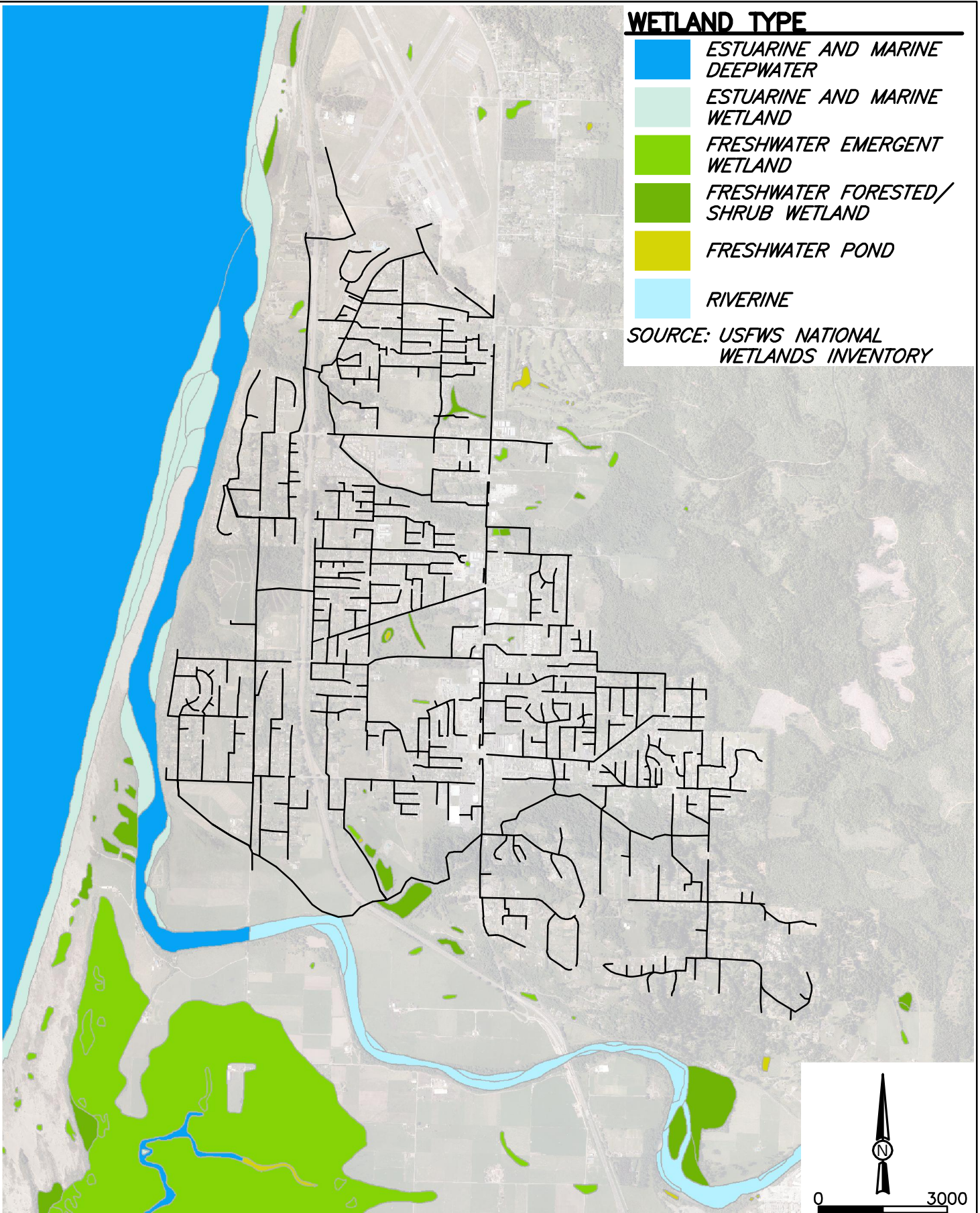
The U.S. Fish and Wildlife Service (USFWS) is the federal agency responsible for tracking wetland trends as well as maintaining a reliable inventory through its National Wetland Inventory (NWI) (USDI, 1987). The NWI can be queried for specific locations throughout the country to aid federal, state, and local agencies in making informed decisions concerning wetlands. Wetlands in McKinleyville occur in and adjacent to riparian corridors and water bodies, and as isolated "pocket" wetlands. Although NWI maps are excellent references for determining the presence or absence of wetlands, the resolution of the NWI tends to be on a macro scale, with no field verification. Site-specific wetland delineations are necessary to determine an accurate distribution of wetlands within a proposed project area. Based on the purpose of this plan, a global review of wetlands was performed and Figure 1-10 shows the MCSD facilities relative to the NWI mapped wetland features in the McKinleyville area. According to the NWI, wetland types found in McKinleyville include:

- **Estuarine Subtidal Unconsolidated Bottom Permanently Flooded (E1UBL):** The Estuarine system includes deepwater tidal habitats and adjacent tidal wetlands that are influenced by water runoff from and often semi-enclosed by land. They are located along low-energy coastlines and they have variable salinity. These habitats are continuously submerged with tidal water and include all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6 to 7 centimeters [cm]), and a vegetative cover less than 30% (Cowardin et al., 1979).
- **Palustrine Scrub-Shrub Broad Leaved Deciduous Seasonally Flooded (PSS1C):** This Palustrine system includes all nontidal wetlands dominated by woody vegetation less than 6 meters (m) (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions, with relatively wide, flat leaves that are shed during the cold or dry season. Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years (Cowardin et al., 1979).
- **Palustrine Unconsolidated Bottom Permanently Flooded (PUBHx):** This Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, and mosses or lichens. It also includes all wetlands and deepwater habitats with at least

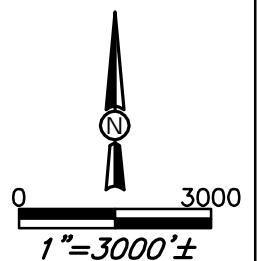
## WETLAND TYPE

- ESTUARINE AND MARINE DEEPWATER
- ESTUARINE AND MARINE WETLAND
- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE

SOURCE: USFWS NATIONAL WETLANDS INVENTORY



SOURCE: 2010 NAIP IMAGERY



**SH**  
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McKinleyville Community Services District  
Wastewater Management Facility  
McKinleyville, California

McKinleyville Area Wetlands

SHN 008189

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Figure 1-10



25% cover of particles smaller than stones less than 6 to 7 cm (2.3 to 2.4 inches), and a vegetative cover less than 30%. Water covers the land surface throughout the year in all years (Cowardin et al., 1979).

- **Riverine Upper Perennial Unconsolidated Bottom Permanently Flooded (R3UBH):** This Riverine system includes all wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water and is characterized by a high gradient and fast water velocity. There is no tidal influence, and some water flows throughout the year. This substrate consists of rock, cobbles, or gravel with occasional patches of sand. There is very little floodplain development. This habitat also includes all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6 to 7 cm), and a vegetative cover less than 30%. Water covers the land surface throughout the year in all years (Cowardin et al., 1979).
- **Estuarine Intertidal Unconsolidated Shore San Regularly Flooded (E2US2N):** This Estuarine system describes deepwater tidal habitats and adjacent tidal wetlands that are influenced by water runoff from and often semi-enclosed by land. They are located along low-energy coastlines, have variable salinity, and are areas from extreme low water to extreme high water and associated splash zone. The unconsolidated particles smaller than stones are predominantly sand, although finer or coarser sediments may be intermixed. This habitat also includes all wetland habitats having two characteristics: 1) unconsolidated substrates with less than 75% areal cover of stones, boulders, or bedrock; and 2) less than 30% areal cover of vegetation. Landforms, such as beaches, bars, and flats, are included in the Unconsolidated Shore class. Tidal water alternately floods and exposes land surface at least once daily (Cowardin et al., 1979).
- **Palustrine Forested Broad Leaved Deciduous Seasonally Flooded (PFO1C):** This Palustrine system includes all nontidal wetlands dominated by woody vegetation that is 6 m (20 feet) tall or taller. Trees or shrubs have relatively wide, flat leaves that are shed during the cold or dry season. Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years (Cowardin et al., 1979).
- **Palustrine Emergent Persistent Seasonally Flooded (PEMIC):** This Palustrine system includes all nontidal wetlands characterized by erect, rooted, and herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants that normally remain standing at least until the beginning of the next growing season. Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years (Cowardin et al., 1979).

### 2.2.6.5 Fisheries Resources

The Mad River is known to contain and provide habitat for the following state and federally listed species (EPA, 2007):

- Southern Oregon/Northern California Coast Coho Salmon Evolutionary Significant Unit (ESU)
- California Coastal Chinook Salmon ESU
- Northern California Steelhead Distinct Population Segment (DPS)

Coastal cutthroat trout, another Special Status Species, has also been reported for the Mad River and is currently being considered for federal listing.

The Mad River is designated as critical habitat for the coho salmon and is considered Essential Fish Habitat pursuant to the Magnuson-Stevens Fisheries Conservation and Management Act, as amended (16 United States Code [USC] Section 1801 et seq.). In 1992, the U.S. Environmental Protection Agency (EPA) added the Mad River to California's 303(d) impaired water list due to elevated sedimentation/siltation and turbidity, as part of listing the entire Mad River basin. The North Coast Regional RWQCB has continued to identify the Mad River as impaired in subsequent listing cycles, the latest in 2006. The 2006 303(d) listing identifies temperature as an additional impairment to the watershed.

Sediment and turbidity Total Maximum Daily Loads (TMDLs) were approved for the Mad River watershed by the EPA in December 2007. The purpose of establishing the Mad River TMDLs was to identify the total amount of sediment and turbidity that can be delivered to the Mad River and its tributaries without exceeding water quality standards, and subsequently to allocate the total amount among the sources of sediment in the watershed (EPA, 2007). The primary purpose of the TMDL development process is to ensure that beneficial uses of water (such as salmonid habitat) are protected from detrimental increases in sediment and turbidity (EPA, 2007).

### 2.2.7 Air Quality

McKinleyville is located within the North Coast Air Basin, which covers Del Norte, Humboldt, Mendocino, and Trinity Counties in their entirety and part of Sonoma County. The North Coast Unified Air Quality Management District (NCUAQMD) regulates air pollutant point sources found within the air basin.

Currently, Humboldt County is a non-attainment area for state standards for particulate matter of less than 10 micrometers ( $\mu\text{m}$ ) in diameter (PM-10). PM-10 emissions include smoke from wood stoves, airborne salts, diesel exhaust, and other particulate matter naturally generated by ocean surf. Due in part to the large number of wood stoves in Humboldt County and the generally heavy surf and high winds common to the area, Humboldt County has exceeded the state standard for PM-10 air emissions. For other point source pollutants, the air basin is an attainment area.



Air quality within McKinleyville meets or exceeds the established air quality standards. Potential sources of air pollution include emissions from vehicle using the local streets and the Redwood Highway (Highway 101), and recreational boat emissions in the river, residential wood burning stoves, open and permitted burning, and agricultural operations.

### **2.2.8 Noise**

Sources of significant noise affecting the McKinleyville area include the following:

- Aircraft landings and take-offs at the Arcata-Eureka Airport
- Vehicular traffic on Highway 101 and major arterial and collector streets
- Construction sites
- Industrial processes

Noise levels for the airport have been measured, projected, and addressed in the Airport Land Use Compatibility Plan for the Arcata-Eureka Airport. Streets and highways within McKinleyville are important noise sources, with the primary source being Highway 101.

### **2.2.9 Land Use Issues**

Existing land uses in McKinleyville include commercial, residential, industrial, recreational, and public use. Much of the land base within the urban development area has been developed. According to the McKinleyville Community Plan (Humboldt County, 2002), the majority of development within the community core will take the form of low- to medium-density residential and community commercial “in-fill” of relatively small (five acres or less) vacant parcels. Land uses for the McKinleyville area include:

- Commercial
- Residential
- Industrial
- Agricultural

#### **2.2.9.1 Commercial**

Commercial land uses in the planning area are centered on Central Avenue between School Road on the south and Railroad Avenue on the north. A smaller number of commercial establishments are located on Sutter Road, Central Avenue north of Railroad Avenue to Murray Road, and McKinleyville Avenue.

#### **2.2.9.2 Residential**

There are several residential low-density and medium density areas within McKinleyville. The majority of residential areas are located to the east and west of Central Avenue within the core urban development area for McKinleyville.

### **2.2.9.3 Industrial**

A small portion of McKinleyville is designated for industrial land use. The Airport Business Park site is a 60-acre parcel located in the northern portion of McKinleyville and is designated as a mixed light industrial/commercial use area that allows: storage and warehousing, research and development, light industrial/manufacturing, administrative, professional/business office, and support commercial uses. The zoning for the property includes performance standards that restrict the development of uses on the site that would be incompatible with the adjacent residential area.

### **2.2.9.4 Agricultural**

About 2,200 acres of prime agricultural soils are located within the McKinleyville urban development area and are provided with water and sewer facilities by the MCSD. An additional 280 acres are located near the site of the Arcata-Eureka Airport.

Agricultural uses occur upon lands adjacent to the Arcata-Eureka Airport and in Dow's Prairie, on bluffs between Highway 101 and the Pacific Ocean, on the flat lowlands and floodplains of the Mad and Little River Valleys, and in a number of other isolated locations throughout McKinleyville. Agricultural endeavors include, but are not limited to beef and dairy farming, bulb production, flower production, produce production, cut-flower production, berry production, nursery crops, and organic crops. Several areas are used for crop cultivation. Many residents own horses, cattle, sheep, and other livestock that graze on small plots of land, usually adjacent to their respective residences.

### **2.2.9.5 Public Facilities and Recreation**

Public facilities within the District boundaries include parks, recreational sites, library, schools, streets, water, wastewater treatment, drainage, and airport facilities (which are operated by Humboldt County). The majority of public facilities, specifically schools and recreational facilities are located in or near residential areas, west and east of Central Avenue.

The County and MCSD share recreation authority within the community of McKinleyville. MCSD has several recreational projects, the majority of which can be characterized as recreational facilities primarily designed to accommodate organized or team sport activities.

## **2.3 Socio-Economic Environment**

### **2.3.1 Economic Conditions and Trends**

McKinleyville's land use is primarily residential, and most of McKinleyville's employed residents are employed in Arcata and Eureka. McKinleyville's employment opportunities involve commercial retail and service businesses. Commercial services are primarily located along Central Avenue between School Road and Murray Road.

During the 1990s, nearly all of McKinleyville's commercial growth was in the form of franchise/chain commercial services located along Central Avenue. The placement of these new facilities has



given Central Avenue the appearance of a commercial strip. These facilities include drive-through restaurants, dining restaurants, auto parts stores, a supermarket, and a department store. Other commercial ventures include a building supply yard and expanded car lots.

The McKinleyville Community Plan states that there is a need to diversify the economic base and encourage additional employment. Portions of McKinleyville may be appropriate for economic development proposals because of the availability of water and sewer service, access to Highway 101 and the availability of air service. Consequently, the plan continues to propose three sites for industrial/commercial development near the Arcata-Eureka Airport (Humboldt County, 2002).

### **2.3.2 Population**

The McKinleyville Community Planning Area, including the Coastal Zone segment had an estimated population (1998) of 12,770 based on projections from the California Department of Finance extrapolated from the 1990 US Census of Population. This is approximately 10% of the County's total population at that time (127,700). The mean number of persons per household for this period was 2.67. Growth in the McKinleyville area alone accounted for almost 60% of the population increase for all unincorporated areas within the County between 1990 and 1998 (Humboldt County, 2002).

McKinleyville is the most populated unincorporated area in Humboldt County and is one of the fastest growing communities in the county. The current (2011) estimated residential population for McKinleyville is approximately 14,500 (MCSD, 2011). The current number of persons per household for McKinleyville is estimated to be 2.58 (MCSD, 2010).

### **2.3.3 Population Growth Projections**

Population growth forecasts were presented in the McKinleyville Community Plan based on projections from the State Department of Finance. Two potential forecasts were presented, an "Alternative Growth" projection (1.8% annual increase), based on current trends for the McKinleyville planning area, and a "Ratio/Share" projection (1.05% annual increase), based on the County average growth rate. The alternative growth projection is considered to be the more probable projection (Humboldt County, 2002). For purposes of this facilities plan, the average growth rate used to develop 20-year flow projections was based on the alternative growth rate that projects a 1.8% annual increase in population.

## **2.4 Land Use Regulations**

### **2.4.1 County Comprehensive Plan and Zoning Ordinance**

The MCSD service area is located within the McKinleyville and Humboldt County planning area, subject to the *Humboldt County Volume I Framework Plan, and McKinleyville Community Plan* (Humboldt County, June 1999). Portions of the service area are located within the coastal zone and subject to the *Humboldt County General Plan Volume II, McKinleyville Area Plan of the Humboldt County Local Coastal Program* (Humboldt County, May 1995). The Humboldt County General Plan (Volume 1-Framework Plan) and Humboldt County Code-Zoning Regulations contain the applicable land use policies and zoning code relevant to the facilities plan.

## **2.4.2 Intergovernmental Agreements**

MCSD is an independent, special district governed by a five member Board of Directors elected by McKinleyville's voters. Community Services Districts (CSDs) are granted powers by the State of California, pursuant to Section 61000-61009 of California Government Code, to carry out the function designated in the petition for formation and any additional services approved by the board of directors and CSD voters. The District has authority to serve water and treat sewer wastes, and holds street lighting, library, and recreational powers.