IV. ENVIRONMENTAL IMPACT ANALYSIS
I. HYDROLOGY & WATER QUALITY

INTRODUCTION

This section of the Revised Draft EIR provides a description of the surface water and groundwater resources in the City of Healdsburg, information on regulations that serve to protect these resources, proposed General Plan policies relevant to surface water and groundwater resources, and an analysis of potential impacts related to hydrology and water quality resulting from implementation of the proposed General Plan. Information used to prepare this section was taken from the *Healdsburg 2030 General Plan Background Report* (January 2009 Draft) and *California Laws for Water Wells, Monitoring Wells, Cathodic Protection Wells, Geothermal Heat Exchange Wells*. This section focuses on potential project impacts to water quality, drainage and flooding. Therefore, Subsection 2 of Section IV.P, Public Utilities, should be referred to for an evaluation of the Project's potential impacts on water supply.

ENVIRONMENTAL SETTING

Physical Setting

The city has two main surface waters, the Russian River and Foss Creek.

Russian River

The Russian River runs along a portion of the eastern boundary of Healdsburg's Sphere of Influence (SOI). The Russian River extends 110 miles and drains approximately 1,500 square miles in Mendocino and Sonoma Counties into the Pacific Ocean. Portions of the city are located within the Russian River's 100-year flood hazard zone (see Figure IV.I-1).

Foss Creek

The other important surface water in the city is Foss Creek, which has its origins at the northeastern-most corner of the Sphere of Influence and empties into the Russian River. Most of the area within city limits and over half of the Urban Service Area falls within the drainage area of Foss Creek. A portion of the Urban Service Area to the north of the city limits drains to Alexander Valley and the balance of the Urban Service Area drains to the Russian River.

Foss Creek runs north-south through the city, roughly paralleling the Northwestern Pacific Railroad tracks, and flows first through a detention basin near the northern city limits (with a 75 acre-foot capacity) then through a second detention basin (off-stream) south of Dry Creek Road (with a 49 acre-foot capacity). South of this detention basin, Foss Creek runs south in channels and conduits, leaving the city through twin 10-foot by 7-foot concrete boxes under U.S. Highway 101 near Exchange Avenue and Healdsburg Avenue.

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Figure IV.I-1 Healdsburg Flood Hazard Zones

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The 75 acre-foot capacity detention basin in the north area, located north of the Parkland Farms subdivision, was sized to accommodate anticipated development in the Foss Creek watershed portion of the city's north Planning Area (i.e., Sub-Areas A, B, and C). The detention basin accepts increases in storm runoff from development and detains the peak storm flows, thereby reducing downstream flooding. The detention basin is designed with upper and lower sections so that the lower area nearest the creek has 3:1 banks, fills first, and functions as a riparian habitat and wetland. During a peak storm (an infrequent event), the upper portion of the detention basin will fill as storm water backs in from the lower area. This area is designed with a gradual 6:1 slope and rectangular shape for potential recreational use. The detention capacity for the basin was calculated for housing densities higher than have actually been approved, resulting in a substantial factor of safety; therefore, no other major flood control or offsite storm drain improvements are needed to accommodate future development in the city's northern Planning Area.

Dams

Flood control for the lower Russian River is provided primarily by Warm Springs Dam, located approximately 10 miles northwest of the city on Dry Creek, a tributary of the Russian River. Completed in 1983, the 30 million cubic yard dam is compacted earth-fill with an impervious core, measuring 319 feet high and 3,000 feet long. Lake Sonoma, which was created by the dam, has a storage capacity of 381,000 acre-feet and a total surface area of 3,600 acres. Warm Springs Dam is located on a midsized fault, but was designed to absorb the maximum expected displacement and groundshaking from any fault in the region. Failure of this dam could inundate most of the city to an elevation of 230 feet (see Figure IV.I-2). The U.S. Army Corps of Engineers (Corps) has developed an evacuation plan for affected areas, including Healdsburg, in the event of dam failure.

Coyote Dam is an earthen dam located on the East Fork of the Russian River above Ukiah (north and upstream of the city, in Mendocino County) and is part of a system that provides water to Mendocino, Sonoma, and Marin Counties. The dam provides storage capacity of 122,500 acre feet at Lake Mendocino. Failure of this dam could inundate the southern portion of the city with water traveling down the Russian River.

Regulatory Framework

Federal/State

Section 402 of the Clean Water Act

This federal legislation authorizes the U.S. Environmental Protection Agency (EPA) to regulate water quality in California by controlling the discharge of pollutants to water bodies from point sources (a municipal or industrial discharge at a specific location or pipe) and non-point sources (diffuse runoff of water from adjacent land uses) through the National Pollution Discharge Elimination System (NPDES). Within the city limits, NPDES permits are administered by the North Coast Regional Water Quality Control Board (NCRWQCB), a division of the SWRCB. Federal regulations issued in November 1990

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Figure IV.I-2 Healdsburg Dam Inundation Areas

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and revised in 2003 expanded the authority of the SWRCB to include permitting of storm water discharges from municipal storm sewer systems, industrial processes, and construction sites that disturb areas larger than one acre.

The SWRCB has adopted a single, state-wide General Permit for application to all storm water discharges associated with construction activities that disturb more than one acre. This General Permit requires all potential dischargers (or, alternatively, "project sponsors") to:

- Prepare and implement a storm water pollution prevention plan (SWPPP) that identifies the best management practices (BMPs) that will be employed to prevent all construction pollutants from contacting storm water and to prevent all erosion-generated sediment from being discharged into off-site surface waters.
- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the nation; and
- Inspect and properly maintain all BMPs.

The General Permit is implemented and enforced by the nine California RWQCBs, and by the cities and counties to whom the NPDES regulations also apply. Large cities or other municipalities must obtain a storm water permit for discharges of urban runoff from municipal storm drain systems. The only municipality currently under a permit with the North Coast RWQCB is Santa Rosa, with the County of Sonoma and the Sonoma County Water Agency as co-permittees.

Under the auspices of this act, the Corps administers permitting programs that authorize impacts to "waters of the United States" including "wetlands" and "other waters." Such impacts may not be permitted until the SWRCB, acting through its regional boards, certifies that activities covered by the permit will not violate water quality standards. Certification must be consistent with the requirements of the federal Clean Water Act, CEQA and CESA, and with the SWRCB's mandate to protect beneficial uses of waters of the state.

In 1994, the RWQCB issued recommendations for New and Redevelopment Controls for Storm Water Programs to define the local regulatory framework and to provide water quality control guidelines for construction permittees. These recommendations include policies that define watershed protection goals; set forth minimum non-point source pollutant control requirements for site planning, construction and post-construction activities; and establish criteria for ongoing reporting of water quality control activities. The RWQCB watershed protection goals are based on policies identified in the Board's North Coast RWQCB Water Quality Control Plan for the North Coast Region (Basin Plan) and the program relies on the implementation of BMPs to limit pollutant contact with storm water runoff at its source and to remove pollutants before they are discharged into receiving waters.

Clean Water Act Section 404 & 401

The Corps and the EPA regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344). Waters of the United States are defined in Title 33 CFR Part 328.3(a) and include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. The lateral limits of jurisdiction in those waters may be divided into three categories – territorial seas, tidal waters, and non-tidal waters – and is determined depending on which type of waters is present (Title 33 CFR Part 328.4(a), (b), (c)). Activities in waters of the United States regulated under Section 404 include fill for development, water resource projects (such as dams and levees), infrastructure developments (such as highways and airports) and mining projects. Section 404 of the CWA requires a federal license or permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in dredge, fill or a discharge of a pollutant into waters of the United States to obtain a certification from the state in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters at the point where the discharge originates or would originate, that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility. The responsibility for the protection of water quality in California rests with the SWRCB and its nine RWQCBs.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) identifies flood zones (i.e., areas that are subject to flooding) through Flood Insurance Rate Maps (FIRMs). The standard for flood protection established by FEMA, and used by the State CEQA Guidelines, is the 1-in-100 annual exceedance probability, commonly referred to as the "100-year flood event" (i.e., the flood that has a 1 percent chance of occurring in any given year). Levees that provide flood protection are required by FEMA to have 3 feet of freeboard above the 100-year flood event.

The Porter-Cologne Water Quality Control Act

Article 4 Waste Discharge Requirements of the Porter-Cologne Act (Section 13260) requires that "All of the following persons shall file with the appropriate regional board a report of the discharge, containing the information which may be required by the regional board: (1) Any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state, other than into a community sewer system." The RWQCB determines if a project should be regulated pursuant to this act based on the likelihood that it would pose any "threat" to water quality. The North Coast RWQCB considers the placement of clean fill in waters of the State to constitute "pollution," because it can potentially alter existing water quality, which may adversely affect its beneficial uses.

Groundwater Wells

Section 13801 of the California Water Code requires the SWRCB to adopt a model ordinance, and each county, city, or water agency to adopt ordinances, for well placement, construction, and abandonment that meet or exceed DWR standards (California Water Code Section 231).[1] Standards for wells in California are found in DWR Bulletins No. 74-81 and 74-90, entitled Water Well Standards, State of California.

Regional/Local

Water Quality Control Plan for the North Coast Region

The Basin Plan, as amended through 2001, defines the beneficial uses, water quality objectives, implementation programs, and monitoring programs for waters of the North Coast Region, which includes Foss Creek and therefore the Planning Area. The North Coastal and Klamath River Basin Plans adopted in 1975 were combined into a single comprehensive Basin Plan, adopted in 1993 by the North Coast RWQCB and most recently updated in 2001. The Basin Plan contains both narrative and numeric water quality objectives for the region. Two types of water quality standards are discussed: ambient water quality objectives and effluent limits (or discharge standards). The former are standards set as objectives for a body of water. The latter are conditions in federal or State wastewater discharge permits, such as the NPDES permits. The Basin Plan also identifies land uses and activities that could degrade water quality and discusses BMPs that could be used to address various nonpoint sources of pollution.

City of Healdsburg Stormwater Management Plan

In 2005, the City adopted a Storm Water Management Plan (SWMP) required by the EPA Phase II storm water regulations. Because the City is identified as an "automatically designated" Small Municipally Separate Storm Sewer (MS4) in an attachment to the General Permit, the SWMP was developed using the implementing provisions in the Small MS4 General Permit adopted by the SWRCB on April 30, 2003.

The SWMP details the City's actions for each of the six required Phase II plan components:

- Public Education and Outreach on Storm Water Impacts,
- Public Involvement/Participation,
- Illicit Discharge Detection and Elimination,
- Construction Site Storm Water Runoff Control,
- Post-Construction Storm Water Management in New Development and Redevelopment, and
- Pollution Prevention/Good Housekeeping for Municipal Operations.

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[1] *State of California, Department of Water Resources, Division of Planning and Local Assistance, California Laws for Water Wells, Monitoring Wells, Cathodic Protection Wells, Geothermal Heat Exchange Wells, March 2003.*

Under the provisions of the SWMP Construction Site Storm Water Runoff Control component, City Public Works staff are responsible for inspecting storm water control measures for construction projects before October 15th of each year and after the first significant rainfall in conjunction with all building permit inspections, and for following up on these as necessary. The City SWMP's "Post-Construction Storm Water Management in New Development and Redevelopment" component includes use of open space and clustering for new development, and buffers along creeks.

City Ordinance No. 1054, "Urban Stormwater Quality Management and Discharge Controls" is intended to "insure the health, safety, and general welfare of citizens, and to protect and enhance the water quality of watercourses and water-bodies in a manner pursuant to and consistent with the federal CWA (33 U.S.C. 1251 et seq.) by reducing pollutants in stormwater discharges to the maximum extent practicable and by prohibiting non-stormwater discharges to the public storm drain system." The ordinance includes requirements regarding the discharge of non-stormwater, discharges in violation of a NPDES permit, the unlawful discharge and unlawful connections to the stormwater system, the reduction of pollutants in stormwater, spill response and notification, testing and monitoring, enforcement, falsification of data, and emergency abatement of a violation of the ordinance.

City of Healdsburg Standard Specifications and Details

Section 4 of the City's *Standard Specifications and Details* (latest edition) requires the following for all projects for which a City permit is issued:

> *4.03 Erosion Prevention Plan*
>
> *Storm water quality shall be addressed, and adverse impacts caused by a project shall be mitigated to the extent practicable or as required by law. In order to minimize impacts to receiving waters, all projects, regardless of size, shall prepare a storm water pollution prevention plan for approval. Said plan shall include both a construction, and post construction component. The construction component shall focus on erosion and sedimentation control measures, which are necessary during construction. The post construction component shall outline maintenance and management practices, which will mitigate ongoing impacts of the project on storm water quality.*
>
> *All applicable projects shall provide evidence of coverage under the Construction General Permit from the North Coast Regional Water Quality Control Board.*
>
> *A. Storm Water Pollution Prevention Plan: All proposed projects shall submit a storm water pollution prevention plan (SWPPP) for approval which includes the following:*
>
> *1. Site plan showing existing vegetation, existing water resources, proposed areas of land disturbance, and proposed best management practices (BMPs) for construction and post-construction activity. Appropriate best management practices (BMPs) which promote the following conditions shall be implemented:*
>
> *a. Prevention and control of erosion.*
>
> *b. Preservation of natural drainage systems.*

c. Source control of construction site materials, wastes, and chemicals.

d. Control and treatment of runoff.

e. Limit the number of access points to the construction site.

B. Minimum Construction BMPs: The following minimum construction BMPs shall be included in the SWPPP:

1. Disturbed areas shall be stabilized between October 15th and April 15th using suitable construction practices such as seeding, mulching, sod stabilization, vegetative buffer strips, etc.

2. Protect downstream areas using vegetative buffer strips, sediment barriers, dikes, etc.

3. Require fencing around all sensitive areas not to be disturbed such as tree drip lines, wetlands areas, etc.

4. Use sediment controls and filtration to remove silt from water generated by runoff and dewatering operations.

5. Use proper material storage, disposal, vehicle cleaning, fueling and maintenance practices.

6. Specific BMPs as may be required for a particular project by the City Engineer.

Russian River Watershed Association (RRWA)

The RRWA is an association of nine cities, counties and special districts in the Russian River Watershed that have joined together to coordinate regional programs for clean water, fisheries restoration, and watershed enhancement. The RRWA works to promote cooperation and implementation of projects that protect watershed resources, restore fisheries and improve water quality at reduced cost to taxpayers. To achieve these goals, RRWA is currently focused on:

- Developing regional support for RRWA's programs and building consensus through effective cooperation and communication;
- Achieving a healthier watershed as a result of effective but not duplicative projects;
- Participating in the development of the North Coast Integrated Regional Water Management Plan.

The North Coast Integrated Regional Water Management Plan (IRWMP)

The North Coast IRWMP was developed by a consortium of cities, counties, tribes, non-governmental organizations, watershed groups and interested stakeholders from Del Norte, Siskiyou, Modoc,

Humboldt, Trinity, Mendocino and Sonoma Counties.[2] The main objectives for the North Coast IRWMP are to:

- Protect and enhance the beneficial uses of water;
- Protect and restore salmonid populations, and;
- Develop and maintain intra-regional cooperation and local autonomy to effectively address integration regional water management.

PROPOSED GENERAL PLAN POLICIES AND IMPLEMENTATION MEASURES

Proposed General Plan policies and implementation measures that affect or pertain to hydrology and water quality are listed below.

Policies

- ~~*PS-B-1:* The City will upgrade its wastewater treatment plant and pursue agricultural and urban reuse of treated effluent in accordance with state law to serve existing and planned development.~~
- *PS-A-9:* The City will pursue agricultural and urban reuse of recycled water in accordance with state law to minimize the use of potable water in serving existing and planned development.
- *PS-B-~~5~~4:* The City will continue to work with neighboring jurisdictions and the Regional Water Quality Control Board in seeking an area-wide solution to water quality problems in the Russian River.
- *PS-D-1:* The City will continue to complete gaps in the storm drainage system in areas of existing development.
- *PS-D-2:* The City will provide for channel improvements to, and periodic tree and brush clearance along Foss Creek to increase its capacity, provided appropriate environmental mitigation measures are taken.
- *PS-D-3:* The City will continue to assess a drainage development fee on all new commercial, industrial, and residential development sufficient to fund system-wide capacity improvements.
- *NR-A-1*: The establishment of any new septic systems within the city limits is prohibited, except as otherwise provided in this General Plan, and shall support the efforts of the County, the Regional Water Quality Control Board, and residents to replace existing septic systems in the Fitch Mountain area with centralized collection and treatment system or equally effective alternative to service existing development.
- *NR-A-2:* The City will seek to minimize siltation, sedimentation and pollution discharge into receiving waterways from construction activities and ongoing operations.
- *NR-A-3:* The City strongly supports the maintenance of maximum summer flows in the Russian River to protect water quality and the recreational values of the Russian River.
- *NR-A-4:* Land with important watershed values shall be designated for open space or very low-intensity uses.

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[2] *Russian River Water Association, website: http://www.rrwatershed.org/IRWMP.htm, September 28, 2007.*

- *NR-B-1:* Channel improvements to, and tree and brush clearance activities along Foss Creek shall not unnecessarily disturb riparian vegetation, shall seek to maintain and provide a sufficient shade canopy over the creek, and shall use plants and natural materials to the extent feasible in bank stabilization projects.
- *NR-B-4:* The use of native plant species in landscaping and in the replanting of cut slopes is encouraged.
- *NR-C-1:* The City will protect the existing natural features to give shape and form to Healdsburg. To this end, new development shall not be allowed to breach the Urban Growth Boundary except under the exceptional circumstances allowed by this General Plan.
- *S-B-2:* The City will ensure that all public facilities, such as buildings, water tanks, and reservoirs, are structurally sound and able to withstand seismic shaking and the effects of seismically-induced ground failure.
- *S-C-1:* The City will continue to participate in the National Flood Insurance Program. To this end, the City will ensure that local regulations are in full compliance with standards adopted by the Federal Emergency Management Agency (FEMA).
- *S-C-2:* New residential development in flood prone areas shall be constructed so that the lowest floor is at least one foot above the 100-year flood level. Nonresidential development in flood prone areas shall be anchored and flood-proofed to prevent damage from the 100-year flood or elevated to at least one foot above the 100-year flood level. Existing development shall comply with these requirements when improvements are made costing at least 50 percent of the current market value of the structure before the improvements.
- *S-C-3:* The City will provide for environmentally-appropriate channel improvements to, and tree and brush clearance along Foss Creek and other watercourses to reduce flooding.
- *S-F-1:* The City shall ensure that adequate emergency procedures are in place to respond to and recover from man-made and natural disasters.

Policy Implementation Measures

- *NR-1: D*evelop and apply standard mitigation measures and conditions of approval on development permits to reduce siltation, sedimentation and pollution discharge into receiving waterways, both pre- and post-construction.
- *NR-1a:* Continue to require Storm Water Pollution Prevention Plans (SWPPP) for development projects that incorporate best management practices to preserve natural drainage systems; provide source control of construction site materials, wastes and chemicals; and control and treat runoff.
- *NR-1b*: Prepare and distribute to the community guidelines that encourage the use of low impact development techniques to maintain or restore the natural hydrologic functions of a site by detaining water onsite, filtering out pollutants and facilitating the infiltration of water into the ground.
- *NR-2:* Continue to enforce the riparian setback requirements of the Zoning Ordinance.
- *NR-4:* Pursue, to the extent feasible, the following actions to implement the Foss Creek Work Program:
  (a) Discuss with interested parties the development of guidelines for future development along Foss Creek
  (b) Select one or more sites for renovation projects
  (c) Encourage development proposals along Foss Creek to incorporate and enhance the creek

(d) Identify target pollutants and develop an education and voluntary contaminant reduction program with business owners and residents

(e) Prepare a series of "best practice one sheets" to assist with public education efforts

- *S-4:* Maintain and periodically update the City's Emergency Operations Plan, Recovery Manual and Hazard Mitigation Plan. As part of the periodic updates, the City shall review county and state emergency response procedures to ensure that they are coordinated with city procedures.
- *S-5:* Conduct periodic emergency response exercises to test the effectiveness of city emergency response procedures.

ENVIRONMENTAL IMPACTS

Methodology

Impacts associated with hydrology were evaluated based on the regulatory setting described above and information found within the *Healdsburg 2030 General Plan Background Report*.

Thresholds of Significance

In accordance with Appendix G to the CEQA Guidelines, the proposed project would have a significant impact related to hydrology and water quality if it would:

(a) Violate any water quality standards or waste discharge requirements;

(b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;

(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;

(d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;

(e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

(f) Otherwise substantially degrade water quality;

(g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

(h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

(i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or

(j) Result in a substantial risk of inundation by seiche, tsunami, or mudflow.

Project Impacts

Impact IV.I-1: The proposed Project would not violate any water quality standards or waste discharge requirements.

Future development in the city will result in the construction of more impervious surfaces, which could result in an increase in stormwater runoff and flooding. Runoff can exceed the capacity of storm drain systems and can contain contaminants, such as oil or solvents. These sediments and contaminants can be transported into creeks, such as Foss Creek, and the Russian River, and potentially groundwater. Soil erosion at construction sites could result in the degradation of these surface waters. A significant impact may occur if a project discharges water that does not meet the quality standards of agencies which regulate surface water quality. All future development will be subject to existing federal, state and local regulations. Policy PS-B-5 calls for the City to work with neighboring jurisdictions and the RWQCB on solutions to water quality issues in the Russian River. Other policies (Policies PS-D-1, PS-D-3, and NR-A-1) call for the City to make improvements to existing or future infrastructure to ensure preservation of water quality. Policy NR-A-2 will require that the City minimize sediments and pollution. These policies, including those implemented as part of the approval process for future projects, and compliance with federal, state, and local regulations would minimize potential impacts to ***less than significant.***

Impact IV.I-2: The proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Any increased demand for water associated with development allowed by the proposed General Plan is anticipated to be adequately served by water from the Russian River and Dry Creek (see Section IV.P [Utilities]) and there will be no depletion of groundwater supplies.

New development which could occur under the proposed General Plan will result in more impervious surfaces and a decrease in groundwater recharge. Some of this development will occur as in-fill development on areas previously developed with impervious surfaces. As part of the proposed Project, the General Plan designations for two parcels and a part of another will change from Very Low Density to Open Space. Therefore, some areas previously proposed for development will remain as open space and will not be developed with impervious surfaces. Additionally, Policy NR-A-4 calls for the designation of important watershed areas as open space or developed with only very low intensity uses. Therefore, impacts to groundwater and groundwater supplies would be ***less than significant.***

Impact IV.I-3: The proposed Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in erosion or siltation on- or off-site or flooding on- or off-site.

The proposed Project will allow development, much of it infill development, throughout the Planning Area. Water quality degradation in the city from erosion impacts will be specific to a project site, and depend largely on the areas affected and the length of time soils are subject to erosion. Although development under the proposed General Plan may result in runoff during construction of individual development projects that will adversely affect water quality beyond standards specified by the State Water Resources Control Board (SWRCB), all development will be subject to regional and local regulations. Specifically, development that is greater than one acre in size will be required to comply with the provisions of the General Construction Activity Stormwater Permit adopted by the SWRCB. Under this permit, applicants are required to prepare, retain, and implement at the construction site a Stormwater Pollution Prevention Plan (SWPPP). In addition, the permit will require the employment of Best Management Practices (BMPs) to limit the extent of eroded materials from discharging into the city's drainage system and affecting water quality. BMPs will consist of any activity, prohibition, practice, procedure, program, or other measure designed to prevent or reduce the discharge of pollutants directly or indirectly into the city's drainage system. All development that is between one and five acres will be required to comply with the provisions of the NPDES Phase II regulations concerning the discharge of pollutants from construction sites.

Policies NR-A-2 and NR-1 call for the City to minimize siltation, sedimentation, and pollution discharge into receiving waters and to develop and apply standard mitigation measures and conditions of approval on development permits. These policies, in addition to compliance with SWRCB's General Construction Activity Stormwater Permit, NPDES Phase II regulations, and the grading regulations of the City's Municipal Code will reduce the risk of water degradation within the city. Therefore, this impact would be ***less than significant***.

Rivers and streams in the city include the Russian River and Foss Creek. No alteration is proposed to the Russian River. Policies PS-B-5 and NR-A-3 call for the City to work with neighboring jurisdictions and the RWQCB to be part of area-wide solutions to improve water quality in the Russian River. The City will also protect Foss Creek through NR-2 by enforcing riparian setbacks. Policies PS-D-2, S-C-3, and NR-4 will improve and maintain the capacity of Foss Creek and reduce flooding potential. Development under the proposed Project will result in alterations to drainage. However, development that could occur will be subject to programs such as SWRCB permitting requirements and standards, NPDES Phase II regulations, grading regulations of the City's Municipal Code, and required BMPs. These programs are reinforced by the state policies regarding streambed alteration and the City's policies that enforce riparian setbacks, which will ensure that development does not significantly alter drainage patterns. Additionally, Policy NR-A-2 states that, "The City will seek to minimize siltation, sedimentation and pollution discharge into receiving waterways." The proposed General Plan, in conjunction with existing state and local policies will minimize potential impacts associated with run-off due to construction of future

development. Therefore, impacts from alteration of the course of a stream or river would be ***less than significant***.

Impact IV.I-4: The proposed Project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

The proposed Project will allow development, much of it infill development or redevelopment of existing properties, throughout the Planning Area. As described in Impact IV.I-3, new development will be subject to state, regional, and local regulations to control runoff or contain polluted runoff from individual development sites. Policy PS-D-1 states that the City will continue to complete gaps in the storm drainage system in areas of existing development, which will increase capacity of the city's storm drainage system. Policy PS-D-3 states that, "The City will continue to assess a drainage development fee on all new commercial, industrial, and residential development sufficient to fund system-wide capacity improvements." These development fees will be used to improve the storm drain system and increase capacity as needed. Therefore, impacts from runoff would be ***less than significant***.

Impact IV.I-5: The proposed Project would not otherwise substantially degrade water quality.

As discussed for Impacts IV.I-1 and IV.I-3 above, future development that could occur is not expected to substantially degrade water quality. All future development will be subject to existing federal, state and local regulations. These existing City policies for project design and approval, as well as RWQCB regulations would minimize potential impacts to ***less than significant***.

Impact IV.I-6: The proposed Project would place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

Development under the proposed General Plan could result in the construction of housing within the 100-year flood zone along Foss Creek, as presently mapped. Additionally, areas proposed for a change of General Plan land use designation from Professional Office/High Density Residential to Medium High Density Resident and to High Residential are included in the 100-year flood zone.

However, FEMA has given preliminary approval of a flood map amendment application filed by the City to reflect a significant reduction in the flood hazard areas depicted for Foss Creek due to construction of detention basins for Foss Creek. Nearly all water is now contained within the creek banks, with the exception of a small area on the north side of Grove Street just north of City Hall.

Policy S-C-1 states that the City will continue to participate in the National Flood Insurance Program and ensure that local regulations are in full compliance with standards adopted by FEMA. In addition, Policy S-C-2 requires that new residential development in flood prone areas shall be constructed so that the lowest floor is at least one foot above the 100-year flood level and that nonresidential development in flood prone areas shall be anchored and flood-proofed to prevent damage from the 100-year flood or

elevated to at least one foot above the 100-year flood level. Improvements to creeks and waterways in the city, in addition to these policies, will reduce the risk from flooding in the city. The City's floodplain management ordinance (No. 1043) is in conformance with current federal regulations. Therefore, impacts which could occur due to flooding would be ***less than significant***.

Impact IV.I-7: The proposed Project would not place within a 100-year flood hazard area any structures which would impede or redirect flood flows.

The City's floodplain management regulations (Ordinance 1043) prohibits encroachments, including fill, new construction, substantial improvements and other development within an adopted regulatory floodway unless certification by a registered civil engineer is provided, demonstrating that the proposed encroachment will not result in any increase in flood levels. Therefore, there would be ***no impact***.

Impact IV.I-8: The proposed Project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Dam failure is the collapse or failure of an impoundment that causes significant downstream flooding. The proposed Project will increase the number of people in the city exposed to the risk of flooding as a result of failure of a dam. Flood control for the lower Russian River is provided primarily by Warm Springs Dam, which is located on Dry Creek, a tributary of the Russian River, approximately 10 miles northwest of the city. Warm Springs Dam is located on a midsized fault, but was designed to absorb the maximum expected displacement and groundshaking from any fault in the region. In the unlikely event of complete dam failure, most of the city would be inundated to an elevation of 230 feet. The Corps has developed an evacuation plan for affected areas, including the city, in the event of dam failure.

Coyote Dam is an earthen dam located on the East Fork of the Russian River above Ukiah (north and upstream of the city, in Mendocino County) and is part of a system that provides water to Mendocino, Sonoma, and Marin counties. Failure of this dam could inundate the southern portion of the city with water traveling down the Russian River.

A consultant has been hired by the City to update the Emergency Operations Plan (EOP), Emergency Operations Center (EOC) operations manual and department operating procedures. It is anticipated that all these documents will be complete and adopted by February 2008. These actions will implement proposed General Plan Policy S-F-1.

Implementation Measures proposed for the revised Safety Element of the proposed General Plan include S-4 which states that the City will "Maintain and periodically update the City's Emergency Operations Plan, Recovery Manual and Hazard Mitigation Plan. As part of the periodic updates, the City shall review county and state emergency response procedures to ensure that they are coordinated with city procedures" and S-5, which states that the City will "Conduct periodic emergency response exercises to test the effectiveness of City emergency response procedures." These two implementation measures will assist in minimizing risks associated with flooding due to a dam failure.

Although the proposed Project will increase the number of people exposed to the risk of flooding, emergency and evacuation plans developed by both the Corps and the City will reduce the risk of injury or death resulting from this flooding. Therefore, this impact would be ***less than significant.***

Impact IV.I-9: The proposed Project would not result in a substantial risk of inundation by seiche, tsunami, or mudflow.

The city is not adjacent to the Pacific Ocean and therefore not subject to tsunami. Additionally, the city is not adjacent to an enclosed body of water and therefore the risk from seiche is non-existent. The city does have hilly areas and some areas could be subject to inundation by mudflows from landslides. However, as discussed in Impact IV.G-3, policies in the proposed General Plan will serve to reduce impacts from landslides and this impact would be ***less than significant***.

CUMULATIVE IMPACTS

The cumulative impact analysis geographical context for hydrology is the watershed that includes the city. As described earlier, the City belongs to the RRWA, which is an association of municipalities that have joined together to coordinate regional programs for clean water, fisheries restoration, and watershed enhancement. Regional water issues are coordinated through the RRWA and through compliance with the North Coast IRWMP, which was developed to address regional water issues. All future development will be subject to existing federal, state and local regulations. Existing municipal policies for project design and approval, as well as RWQCB regulations will minimize potential impacts. As such, cumulative impacts relating to hydrology and water quality would be ***less than significant***.

MITIGATION MEASURES

With implementation of applicable regulations and the proposed General Plan policies and implementation measures listed above, no mitigation measures would be required for Impacts IV.I-1 through IV.I-9. Additionally, no mitigation measures would be required for cumulative impacts.

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