5.3 HYDROLOGY AND WATER QUALITY

5.3.1 INTRODUCTION

This section describes regional and local hydrology, and evaluates the impacts of the proposed project on drainage, flood control, groundwater resources, and surface and groundwater quality.

5.3.2 EXISTING CONDITIONS

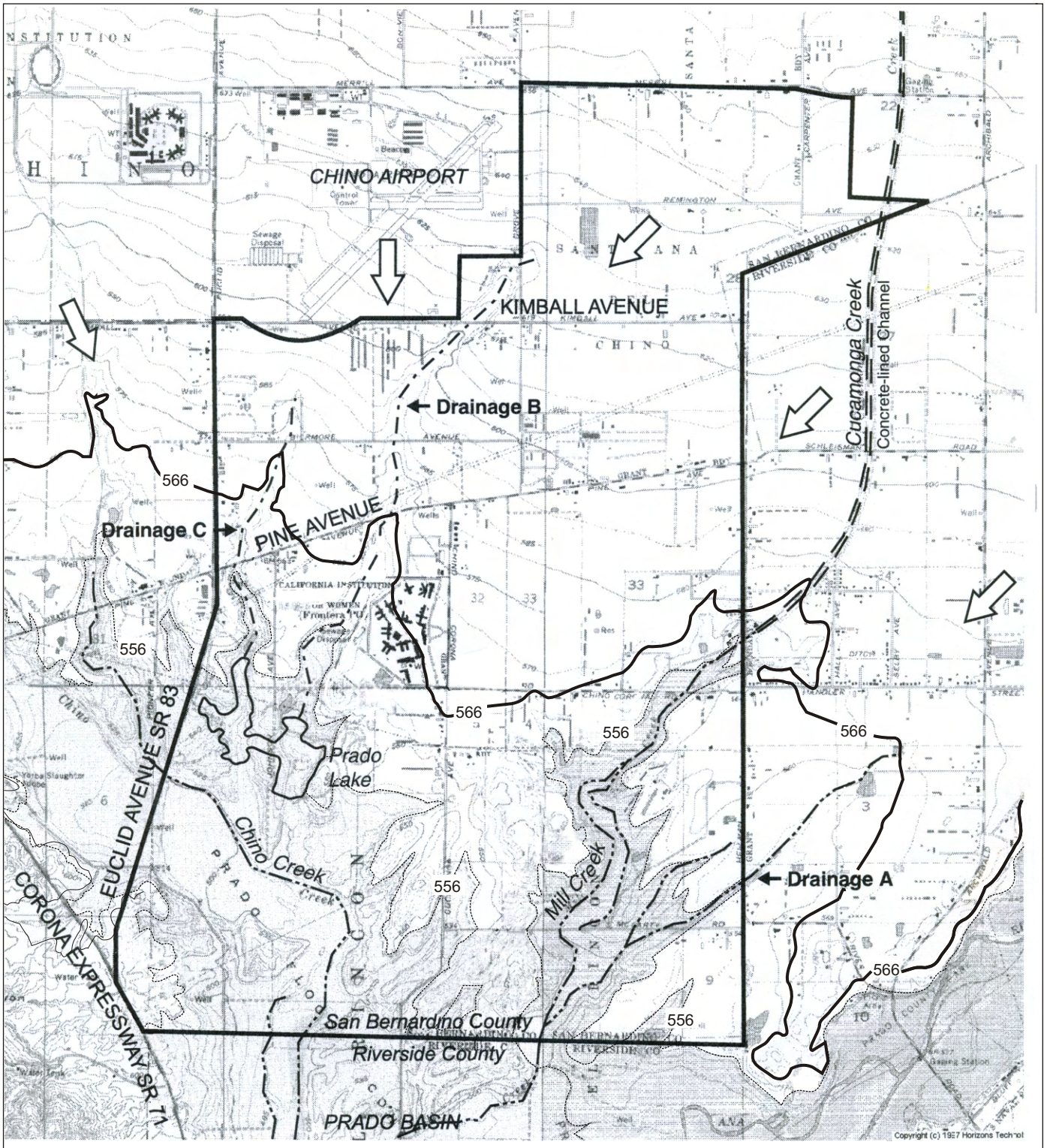
Flooding and Inundation

Surface Runoff and Drainage Characteristics

The proposed plan area is located on the broad, gentle sloping alluvial plain of the Chino Basin. The principal drainage course of the lower Chino Basin is the Santa Ana River (SAR), located south of the plan area within the Prado Flood Control Basin. The Santa Ana River watershed encompasses 2,650 square miles, within which the SAR extends some 69 miles from its headwaters in the San Bernardino Mountains to its outlet at the Pacific Ocean. The Santa Ana River enters the Chino Basin at the Riverside Narrows and flows along the southern boundary to the Prado Basin where it is eventually discharged through the outlet at Prado Dam. Two principal tributaries to the SAR flow through the plan area—Chino Creek and Mill Creek. The plan area is also traversed by several ephemeral and seasonal drainages, and is subject to extensive sheet flow during major storm events. These flows are ultimately conveyed via either Chino Creek or Mill Creek to the Santa Ana River at Prado Basin.

The plan area contains five distinct north/south concentrated drainage paths, three of which are indicated as blueline streams on the USGS map (Exhibit 5.3-1). The most easterly of the blueline streams (Drainage A) is an unnamed tributary to Mill Creek which receives sheet flow from dairy lands located south of Chandler Street and east of Hellman Avenue, and carries flows in a natural channel to a confluence with Mill Creek. The next system westward, Mill Creek, receives flow from Cucamonga Creek channel (49,000 CFS capacity), a concrete-lined trapezoidal channel which handles storm water flows from the City of Ontario and City of Ontario General Plan Amendment (GPA) area (i.e. 'New Model Colony') to the north. Mill Creek also receives sheet flow from immediately surrounding agricultural and dairy lands.

The third blueline stream is Chino Creek (26,400 CFS capacity) which flows along the western boundary of the plan area as a natural channel. Two minor unnamed tributaries to Chino Creek (Drainages B and C) provide surface flow to Prado Lake.



LEGEND

- Project Boundary
- Concrete-lined Channel
- Natural Channel (USGS blue line stream)
- Drainage Flow Path
- 566 Prado High Water Line
- 556 Existing USACE Easement Line

Michael Brandman Associates

Exhibit **5.3-1**
Surface Drainage Features

Sheet flows from the Ontario GPA area, the developing Eastvale community, and flows within the proposed plan area itself, all combine to cause significant localized flooding of earthen swales, curbed roadways and dairies within the plan area during moderate-to-severe storm events. The result is numerous road closures, dairy livestock loss, and overtopping or breaches of dairy water retention ponds.

Master Plans of Drainage (MPD) have been developed by San Bernardino County Flood Control District, and the cities of Chino and Ontario to address flooding problems within their respective jurisdictions.

Other collaborative agency initiatives are underway to address flood control and related water quality problems in the Chino Basin Dairy Area (CBDA) and proposed plan area.[1] Participating agencies include Inland Empire Utilities Agency (IEUA), the USDA-Natural Resources Conservation Service (NRCS), San Bernardino County Flood Control District, Orange County Water District and others.

Plans and projects include, but are not limited to the IEUA Organics Management Center (see Dairy Waste Management in Section 5.12), Emergency Watershed Protection (EWP) planning to clean up manure and provide flood control, a Storm Water Management Demonstration Project for Chino Creek, and a Debris Removal/Water Quality Restoration Project for Mill Creek. Implementation of these programs and projects will help to alleviate current flooding conditions and water quality problems within the proposed plan area.

Santa Ana River Mainstem Project - Prado Dam

Prado Dam is a compacted earth-filled embankment with a current spillway crest elevation of 543 feet above mean sea level (MSL). In 1988, pursuant to the Santa Ana River Mainstem and Prado Dam projects, the U.S. Army Corps of Engineers (USACE) approved structural revisions to raise the spillway crest elevation by 20 feet to 563 feet, and revisions to raise the dam structure 28.6 feet to a design water surface elevation of 566 feet. These improvements to the dam and the associated spillway are scheduled for completion in 2008. The raised dam is designed to accommodate a 200-year flood event.

Approximately 53% of the proposed plan area lies within the 566 foot elevation area subject to inundation from these planned Prado Dam improvements. Approximately 25% of the proposed plan area is within the 556 foot elevation, which is the current Corps of Engineers Easement and Fee Line (i.e. the 556 ft. ‘take’ line). This includes properties already owned or encumbered by the Corps of Engineers. Currently, the southwest portion of the plan area floods to an elevation of approximately

[1] Santa Ana River Watershed Group (6/01).

505 feet annually. Although the proposed Prado Dam improvements are principally designed for flood control purposes, the project also includes water conservation, recreation, and more recently, endangered species habitat conservation objectives.

History of the Prado Dam

The idea of a dam on the Santa Ana River was seriously considered following the major flood of 1916. Studies were considered on a number of occasions, but the concept of the Prado Dam took its ultimate form following the flood of 1927. The Orange County Flood Control District (OCFCD) in 1938, following another major flood that year, began acquiring the properties behind the dam site to an elevation of 556 feet above sea level, the ultimate maximum height of the flood control basin.

This extent of property acquisition involved controversy with the land owners, and at the end of 1939, the USACE took over the efforts to complete the remaining land acquisitions and condemnations necessary to secure all outstanding fee titles to land. The crest of the constructed dam had an elevation of 566 feet and the top of the spillway was at 543 feet. The flood control basin covered 9,741 acres, and this included the town of Rincon, the railroad tracks, and numerous local farmsteads of the region. Many of the existing wood-frame houses and barns were removed and publicly sold by the government. The construction contract for the earth-filled dam was awarded in September 1938, and the work was completed by May 1941. The dam and reservoir have been managed ever since its completion by the USACE. Under USACE management, tracts within the flood control basin have been leased for dairy agricultural operation, or for recreational activities (see Section 5.1 Land Use).

In the mid-1970's an agreement was made to increase the flood control capacity of Prado Dam by increasing the dam height by about thirty feet and raising the spillway outlet elevation 563 feet. A new property 'take' line agreement was established which increased the reservoir basin to cover the lands behind the dam to an elevation of 566 feet. . In the 1980's, cultural resource studies were begun to address Federal cultural resource planning requirements for all properties up to the 566-foot elevation take line.

In the late-1990's, agreements between the USACE, Orange County Water District (OCWD), and the United States Fish and Wildlife Service (USFWS) established criteria for Prado Dam operations that balance flood control, water conservation and endangered species protection objectives. The *Water Control Manual for the Prado Basin* (1994) defines how the dam is to be operated at various times of year to achieve flood control, water conservation and environmental protection functions. Currently, an annual backhold elevation of 505 feet is established for Prado Basin during the water conservation period (March 1st to September 30th), to meet endangered species objectives within the Basin. The release rate during this period is established at 200-600 CFS in order to provide year-round flow to OCWD's water recharge facilities located downstream. During the flood season (October 1st - February 28th), the Prado Dam release rate is controlled at 2,500 CFS up to the 520 elevation in order

to match the capacity of the downstream channel facility. However, when the backhold elevation rises above the 520 elevation, release rates can increase to 5,000 CFS to limit localized flooding within the Basin area.

OCWD has initiated a request to alter the water conservation program for Prado Basin[2] to further increase water available for downstream groundwater recharge. OCWD proposes extending the water conservation period to year-round and altering the current 505 backhold elevation criteria to increase dam outflow. The proposal is currently under evaluation by the USACE.

Prado Dam Real Property Acquisition Program

In 1989 the USACE, and three local sponsors – The Riverside County Flood Control and Water Conservation District (RCFCD), the San Bernardino County Flood Control District (SBCFD), and the OCFCD entered into a Local Cooperation Agreement (LCA) for the Santa Ana River Mainstem (SAR) Project. There are several components or features of the SAR project, including raising Prado Dam and spillway and constructing various dikes in the Prado Dam reservoir basin. Under the terms of the LCA, the OCFCD is to acquire property rights between the 556-foot and 566-foot elevations required for the Prado Dam improvements feature of the project. This acquisition program involves purchasing the right to flood property up to 566' in the Prado Dam reservoir basin.

The OCFCD may acquire parcels in fee or acquire a flowage easement, depending on the potential impact of the Prado Dam project on a parcel, and consideration of long-term operation of the dam and associated management of the reservoir basin. The USACE determines what land uses that are consistent with local zoning can occur on property purchased by the OCFCD. The primary criterion is that there can be no habitable structures or permanent human habitation below 566 feet. Determinations on which parcels are impacted, and the type of rights to be acquired, are subject to more specific engineering, surveying and related studies.

Current Status of Program

Approximately 280 ownerships are affected by the Orange County Flood Control District (OCFCD) acquisition program, representing 1,660 acres to be acquired.[3] At the present time, the acquisition program for the Prado Dam feature is focused on individually assessed hardship applications. Within the proposed plan area, six parcels totaling 57 acres have been acquired by OCFCD. Also within the plan area, 37 parcels totaling approximately 985 acres are classified as 'property most impacted', and are yet to be acquired. An additional 90 acres are classified as 'under study' for acquisition, and up to 100 additional acres located just below the 566-foot elevation are classified as 'lesser impacted

[2] Prado Dam Water Conservation and Supply Study, U.S. Army Corps of Engineers. 1999.

[3] Proposed Prado Dam Project; County of Orange Public Facilities & Resources Department (10/23/00)

property'. The USACE and OCFCD continue to study alternatives, design construction phasing and financial plans.

Offset Flood Volume Mitigation

The U.S. Army Corps of Engineers has authority to require offset volume mitigation for any project that would result in reduced flood capacity within the 566-foot elevation. Examples where this approach has occurred or is planned include IEUA's Regional Plant-5 within Chino Subarea 1, and USACE projects to provide stabilization of the Norco Bluffs and flood protection for existing facilities, uses and structures within the Prado Basin.[4]

USACE proposes stabilization of the toe of the Norco Bluffs by placing a soil cement structure between the toe and the riverbed. Compacted fill would be located between the soil cement structure and bluff slope up to the 100-year flood elevation. Fill would also be placed along several side canyon areas to ensure proper drainage within these areas. A variety of structural improvements are proposed by USACE within the Prado Flood Control Basin, including numerous dikes for protection of existing facilities and uses within the basin. Among these is a proposed dike along the western and southern boundary of the California Institution for Women, within the proposed plan area. To offset the flood capacity lost by placement of these features within the 566 foot inundation area, USACE has identified a borrow site of approximately 17 acres within the proposed plan area near its southerly boundary. Soil material is proposed for removal at this location, for potential use in creating a flood protection dike along the CIW-Chino westerly and southerly boundaries. See Section 5.1 Land Use for additional information on USACE plans within the Prado Flood Control Basin.

Special Flood Hazard Areas

Prado Dam currently retains floodwaters up to an inundation elevation of 505 feet on an annual basis. The 505-foot elevation is largely confined to the Chino Creek and Mill Creek channels within the plan area. Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM) also identify portions of the plan area within the 500-year flood plain. In addition, the FIRM maps and the Prado Flood Control Basin Master Plan indicate that 100-year flood-prone areas occur within the plan area in the vicinity of Mills Creek and Chino Creek floodplain below the 550-foot elevation. This essentially encompasses the lower 30% of the plan area.

Groundwater Resources

Chino Basin is one of the largest groundwater basins in southern California with about 5,000,000 acre-ft of water in the underground basin and an unused storage capacity of about 1,000,000 acre-ft.

[4] Supplemental EIS and Project EIR for Prado Basin and Vicinity, Including Stabilization of the Bluff Toe at Norco Bluffs; U.S. Army Corps of Engineers (7/2000).

The basin is an integral part of the regional and statewide water supply system, and is identified as a critical component in solving state water needs and managing inter-state shortfalls of available water from the Colorado River and the Bay-Delta[5]. Various water agencies, including Chino Basin Water Master, Inland Empire Utility Agency (IEUA), and other water supply entities produce groundwater for municipal and industrial supplies within the basin, and about 300 to 400 agricultural users produce groundwater from the basin for local use. It is estimated that the 270 dairies within the Chino Basin Dairy Area pump approximately 40,000 acre-feet of water from the underground basin annually.[6]

Chino Basin groundwater contributes to surface flows in the Santa Ana River (SAR), as significant quantities of Chino Basin groundwater rise to the surface and enter the Santa Ana River within the Prado Basin south of the plan area. The SAR is the primary source of groundwater recharge for the Lower Santa Ana Basin, which supplies approximately 63% of Orange County's water needs.

The proposed project area (i.e. the 'plan area') overlies Sub-basin II of the Chino Groundwater Basin. Several municipal groundwater production wells are located along Kimball Avenue and Remington Avenue at the northern limits of the plan area. Numerous private wells associated with agricultural uses are also located within the plan area.

Water Quality and Dairy Wastes

The Chino Basin Dairy Area (CBDA) is considered to have the highest concentration of dairies in the world.[7] Dairies within the CBDA generate large amounts of manure, urine and other organic materials. These wastes contribute to excess salts and nutrient loading, specifically total dissolved solids (TDS) and nitrate, present in both the groundwater and surface water systems of the Lower Chino Basin. TDS are mineral salts dissolved in the water that concentrate as the water is reused. The deterioration of the water quality in the Chino Basin and the Santa Ana River has been attributed to this increase in TDS (primarily magnesium and calcium) and nitrate.

It has been estimated by the Santa Ana Regional Water Quality Control Board (SARWQCB) that over 13 million tons of manure have been applied to the Chino Basin since the mid 1950's when dairy farmers relocated to the basin. As a result of this 13 million tons of manure spread across the CBDA, 1.4 millions tons of salts have reached, or will reach groundwater. Salts may have an adverse effect upon human health, increase costs of urban infrastructure and facilities, and increase the cost and decrease the effectiveness of reclaiming wastewater.

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5 Integrated Water Resources Plan; Metropolitan Water District.

6 Chino Basin Watermaster (8/99)

7 Dairies and Their Relationship to Water Quality Problems in the Chino Basin; California Regional Water Quality Control Board, Santa Ana Region (7/90).

It is estimated by the SARWQCB that the current application of manure and wash water to land in the Chino Basin is resulting in 34,000 tons of salt that will reach the groundwater each year[8]. Of that 34,000 tons per year, about 30,000 tons per year is from the application of manure and the remaining 4,200 tons per year is from the discharge of wash water. In addition, the Board staff has estimated that approximately an additional 3,800 tons of salt are discharged to groundwater through the percolation of rainfall runoff from corrals and drainage of manure stockpiles.

Regulatory Context

Federal Water Pollution Control Act

The Federal Water Pollution Control Act, or the 'Clean Water Act' (CWA), requires that discharges from both point and non-point sources into navigable waters meet the stringent standards of the National Pollution Discharge Elimination System (NPDES). In 1990, the U.S. Environmental Protection Agency established requirements for storm water permits for specified categories of industries, municipalities, and certain construction activities. The regulations require that discharges of storm water from construction activity of five acres or more must be regulated as an industrial activity and covered by an NPDES permit.

The Clean Water Act (CWA) states that all concentrated animal feeding operations (CAFOs) are point sources and are subject to NPDES permitting requirements. All dairies within the CBDA have been designated as CAFOs and therefore are required to comply with NPDES.

Porter Cologne Water Quality Act

Section 303 of the Federal Clean Water Act and the State's Porter Cologne Water Quality Act (Porter Cologne) establish water quality standards for ground and surface water in the state. Under the Porter-Cologne Act, the State Water Resources Control Board has the ultimate authority over State water rights and water quality policy. However, Porter-Cologne also establishes nine Regional Water Quality Control Boards (Regional Boards) to oversee water quality on a day-to-day basis at the local/regional level.

As required by the Porter Cologne Act and CWA, dairy operators must retain any on-site storm runoff generated within the dairy up to a 25-year, 24-hour storm event. For the CBDA the 24-hour, 25-year storm is a storm with the intensity of 4.5 inches per day. Historically, the SARWQCB has regulated compliance of both Porter Cologne and CWA through the issuance of a general area-wide permit.

[8] General Waste Discharge Requirements for Concentrated Animal Feeding Operations within the Santa Ana Region, Order 99-11, NPDES No. CAG018001; SARWQCB (8/99)

Water Quality Control Plan

The Santa Ana Region RWQCB administers the Water Quality Control Plan for the Santa Ana River Basin. The Plan, originally published in 1983 with subsequent revisions in 1989 and 1995, sets forth the water quality objectives and outlines the projects and programs for the Santa Ana Watershed. The Water Quality Control plan includes a water supply plan, a groundwater management plan, and a waste management plan. The Regional Board achieves the goals of the plan through the issuance of waste discharge permits, either in the form of waste discharge requirements or NPDES permits.

Water quality objectives for surface water within the Chino Basin are determined for a myriad of known substances and conditions, including: (1) organisms (i.e., algae and bacteria); (2) chemicals and their constituents (i.e., sulfate, sulfide, nitrate, fluoride, ammonia, chlorine, chloride, nitrogen, boron, and sodium); (3) metals (i.e., cadmium, copper, lead); (4) temperature; (5) pH; (6) taste and odor; (7) solids (i.e., suspended and settleable); (8) toxic substances; (9) turbidity; (10) oil and grease; (11) chemical oxygen demand; and (12) dissolved solids.

In 1998 the Regional Water Quality Control Board (RWQCB) listed both Chino Creek and Mill Creek within the plan area as impaired waters due to high nutrient, pathogen, salinity/TDS/chlorides and suspended solids concentrations. The RWQCB has also adopted requirements for dairy operators designed to prevent continued surface and groundwater contamination[9].

In August of 1999 the SARWQCB adopted additional manure handling regulations designed to impede manure waste from further degradation of the Santa Ana River. As adopted, these regulations include the following:

- All dairies, heifer ranches, and calf nurseries in the Region are designated Concentrated Animal Feeding Operations (CAFOs)[a]

- All dairies are required to develop Engineered Waste Management Plans acceptable to the Executive Officer in accordance with established guidelines and construct containment structures to contain the 24-hour, 25-year storm. The cease and desist order was modified in February 2000 by the State RWQCB to enact the schedule for the waste management plans.

[9] RWQCB Santa Ana Region Order No. 99-11, NPDES No. CAG018001; RWQCB Santa Ana Region Cease and Desist Order No. 99-65 as amended by Order No 2000-01.

[a] The CWA defines a Concentrated Animal Feeding Operation (CAFO) as any AFO that has more than 1,000 animal units (i.e. dairy cattle are considered 1.4 animal units). Additionally, the CWA states that smaller facilities can be designated as CAFOs by a permitting authority (Regional Board) after considering certain criteria. These criteria include in part, the location of the AFO relative to surface waters, the slope, rainfall, and other factors that increase the likelihood of frequency of discharges and the impact of the aggregate amount of waste from any small operations in a watershed that exceed that of larger operations. The SARWQCB staff has determined that all dairies, heifer ranches, and calf nurseries in the Region meet one or more of these criteria, and therefore shall be designated a CAFO under the CWA.

- Disposal of manure to land is prohibited except the use of manure on land that is currently being farmed (not pasture). This disposal must be in agriculturally recognized amounts and is contingent upon the installation of a new groundwater desalter in the basin.

- Removal of the approximately 2 million tons of manure stockpiled in the CBDA by December 31, 2001.

- Ship manure out of the basin within 180 days of scraping the corrals.

Additional information on dairy waste management issues and practices within the CBDA and proposed plan area is contained in Dairy Waste Management, Section 5.12 of this EIR.

Other Water Quality Plans and Initiatives

The Chino Basin Watermaster has prepared the *Optimum Basin Management Program (OBMP)* for the Chino Groundwater Basin to ensure future water demands for the Chino Basin and Lower Santa Ana Basin are met.[10] The OBMP will implement comprehensive groundwater monitoring, recharge, salt management, storage, and conjunctive use programs for the Chino Basin by 2001.

The Santa Ana Watershed Project Authority (SAWPA) and Inland Empire Utilities Agency (IEUA) have cooperatively developed a desalting facility ('desalter') to treat contaminated groundwater within the Chino groundwater sub-basin. This 8 million gallon per day (mgd) facility, located at the intersection of Kimball Avenue and Euclid Avenue, extracts and treats approximately 9,200 acre feet of brackish groundwater annually. An additional desalter within the Chino Basin is in the advanced planning stages. Other desalting facilities and the feasibility of construction of a hydraulic barrier well field within the plan area are also being considered in conjunction with the OBMP.

5.3.3 THRESHOLDS OF SIGNIFICANCE

For purposes of this analysis, a project is considered to have a significant impact if it would:

- Substantially increase the rate or amount of surface runoff in a manner that would expose people or structures to onsite or offsite flooding, or result in peak runoff rates from the site that would exceed existing or planned capacities of downstream flood control systems.

- Substantially alter the existing drainage pattern of the site or area, including alteration of the course of a stream or river.

[10] Optimum Basin Management Program; Wildermuth Environmental for Chino Basin Watermaster (8/19/99).

- Violate water quality standards or waste discharge requirements for the receiving drainages.

5.3.4 PROJECT IMPACTS

The following impacts resulting from implementation of the proposed plan were evaluated and determined to be less than significant.

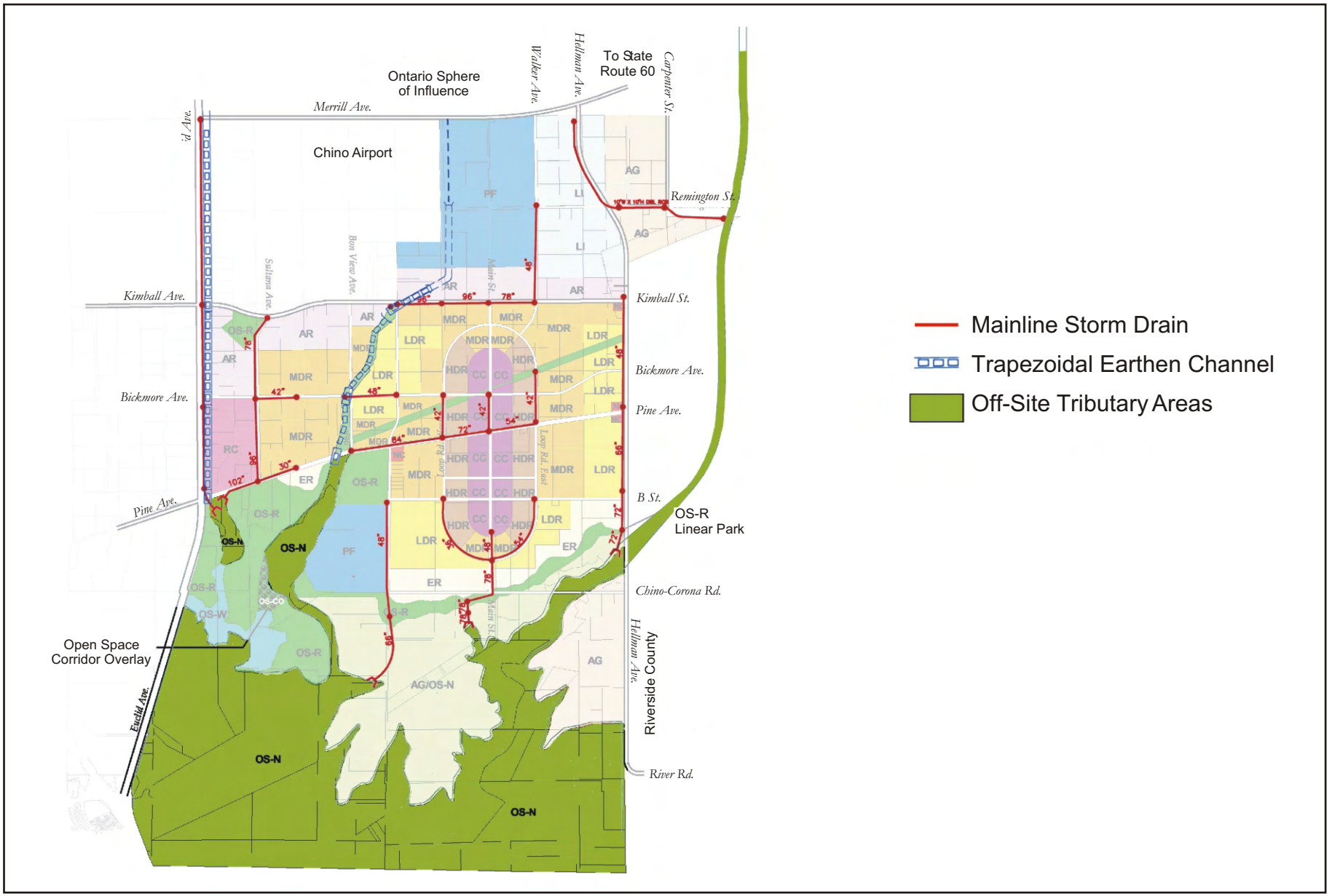
Flooding and Storm Water Management

Implementation of the proposed plan will encourage land use changes that lead to new development and an increase in impermeable surfaces within the project area. Such increases in impermeable surfaces would create additional storm water runoff, which could exacerbate existing flood hazards unless properly managed and controlled. Lower portions of the plan area within the planned open space system are included in the 100-year flood plain. No habitable structures or facilities that are not suitable to periodic flooding are planned within these areas.

The project site is currently subject to frequent flooding during moderate to severe storm events. Flooding will continue until 1) offsite flows into the plan area are controlled with master planned flood control improvements in the City of Ontario SOI/GPA area (i.e. Master Plan of Drainage for 'New Model Colony') and the Eastvale community in Riverside County, and 2) backbone drainage facilities are provided with implementation of the proposed plan for The Preserve.

Existing drainage patterns and flows through the site will be substantially altered with implementation of storm drain plans to support proposed development. Backbone drainage improvements required to reduce onsite flood hazards and support the proposed plan at buildout are identified in Exhibit 5.3-2.

The Storm Drainage Plan divides the plan area into ten drainage basins. Each basin is tributary to a proposed storm drain system identified as Lines A through J. The proposed lines range in size from 10" to 102", as shown in Table 5.3-1. Onsite drainage facilities will be designed to standards and criteria of the City of Chino and San Bernardino County Flood Control District. Pursuant to City requirements, the necessary facilities will be constructed either prior to or in phase with planned development.



SOURCE: The Planning Center

NORTH

MAP NOT TO SCALE

Michael Brandman Associates

05760012 · 6/2001

Exhibit **5.3-2**

Storm Drainage Plan

THE PRESERVE • CHINO SUBAREA 2

TABLE 5.3-1
PROPOSED DRAINAGE BACKBONE FACILITIES

Line	Description	Size	Length (feet)
A	Double Barrel RCB	10' x 10'	6,000
B	RCP	48" – 72"	7,100
C	RCP	42" – 90"	9,850
D	RCP	48" - 96"	6,700
E	RCP	48"	1,450
F	RCP	36" - 78"	8,000
G	RCP	48" - 66"	5,100
H	RCP	30" - 102"	8,400
I	Trapezoidal Earthen Channel	20' W x 8' H	11,200
J	Earthen Channel	20' W x 8' H	6,000
		Total	**86,900**
Source: City of Chino, Master Plan of Drainage Subarea 2, Preliminary Report (2/01)			

Additional onsite private systems to address localized collection and distribution of runoff will also be provided, pursuant to specific plan requirements and as part of the development review process. Detailed drainage studies, including hydrology and hydraulic calculations will be required for all proposed developments. In conjunction with Design Review requirements of the Specific Plan, the City of Chino will be required to make specific findings that grading and drainage of specific projects is coordinated and compatible with surrounding properties. Such reviews will assure that runoff from new development is contained and controlled to prevent impacts on surrounding dairies during the phased transition to buildout under the proposed plan.

The Storm Drainage Plan includes trapezoidal earthen channels along Euclid Avenue and south from Chino Airport along an existing drainage channel to outlets within open space areas above Prado Lake. These channels provide opportunities for augmentation to provide water features that enhance filtration and percolation to the groundwater basin, and potential habitat for waterfowl. Storm drain outlets to the major open space system will be designed to reduce velocities and protect drainage channels from erosion and sedimentation during storm events. No significant scouring or erosion and sedimentation impacts to the receiving channels in the open space system are anticipated.

The proposed plan would not result in significant alteration of the principal streams and watercourses through the site. Existing natural channels within the open space system, including Chino Creek and Mill Creek, would remain unaltered.

At buildout of the proposed plan, existing problems associated with flooding of the dairies, lack of containment and related pollution of downstream receiving waters would be alleviated. With implementation of the Storm Drainage Plan and project-level detailed storm water management studies and measures specified in the specific plan, no significant storm water runoff impacts are anticipated from future development.

Prado Flood Control Basin

The proposed plan generally limits urban development to areas above the 566-foot Prado high water inundation line, consistent with the Prado Dam project and acquisition program. An exception to this is an approximate 55-acre area at the northeast corner of Euclid and Pine Avenues designated Regional Commercial in the proposed plan. This 55-acre area within the 566-foot elevation is part of the proposed 86-acre Regional Commercial center at this location. Thirteen (13) of the 55-acres are owned by the U.S. Army Corps of Engineers (USACE), and an additional acre is owned by Orange County Flood Control District (OCFCD). Any future development at this location would require use agreements and permits with the USACE to offset the loss of flood volume. As a result, no significant impact on Prado Dam inundation capacity is anticipated.

Water Quality

The following impacts resulting from implementation of the proposed plan were evaluated to be potentially significant.

Implementation of the proposed plan will result in a transition from dairies to urban development on approximately 2,100 acres of the site generally north of the 566-foot elevation. As a result, impacts to surface waters from polluted storm water runoff from the dairies will likely diminish over time. However, proposed urban uses would have the potential to degrade surface waters through discharges of urban runoff, containing a variety of pollutants including but not limited to oils, greases, solvents, pesticides and urban debris. These contaminants may enter the storm drain system in the form of street runoff, indiscriminate household use or other sources. Without proper management, potentially significant water quality impacts could occur.

With respect to street run-off and the introduction of other impervious surfaces within the specific plan area, it is unclear whether specific plan post-development runoff would be expected to contain more pollutants than under current conditions. Since storm waters will be collected and transported through the proposed storm drain facilities, those contaminants would be concentrated at each of the discharge points to Prado Lake, Chino Creek and Mill Creek. Urban development, such as that envisioned by the proposed specific plan, typically generates a variety of water contaminants, such as airborne particulates, tire-wear residues, petroleum products, oil and grease, fertilizers and pesticides,

litter and animal wastes. All of these contaminants are found in street runoff, representing the major source of pollution found in urban runoff.

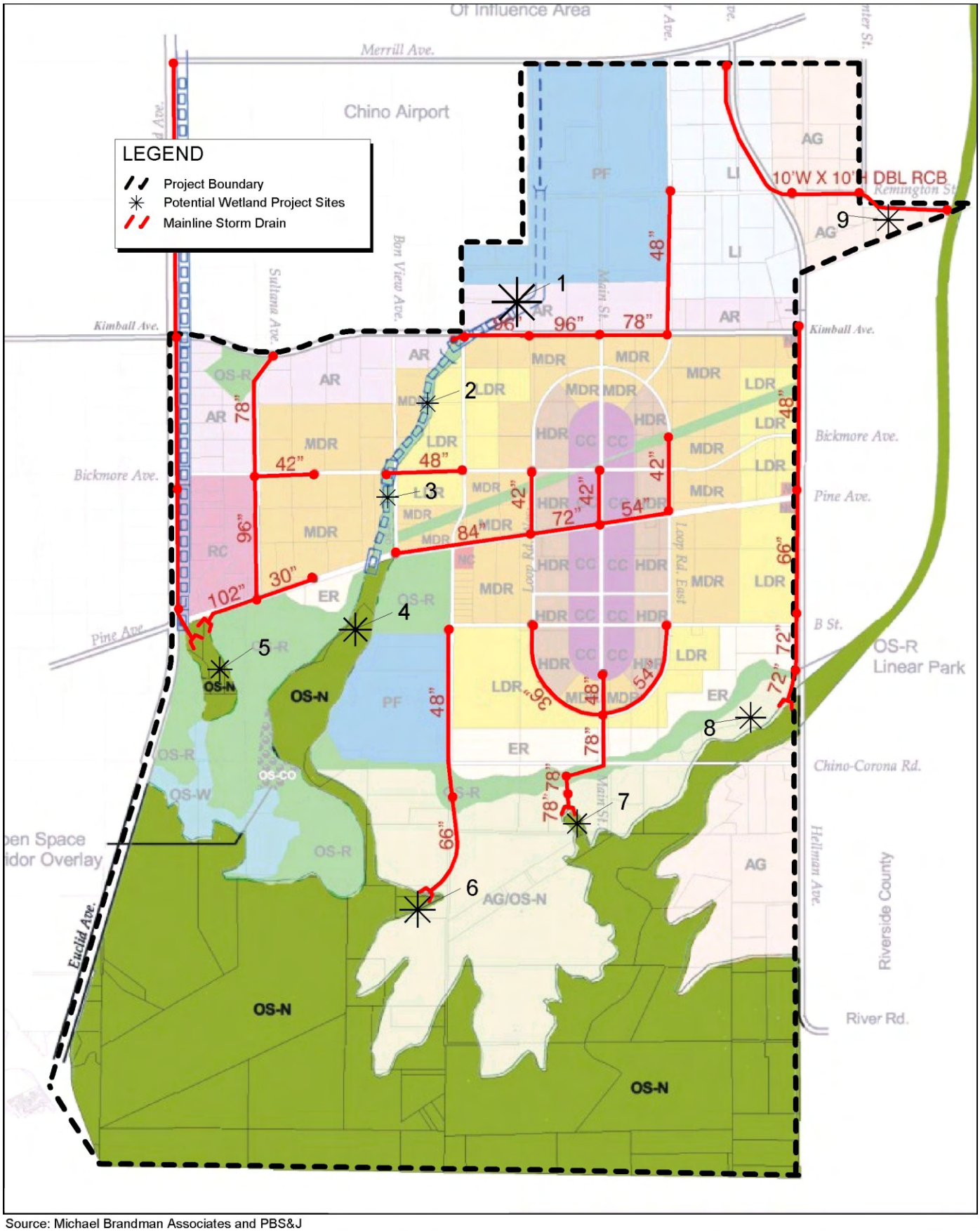
Unless measures to capture and filter the runoff to remove the bulk of contaminants are provided, storm drain discharges at creek outlets could contain contaminant levels that exceed the threshold limits established by the RWQCB. This concentration of contaminants, could jeopardize the beneficial uses identified in the Basin Plan that are dependent upon surface water supplies and the groundwater recharge of the storage units.

Proposed projects occurring upstream of or discharging into impaired waterbodies listed on the Clean Water Act Section 303(d) list may be subject to additional controls (e.g. Total Maximum Daily Loads or TMDLs) pursuant to federal regulations. Both Chino Creek and Mill Creek within the plan area have been listed as impaired waters due to high nutrient, pathogen, salinity/TDS/chlorides and suspended solids concentrations. As tributaries of the Santa Ana River and contributors to groundwater recharge within the Prado Basin, these drainages are of special water quality concern. Without proper management of runoff to protect water quality in Chino and Mill Creeks, potentially significant water quality impacts could occur.

Buildout of the plan area is anticipated to occur over 20 years. Throughout this buildout period, development of the project site will require compliance with the Clean Water Act (CWA), which protects receiving waters by assuring that discharges to "waters of the United States" from any point source to be in compliance with the National Pollutant Discharge Elimination System (NPDES) permit requirements. Section 402 (p) of the CWA establishes the framework for regulating municipal and industrial storm water discharges under the NPDES Program. The regulations provide that discharges of storm waters from construction projects are effectively prohibited, unless the discharge is conducted in compliance with a NPDES permit.

The NPDES program is administered by the State Water Resources Control Board (SWRCB) through the individual California Regional Water Quality Control Boards (RWQCB). General Construction Activity Storm Water NPDES permits are issued for storm water discharges by the RWQCB. Construction activities subject to this General Permit include clearing, grading, disturbances to the ground such as stockpiling, or excavation that results in soil disturbances. Stormwater pollution prevention plans (SWPPP) are required for issuance of a construction NPDES permit; these plans typically include both structural and non-structural Best Management Practices (BMPs) to reduce water quality impacts. Prior to issuance of a grading permit, individual projects will be required to demonstrate compliance with NPDES construction activity stormwater permit requirements.

A number of Best Management Practices (BMPs) are available for application by the City to subsequent development projects within the specific plan area in order to reduce water pollution sources on developed sites to the maximum extent feasible. The incorporation of these BMPs are



Source: Michael Brandman Associates and PBS&J

NORTH

1000 0 1000 2000 Feet

Michael Brandman Associates

05760012 · 4/2002

Exhibit **5.3-3**

Potential Wetland Project Sites

THE PRESERVE · CHINO SUBAREA 2

intended to reduce the level of contaminants present at the drainage system discharge points to acceptable levels. Source reduction techniques have proven to be the most cost-effective ways of avoiding or reducing water pollution from urban runoff. Among the source-reduction BMPs that may be applied by the City to individual development projects within the plan area are the following:

Animal Waste Collection. Collection of animal wastes to reduce the levels of bacteria and organic matter released to surface waters.

Exposure Reduction. Partial or total physical enclosure of stockpiled or stored material, loading and unloading areas, and processing operations and the capture of and filtration of drainage from these areas to remove metals, soils and grease, and other chemicals.

Recycling/Waste Disposal. Community hazardous waste and waste oil recycling centers to encourage careful and correct disposal of potentially hazardous chemicals and materials.

Parking Lot and Street Cleaning. Regular parking lot and street cleaning will be conducted and will help reduce accumulation of pollutants deposited on paved surfaces.

Infiltration (Exfiltration) Devices. This includes devices such as infiltration trenches , dry wells, and catch basins that can remove pollutants through adsorption onto soil particles, and biological and chemical conversion in the soil.

Oil and Grease Traps. This includes devices such as oil-water separators, oil and grease trap catch basins, simple skimmers, and control structures to separate oils and grease and other sediments from storm water.

Sand Filters. Sand filters achieve reduction of urban pollutants by passing storm water through beds of sand, allowing particles to settle out in the pre-treatment devices and by straining out particles in the filter.

Filter Strips. This involves placement of close-growing vegetation (e.g., turfgrass) to trap sediments between pollutant source areas and the receiving water.

Grass Swales. Grass-lined drainage swales remove pollutants from surface flow by the filtering action of the grass, sediment deposition, and through infiltration into the soil.

Regular/Routine Maintenance. Regular maintenance and cleaning of all pollution control devices to ensure that those devices are kept clean and unobstructed and are functioning correctly.

The storm drain system and the BMPs applied by the City to individual development projects must conform to non-point stormwater pollution control standards related to the County's Municipal Stormwater Permit, under the NPDES program (Water Quality Order Number 90-136, NPDES CAS000200), as amended by the SWRCB's Statewide General Permit (WQ Order No. 92-08 DWQ) and General Construction Activities Storm Water Permit (WQ Order No. 99-08-DWQ).

5.3.5 CUMULATIVE IMPACTS

Implementation of the proposed plan, along with other projects in the surrounding area Chino Basin Dairy Area (CBDA), will contribute to increases in impervious surfaces (which will increase runoff rates), and incrementally add to the amount of urban pollutants discharged into the drainage system. However, the proposed project's incremental impact would be substantially reduced with application of identified mitigation measures and compliance with state and federal regulations protecting receiving waters. Consequently, the project's contribution to cumulative water resources impacts is considered less than significant.

5.3.6 MITIGATION MEASURES

HWQ-1 All development shall comply with the National Pollutant Discharge Elimination System (NPDES) regulations. Prior to the issuance of a grading permit, applicants shall demonstrate compliance with NPDES Stormwater Permit requirements to the satisfaction of the City of Chino. Applicable BMP provisions shall be incorporated into the NPDES Permit.

HWQ-2 Individual projects within the specific plan area shall be reviewed by the City of Chino for the inclusion of appropriate structural and non-structural Best Management Practices (BMPs) to control stormwater discharges and protect water quality. Structural controls may include, but are not limited to filtration, common area efficient irrigation, common area runoff-minimizing landscape design, velocity dissipation devices, oil/grease separators, inlet trash racks, and catch basin stenciling. Non-structural BMPs can include education for property owners, tenants and occupants, activity restrictions, common area landscape management, litter control, and catch basin inspection, BMP maintenance; and street sweeping.

The following are examples of BMPs that may be included within NPDES permit requirements for individual projects:

- Use of sand bags and temporary desilting basins during project grading and construction during the rainy season (October through April) to prevent discharge of sediment-laden runoff into stormwater facilities.

- Installation of landscaping as soon as paracticable after completion of grading to reduce sediment transport during storms.

- Hydroseeding soil binders or other measures to retain soil on graded building pads if they are not built upon before the onset of the rainy season.

- Incorporation of structural BMPs (e.g., grease traps, debris screens, continuous deflection separators, oil/water separators, drain inlet inserts) into the project design to provide detention and filtering of contaminants in urban runoff from the developed site prior to discharge to stormwater facilities.

- Stenciling of catch basins and other publicly visible flood control facilities with the phrase "No Dumping-Drains to the Ocean."

HWQ-3 The City shall review subsequent development projects within the specific plan area for the application of Best Management Practices (BMPs) to reduce water pollution from urban runoff. Among the source-reduction BMPs that may be required by the City for application to such projects are the following:

- Animal waste reduction
- Exposure reduction
- Recycling/waste disposal
- Parking lot and street cleaning
- Infiltration (exfiltration) devices
- Oil and grease traps
- Sand traps
- Filter strips
- Regular/routine maintenance

The specific measures to be applied shall be determined in conjunction with review of required project hydrology and hydraulic studies, and shall conform to City standards and the standards of the County's Municipal Stormwater Permit, under the NPDES program.

HWQ-4 A water quality monitoring program should be implemented to regularly test the water quality at the project storm drainage outlets to Prado Lake, Chino Creek and Mill Creek. The program should be devised to differentiate the pollutant contributions of project development from dairies during the transitional period. If test results determine that the water quality standards established by the RWQCB are not being met, corrective actions acceptable to the RWQCB would be taken to improve the quality of surface runoff discharged from the outlets to a level in compliance with the adopted RWQCB standards.

HWQ-5 In implementing the Storm Drainage Plan, the City should review subsequent development projects within the plan area for opportunities to provide 'mini-basins' for purposes of detention, filtration and recharge to groundwater. Such basins may have the corollary benefit of providing habitat for waterfowl. Appropriate locations may include storm drain outlets to earthen channels, within or adjacent earthen channels, and at storm drain outlets to the natural open space system.

HWQ-6 The City of Chino shall assure that storm drain facilities and outlets to Prado Regional Park and the natural open space system are designed in a manner that minimizes disruption of park operations and protects park and open space resources. Specific

drainage facility designs at outlets to the major open space system below the 566' elevation shall be made available for review by the County of San Bernardino Flood Control District and U.S. Army Corps of Engineers, as appropriate.

HWQ-7 Prior to any development approvals, a plan for managing urban runoff to protect sensitive drainages within the open space system shall be approved by the City of Chino. This Urban Runoff Management Plan (URMP) will be integrated with the project Storm Drain Plan, and provide the framework and mechanism for:

1) Phased implementation of structural and non-structural best management practices (BMP's) to control stormwater discharges and protect water quality;

2) Review of subsequent projects for inclusion of 'mini-basins' for detention, filtration and recharge to groundwater;

3) The design and location of Natural Treatment Systems (NTS) for water quality purposes within drainages; and

4) Implementation of a water quality monitoring program at storm drain outlets to Prado Lake, Chino Creek and Mill Creek.

The URMP shall be made available for review and comment by the Flood Control Districts of the counties of San Bernardino and Orange, the U.S. Army Corps of Engineers, and Orange County Water District during the City of Chino's review and approval process. The URMP shall assure to the satisfaction of the City of Chino that project development that drains into Chino Creek and Mill Creek will not unacceptably contribute to flooding, scour and erosion, or water quality degradation of these environmentally sensitive drainages.

5.3.7 LEVEL OF SIGNIFICANCE AFTER MITIGATION

With incorporation of project design features, project-level hydrology studies, NPDES permit program requirements, Best Management Practices (BMPs) for point and non-point source pollution control, and other mitigation measures identified above, the flooding, hydrology and water quality impacts of the proposed project would be reduced to a level that is considered less than significant.