GROUNDWATER BASIN MANAGEMENT PLAN FOR THE MONTECITO WATER DISTRICT

Prepared By:

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This Groundwater Basin Management Plan was researched, written, and produced by Ryan Pingree, a student intern from UC Santa Barbara's Bren School of Environmental Science and Management, under the direction of Tom Mosby, Montecito Water District (MWD) Engineering Manager. The author gratefully acknowledges C. Charles Evans, MWD General Manager, Tom Mosby, MWD Engineering Manager, Cathy Muneio, MWD Secretary, and Chip Wullbrandt of Price, Postel and Parma for their assistance in the research and review of the Plan.

Additional copies of this document can be obtained from the Montecito Water District Office at 583 San Ysidro Road, Montecito.

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1.1 INTRODUCTION TO GROUNDWATER MANAGEMENT PLAN

The State of California has recognized and subsequently declared that groundwater contained in the basins within the State of California is a valuable natural resource. As a result of this declaration, a mechanism for encouraging the development of a comprehensive groundwater management plan was developed to ensure that groundwater resources remain a safe and reliable source of water in the years to come. With the passage of Assembly Bill 3030, the State of California encouraged all local agencies, in cooperation with other users within a groundwater basin, to implement and adopt a comprehensive groundwater management plan and associated ongoing groundwater management program.

As defined in AB 3030, the Montecito Water District (District) is designated as the lead agency to initiate the development of a groundwater management plan in all areas within the service boundary. As the lead agency, the Montecito Water District has initiated the development of a comprehensive groundwater management plan for the groundwater contained within the Montecito and portion of the Toro Canyon community. By developing a groundwater management plan, the District aims to:

1. preserve and promote local control of groundwater management
2. encourage cooperation among all basin users
3. develop information and tools for effective basin management

This Groundwater Management Plan, when used in conjunction with the Groundwater Management Program, will ensure that the aquifers within the boundaries of the Montecito Water District will continue to supply the community with a safe and reliable source of water.

By designing and implementing a comprehensive groundwater management plan, the long-term viability of this valuable resource can be sustained without negatively impacting the socioeconomic needs of the community. As new wells are constructed and associated groundwater demands increase, additional development of the groundwater basins will approach, and possibly exceed, the natural recharge capability of the groundwater basins. Continued development thereafter without a management plan could potentially deplete the groundwater resource, resulting in damaging economic and environmental consequences. The predicted future increase in water demand, as well as continued current demand, necessitates careful and accurate management of the groundwater basins if adequate long-term water supplies are to be maintained.

Lengthy historical records have documented that the Montecito and Summerland communities have had to endure periods of extended drought and flood. In times of drought, when surface water supplies are limited, groundwater demand increases. In times of flood, when surface supplies of water are plentiful, there is reduced production of water from the groundwater basins, and the basins are recharged. By implementing a comprehensive groundwater management plan, the Montecito Water District and individual well users can effectively respond to episodic changes in the quantity and quality of groundwater.

Cooperation and participation of all well owners in the program will provide the community with a better means of determining groundwater availability and quality, and the remaining storage for long-term planning purposes and optimal use of the water for all concerned interests. If the groundwater basins confined within the boundaries of the District become overdrafted, the State of California has the authority to adjudicate, or take control of, the groundwater basins. Additionally, the development of a groundwater management plan is required as a result of the Montecito Water District's participation in the Cachuma Project with the Bureau of Reclamation.

An effective groundwater management plan only occurs as a result of careful studying, planning, and cooperative efforts between water purveyors, private well owners and regulators within the scope of the groundwater basin. Of specific importance regarding community input will be the formation of certain essential elements concerning monitoring, conjunctive use and remedies imposed on all groundwater basin users to minimize potential groundwater overdraft conditions. This cooperative effort will identify and fully define existing regulations and enable the District and the community as a whole to modify these regulations to meet the unique characteristics of the groundwater basins. By actively soliciting input from the community, the District will be able to alert the community as to the importance of properly monitoring this finite resource.

1.2 DEFINITION AND ROLE OF RESPONSIBLE AGENCY

The Montecito Water District, as the local water purveyor to the Montecito and Summerland communities, is designated by Assembly Bill 3030 as the lead agency to develop a groundwater management plan and associated groundwater management program. As the designated lead agency in the community, the Montecito Water District will actively solicit input from all concerned individuals and agencies within the boundaries of the Montecito Water District in developing the plan.

Assembly Bill 3030 authorizes any local agency that provides water service to adopt and implement a groundwater management plan in a groundwater basin underlying its jurisdiction that is not currently being managed. Groundwater basins are defined in the Department of Water Resources Bulletin #118 and its accompanying amendments. AB 3030 does not apply to existing groundwater management agencies or adjudicated basins.

If several public agencies overlie a basin, the legislation contained in AB 3030 encourages a coordinated groundwater management plan between the agencies. This coordination may vary from coordinated planning to the creation of a Memorandum of Understanding or a Joint Powers Agreement. A Joint Powers Agreement is restricted to public agencies, whereas a Memorandum of Understanding can involve both public agencies and private entities.

The District only acts as the lead agency in adopting the rules and regulations to implement and enforce the plan. The plan does not authorize the District to make a binding determination of the water rights of any person or entity. The District will not have the authority to limit or suspend groundwater extraction by others unless the District and the community of basin users as one entity has determined, through study and investigation, that groundwater recharge or replenishment programs have proven insufficient and degradation of the groundwater basin will continue without the control of groundwater production.

1.3 PREPARATION, PUBLIC REVIEW, AND ADOPTION OF GMP

In developing a comprehensive groundwater management plan, it Is essential that the public understand the different issues and concerns that will compose the elements of the groundwater management plan. These issues and concerns consist of different elements that address overall groundwater management. They will be described in detail in the following sections of the Groundwater Management Plan.

The District has notified mutual water companies and private well owners about the adoption of AB 3030 and scheduled a public workshop to introduce and explain the purpose and intent of the Groundwater Management Plan. This public workshop outlined the respective roles of the District, basin users, individuals and other public agencies integral to the development of the Groundwater Management Plan. As the lead agency, the District also prepared the Groundwater Management Plan in response to public concerns and challenges. The District also contacted the Carpinteria Valley Water District regarding the Toro Canyon area overlying the groundwater basin within both Districts. The section of the Groundwater Management Plan involving the Toro Canyon sub-basin is covered between the two Districts by a Memorandum of Understanding (MOU).

SECTION 11: THE MONTECITO WATER DISTRICT

2.1 THE MONTECITO WATER DISTRICT

The Montecito Water District was established on November 10, 1921, by an act of the California legislature. Although it is a political body of the State of California, the Montecito Water District is an independent government organization, governed by an elected five member Board of Directors who must be residents of the District. The District's governing authority is Division 12 of the California County Water District Act, which is included in Sections 30000-33901 of the California Water Code.

The District is located in the southern coastal portion of Santa Barbara County and includes the unincorporated communities of Montecito and Summerland, as well as the Toro Canyon area. Also included are the Coast Village Road and Montecito Circle areas in the City of Santa Barbara. The Summerland Water District became a part of the Montecito Water District on December 6, 1995. The District encompasses an area of approximately 9,900 acres with a current (1998) population estimated to be 13,100. The District provides water service to approximately 3,960 municipal, residential, recreational, agricultural and business customers in the following categories:

Table 2.1.2: Water Service Customers

CUSTOMERS	NUMBER
Residential	3801
Commercial	93
Agricultural	66
TOTAL	3960

The District directly operates and maintains a water transmission and distribution system including approximately 100 miles of pipelines of various sizes, two water treatment facilities for the treatment of Jameson Lake surface water, 18 developed water wells, and 11 potable water reservoirs. In addition, the District is a member of the Cachuma Project and the Central Coast Water Authority, together which provide the District with its primary sources of potable water. Water from these two sources is treated at the City of Santa Barbara Cater Water Treatment plant.

2.2 WATER PRODUCTION SUPPLIES

Serving for many decades as the water purveyor for the Montecito community, the District has strongly emphasized the development of water supplies to meet the increasing needs of the community. Due to the limited storage and aquifer capabilities of the groundwater basins, only a small percentage of the District's total water needs are provided by groundwater resources. Realizing the limited potential of the groundwater basins' the District has focused efforts on securing adequate surface water supplies. The District's own Jameson Lake was developed in the late 1920's. In the mid 1950's, following the severe drought of 1947-51, the Cachuma Project was developed to provide additional surface water resources to the South Coast and upper Santa Ynez Valley water purveyors. In response to increasing community demands, the District and the Goleta

Water District participated in the construction of an emergency desalination facility with the City of Santa Barbara in 1992, following the severe drought beginning in 1988. However, due to lack of need, the desalination facility was decommissioned in 1997.

In 1988, due to drought, the District initiated groundwater production with several of the District's water wells. Additionally, funds were allocated to conduct geotechnical studies to determine if there existed any opportunity for additional development of the groundwater basin to supplement the District's dwindling surface water supplies. These studies, initiated by the District concluded that the groundwater basins, in conjunction with existing surface supplies, could not provide the District with a reliable quality and quantity of water to serve its customers. Faced with the possibility of insufficient water resources to meet future demands, the District proposed to the community a voter referendum for approval to secure State Water rights. In June 1991, by popular vote, the community approved the State Water Project. The procurement of State Water ensured that the District would be able to provide water in sufficient quantities and of reliable quality to meet current and future demands for full community build-out and development.

The Montecito Water District utilizes the following sources for supplying water to its customers:

STATE WATER PROJECT

In June of 1991, customers of Montecito and Summerland Water Districts approved the acquisition of 2,700 acre feet and 300 acre feet of water, respectively, from the State Water Project. This water is used to support traditional demand, to reduce current groundwater demand, to support new construction, and to offset reservoir siltation at Cachuma and Jameson Reservoirs. In December 1995, the Summerland Water District merged with the Montecito Water District. The Montecito Water District's total State Water Project entitlement is 3,000 acre feet.

LOCAL SURFACE WATER SUPPLIES

LAKE CACHUMA

Lake Cachuma is an open-surface water reservoir developed in the early 1950's and is owned by the United States Bureau of Reclamation. Currently (1998), the capacity of Lake Cachuma is 190,400 acre feet, and the annual average safe yield is 25,700 acre feet. The Montecito Water District is one of four water purveyors on the South Coast of Santa Barbara County that receives water from Lake Cachuma. In addition, the Santa Ynez I.D. Number One in the Santa Ynez Valley below Cachuma utilizes water from the Lake. The District is entitled to 2,660 acre feet of water in years of normal rainfall. All District water from the lake is treated at the Cater treatment facility. The treated water flows down the South Coast Conduit to the District. The District employs the use of multiple turnouts from the South Coast Conduit to provide water to District customers.

JAMESON LAKE, ALDER AND FOX CREEKS

Jameson Lake, restrained by Juncal Dam, is an open-surface water reservoir owned and operated by the District. Jameson Lake is located in the upper reaches of the Santa Ynez River and is under permit with the State Department of Water Resources, Division of Safety of Dams. Current capacity, based on a silt survey done in May 1998, when the Lake was at its maximum elevation, is 5,300 acre feet. Water from Jameson Lake is diverted through Doulton Tunnel to the District on a year-round basis. The District is limited to a maximum diversion of 2,000 acre feet per year from the Santa Ynez River and its tributaries.

Alder Creek is a small tributary to the Santa Ynez River adjacent to Jameson Lake. An average of 240 acre feet per year of water from this creek has been diverted directly into Jameson Lake since the 1930's.

Fox Creek has supplied water into the pipeline leading to the Doulton Tunnel South Portal since the early 1940's. The Fox Creek diversion has annually averaged 100 acre feet.

The reliability of these two surface water streams as water production sources has been severely impacted by stringent environmental protection requirements. As required by the Endangered Species Act, the District currently diverts water from these two streams at only a fraction of their previous production capabilities.

DOULTON TUNNEL

Doulton Tunnel is a two and one-quarter mile long unlined conduit that transfers water from Jameson Lake to the Montecito side of the Santa Ynez Mountains. The size and length of the tunnel permits significant water production from direct infiltration to the tunnel. For planning purposes, the annual infiltration yield, even in a prolonged dry period, is set at 400 acre feet.

RECYCLED WATER

A Water Reclamation Study prepared by CH2M HILL in November 1990, authorized and funded jointly by the Montecito Sanitary and Water Districts, concluded that the use of reclaimed water is not economically feasible at this time in Montecito. The study determined that sites capable of using reclaimed water were not located within a reasonable distance from where the tertiary treated water would be produced. The costs associated with the development of pumping stations, reclaimed transmission and distribution facilities were determined to be economically infeasible. Future drought conditions could, however, justify the building and short-ten-n utilization of such facilities.

GROUNDWATER SUPPLIES

The Montecito Water District currently has 18 groundwater production wells distributed throughout the District. For planning purposes, the District has determined that 700 acre feet of water can be produced on an annual basis. The District pumps groundwater from these wells in times of water shortages due to drought or other disaster that may limit the availability of surface water supplies.

SECTION III: GROUNDWATER BASIN CHARACTERISTICS

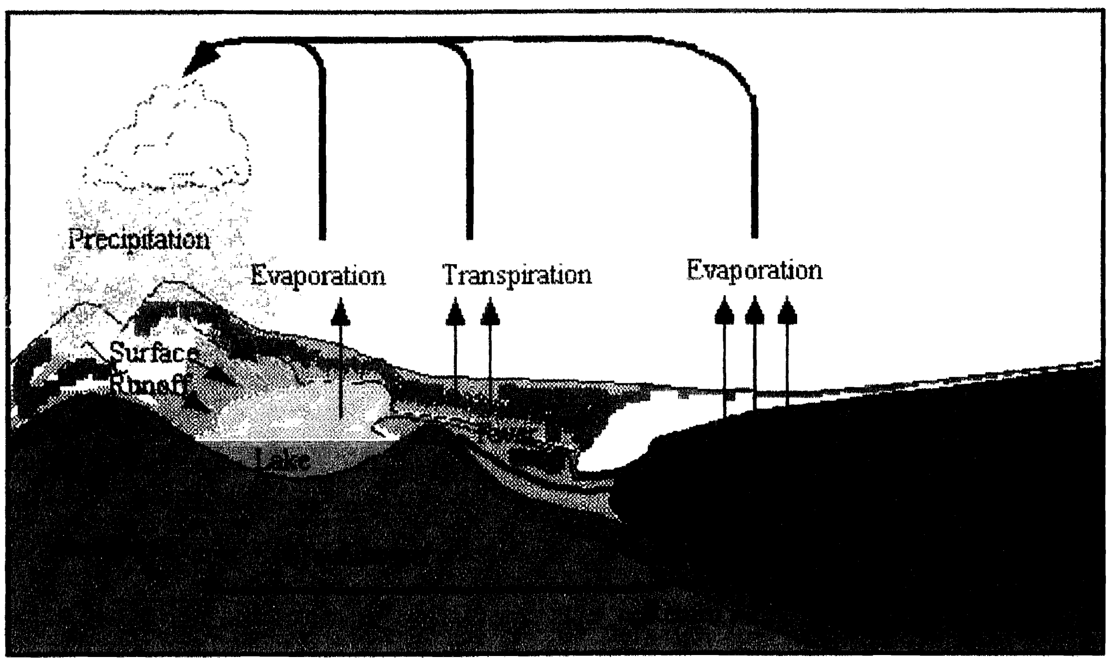
3.1 GEOGRAPHY

BASIN CLIMATE

The groundwater basins described by the Montecito Water District are subject to a Mediterranean-type of climate. Summers are generally long and dry and are frequently followed by short, wet winters with cooler temperatures. On average, the seasonal temperatures range from a low of 54 degrees in the winter to a high of approximately 65 degrees in the summer.

Figure 3.3.1 shows how water is conveyed throughout a coastal environment similar to the Montecito Community, Precipitation falls on the local mountains, resulting in surface runoff and groundwater infiltration. Surface runoff can be stored in a reservoir (Jameson Lake) for use in dry periods. Groundwater is recharged from water percolating from surface runoff and stream seepage.

Figure 3.1.1: Coastal Zone Hydrologic Cycle



The majority of precipitation falls between the months of November and April. The Montecito Water District has continuously recorded rainfall at the District's office since the winter 1924-25. Beginning in 1924-1925 and continuing up to the winter of 1995-1996, annual rainfall over this 71-year period has averaged 19.75 inches (D)W-UWMP, 96). Annual rainfall totals have varied from a high of 45 inches in the winter of 1997-1998 to a low of 7.06 inches in the winter of 1989-1990. Below average amounts of annual rainfall have occurred in 67 percent of the recorded years. As the Montecito area is characterized by dramatic rises in elevation, and orographically enhanced along the coast, annual rainfall along the crest of the drainage divide averages approximately nine inches greater (27 inches) than at the coast (GTC, 73).

Surface drainage is generally in a southerly direction along Montecito, Oak, San Ysidro, Romero, Picay and Toro Canyon Creeks. These streams are typically perennial in their upper reaches, but become intermittent across the recharge area of the groundwater basin (GTC, 73). These six creeks have a combined drainage area (above the upper basin boundary) of approximately 9,852 acres (Hoover, 80). Groundwater movement in the basin is north to south and, in general, follows the surface topography of the area (GTC, 73).

LAND USE

The overlying Montecito area is primarily residential with generally large (one or more acres) sized parcels. Citrus and avocado orchards compose the majority of the estimated 807 acres (8% of the total District area) devoted to agriculture (USBR WCP, 95). The remainder of the community is urbanized or characterized by tracts of undeveloped natural hillsides and lowlands vegetated with native brush. The majority of human development has occurred within the narrow coastal plains and foothills. Future development in the community is regulated by the Santa Barbara County Department of Planning and Development.

3.2 GROUNDWATER BASIN BOUNDARIES

The Montecito Water District encompasses two distinct groundwater basins. The Montecito Groundwater Basin and the Toro Canyon Storage Unit of the Carpinteria Groundwater Basin together store all of the available groundwater for users in the area. The Montecito Groundwater Basin, which underlies 3,632 useable acres, is substantially larger than the Toro Canyon Subbasin and is divided into three main storage units- Numbers 1, 2, and 3 (Slade, 91). The Toro Canyon Storage Unit, which underlies 347 useable acres, is considered to be a part of the adjoining Carpinteria Groundwater Basin (Slade, 91).

BOUNDARIES OF THE MONTECITO GROUNDWATER BASIN

The Montecito Groundwater Basin covers 11.5 square miles and is situated in the southwestern coastal area of Santa Barbara County. The Basin consists of a four-mile long, two-mile wide, low-lying alluviated plain (GTC, 73). The Basin is bounded to the north by the Santa Ynez Mountains and to the east by consolidated Tertiary age rocks (GTC, 73). The southern boundary of the basin is defined by the offshore trace of the Rincon Creek Thrust Fault (GTC, 73). However, no definite hydrologic barrier exists between the Montecito Groundwater Basin and the Santa Barbara Groundwater Basin to the west (GTC, 73). Here, surface topography features delineate the two Basins, not underlying geological formations. Therefore, while the Montecito Groundwater Basin is effectively sealed to the north, south, and east, as no definite barrier to groundwater movement to the west exists, groundwater is able to travel horizontally between the two basins (GTC, 73).

The underlying geological Montecito Groundwater Basin boundaries correspond to the following surface landmarks: the northern boundary is bounded approximately by a tortuous line beginning at Mountain Drive and Coyote Road, eastward to where Bella Vista Drive intersects Ladera Lane. This line approximates the course of the Santa Ynez Ridgeline throughout its course.

The Basin's approximate eastern boundary begins near where Bella Vista and Ladera Lanes intersect. From here, a southward trending line travels along Ladera Lane until reaching East Valley Road. The boundary then trends westward along East Valley Road, until reaching Ortega Ridge Road, whereupon it trends south to the ocean. The southern Basin boundary can be imagined as a westward trending line that begins where the western end of Ortega Road intersects the ocean. This line, setback 500 feet from the coast, mirrors the coastline until it reaches the western end of the Santa Barbara Cemetery. Finally, the western boundary approximates a line beginning at Cabrillo Boulevard and the SB Cemetery. From here, the line trends northward along Hot Springs Road to where it intersects with Sycamore Canyon Road. The line continues along Sycamore Canyon Road until it reaches Coyote Road. The boundaries of the Montecito Groundwater Basin are finally enclosed where Coyote Road bisects Mountain Drive.

BOUNDARIES OF THE GROUNDWATER BASIN WATERSHED

The Montecito Groundwater Basin is recharged by precipitation that initially falls within a defined area, or watershed. All of the precipitation that falls within this watershed can be thought of as having the potential of recharging only the Montecito Groundwater Basin. For the Montecito Groundwater Basin, this associated watershed extends from the ocean on the south to the crest of the Santa Ynez Range on the north. Elevations along the northern divide range from about 3,000 feet on the east to 3,800 feet on the west. Foothills to the east and west constitute the western and eastern components of the watershed divide. Elevations along the base of the foothills range from approximately 350 feet on the eastern side of the area to about 500 feet on the west. From these foothills, ground elevation rises sharply northward, whereupon it connects with the Santa Ynez Mountains.

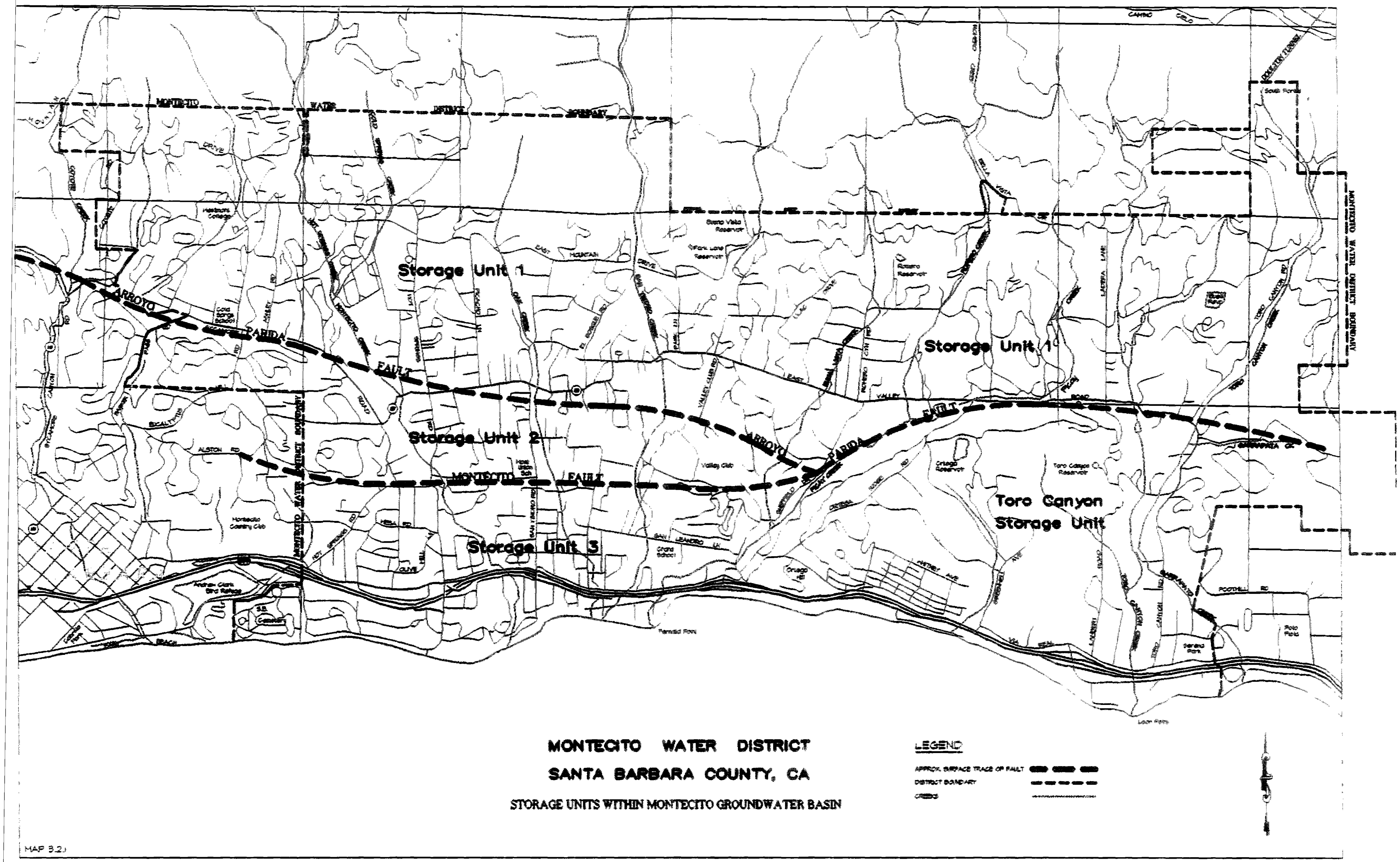
The northern boundary of the Montecito Groundwater Basin Watershed is defined by East Camino Cielo, which traverses the ridgeline of the Santa Ynez Mountains. Hills and ridges that extend seaward from the Santa Ynez Mountains bind the watershed on the east and west.

STORAGE UNITS OF THE MONTECITO GROUNDWATER BASIN

The Montecito Groundwater Basin is divided into three distinct storage units separated by eastwest trending faults (MWD, 88). For the most part, these east-west trending faults represent significant barriers to groundwater movement (Slade, 87). Higher water levels and steeper groundwater gradients north of the Arroyo Parida and Montecito Faults confirm the separation of the units. North of the Montecito Fault, groundwater levels have historically remained about 150 feet higher than south of the Fault (GTC, 73). These storage units are numbered one through three, with unit number three being the closest to the ocean. Map 3.2.1 describes the boundaries of the Montecito Water District and the nested three distinct groundwater storage basins.

Storage Unit Number One. Unit Number One is the northernmost and largest of the three storage units. Unit Number One is bounded on the north, cast, and west by non-water-bearing consolidated rocks. The Arroyo Parida Fault defines the southern boundary. The Arroyo Parida Fault can be best approximated by drawing a straight line from the intersection of Coyote and Sycamore Canyon Roads, southeast to where Sheffield Drive is bisected by Birnam Wood Drive. Storage Unit One covers an area of approximately 2,040 acres, attaining a maximum saturated thickness of about 100 feet (Slade, 91).

3.2.1: Storage Units of the Montecito Groundwater Basin



Storage Unit Number Two. The smallest of the three units is Storage Unit Two. This aquifer lies between the Arroyo Parida and Montecito Faults. The Montecito Fault can be best approximated by drawing a line from the intersection of Rametto and Alston Roads eastward to where Sheffield Drive is bisected by Birnam Wood Drive. Surface area of this unit constitutes approximately 300 acres. The average saturated thickness is approximately 20 feet (Slade, 91). Unit Two represents an up-thrown, fault-bounded block with only a thin veneer of water-bearing sediments (Slade, 87). The relatively shallow bedrock found here is strongly suspected of containing very poor quality water (Slade, 91). It is often under artesian head and may leak into portions of Storage Units One and Three (Slade, 91).

Storage Unit Number Three. Unit Number Three is the second largest of the three storage units. This Unit is bounded by the Montecito Fault to the north, the Rincon Creek Thrust Fault offshore, and by consolidated sediments near Summerland to the west. As mentioned earlier, as no definite geological delineation exists between Storage Unit Three and the Santa Barbara Groundwater Basin, the western boundary can be described by the western boundary of the Montecito Groundwater Basin south of the Arroyo Parida Fault. Storage Unit Three covers approximately 1,040 acres with an average saturated thickness of 100 feet (Slade, 91).

TORO CANYON STORAGE AREA

The fourth sub-basin from which water is available to the Montecito Water District underlies Toro Canyon. Referred to as Storage Unit Number Four, the Toro Canyon Storage Area is a part of the Carpinteria Groundwater Basin. The Toro Canyon Storage Unit area is enclosed by consolidated sediments to the east and west, and by the Santa Ynez Mountains to the north. The offshore Rincon Creek Thrust Fault binds the unit to the south. The useable area of the Toro Canyon Storage Unit is approximately 347 acres (Slade, 91). The average saturated thickness of the unit is 60 feet (Slade, 91).

3.3 HYDROGEOLOGY OF THE GROUNDWATER BASINS

The groundwater basins within the Montecito Water District are composed of two types of rocks: unconsolidated sediments consisting of clay, sand, and gravels of Plio-Pleistocene and recent ages and consolidated Tertiary age sandstones, siltstones, and shales (Hoover, 80).

UNCONSOLIDATED SEDIMENTS

Principal water-bearing deposits in the groundwater basins include deposits of alluvium (stratified beds of sand, gravel, silt and clay deposited by flowing water) and terrace of recent age, in addition to deposits from the Plio-Pleistocene Casitas and Santa Barbara Formations (GTC, 73). While the Casitas Formation represents the primary aquifer in the Basin (Hoover, 80), much of the deeper Casitas sediments are very fine grained and display very poor watert ransmitting characteristics (Slade, 91). These deposits consist of tan to red-brown, poorly sorted boulders, cobbles, and sands with variable amounts of sand and clay (GTC, 73). In general, data has suggested that the aquifers found within the Montecito Water District are generally thin and separated by somewhat thicker zones of sandy clay or clayey sand of low permeability (GTC, 73). These unconsolidated formations are underlain and bounded by consolidated Tertiary aged basement rocks which are essentially non-water bearing.

Elevated and dissected water bearing deposits present in the basins are composed of older alluvium, terrace deposits, and Riviera Fanglomerate (GTC, 73). Shallow wells and deeper wells with near-surface perforations can obtain water from these deposits. Recent deposits of alluvium consisting of clay, boulders, sands and gravels occur adjacent to and within active stream channels.

CONSOLIDATED SEDIMENTS

Although the majority area of the groundwater basins is comprised of unconsolidated sediments, the northern portion, generally the area above Mountain Drive, is comprised of consolidated or bedrock formations (MWD, 88). These consolidated and bedrock formations yield small quantities of water to wells. The consolidated formations do however, supply moderate to large quantities of water to horizontal tunnels such as Doulton Tunnel (Hoover, 80).

3.4 BASIN RECHARGE PROCESSES AND LOCATIONS

Recharge to the groundwater basins within the Montecito Water District occurs through the processes of infiltration of rainfall, seepage of streamflow, and subsurface inflow from consolidated rocks. Annual recharge to the groundwater basins from all sources is approximately 1,614 acre feet (Hoover, 80).

STREAMFLOW SEEPAGE

The most significant component of recharge to the groundwater basins within the Montecito Water District is through streamflow seepage. On their passage to the ocean, the six streams draining the watershed recharge the groundwater table. The amount of water available to seep from the streams into the groundwater basin is dependent upon the volume of potential runoff present in the watershed. Runoff varies significantly depending on the amount of seasonal rainfall. When rainfall is less than 12 inches per year, runoff is negligible. When 26 inches of rainfall in a year occurs, runoff will be 25% of total rainfall (Hoover, 80). When rainfall reaches 40 inches in a year, runoff is greater than 50% of total precipitation (Hoover, 80).

Because surface runoff occurring in the District is not gauged, stream seepage estimates are based on theoretical relationships. Seepage loss estimates for the Montecito Basin have been extrapolated from observed relationships in the nearby Goleta and Carpinteria Basins, which indicate that stream seepage averages-ages about 14 percent of runoff. Based on comparisons of the drainage area of creeks in the Montecito area with the observed drainage area-runoff ratio from the San Jose Creek drainage in the Goleta Basin, the average annual stream seepage rate is approximated to be 764 acre feet (Hoover, 80).

INFILTRATION OF RAINFALL

A large amount of recharge to the groundwater basins occurs through the direct infiltration of rainfall. Precipitation falling on the ground can seep into the soil, percolate down to the water table, and recharge the basin. Infiltration rates will vary according to the type of surface encountered by the water. Due to the predominantly narrow and steep topography present in the

District, there is relatively little opportunity for rainfall to percolate into the water table, as runoff is quick to occur. However, where the land is flatter and infiltration capacities are high, rainfall has the potential to recharge the groundwater basin. Experiments have shown that groundwater recharge rates should be expected to be greatest for large grained, tilled loams (agricultural fields), and lowest (approximately zero) for paved surfaces (parking lots). Chart 3.4.1 illustrates the effect of rainfall on groundwater elevations for the District's office well located at 583 San Ysidro Road, for the period 1964 to 1997. The graph presents the effects of both prolonged dry and wet precipitation cycles on groundwater elevations. Observe how the prolonged drought beginning in 1988 affected groundwater elevations. Additionally, notice how the groundwater elevations quickly responded to above average rainfall. In areas where the surface has a higher infiltration capacity (higher permeability), greater rates of groundwater recharge are observed. Using technology developed by Blaney in 1963, the average annual infiltration of rainfall to the groundwater basins with the boundaries of the District by rainfall is approximately 500 acre feet (Hoover, 80).

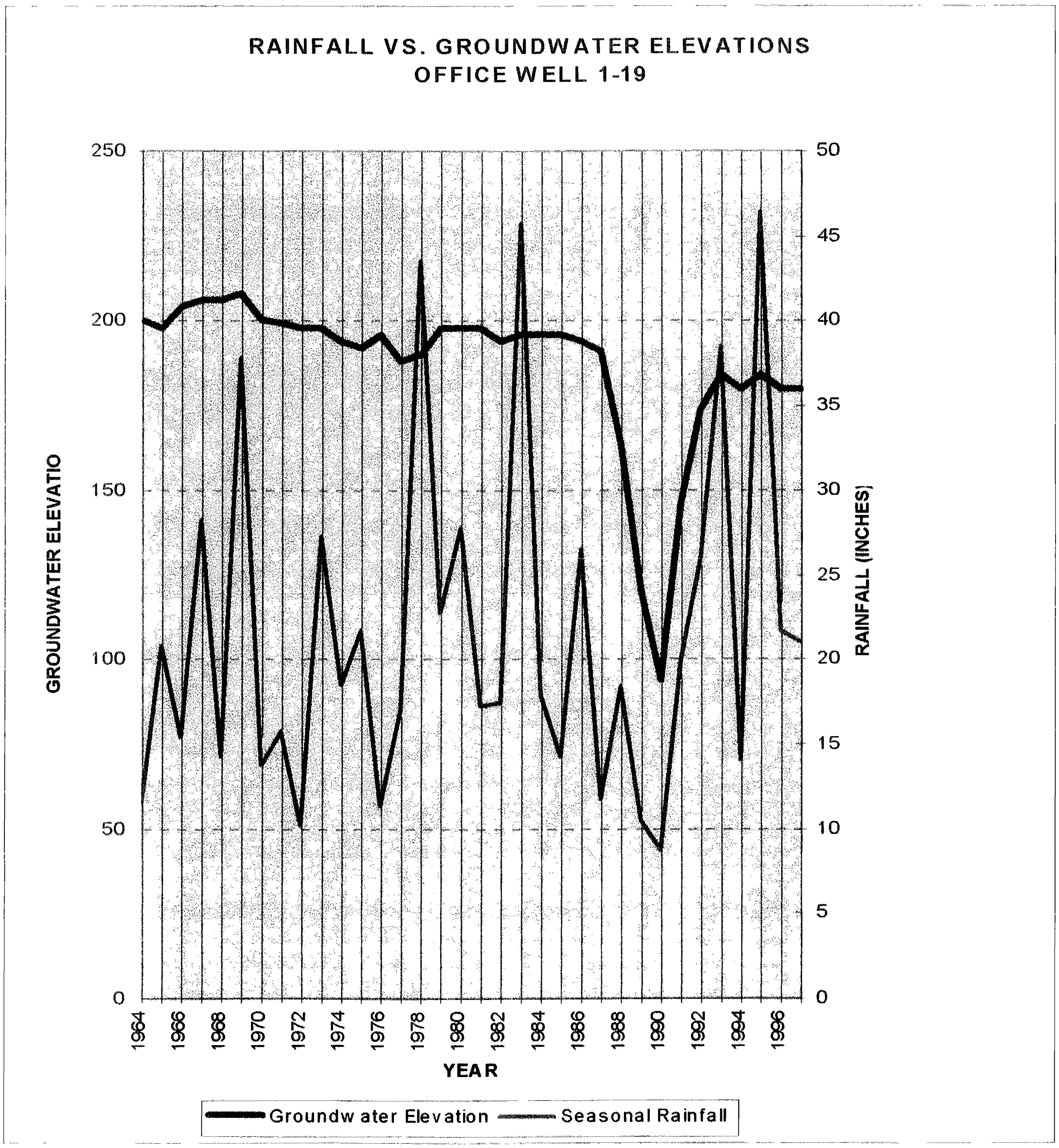
SUBSURFACE INFLOW

Subsurface groundwater inflow is dependent upon the hydraulic gradient between the consolidated sandstone formations and the groundwater basins. If heavy pumping of the consolidated sandstone aquifers were to occur, then the long-term average for subsurface inflow from consolidated rocks to the basin of 250 acre feet could be reduced (Hoover, 79). At this time, the District has no pumping records from private wells located in the consolidated sandstone aquifers.

IRRIGATION INFLOW

The long-term average annual infiltration rate of water from the irrigation of agriculture areas and residential landscaping is estimated to be on the order of 100 acre feet (Hoover, 80).

Chart 3.4.1. Rainfall Vs. Groundwater Elevations



IDENTIFICATION OF RECHARGE LOCATIONS

The identification and designation of areas in the Montecito community that are essential to the recharge processes described above can contribute to the ability of surface water to recharge the aquifers. These essential areas include streambeds and lands adjacent to streams and creeks; when future land-use changes are proposed, the impacts of such changes can be evaluated as to their impacts on the groundwater basins. By recognizing these areas for their significance in aquifer recharge processes, groundwater basin recharge processes can be sustained. The Montecito Community Plan, adopted by the County of Santa Barbara in 1992, has recognized the importance of recharge areas to groundwater quantity and quality.

3.5 BASIN STORAGE CAPACITY

Within a groundwater basin, the amount of available groundwater storage capacity represents the total volume of water that can be held in underground storage for a given period. The amount of groundwater available for extraction by wells depends on the volume of the water-bearing sediments that are, or can become, saturated, and the specific yield of the water-bearing sediments. A rising water- table will increase the thickness of the saturated water-bearing zone, thereby resulting in a greater volume of available groundwater storage. Conversely, when the height of the water table decreases, the volume of water made available decreases.

Groundwater is found in the pore, or void spaces of a soil. These spaces fill with water when water percolates down from the surface. To be usable, the void space for groundwater storage in a given volume of sediments must be economically capable of being withdrawn during periods of insufficient surface supply (discharge). The void spaces must also be capable of being resaturated either naturally or artificially during periods of excess surface supply (recharge). Groundwater extraction can result in compaction of fine sediments found within the aquifer. Compaction of these fine sediments reduces the total amount of groundwater stored in the aquifer. In addition, compaction of these fine materials leads to subsidence of the land surface that can change the gradients in rivers and streams, and cause structural damage to highways, bridges and buildings (CGM, 97). However, the part of the aquifer that yields water to wells is not compacted. The coarser sediments, consisting of sands and gravels, in which most of the available water is stored, are not compacted (CGM, 97).

Groundwater in storage is a constantly changing value that fluctuates in response to both seasonal and long-ten-n changes in recharge and discharge rates to the groundwater reservoir. By using recognized maximum and minimum well hydrograph records, approximations to the maximum and minimum amounts of useable groundwater in storage can be obtained. Useable water is defined as being of satisfactory quality for prevailing beneficial uses and in sufficient quantity within the underground reservoir to be available without excessive drawdown or uneconomic yield occurring. It has been accepted that during the Spring of 1983, the groundwater basin was at its highest observed level (Slade, 91). It has also been agreed that the groundwater basin was at an all time low level in the Winter of 1991 (Slade, 91). The total amount of groundwater in storage that is potentially available for extraction is determined by multiplying the total volume of water-bearing sediments by the specific yield of the sediments.

The maximum total volume of useable groundwater in Storage Unit One has been estimated to be 8,770 acre feet (Slade, 91). The minimum total volume of useable groundwater in Storage Unit One is approximately 2,830 acre feet (Slade, 91).

The maximum total volume of useable groundwater in Storage Unit Two is estimated to be 730 acre feet (Slade, 91). The minimum total volume of useable groundwater in Storage Unit Two is approximately 70 acre feet (Slade, 91). However, since sediments here do not generally attain a thickness greater than 50 feet, wells would not adhere to State standards for well construction.

The maximum total volume of useable groundwater in Storage Unit Three is estimated to he 4,990 acre feet (Slade, 91). The minimum total volume of useable groundwater in Storage Unit Three is approximately 3,710 acre feet (Slade, 91). Included in calculating the volume of useable groundwater was a 500-foot wide strip along the coastline where no extractions would occur to lower water levels. It is believed that this "buffer zone" would provide protection from possible seawater intrusion.

The maximum total volume of useable groundwater in the Toro Canyon Storage Area is estimated to be 1,620 acre feet (Slade, 91). The minimum total volume of useable groundwater in the Toro Canyon Storage Area is approximately 1,150 acre feet (Slade, 91).

The total maximum volume (all four sub basins) of useable groundwater is approximately 16,110 acre feet (Slade, 91). The total minimum volume of useable groundwater is approximately 7,760 acre feet (Slade, 91). In terms of distinct groundwater basins, the Montecito Groundwater Basin has maximum and minimum volumes of 14,490 acre feet and 6,610 acre feet respectively (Slade, 91). The Toro Canyon Storage Area has maximum and minimum values of 1,620 acre feet and 1, 150 acre feet respectively (Slade, 91). It can be expected that at any one time the total amount of available groundwater in storage is somewhere between these two accepted values.

3.6 GROUNDWATER BASIN SAFE YIELD

According to a study in 1980 by the District consulting geologist, Michael Hoover, (Safe Yield of the Montecito Basin and Toro Canyon Area) the safe yield of the groundwater basins within the Montecito Water District is 1,650 acre feet per year (AFY) (Hoover, 80). Breakdown by groundwater storage units is as follows:

Table 3.6. 1: Groundwater Sub Basin Safe Annual Yields

SUB BASIN	**SAFE YIELD (AFY)**
Storage Unit 1	550
Storage Unit 2	100
Storage Unit 3	700
Toro Canyon	300
Groundwater Basin Safe Yield	**1,650 AFY**

The safe yield of 1,650 AF is an annual average. In addition to this value, there is also the opportunity for additional groundwater withdrawals by "mining". The term "mining" refers to a program of deliberately exceeding the safe yield during critically dry years. This is done with the reasonable expectation that, based upon historic rainfall data, the basin will recharge an amount of the mined water in the following wet years. It is the Districts policy that mining of the groundwater basins will only be considered if no other feasible alternative exists for meeting water demand, given an extreme event.

3.7 HISTORICAL GROUNDWATER PRODUCTION

All groundwater basins located within the boundaries of the District are subject to groundwater production. However, because of aquifer characteristics described in earlier sections, withdrawal rates vary between the four storage units. The District has historically depended on the water contained in Storage Unit Number One for the majority of its groundwater production. The only exception to this pattern was in 1990, when groundwater production from Storage Unit Number Three surpassed the extractions from Storage Unit One (Slade, 91). Historically, the Montecito Water District has not withdrawn water from Storage Unit Number Two, nor from the Toro Canyon Storage Unit (Slade, 91).

Annual groundwater production by the Montecito Water District has been recorded since 1947. As described in its conjunctive use program, groundwater production by the District has varied historically in response to changes in annual rainfall. From 1960 to 1972, the District withdrew no groundwater. After 1972, groundwater production slowly increased. During the height of the drought in 1990, when surface water supplies were scarce, groundwater production by the District was at an all time high of 562 acre feet. Following the drought, when surface supplies of water became plentiful, groundwater production decreased substantially. Annual Montecito Water District groundwater production for the period from 1980 to 1990 averaged 180 acre feet per year (Slade, 91).

Groundwater production by private well owners and mutual water companies occurs in all four storage units. Although complete records are not available, historical groundwater production has been estimated by Hoover, 80 and Slade, 91, as follows:

Table 3.7. 1: Estimated Historical Groundwater Production

YEAR	**EST. PRODUCTION** (AFY)
1929	1658
1954	1322
1962	872
1979	458
1980-1990	940 (average)

Total groundwater extractions by all users (MWD, private well owners and mutual water companies) averaged 940 acre feet per year for the eleven-year period from 1980 to 1990 (Slade, 91).

3.8 GROUNDWATER BASIN WELLS

NUMBER OF WELLS

The Montecito Water District currently has 18 wells distributed throughout the Montecito Groundwater Basin and the Toro Canyon Storage Area. Of these 18 wells, 11 are located in Storage Unit Number One, 4 are located in Storage Unit Three, and there are 3 wells drilled in the Toro Canyon Storage Area. The District has no wells drilled into Storage Unit Number Two. All 18 of the District's wells are monitored from the time they go on line.

Private and/or small mutual water company wells are present in all four storage units. These production sites are fairly evenly distributed throughout the storage units. Private water companies in the District still actively provide water to its customers. Many customers of private water companies have District meters as a supplementary supply source. Many of the private water companies, small water systems and individual wells were drilled following the District's water meter moratorium beginning in 1973. The moratorium on the issuing of District water meters to property owners within the District's boundaries was a consequence of insufficient water supplies and the District's increasing demand. The water meter moratorium was suspended in 1993 and finally terminated in the fall of 1997 following voter approval of State Water in 1991 and the subsequent construction of State Water facilities.

The drought of 1987-91 also severely limited the District's ability to provide adequate supplies of water to District customers. District customers were placed under severe restrictions under a District allocation program from 1988 to 1991 due to declining surface water supplies. Customers that exceeded their allocations paid for water at over twice its current cost. Flow restrictors were placed in some District meters to prevent customers from using too much water. Many new private wells were added to the District's service area during this period. The District began to depend upon groundwater supplies to meet demand. Even with continuous pumping, District wells in the groundwater basin could only satisfy a small part of the District's overall need for water. District water demand and District well production during pre-and post-drought periods as shown in Table 3.8.2 indicates the severity of water allocation restrictions, in addition to the variable dependance on groundwater.

Table 3.8.2: District Water Demand and Groundwater Production 1987-1995

YEAR	METERED USAGE (AF)	WELL PRODUCTION-MWD (AF)
1987-1988	4,865	117
1988-1989	5,174	197
1989-1990	4,402	368
1990-1991	3,749	562
1991-1992	2,866	360
1992-1993	3,901	98
1993-1994	3,820	134
1994-1995	3,955	118

At present, there are 70 private wells in the District's biannual monitoring program. The locations of the monitoring wells currently active in the District's Monitoring Well Program are plotted on Map 3.8. 1. It is estimated that there are an additional several hundred active wells in the community. While records for the District's wells are available, production data for private wells is virtually nonexistent.

WELL PRODUCTION CAPACITY

The total estimated production capacity of the District wells scheduled to be in service by the 1991-1992 water year was in the range of 1048.8 to 1238.4 acre feet per year (Slade, 91). This value is dependent upon actual production during drought conditions of wells that were not yet on line, or that were then producing at less than full potential. In addition, this estimate assumes 70 to 80% of possible operational usage. Although the total estimated production capacity of the private wells and small mutual water companies cannot be accurately determined, it is believed that, if needed, annual withdrawal of groundwater can exceed the current estimated average private production of 756 acre feet per year.

3.9 GROUNDWATER QUALITY

BASIN WATER QUALITY

Overall, water quality of the groundwater basin is classified as good to moderately good (GTC, 73). For irrigation purposes, the water is classified as Class I to Class 2 (GTC, 73). In general, water quality south of the Arroyo Parida Fault is of calcium bicarbonate character (GTC, 73). On the north side of the fault, water is of primarily sodium sulfate character (GTC, 73). Observed total dissolved solids (TDS) concentrations range from 600 to I 100 milligrams per liter (mg/1) (GTC, 73). Concentrations of iron and manganese in District wells exceed Federal standards (GTC, 73). The water is typically hard to very hard and may encrust wells (GTC, 73).

The District has been able to correlate an overall improvement in groundwater quality with the abundance of rainfall and the high groundwater elevations occurring since 1995. During the height of the drought in 1990, water quality in several of the District's wells was being impacted by high levels of nitrates. Nitrates have been proven to be harmful to young children and babies at levels above 45 mg/l. In some District wells, nitrate levels were near the maximum allowed contaminant level. These wells were blended with other District sources so that delivered nitrate levels to customers was well below the maximum allowed contaminant level. These high nitrate levels were located downgradient of recreational golf courses in the community. Recent monitoring of nitrate throughout the District indicates that concentrations have dropped well below the maximum allowable contaminant level. Table 3.9.1 presents how certain chemical constituents of groundwater in the Districts wells are affected by groundwater elevations. As groundwater elevations decrease (drought), the chemical constituents increase in concentration. Conversely, when there is more water in the aquifer, there is a corresponding improvement in water quality.

Map 3.8.1: Private Monitoring Well Locations

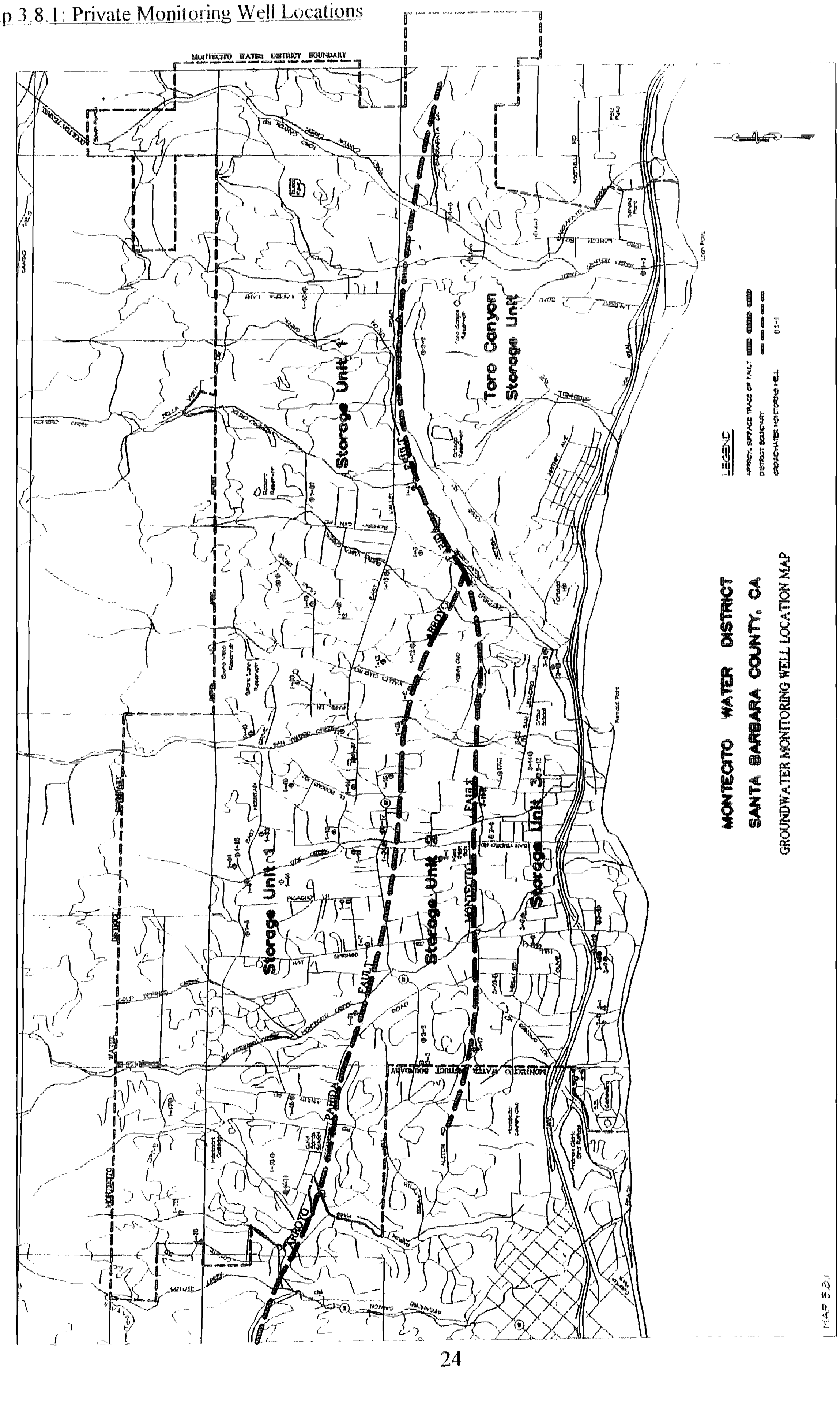


Table 3.9.1: Valley Club Well; Groundwater Elevations and Water Quality

DATE	STATIC ELEVATION (FMSL)	NITRATE as NO3(mg/l)
05/91	159	36
11/94	212	32
06/97	221	29

District wells are tested in accordance with requirements of the State Department of Health. Active District wells are tested at least every three years for chemical constituents. It should be noted that because historical data collection has been random and intermittent, no long-term records exist. Furthermore, as it is often difficult to obtain complete historical records from private wells within the basin, groundwater basin-wide coverage is unavailable.

WATER QUALITY CONCERNS

All members of the Montecito community need to be concerned with the quality of the water contained in the aquifers found within the boundaries of the Montecito Water District. Water found in the groundwater basins is subject to negative influences that can severely affect not only the quality of the water, but the quantity of water available for consumption as well. Through the Groundwater Management Program, these possible effects and consequences will be monitored and observed to ensure that the long-term health and vitality of the aquifer are being maintained. Through this process, the groundwater contained in the aquifers within the Montecito Water District will continue to supply all concerned interests with water of the highest possible quality in the years to come.

3.10 GROUNDWATER POLLUTION SOURCES

CAUSES OF GROUNDWATER POLLUTION

Human activities and natural processes have the potential to cause changes in the quality and quantity of groundwater contained in the aquifers within the Montecito Water District. Contaminants can enter aquifers through infiltration, recharge from surface water, direct flow through improperly built wells and cross-contamination and from other polluted aquifers through improperly constructed wells (CGM, 97). Contamination is classified as being a point source contaminant or a non-point source contaminant. Point source contaminants come from specific locations, such as underground petroleum storage tanks, septic systems and landfills. Non-point sources of contamination include agricultural wastes and stormwater runoff. Some common point and non-point sources of contamination are listed in Attachment 9.4. The following list outlines some particular actions and processes having the potential to affect groundwater quality and quantity:

- Commercial and domestic landscaping activities
- Agriculture and livestock
- Septic systems, synthetic organics used in household cleaning products and septic tank cleaners
- Underground storage tanks

- Seawater intrusion
- Natural contaminants

FERTILIZERS

Within the community, intricate landscaping designs are commonplace. This landscaping provides an opportunity for surface irrigation and precipitation to percolate into the groundwater basins. (See Recharge Processes, 3.4) In order to help maintain the high quality of these landscapes, fertilizers are often utilized. While fertilizers can enhance the production of flora in the area, over-fertilization of grasses and landscaped areas can lead to unnatural concentrations of nitrates, phosphates and other detrimental chemicals accummulating in the groundwater basins. Since groundwater moves slowly, many years may pass before a pollutant released on the land surface is detected in the groundwater aquifers. This means that contamination from over-fertilization is often already widespread before it is detected. Given enough time, the accummulation of these harmful chemicals could lead to the aquifers becoming too polluted for safe use by the community. Although groundwater can be treated to remove chemical contaminants, it is often costly.

While it is understood that fertilization of soils and plants may be sometimes necessary, in order to help maintain the safe chemical composition of the aquifers, efforts should be made by both individuals and companies alike to ensure that over-fertilization and subsequent aquifer degradation does not occur.

The best protection against groundwater pollution from over-fertilization can be obtained by making a conscious effort to keep the use of fertilizers to an absolute minimum. This is known as utilizing Best Management Practices (BMP's). For more discussion of BMP'S, consult the District's latest Water Conservation Plan Annual Update, compiled for the Bureau of Reclamation, or the District's Urban Water Management Plan, created for the Department of Water Resources.

AGRICULTURE AND LIVESTOCK ACTIVITIES

Although agricultural or livestock production in the community is not widespread, in the areas that it does occur, the potential exists for groundwater contamination. Of most concern are nitrates. Nitrates have been responsible for shutting down more public water supply wells than any other contaminant (CGM, 97). Nitrates most commonly enter the groundwater from fertilizers, manure, septic systems and nitrate-laden wastewater percolating downward from holding ponds. Nitrate is very soluble in water and is not readily absorbed by soil, allowing it to be very mobile in the subsurface environment (CGM,97). Excess nitrates in groundwater used for drinking water are a health concern because they can lead to almost immediate harmful effects on humans with little exposure. Although fertilizers applied to crops and livestock constitute the biggest source of nitrates to the environment, agricultural chemical purveyors and septic systems also contribute nitrates to the environment (CGM, 97).

Fecal material associated with livestock and domestic animals can pollute the aquifers if the number of animals in a given area proves to produce more waste than the groundwater aquifer can safely filter. In addition, pesticides and fertilizers associated with agricultural and citrus production can contaminate the basins if chemicals are used irresponsibly and chronically.

SEWERAGE SYSTEMS

Within the Montecito and Summerland communities, some households and organizations discharge their domestic wastes through septic tanks. Septic tanks provide a method of sewage disposal when sewer hook-ups are not available, as well as being inexpensive to install and maintain. However, resulting environmental costs can be serious on groundwater aquifers if groundwater levels are high, or if the septic systems are placed too close to bodies of water.

Figure 3.10.1 demonstrates how the placement of a septic tank system in a soil with low permeability can result in contaminated groundwater flow down-gradient above the aquaclude to an otherwise clean production well, thereby polluting the produced water. Figure 3.10.2 shows how a newly constructed well with a high production rate can create a cone of depression large enough to reverse the groundwater gradient, subsequently contaminating previously clean well water.

Figure 3.10.1: Septic Tank System Pollution Pathways (I)

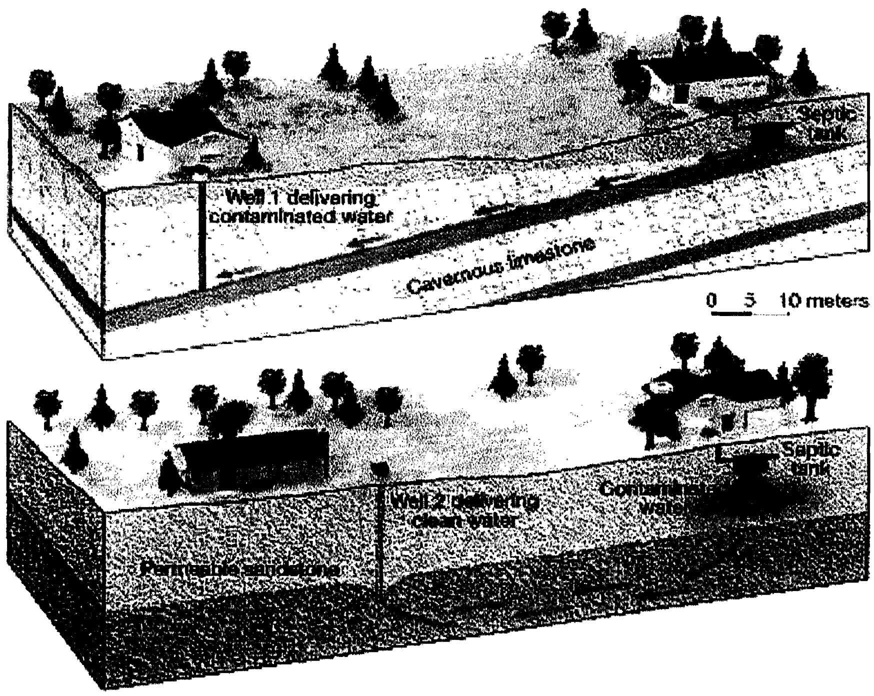
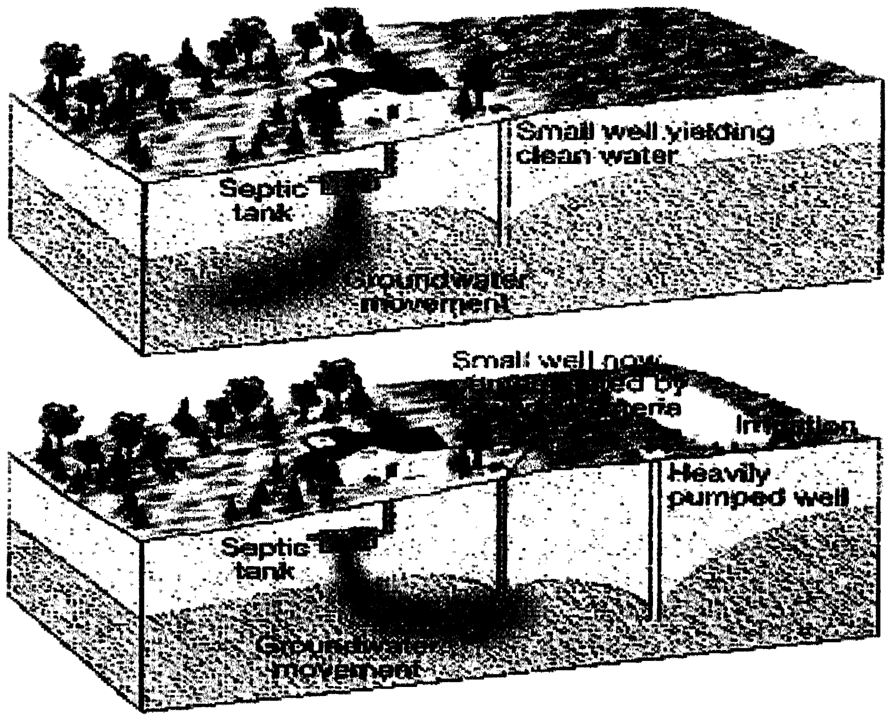
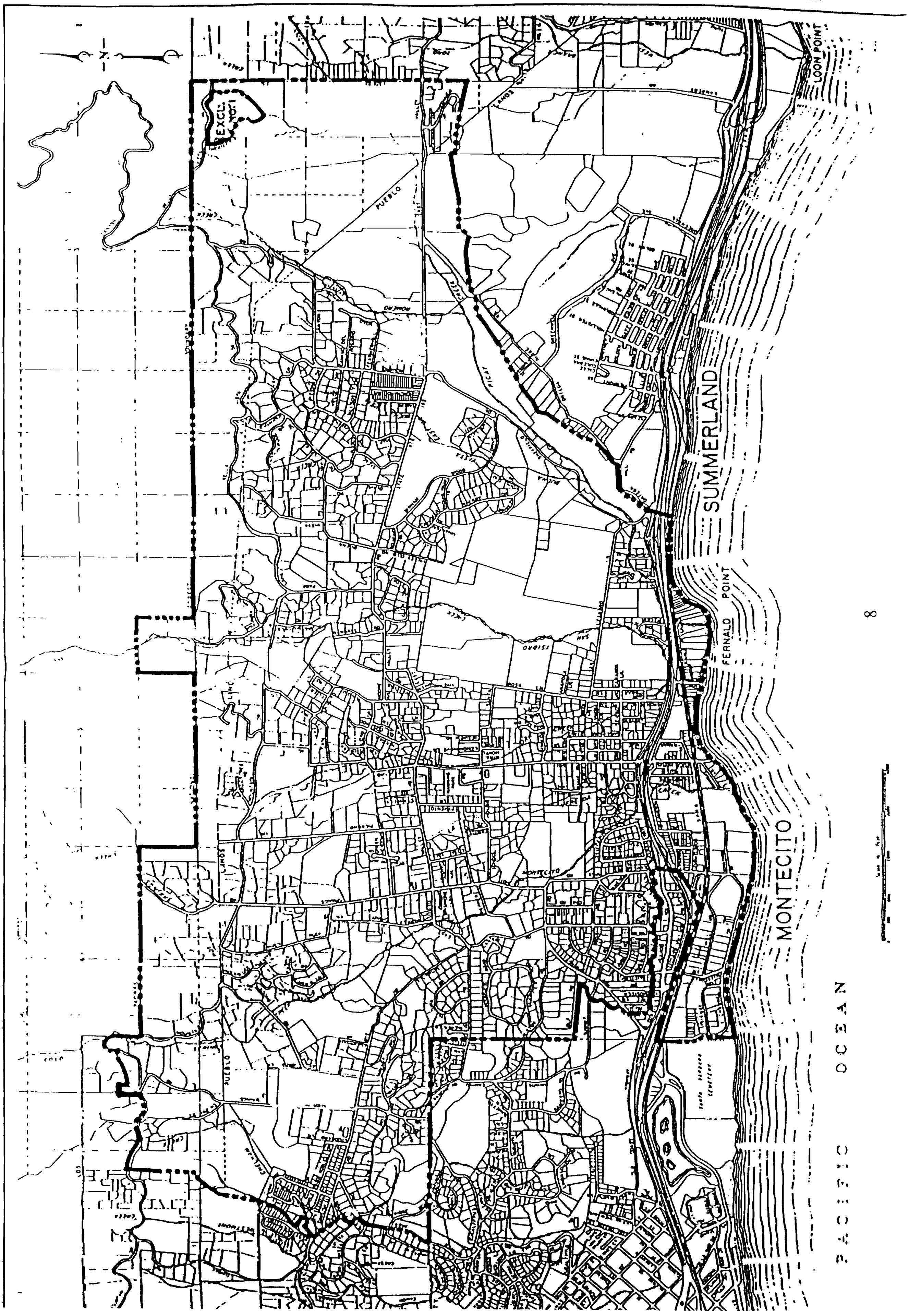


Figure 3.10.2: Septic System Pollution Pathways (II)



To minimize the threat of groundwater pollution from septic systems, a change from septic systems to sewer lines would be beneficial. Where sewer hook-ups are not feasible, it is critical that existing and future septic systems be located in areas that will minimize the threat of groundwater pollution. In addition, if septic systems are to be used, it is essential that the tanks are of proper sizing, and location, and that frequent inspection and maintenance of septic tanks and accompanying drainfields occur. Septic tanks and leach fields will continue to be a source of nitrate contamination as long as most rural areas are not required to provide off-site secondary or tertiary sewage treatment. The District is comprised of individual septic systems and the sewer hook-ups provided by the Montecito and Summerland Sanitary Districts. Map 3.10.1 describes the service boundaries of the Montecito Sanitary District. All areas outside the service boundary of the sanitary districts have either dry wells or leach fields for sewage disposal. The number of properties with private septic systems in the community is substantial. Construction of septic systems is under the jurisdiction of the Santa Barbara County Department of Environmental Health. The Health Department only oversees construction and does not oversee operation unless there is a reported health threat. Adding areas outside the current service boundaries of the Montecito and Summerland Sanitary Districts requires annexation of the properties and installation of new sewer mains and laterals. Additionally, costs associated with annexation and infrastructure improvements are high.

Map 3.10.1: Service Boundaries of the Montecito Sanitary District



UNDERGROUND STORAGE TANKS

In the community, there are a handful of service stations and similar sites that have underground oil and/or gas tanks. The District previously had underground gas and diesel tanks. Over time, it is possible for the tanks to degrade and subsequently leak hazardous materials into the groundwater aquifers. Extensive contamination has resulted from tanks and other subsurface facilities used by industry and the government (CGM, 97). Because of the highly toxic nature of these contaminants, the potential exists for major aquifer contamination to result from small amounts of leakage. By frequently monitoring the integrity of the underground tanks and by replacing those that are leaking or have the potential for leaking, potential contamination from underground storage tanks can be averted.

Currently, besides storage tanks associated with gas stations, there are several contaminated sites in the Montecito area. These contaminated areas are all outside the sphere of influence of existing groundwater wells and subject to ongoing clean up. These clean up sites are under the jurisdiction of the Santa Barbara County Fire Department. Previously, the clean-up programs were directly under the Santa Barbara County Department of Environmental Health.

SEAWATER INTRUSION

Being situated on a narrow coastal plain, a concern of those who produce groundwater from the basins found within the Montecito Water District is seawater intrusion. Specifically, well users in Storage Unit Number Three need to be most concerned. As mentioned earlier, groundwater flows along a north-south gradient towards the ocean. As long as this flow gradient remains directed out to sea, seawater intrusion is not likely. However, if the gradient approaches zero, or possibly reverses, seawater has the potential to flow into the groundwater basins, causing severe and long-lasting detrimental effects to the quality and quantity of available groundwater. Analysis has shown that during times of drought and associated substantial groundwater withdrawals, water levels south of the Arroyo Parida Fault have been depressed (GTC, 73).

Investigations have indicated that the offshore Rincon Thrust Fault is an effective barrier to seawater intrusion into the deeper water-bearing zones (GTC, 73). Conversely, shallow, actively pumped sediments in Unit Three are in direct hydraulic continuity with the ocean (Slade, 87). Although wells in this unit have historically displayed relatively high (TDS) concentrations (700-900 mg/1), the majority of wells in Storage Unit Number Three provide groundwater of acceptable quality for domestic use (Slade, 87).

Using electric logs, general water quality has been shown to decrease at irregular depths and locations along the coastline (Slade, 91). Some wells in Storage Unit Number Three very near the coast have, upon occasion, yielded groundwater samples containing chloride concentrations as high as 1000 to 2000 mg/l (Slade, 91). These concentrations exceed the State limit for chloride in drinking water of 250 mg/l. Although no wells in the unit have the long-term quality records to definitely confirm if seawater intrusion has occurred, the Murphy Park Well in the eastern portion of the City of Santa Barbara, (4N/27W-24D2, 473 feet deep) has shown a continuous increase in chloride concentrations from 78 mg/l to 1100 mg/l over a twenty-five year period (Slade, 87). The highest chloride concentrations have been recorded when water levels south of the Arroyo

Parida Fault were generally depressed to at or below sea level due to drought conditions and increased pumping demands (Slade, 91). It is unclear whether the increases in chloride concentrations were an effect of seawater intrusion, or the result of an inadequate cement seal that could possibly allow shallow brackish water into the casing (Slade, 91).

None of the above examples of elevated TDS and chloride concentrations are high enough to prove that substantial seawater intrusion and resulting aquifer degradation has occurred (GTC, 73). They only indicate that there exists a narrow zone along the coast into which there has been some horizontal migration of seawater. This observed migration has occurred simultaneously with increased pumping from the basin and associated depressed water levels. Additionally, it is possible for seawater to migrate vertically between aquifers. Improperly constructed wells or wells that have deteriorated with time can permit seepage of saline water into aquifers of fresh water, thereby contaminating the fresh water source(s).

Given the intrinsic characteristics of Storage Unit Three, there is, and always will be, a delicate balance between useable groundwater and unsafe seawater. It is only through the careful monitoring of groundwater chemical properties and well hydrographs that steps can be taken to guarantee that seawater intrusion does not occur. In order to ensure the long-term health and viability of the groundwater storage basin, it is critical to maintain a positive seaward groundwater gradient to the ocean, although it is noted that that will create a small loss of fresh water discharging into the ocean.

NATURAL CONTAMINANTS

As water percolates through the soil, it picks up naturally occurring minerals, salts and organic compounds. As the water continues to migrate downward, concentrations of the dissolved minerals and salts increase. This process, known as mineralization, can in some instances result in chemical concentrations high enough to degrade groundwater quality so that it can no longer be of beneficial use without treatment (CGM, 97).

Some of the more common natural contaminants include hydrogen sulfide, a decay product of organic materials; radon, a radioactive gas formed when uranium decays in rocks; and arsenic. Iron and manganese are often found in high concentrations. Together they constitute the most common impurities in California drinking water that may exceed secondary drinking water standards (CGM, 97).

3.11 FUTURE GROUNDWATER DEMANDS

The most effective way of obtaining maximum beneficial use of water from all sources is by employing a conjunctive use water management approach. This entails relying primarily on water from surface reservoirs during periods of adequate rainfall and conserving water in the groundwater basins as a natural underground reservoir for use during prolonged dry periods. Due to the current period of more than adequate rainfall, the District, in accordance with the District's conjunctive use program, has relied primarily on surface water supplies to meet demand. Future groundwater supply projections are complicated because the District does not control the basins, nor does the District have the authority to limit the present production from, or future drilling of private wells. Further, although District wells are equipped with production meters, private wells generally are not. It is assumed that future water needs not met by the District will be served by private wells in the basins. The adoption and implementation of the community's groundwater management program will enable the community to strive to better understand the factors affecting groundwater supply and quality. The insight and knowledge gained from the program will aid in increasing the ability to make accurate long and short-term groundwater demand estimates.

Since 1992, new water service connections have increased approximately 1% per year (DWR, 95). Following the suspension of the water shortage emergency in April 1992, and the water moratorium in April 1993, water demand has slowly increased from District-imposed water allocation levels at an annual rate of 7%.

It should be observed that the annual reliance upon groundwater in the near future is expected to be substantially below the District's safe allocation of 700 acre feet, assuming that other sources of water remain constant. As noted earlier, if a prolonged drought were to occur, the District would increase production from the groundwater aquifers to meet customer demand. It is the position of the District that a basin is over-committed when the total potential demand of all active wells, including those of the District, has exceeded the annual safe yield. The basins will be in a state of overdraft when the potential demand becomes the actual demand and when the amount of water being extracted from the basin is greater than the annual safe yield on a sustained basis.

3.12 WATER CONSERVATION PROGRAMS

Montecito Water District's water conservation measures and programs are an essential element in the District's operations. The District has been active in devising and implementing various types of water conservation programs. A detailed description of the programs currently in use by the District can be found in the District's latest Water Conservation Plan Annual Update, compiled for the Bureau of Reclamation. In addition to these reports, the District's Urban Water Management Plan for the Department of Water Resources chronicles water conservation measures employed by the District.

SECTION IV: GROUNDWATER PLAN ELEMENTS

The following groundwater plan elements are as described in AB 3030. They can be applied to the groundwater basins found within the Montecito Water District where appropriate. As part of an effective groundwater basin management plan, the planning and implementation of projects that protect the quality and quantity of groundwater in storage to meet long-term demands must be included. The following are examples of methods that aid in the efficient management of groundwater resources.

4.1 BASIN WELLHEAD AND RECHARGE AREAS

The Federal Wellhead Protection Program was established by Section 1428 of the Safe Drinking Water Act Amendments of 1986. The purpose of the program is to protect groundwater sources of public drinking water supplies from contamination, thereby eliminating the need for costly treatment to meet drinking water standards. The program is based on the concept that the development and application of land-use controls (usually applied at the local level in California) and other preventative measures, can protect groundwater.

A Wellhead Protection Area (WHPA), as defined by the 1986 Amendments, is "the surface and subsurface area surrounding a water well or wellfield supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield. The WHPA may also be the recharge area that provides the water to a well or wellfield. Unlike surface watersheds that can be easily determined from topography, WHPAs can vary in size and shape depending on geology, pumping rates, and well construction. Several different methods can be used to delineate the lateral boundaries of a WHPA. These include simple fixed-radius techniques, analytical equations, numerical modeling, and geologic mapping. Under the Act, states are required to develop an EPA-approved Wellhead Protection Program. To date, California has no formal state-mandated program, but instead relies on local agencies to plan and implement programs. For this reason, AB 3030 was enacted. Wellhead Protection Programs are not regulatory by nature, nor do they address specific sources. They are designed to focus on the management of the resource rather than to control a limited set of activities or contamination sources.

4.2 WELL CONSTRUCTION PROCEDURES AND STANDARDS

Improperly constructed wells can result in poor water quantity and quality. More importantly, inferior well construction may result in aquifer contamination by establishing a pathway for pollutants to enter a well from drainage from the surface, allowing communication between aquifers of varying quality, or providing the opportunity for unauthorized waste disposal.

Well construction policies shall be established to ensure that well drillers comply with local ordinances and State law. A permit from the Santa Barbara County Department of Environmental Health is required for drilling, deepening, modifying, or repairing a well. Whoever performs the work must have an active C-57 Contractor's license. An inspection is required prior to the sealing of all wells. All wells drilled are recorded with the State and assigned a State number.
Sections 13700 through 13806 of the California Water Code require proper construction of wells. Minimum standards for the construction of wells are specified in Department of Water Resources

Bulletins 74-81 and 74-90. These standards apply to all water wells, cathodic protection wells, and monitoring wells. If a local regulatory agency does not have its own well standards ordinance, it must enforce the State's Model Well Ordinance (State Water Resources Control Board Resolution No. 89-98).

4.3 WELL ABANDONMENT AND DESTRUCTION PROCEDURES

All wells shall be properly destroyed or decommissioned if they are not to be used in the future. Wells that are abandoned or improperly destroyed can pollute groundwater to the point where it is unusable, or require expensive cleansing treatment. There are three general means by which this occurs:

- Pollutants enter the well from the surface.
- Wells establish vertical communication, allowing poor quality groundwater and pollutants to move from one aquifer to another.
- The well is used for illegal waste disposal.

Groundwater contamination is not the only threat to public health due to abandoned wells. Abandoned wells also pose a serious physical risk to especially children and household pets, as it is possible for the children and animals to fall down the unsealed wells. Proper destruction or decommissioning of the wells will ensure that this does not occur.

Property owners or lessees who do not properly destroy an abandoned well on their land may be guilty of a misdemeanor (Section 24400 of the Health and Safety Code). Wells do not have to be destroyed if future use is anticipated, but they must be properly capped and maintained, as specified in the code. Criminal penalties do not apply unless the well presents a public health hazard or a probable preferential pathway for the movement of pollutants, contaminants, or poor quality water. The owner can also be assessed clean-up costs if the well causes groundwater contamination.

Sections 13700 through 13806 of the California Water Code require proper destruction of wells. Minimum standards for the destruction of wells are specified in Department of Water Resources Bulletins 74-81 and 74-90. These standards apply to all water wells, cathodic protection wells, and monitoring wells. If a local agency does not have its own well standards ordinance, it must enforce the State's Model Well Ordinance (State Water Resources Control Board Resolution No. 89-98).

4.4 GROUNDWATER BASIN MONITORING

The purpose of a groundwater monitoring program is to provide minimum information-nation that will allow computation of the change in groundwater storage. Information-nation needed shall include spring and fail static groundwater levels, hydraulic properties of the aquifer(s) including the dynamic pumping level, pumping rate, and an estimate of the annual quantity of water pumped. An adequate monitoring well network includes wells that are representative of the vertical and lateral dimensions of the aquifer(s). Establishing the network of monitoring wells requires that each well be designed to tap individual aquifers in the basin.

Data collected from the monitoring well shall be entered into a computer database maintained by the District. This data will be used to create hydrographs, groundwater elevation contour maps, and groundwater change contour maps that will provide the tools to evaluate groundwater levels and determine changes (positive or negative) of the groundwater in storage. Other data collected shall be the size and depth of the well and the State ID Number. Each well and discharge piping shall be inspected by the owner to ensure that well construction and operating standards are in compliance.

4.5 MITIGATION OF BASIN OVERDRAFT

Uncontrolled overdraft, long-term depletion of storage, and prolonged mining of groundwater can cause several problems to aquifers. Surface subsidence, the degradation of groundwater quality, and increased pumping costs can all result from groundwater basin overdraft conditions. In addition, if groundwater basin storage is depleted and not replaced naturally, groundwater may not be a dependable resource when surface water sources are limited. Shallow wells in the basin have gone dry in the past, and therefore the potential of this occurring in the future exists. The development of a groundwater basin monitoring program will assist in keeping the groundwater basin from becoming in a condition of overdraft.

Mitigation of groundwater overdraft can occur through: 1) the termination or regulation of extractions and/or the increase of recharge to offset mining practices, 2) restrictions through strict regulations on the amount of water extracted, and 3) the use of financial incentives to control the amounts extracted. Significant surcharges on quantities extracted in excess of a prescribed limit could be imposed.

4.6 ACTIONS FOR CONTAMINATED GROUNDWATER

Groundwater contamination originates from several sources or activities. Effective control and clean-up of contaminated groundwater requires a coordinated effort between the community and all regulatory agencies involved, control of the pollution source(s), an understanding of the hydrogeology, and delineating the scope of the contamination.

Agencies with a role to play in mitigating groundwater contamination include the Santa Barbara County Department of Environmental Health, the Central Coast Regional Water Quality Control Board (based in San Luis Obispo), the State Water Resources Control Board, the Department of Toxic Substances Control, the U.S. Environmental Protection Agency. Each agency has a unique set of regulatory authorities and expertise to contribute. The degree to which they participate depends on the nature and magnitude of the problem.

Regarding the investigation of waste disposal or other pollution mechanisms that affect groundwater basins water quality, the Santa Barbara County Department of Environmental Health and the Central Coast Regional Water Quality Control Board will have active jurisdiction and enforcement powers. The Santa Barbara County Department of Environmental Health refers to the Central Coast Regional Water Quality Control Board's Water Quality Control Plan (1975) for the Central Coastal Basin of California. The District and other basin users would report groundwater basin problems to these agencies if a reported problem cannot be mitigated. In many cases, the Regional Water Quality Control Board conducts this activity. If, during the verification process, evidence of any uncontrolled discharge or spill of these materials is found, then the Regional Water Quality Control Board can order investigation into the extent of contamination and subsequent cleanup. These investigations are usually conducted on a site by site basis.

Controlling the migration of contamination requires an understanding of the hydrogeology of the basin and delineating the lateral and vertical extent of the contaminant plume(s). Technical information for many basins is available from a number of sources such as the United States Geological Survey (USGS) and the State Department of Water Resources (DWR). The most common tool for delineating the boundaries of a plume is by using monitoring wells. Monitoring wells can sample one aquifer or many, depending on the design and need. Monitoring wells can provide accurate information concerning the scope and intensity of the contamination.

Once the location of the contamination is verified, the contamination can be monitored, contained from moving further into clean aquifers, or removed from the aquifer. Contaminant containment is essential in attempting to stop downgradient aquifers and drinking water supplies from also being polluted. Containment also provides time to complete investigations and to develop a more comprehensive long-term treatment system while confining the scope of the pollution.

Complete removal of some contaminants, such as solvents and nitrates, is often difficult, if not impossible. The level of effort undertaken to deal with contamination depends on several factors. Available funds, risk to drinking water supplies and public health, the extent and concentration of contamination, the ability to use the groundwater that is removed and treated, and state and federally mandated clean-up levels all influence the scope of groundwater remediation.

4.7 OPTIMIZATION THROUGH CONJUNCTIVE USE

Conjunctive operation of a groundwater basin is defined in DWR Bulletin 118-80 as:
"Operation of a groundwater basin in coordination with a surface water reservoir system. The basin is intentionally recharged in years of above-average precipitation, so groundwater can be extracted in years of below-average precipitation when surface water supplies are below normal."

A conjunctive use program can vary from a limited program to a comprehensive, intensively managed program that coordinates surface water use and delivery, and groundwater use and extraction. A limited program makes use of surplus surface water only when it happens to be available, whereas the comprehensive program includes contractual commitments to purchase surface water for recharge, metered extraction, and control of points and amounts of extraction to minimize pump lift and minimize or correct groundwater quality problems. Many programs may fall between the two extremes.

In general, conjunctive operations promise to be less costly than traditional surface water projects, increase the efficiency of water supply systems and cause fewer negative environmental impacts than do new surface water reservoirs. Understanding this, the Montecito Water District utilizes a conjunctive use program.

4.8 LAND USE POLICIES AND PLANNING

An important component of developing a groundwater management plan is the review of land use plans for the surrounding area or basin, and coordinating efforts with regional, sub-regional, and local land use planning agencies. In California, the majority of land use decisions are made by city and county governmental agencies. Land activities and how they are managed can affect both groundwater quality and quantity. The threat that a certain land use may pose to a groundwater resource is a function of the groundwater aquifer properties, management practices associated with the individual land use, and actual use of surrounding land (cumulative impact of all activities). As an example, hydrologic conditions may dictate that, in certain areas, the aquifers more vulnerable to pollution. This may be due to the permeability of the underlying aquisoils and/or a shallower depth to the water table. To assure protection of groundwater quality in the basin, this type of information may be taken into consideration when making land use decisions regarding zoning.

Examples of common land uses with a potential to adversely impact groundwater supplies include large-scale residential development and industrial development without proper control measures or management practices. Cumulative impacts to a basin and relative land development density should also be evaluated.

An essential aspect of groundwater management is maintaining quantity or supply. Land use planning decisions that lead to covering large portions of land with impervious surfaces can increase storm water runoff. This can lead to excessive down cutting and erosion in stream channels and flooding in the lower part of the watershed. Additionally, the amount of natural recharge to the groundwater basin can be significantly reduced. Land use decisions such as maintaining green space in areas of high recharge and encouraging the use of permeable surface materials will have a net benefit to the groundwater basin.

The Montecito Community Plan, developed in 1992 by the County of Santa Barbara, serves as a long term planning tool for the Montecito Community. This Plan details standards, goals, policy and management strategies for current and future land use within the community. By referencing The Montecito Community Plan, in conjunction with the Districts' Groundwater Management Plan, effective protection and management of the groundwater resource can be sustained.

The District shall, as lead agency, continue its role in reviewing land use proposals and identifying concerns for the County Planning Agency. In the event further action is needed, the District will notify and request participation from other basin users.

4.9 ROLE OF LOCAL, STATE AND FEDERAL AGENCIES

The formation of a groundwater management district involves the development of relationships and communication strategies with a variety of local, state and federal regulatory agencies. Working effectively with each of these agencies requires the local groundwater management district to understand the role of these players in regulating and managing groundwater resources. Groundwater planning, as defined in AB 3030, is a state-led activity. The State Water Resources Control Board (State Water Board), as the lead State water agency responsible for maintaining water quality standards, provides the framework and direction for California's groundwater protection efforts. Through the Regional Water Quality Control Boards, the State Water Board initiates statewide planning and protection programs.

National policy direction and consistency in groundwater protection efforts are provided by the Environmental Protection Agency (EPA). The EPA provides national guidance in state-led comprehensive groundwater protection plans, and a portion of the resources needed to carry out those planning efforts. While states are provided the flexibility to design programs that make sense on a regional and local basis, EPA guidelines ensure that all groundwater protection plans and programs are preventive in nature, comprehensive in scope and consistent in maintaining a high level of protection across the nation.

A comprehensive list of all levels of governmental agencies concerned or affiliated with groundwater, in addition to appropriate points of contact, can be found in Appendix 8.2.

SECTION V: GUIDELINES FOR MANAGEMENT

5.1 GROUNDWATER MANAGEMENT PROGRAM

The initiation and subsequent utilization of a comprehensive groundwater management program is essential to providing water of the highest quality and quantity for all concerned interests of the Montecito and Summerland communities. It is in the best interests of all concerned members of the community to enact such a program to obtain the maximum potential from the groundwater basin resources found within the Montecito Water District. In addition, the State encourages the creation of a comprehensive monitoring and action plan to be developed by the designated lead agencies as defined in AB 3030. Understanding this, the District and basin users will construct a comprehensive groundwater management program that, when used in conjunction with this groundwater management plan, will provide the mechanism for ensuring the long-term health and viability of the groundwater aquifers. The Ground Water Management Program will be ordered and enacted if monitoring and a cooperative effort by all basin users is unable to prevent over-commitment and or water quality degradation of basin supplies. Existing regulatory agencies have sufficient oversight and authority to correct or cause to correct individual well deficiencies. It is the intent of the basin users and the District to act as an advisory organization under the Ground Water Management Plan and to take further action as a collective in initiating restrictions or corrective actions that solve developing or reported problems with the groundwater basin.

The Groundwater Management Program, when enacted, will produce an annual report that summarizes the state of the aquifer and any changes that might have occurred since the last report. These reports will greatly enhance the ability of the Montecito Water District, local and regional policy makers, and other concerned interests to make educated decisions on projects or plans that might have the potential for affecting the health of the groundwater basins.

SECTION VI: FEES AND ASSESSMENTS

With the adoption of AB 3030, Sections 10754-10754.3 of the Water Code authorize the District as lead agency and with the approval of basin users to collect fees and assessments for groundwater management. In order for the District to collect said fees and assessments for the replenishment of extraction of groundwater, the District must hold an election to determine if the District shall be authorized to levy a groundwater management assessment or collect fees for the replenishment or extraction of groundwater. No fees or assessments are being considered under the groundwater monitoring plan.

SECTION VII: MANAGEMENT PLAN AMENDMENT PROCEDURES

For the purposes of amending the groundwater monitoring plan, should this occur, the following action shall be required. An initial proposal will be made to the District Board of Directors, by District staff or community members, whereupon the proposal will be made available to all concerned interests for review and comment. If no majority for amendment rejection occurs, the Board of Directors may approve the amendment at a public meeting. If at some time an amendment is proposed that would affect another agency or interest outside the District, the said party will have an opportunity for comment and evaluation of the amendment. Specifically, this would entail contacting the Carpinteria Valley Water District concerning any amendment proposals affecting the Toro Canyon area, or the City of Santa Barbara concerning any amendment proposals affecting the District - City boundary area.

SECTION VIII: APPENDIXES

8.1 ASSEMBLY BILL 3030

CHAPTER	947
FILED WITH SECRETARY OF STATE	SEPTEMBER 28, 1992
APPROVED BY GOVERNOR	SEPTEMBER 26, 1992
PASSED THE ASSEMBLY	AUGUST 27, 1992
PASSED THE SENATE	AUGUST 25, 1992
AMENDED IN SENATE	AUGUST 21, 1992
AMENDED IN SENATE	AUGUST 14, 1992
AMENDED IN SENATE	AUGUST 11, 1992
AMENDED IN SENATE	JUNE 26, 1992
AMENDED IN SENATE	JUNE 15, 1992
AMENDED IN ASSEMBLY	MAY 12, 1992
AMENDED IN ASSEMBLY	APRIL 20, 1992

INTRODUCED BY Assembly Member Costa

FEBRUARY 19, 1992

An act to repeal and add Part 2.75 (commencing with Section 10750) of Division 6 of the Water Code, relating to water.

LEGISLATIVE COUNSEL'S DIGEST

AB 3030, Costa. Groundwater management.

(1) Existing law authorizes prescribed local agencies to establish, by ordinance, or by resolution if not authorized to act by ordinance, programs for the management of groundwater in accordance with prescribed procedures.

This bill would repeal those provisions. The bill would authorize a local agency that provides water service, or a prescribed local public agency under certain conditions, whose service area includes a groundwater basin or a portion of a groundwater basin, that is not subject to groundwater management, to adopt and implement, by ordinance, or by resolution if the local agency is not authorized to act by ordinance, a groundwater management plan, in accordance with specified procedures. The bill would require a local agency that has adopted a resolution of intention to adopt a groundwater management plan to prepare the plan within 2 years, as prescribed. The bill would authorize a local agency that adopts a groundwater management plan to impose, with certain exceptions, fees and assessments for the purpose of groundwater management. The bill would make a legislative finding relating to groundwater. The bill would define terms.

(2) This bill would require the Department of Water Resources, by January 1, 1998, to prepare and publish in a department bulletin a report on the status of groundwater management plans adopted and implemented pursuant to the bill.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Part 2.75 (commencing with Section 10750) of Division 6 of the Water Code is repealed.

SEC. 2. Part 2.75 (commencing with Section 10750) is added to Division 6 of the Water Code, to read:

PART 2.75. GROUNDWATER MANAGEMENT

CHAPTER 1. GENERAL PROVISIONS

10750. The Legislature finds and declares that groundwater is a valuable natural resource in California, and should be managed to ensure both its safe production and its quality. It is the intent of the Legislature to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions.

10750.2. (a) Subject to subdivision (b), this part applies to all groundwater basins in the state.

(b) This part does not apply to any portion of a groundwater basin that is subject to groundwater management by a local agency or a watermaster pursuant to other provisions of law or a court order, judgment, or decree, unless the local agency or watermaster agrees to the application of this part.

10750.4. Nothing in this part requires a local agency overlying a groundwater basin to adopt or implement a groundwater management plan or groundwater management program pursuant to this part.

10750.6. Nothing in this part affects the authority of a local agency or a watermaster to manage groundwater pursuant to other provisions of law or a court order, judgment, or decree.

10750.7. (a) A local agency may not manage groundwater pursuant to this part within the service area of another local agency, a water corporation regulated by the Public Utilities Commission, or a mutual water company without the agreement of that other entity.

(b) This section applies only to groundwater basins that are not critically overdrafted.

10750.8. (a) A local agency may not manage groundwater pursuant to this part within the service area of another local agency without the agreement of that other entity.

(b) This section applies only to groundwater basins that are critically overdrafted.

10750.9. A local agency that commences procedures, prior to January 1, 1993, to adopt an ordinance or resolution to establish a program for the management of groundwater pursuant to Part 2.75 (commencing with Section 10750), as added by Chapter 903 of the Statutes of 1991, may proceed to adopt the ordinance or resolution pursuant to that Part 2.75, and the completion of those procedures is deemed to meet the requirements of this part.

10750.10. This part is in addition to, and not a limitation on, the authority granted to a local agency pursuant to other provisions of law.

CHAPTER 2. DEFINITIONS

10752. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Groundwater" means all water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water which flows in known and definite channels.

(b) "Groundwater basin" means any basin identified in the department's Bulletin No. 118, dated September 1975, and any amendments to that bulletin, but does not include a basin in which the average well yield is less than 100 gallons per minute.

(c) "Groundwater extraction facility" means any device or method for the extraction of groundwater within a groundwater basin.

(d) "Groundwater management plan" or "plan" means a document that describes the activities intended to be included in a groundwater management program.

(e) "Groundwater management program" or "program" means a coordinated and ongoing activity undertaken for the benefit of a groundwater basin, or a portion of a groundwater basin, pursuant to a groundwater management plan adopted pursuant to this part.

(f) "Groundwater recharge" means the augmentation of groundwater, by natural or artificial means, with surface water or recycled water.

(g) "Local agency" means any local public agency that provides water service to all or a portion of its service area.

(h) "Recharge area" means the area that supplies water to an aquifer in a groundwater basin and includes multiple wellhead protection areas.

(i) "Watermaster" means a watermaster appointed by a court or pursuant to other provisions of law.

(j) "Wellhead protection area" means the surface and subsurface area surrounding a water well or well field that supplies a public water system through which contaminants are reasonably likely to migrate toward the water well or well field.

CHAPTER 3. GROUNDWATER MANAGEMENT PLANS

10753. (a) Any local agency, whose service area includes a groundwater basin, or a portion of a groundwater basin, that is not subject to groundwater management pursuant to other provisions of law or a court order, judgment, or decree, may, by ordinance, or by resolution if the local agency is not authorized to act by ordinance, adopt and implement a groundwater management plan pursuant to this part within all or a portion of its service area.

(b) Notwithstanding subdivision (a), a local public agency, other than an agency defined in subdivision (g) of Section 10752, may exercise the authority of this part within a groundwater basin if both of the following requirements are met:

(1) Water service is not provided by a local agency.

(2) The local public agency provides flood control, groundwater quality management, or groundwater replenishment.

10753.2. (a) Prior to adopting a resolution of intention to draft a groundwater management plan, a local agency shall hold a hearing, after publication of notice pursuant to Section 6066 of the Government Code, on whether or not to adopt a resolution of intention to draft a groundwater management plan pursuant to this part for the purposes of implementing the plan and establishing a groundwater management program.

(b) At the conclusion of the hearing, the local agency may draft a resolution of intention to adopt a groundwater management plan pursuant to this part for the purposes of implementing the plan and establishing a groundwater management program.

10753.3. (a) After the conclusion of the hearing, and if the local agency adopts a resolution of intention, the local agency shall publish the resolution of intention in the same manner that notice for the hearing held under Section 10753.2 was published.

(b) Upon written request, the local agency shall provide any interested person with a copy of the resolution of intention.

10753.4. The local agency shall prepare a groundwater management plan within two years of the date of the adoption of the resolution of intention. If the plan is not adopted within two years, the resolution of intention expires, and no plan may be adopted except pursuant to a new resolution of intention adopted in accordance with this chapter.

10753.5. (a) After a groundwater management plan is prepared, the local agency shall hold a second hearing to determine whether to adopt the plan. Notice of the hearing shall be given pursuant to Section 6066 of the Government Code. The notice shall include a summary of the plan and shall state that copies of the plan may be obtained for the cost of reproduction at the office of the local agency.

(b) At the second hearing, the local agency shall consider protests to the adoption of the plan. At any time prior to the conclusion of the second hearing, any landowner within the local agency may file a written protest or withdraw a protest previously filed.

10753.6. (a) A written protest filed by a landowner shall include the landowner's signature and a description of the land owned sufficient to identify the land. A public agency owning land is deemed to be a landowner for the purpose of making a written protest.

(b) The secretary of the local agency shall compare the names and property descriptions on the protest against the property ownership records of the county assessors.

(c) (1) A majority protest shall be determined to exist if the governing board of the local agency finds that the protests filed and not withdrawn prior to the conclusion of the second hearing represent more than 50 percent of the assessed value of the land within the local agency subject to groundwater management pursuant to this part.

(2) If the local agency determines that a majority protest exists, the groundwater plan may not be adopted and the local agency shall not consider adopting a plan for the area proposed to be included within the program for a period of one year after the date of the second hearing.

(3) If a majority protest has not been filed, the local agency, within 35 days after the conclusion of the second hearing, may adopt the groundwater management plan.

10753.7. A groundwater management plan may include components relating to all of the following:

(a) The control of saline water intrusion.

(b) Identification and management of wellhead protection areas and recharge areas.

(c) Regulation of the migration of contaminated groundwater.

(d) The administration of a well abandonment and well destruction program.

(e) Mitigation of conditions of overdraft.

(f) Replenishment of groundwater extracted by water producers.

(g) Monitoring of groundwater levels and storage.

(h) Facilitating conjunctive use operations.

(i) Identification of well construction policies.

(j) The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.

(k) The development of relationships with state and federal regulatory agencies.

(l) The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

10753.8. (a) A local agency shall adopt rules and regulations to implement and enforce a groundwater management plan adopted pursuant to this part.

(b) Nothing in this part shall be construed as authorizing the local agency to make a binding determination of the water rights of any person or entity.

(c) Nothing in this part shall be construed as authorizing the local agency to limit or suspend extractions unless the local agency has determined through study and investigation that groundwater replenishment programs or other alternative sources of water supply have proved insufficient or infeasible to lessen the demand for groundwater.

10753.9. In adopting rules and regulations pursuant to Section 10753.8, the local agency shall consider the potential impact of those rules and regulations on business activities, including agricultural operations, and to the extent practicable and consistent with the protection of the groundwater resources, minimize any adverse impacts on those business activities.

CHAPTER 4. FINANCES

10754. For purposes of groundwater management, a local agency that adopts a groundwater management plan pursuant to this part has the authority of a water replenishment district pursuant to Part 4 (commencing with Section 60220) of Division 18 and may fix and collect fees and assessments for groundwater management in accordance with Part 6 (commencing with Section 60300) of Division 18.

10754.2. (a) Subject to Section 10754.3, except as specified in subdivision (b), a local agency that adopts a groundwater management plan pursuant to this part, may impose equitable annual fees and assessments for groundwater management based on the amount of groundwater extracted from the groundwater basin within the area included in the groundwater management plan to pay for costs incurred by the local agency for groundwater management, including, but not limited to, the costs associated with the acquisition of replenishment water, administrative and operating costs, and costs of construction of capital facilities necessary to implement the groundwater management plan.

(b) The local agency may not impose fees or assessments on the extraction and replacement of groundwater pursuant to a groundwater remediation program required by other provisions of law.

10754.3. Before a local agency may levy a water management assessment pursuant to Section 10754.2 or otherwise fix and collect fees for the replenishment or extraction of groundwater pursuant to this part, the local agency shall hold an election on the proposition of whether or not the local agency shall be authorized to levy a groundwater management assessment or fix and collect fees for the replenishment or extraction of groundwater. The local agency shall be so authorized if a majority of the votes cast at the election is in favor of the proposition. The election shall be conducted in the manner prescribed by the laws applicable to the local agency or, if there are no laws so applicable, then as prescribed by laws relating to local elections. The election shall be conducted only within the portion of the jurisdiction of the local agency subject to groundwater management pursuant to this part.

CHAPTER 5. MISCELLANEOUS

10755. (a) If a local agency annexes land subject to a groundwater management plan adopted pursuant to this part, the local agency annexing the land shall comply with the groundwater management plan for the annexed property.

(b) If a local agency subject to a groundwater management plan adopted pursuant to this part annexes land not subject to a groundwater management plan adopted pursuant to this part at the time of annexation, the annexed territory shall be subject to the groundwater management plan of the local agency annexing the land.

10755.2. (a) It is the intent of the Legislature to encourage local agencies, within the same groundwater basin, that are authorized to adopt groundwater management plans pursuant to this part, to adopt and implement a coordinated groundwater management plan.

(b) For the purpose of adopting and implementing a coordinated groundwater management program pursuant to this part, a local agency may enter into a joint powers agreement pursuant to Chapter 5 (commencing with Section 6500) of Division 7 of Title 1 of the Government Code with public agencies, or a memorandum of understanding with public or private entities providing water service.

(c) A local agency may enter into agreements with private parties for the purpose of implementing a coordinated groundwater management plan.

10755.3. Local agencies within the same groundwater basin that conduct groundwater management programs within that basin pursuant to this part shall, at least annually, meet to coordinate those programs.

10755.4. Except in those groundwater basins that are subject to critical conditions of groundwater overdraft, as identified in the department's Bulletin 118-80, revised on December 24, 1982, the requirements of a groundwater management plan that is implemented pursuant to this part do not apply to the extraction of groundwater by means of a groundwater extraction facility that is used to provide water for domestic purposes to a single-unit residence and, if applicable, any dwelling unit authorized to be constructed pursuant to Section 65852.1 or 65852.2 of the Government Code.

SEC. 3. The Department of Water Resources shall, on or before January 1, 1998, prepare and publish, in a bulletin of the department published pursuant to Section 130 of the Water Code, a report on the status of groundwater management plans adopted and implemented pursuant to Part 2.75 (commencing with Section 10750) of Division 6 of the Water Code.

8.2 GOVERNMENT CONTACTS

1. Santa Barbara County Water Agency
   123 E. Anapamu, Santa Barbara, 93105
   Robert Almy, (805) 568-3542.

2. Santa Barbara County Fire Department
   Underground Storage Tank Contaminant Clean-up
   195 N. Hwy 246, #102, Buellton, 93427
   Kate Sulka, (805) 686-8169.

3. Santa Barbara County Health Care Services
   225 Camino del Remedio, Santa Barbara, 93110.
   Daniel Reid, (805) 681-4900.

4. Santa Barbara County Department of Planning & Development
   123 E. Anapamu, Santa Barbara, 93105.
   Greg Mohr, (805) 568-2080.

5. Santa Barbara County Department of Environmental Health
   225 Camido del Remedio, Santa Barbara, 93110
   Norman Fujimoto, (805) 681-4900.

6. Montecito Sanitary District
   1042 Monte Cristo Lane, Montecito, 93108
   Ed Hallenbeck, (805) 969-4200.

7. Carpintenia Valley Water District
   PO Box 578, Carpinteria, 93014
   Norm Cota, (805) 684-2816.

8. California Coastal Commission
   89 South CA Street, Suite 200, Ventura, 93001
   Mark Capelli, (805) 641-0142.

9. United States Geological Survey
   Water Resources Division
   Place Hall, 6000 J Street, Sacramento, 95819
   Walt Swain. (916) 278-3000.

10. California Fish & Game
    530 E. Montecito, Room 104, Santa Barbara, 93103.
    Maurice Cardenas, (805) 568-1223.

11. Regional Water Quality Control Board - Central Coast Region
    81 Higuera Street, San Luis Obispo, 93401
    Roger Briggs, (805) 549-3147.

12. State Health Services
Division of Drinking Water
530 E. Montecito, Suite 102, Santa Barbara, 93103
John Curphey, (805) 963-8616.

13. State Water Resources Control Board
1416 9th Street, Sacramento, 95814-5515
Ken Harris, (916) 657-0876.

8.3 GLOSSARY OF TERMS USED IN PLAN

ACRE FOOT - The quantity of water to cover one area to a depth of one foot; equal to 43,560 cubic feet, or 325,851 gallons.

APPLIED WATER DEMAND - The water that would be delivered for urban or agricultural applications if no conservation measures were in place.

ARTIFICIAL RECHARGE - The addition of water to a ground water reservoir by human activity, such as irrigation or induced infiltration from streams, wells, or recharge basins. See also GROUND WATER RECHARGE, RECHARGE BASIN.

BRACKISH WATER - Water containing dissolved minerals in amounts that exceed normally acceptable standards for municipal, domestic, and irrigation uses.

CONJUNCTIVE USE - The operation of a groundwater basin in coordination with a surface water storage and conveyance system. The purpose is to recharge the basin during years of above-average water supply to provide storage that can be withdrawn during drier years when surface water supplies are below normal.

CONSERVATION - As used in this report, urban water conservation includes reductions realized from voluntary, more efficient, water use practices promoted through public education and from State-mandated requirements to install water-conserving fixtures in newly constructed and renovated buildings. Agricultural water conservation, as used in this report, means reducing the amount of water applied in irrigation through measures that increase irrigation efficiency. See NET WATER CONSERVATION.

CRITICAL DRY PERIOD - A series of water-deficient years, usually an historical period, in which a full reservoir storage system at the beginning is drawn down (without any spill) to minimum storage at the end.

CRITICAL DRY YEAR - A dry year in which full commitments for a dependable water supply cannot be met and deficiencies are imposed on water deliveries.

DESALTING - A process that converts seawater or brackish water to fresh water or an otherwise more usable condition through removal of dissolved solids. Also called "desalination".

FIRM YIELD - The maximum annual supply of a given water development that is expected to be available on demand, with the understanding that lower yields will occur in accordance with a predetermined schedule or probability.

GROUNDWATER - Water that occurs beneath the land surface and completely fills all pore spaces of the alluvium or rock formation in which it is located.

GROUNDWATER BASIN - A groundwater reservoir, together with all the overlying and underlying aquifers that contribute water to the reservoir.

GROUNDWATER MINING - The withdrawal of water from an aquifer greatly in excess of replenishment; if continued, the underground supply will eventually be exhausted or the water table will drop below economically feasible pumping lifts.

GROUNDWATER OVERDRAFT - The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that replenishes the basin over a period of years.

GROUNDWATER RECHARGE - Increases in groundwater by natural conditions or by human activity. See also ARTIFICIAL RECHARGE.

GROUNDWATER STORAGE CAPACITY - The space contained in a given volume of soil deposits. Under optimum use conditions, the usable groundwater storage capacity is the volume of water that can, within specified economic limitations, be alternately extracted and replaced in the reservoir.

GROUNDWATER TABLE -The surface between the zone of saturation and the zone of aeration or the level at which the hydraulic pressure of a body of unconfined groundwater is equal to atmospheric pressure. No water table exists if the upper surface of the zone of saturation is in contact with an overlying confining layer.

HARDNESS - The content of metallic ions which react with sodium soaps to produce solid soaps or scummy residue and which react with negative ions. Hardness is normally expressed as the total concentration of Ca2+ and Mg2+ as milligrams per liter equivalent to CaCO3.

HYDRAULIC CONDUCTIVITY - the degree of permeability of a porous or water-bearing stratum, expressed as the rate of flow of water in gallons/day through a cross section of I square foot at a unit hydraulic gradient at either the prevailing temperature in the field or at a temperature adjusted to 60 degrees F. Can also be expressed in ft/day, cm/day or m/day.

HYDROGEOLOGY - the science that deals with subsurface waters and with related geologic aspects of surface waters.

HYDROGRAPH - A time record of groundwater level or stream discharge at a given cross section or stream surface elevation, and at a given point. Stream hydrographs generally indicate rate of flow and represent stage, flow, velocity or other characteristics, while groundwater hydrographs represent water level or head.

HYDROLOGIC BALANCE - An accounting of the inflow, outflow, storage, and evaporation of water from a hydrologic unit such as a drainage basin, aquifer, soil zone, lake or reservoir, and expressed by the hydrologic equation as the relationship between evaporation, precipitation, runoff and water storage within a hydrologic unit over a specified period of time.

HYDROLOGIC CYCLE- The process involving the continuous circulation of water from the oceans and the land surface of the Earth to the atmosphere through transpiration and evaporation, and its eventual return to the Earth's surface through various forms of precipitation.

HYDROLOGY- The study of the origin, distribution and circulation of water of the Earth.

IMPERMEABLE- A textural condition of rock, sediment or soil that makes it incapable of transmitting fluid under pressure. The cause is generally low porosity or the presence of small individual pores that lack conductivity.

IMPORTED WATER- Water transported into a watershed from a different watershed. Native water is water that occurs naturally within a watershed.

INFILTRATION- (1) The flow of a fluid, such as water, into a solid substance through pores or small interstices, and particularly referring to the movement of water into soil or porous rock; (2) the absorption by the soil of water either from precipitation or streamflow; (3) the amount of groundwater that enters pipes through breaks, joints or porous walls.

INJECTION WELL- A well through which water is pumped under pressure to recharge an aquifer.

IRRIGATION- Distribution of water to land through artificial means to enhance crop production, either where natural water sources are so deficient as to make crop production impossible or where it is advantageous to supplement the natural water supply at certain critical stages in the development of crops.

LAND SUBSIDENCE - The lowering of a natural land surface in response to: Earth movements; lowering of fluid pressure; removal of underlying supporting materials by mining or solution of solids, either artificially or from natural causes; compaction caused by wetting; oxidation of organic matter in soils; added load on the land surface; by tectonic activity; or by lithification.

LEACHING- The flushing of salts from the soil by the downward percolation of surface water.

MAXIMUM CONTAMINANT LEVEL - The highest concentration of a constituent in drinking water permitted under Federal and State Safe Drinking Water Act regulations.

MILLIGRAMS PER LITER - The weight in milligrams of any substance dissolved in one liter of liquid; nearly the same as parts per million.

MINERALIZATION- The process whereby concentrations of minerals, such as salts, increase in water, a natural process resulting from water dissolving minerals found in rocks and soils through which it flows.

MINING- The withdrawal of water from a groundwater resource at a rate that exceeds the rate of replenishment so that the supply is threatened or its economic usefulness is endangered. See OVERDRAFT.

MOU- Memorandum of understanding.

NITRATE - A salt of nitric acid, a compound containing the radical (NO3)-l. Dissolved nitrogen in the form of nitrate is the most common contaminant identified in groundwater. Used colloquially to denote all forms of nitrogen.

NON-POINT SOURCE - Wastewater or contaminant discharge other than from point sources.

OUTFLOW - The water that is discharged from a drainage basin or from a stream, lake, reservoir, or aquifer system.

OVERDRAFT- the intentional or inadvertent withdrawal of water from an aquifer in excess of the amount of water that recharges the basin over a period of years during which water supply conditions approximate average, and which, if continued over time, could eventually cause the underground supply to be exhausted, cause subsidence, cause the water table to drop below economically feasible pumping lifts, or cause a detrimental change in water quality.

OVERLYING LAND - property, a portion of which overlies the water-bearing portion of a groundwater basin. If a portion of the property overlies the water-bearing formation, the entire parcel is located within the drainage area of the basin it is overlying.

PARTS PER MILLION (PPM) - a measure, by weight and not by volume, of the concentration of a foreign substance in a solution.

PATHOGENS - any viruses, bacteria, protozoa or fungi that cause disease.

PERCHED GROUNDWATER - Groundwater supported by a zone of material of low permeability located above an underlying main body of groundwater with which it is not hydraulically connected.

PERCOLATION- The movement of water through small openings within a porous material.

PERENNIAL YIELD - The maximum quantity of water that can be withdrawn annually from a groundwater resource under a given set of conditions without causing an undesirable result.

PERMEABILITY - The capability of soil or other geologic formation to transmit water.

PESTICIDE- Any organic or inorganic substance used to kill or inhibit plant or animal life.

PHREATIC ZONE - The zone beneath the water table in which the pore space is filled with water. Also referred to as the saturated zone.

POINT SOURCE - A specific site from which waste or polluted water is discharged into a water body, the source of which can be identified and measured.

POROSITY - Voids or open spaces in alluvium and rocks that can be filled with water, frequently expressed as the percentage of the volume of the entire material that constitutes the volume of the openings.

PRECIPITATION - The discharge of water, in either liquid or solid form, from the atmosphere to the surface of the Earth, including rain, drizzle, sleet, snow, pellets, snow grains, ice crystals, ice pellets, hail dew and frost, usually measured in inches, hundredths of inches, or millimeters of equivalent depth of water.

PRESCRIPTIVE RIGHTS - The rights acquired by parties who use water adverse to the rights of the lawful owner of property.

RADIUS OF INFLUENCE - The distance from the center of a well to the limit of the cone of depression.

RECHARGE - Flow to groundwater storage from precipitation, infiltration from streams, irrigation, spreading basins, injection wells and other sources of water.

RECHARGE BASIN - A surface facility, often a large pond or other similar artificial basin, used to increase the percolation of surface water into a groundwater basin thereby replenishing a groundwater supply.

RECYCLED WATER - Wastewater that become suitable, as a result of treatment, for a specific direct beneficial use.

REGIONAL WATER QUALITY CONTROL BOARDS (RWQCB) - The primary State agencies that regulate water quality and which are operated pursuant to policies adopted or approved by the State Water Resources Control Board. The regional boards have the authority to compel cleanup and abatement of groundwater pollution under the Porter-Cologne Water Quality Control Act.

RETURN FLOW -The portion of withdrawn water not consumed by evapotranspiration or system losses which returns to its source or to another body of water.

RIPARIAN LAND - Land that adjoins or abuts a natural watercourse. To be riparian, the land must be within the watershed of the natural watercourse.

RUNOFF - The surface flow of water from an area; the total volume of surface flow from an area during a specified time.

SAFE YIELD - See perennial yield.

SALINE - Consisting of or containing salts, the most common of which are potassium, sodium or magnesium in combination with chloride, nitrate or carbonate.

SALINITY - generally, the concentration of mineral salts dissolved in water.

SALT WATER BARRIER - A physical facility or method of operating which is designed to prevent the intrusion of salt water into a body of fresh water.

SALT WATER INTRUSION - The phenomenon occurring when a body of salt water, because of its greater density, invades a body of fresh water. It can occur either in surface or groundwater bodies. When groundwater is pumped from aquifers that are in hydraulic connection with the sea, the gradients that are set up may induce a flow of salt water from the sea toward the well.

SATURATED ZONE - The area below the water table in which the soil is completely saturated with groundwater.

SEDIMENT- Soil or mineral material transported by water and deposited in streams or other bodies of water.

SEEPAGE - The gradual movement of a fluid into, through or from a porous medium.

SEWAGE - The liquid waste from domestic, commercial and industrial establishments.

SOLUBLE MINERALS - Naturally occurring substances capable of being dissolved.

SPECIFIC CAPACITY - The volume of water pumped from a well in gallons per foot of drawdown.

SPECIFIC YIELD - The ratio of the volume of water that a given mass of saturated rock or soil will yield by gravity to the volume of that mass.

SPRING - A location from which groundwater flows from work or soil onto the land surface or into a water body. The occurrence of a spring is dependent upon the location of permeable and impermeable rock layers, the level of the water table and on the local topography.

STATIC GROUNDWATER LEVEL - The water level in a well that is not flowing or being pumped; generally the level immediately before pumping is started after being stopped for a period of time.

SURFACE SUPPLY - Water in reservoirs, lakes or streams, expressed either in terms of rate of flow or volume.

STATE WATER RESOURCES CONTROL BOARD (SWRCB) - The administrative agency with primary responsibility for regulating and determining rights to surface water and groundwater occurring within known and defined channels and as subsurface flow. In addition, the SWRCB has primary responsibility for enforcing the constitutional reasonable use requirement.

TOTAL DISSOLVED SOLIDS (TDS) - The quantity of minerals (salts) in solution in water, usually expressed in milligrams per liter or parts per million.

TRANSMISSIVITY- The capacity of rock to transmit groundwater under pressure, expressed as a quantity of water, at the prevailing temperature, transmitted horizontally in a given period of time through a vertical strip of a given width of the fully saturated thickness of the aquifer, under a hydraulic gradient of 1.

UNCONFINED AQUIFER - Groundwater that has a free water table. It is not confined under pressure beneath rocks or soil.

UNSATURATED ZONE - A subsurface soil zone, also called the vadose zone or the zone or aeration, that lies above the zone of saturation (the water table).

USABLE STORAGE CAPACITY- The quantity of groundwater of acceptable quality that can be economically withdrawn from storage.

WATER BANKING - A water conservation and use optimization system whereby water is allocated for current use or stored in surface water reservoirs or in aquifers for later use. Water banking is a means of handling surplus water supplies.

WATER CONSERVATION - Reduction in applied water due to more efficient water use such as implementation of Urban Best Management Practices.

WATER QUALITY - Used to describe the chemical, physical and biological characteristics of water, usually in regard to its sustainability for a particular purpose or use.

WATER RECLAMATION - As used in this report, water recycling, sea water desalting, groundwater reclamation, and desalting agricultural brackish water.

WATER RECYCLING - The treatment of urban wastewater to a level rendering it suitable for a specific, direct, beneficial use.

WATER RIGHT- A legally protected right to take possession of and use the water occurring in a natural waterway and to divert that water for beneficial use. It includes the right to change the place of diversion, storage or use of water if rights of other water users will not be injured.

WATER TABLE - See groundwater table.

WATER YEAR - A continuous twelve month period for which hydrologic records are compiled and summarized. In California, it begins on October 1 and ends on September 30 of the following year.

WELL - An artificial pit, hole or other excavation that is often walled or lined and is sunk into the ground in order to penetrate water-yielding rock or soil in order to withdraw water for use at the land surface.

WELL CASING - A lining to maintain an open hole from the ground surface to the aquifer. It seals out surface water and any undesirable groundwater and provides structural support against caving materials outside the well.

WELL CONSTRUCTION - The procedures necessary, using the proper materials and equipment, to build a well for a specific purpose.

WELL DESTRUCTION - The procedures necessary, using the proper materials and equipment, to ensure the boring is no longer a conduit for contamination of groundwater.

WELL LOG - A graphic record of a well, generally a lithologic and/or stratigraphic record of the units traversed by a borehole.

9.2 PRIMARY STATE STATUTES ADDRESSING GROUNDWATER PROTECTION

Civil Code

§ 3479 *et seq*	Public and Private Nuisance

Food and Agriculture Code

§ 11401 *et seq*	Pest Control Operations
§ 12811 *et seq*	Registration
§ 13121 *et seq*	Birth Defect Prevention Act
§ 13141 *et seq*	Pesticide Contamination Prevention Act
§ 14001 *et seq*	Restricted Materials

Government Code

§ 8574.16 *et seq*	Toxic Disasters
§ 8574.19 *et seq*	Hazardous Substance Emergency Response Training
§ 65000 *et seq*	Local Planning
§ 65300 *et seq*	General Plans
§ 66410 *et seq*	Subdivisions
§ 66484.5	Groundwater Recharge Facilities
§ 66700 *et seq*	Solid Waste Management, Resource, Recovery and Recycling

Health and Safety Code

§ 4010 *et seq*	Safe Drinking Water Act
§ 24400 *et seq*	Abandoned Excavations
§ 25100 *et seq*	Hazardous Waste Control
§ 25159.0 *et seq*	Toxic Injection Well Control Act
§ 25179.1	Hazardous Waste Management Act
§ 25207 *et seq*	Banned, Unregistered or Outdated Agricultural Wastes
§ 25208 *et seq*	Toxic Pits Cleanup Act
§ 25242 *et seq*	Hazardous Waste Disposal on Public Land
§ 25244 *et seq*	Hazardous Waste Reduction, Recycling and Treatment
§ 25249.5 *et seq*	Safe Drinking Water and Toxic Enforcement Act
§ 25270 *et seq*	Aboveground Storage of Petroleum
§ 25280 *et seq*	Underground Storage of Hazardous Substances
§ 25300 *et seq*	Carpenter-Presley-Tanner Hazardous Substances Account Act
§ 25500 *et seq*	Hazardous Materials Release Response Plans and Inventory
§ 28740 *et seq*	California Hazardous Substance Act
§ 11695 *et seq*	Water Supply

Public Resources Code

§ 2710 *et seq*	Surface Mining and Reclamation Act
§ 3000 *et seq*	Oil and Gas Resources
§ 3700 *et seq*	Geothermal Resources
§ 21000 *et seq*	California Environmental Quality Act (CEQA)
§ 40000 *et seq*	California Integrated Solid Waste Management Act

Vehicle Code

§ 2450 *et seq*	Hazardous Substances Highway Spill Containment and Abatement Act

Water Code

§ 2100 *et seq*	Adjudications to Protect the Quality of Groundwater
§ 10750 *et seq*	Groundwater Management
§ 12920 *et seq*	Porter-Dolwig Groundwater Basin Protection Law
§ 13000 *et seq*	Porter-Cologne Water Quality Control Act Code (includes Basin Planning, Solid Waste Disposal Site Assessment Texts, Water Reclamation Law, and Well Standards)
§ 13397 *et seq*	Drainage from Abandoned Mines
§ 13700 *et seq*	Water Wells and Cathodic Protection Wells

9.3 WATER CONSERVATION LEGISLATION AND REOUIREMENTS

PENDING AND APPROVED LEGISLATION REQUIRING EFFICIENT USE OF WATER

Water Code Section 10610, Part 2.6 - Urban Water Management Planning (AB 797, Klehs, 19895) - Requires urban water purveyors serving 3,000 customers or 3,000 acre feet per year of water to prepare water management plan to achieve conservation and efficient use. Update to these plans is due after 5 years.

AB 2662 - Amended the above referenced section of the Water Code to require updates of urban water management plans to be submitted to the Department of Water Resources every 5 years, beginning December 31, 1990.

Article 10.8 (commencing with Section 65590), Chapter 3 of Division 1 of Title 7 of the Government Code (AB 325, Clute, Chapter 1145) - Requires adoption of water efficient landscape ordinances for development. Affects all cities unless they make findings that, due to geologic and topographical conditions, such an ordinance is not necessary in their area. Ordinances must be adopted by January 1, 1993.

AB 2355 - Requires installation of water efficient plumbing fixtures (i.e., 1.6 gallon per flush toilets and 2.0 gallons per minute showerheads) in all new construction beginning January 1, 1992.

AB 11 - Water Shortage Contingency Plans. - Requires urban water purveyors serving a minimum number of customers (3,000) to prepare water shortage contingency plans, with a phased approach for reducing demand during droughts. Plans were due in January 1992.

SB 1520 - Requires installation of water efficient plumbing fixtures in all new public facilities beginning January 1, 1992.

SB 2334 - Requires automatic shutoff valves for in-home reverse osmosis devices installed after January 1, 1991.

CURRENT REQUIREMENTS AND VOLUNTARY AGREEMENTS

Bureau of Reclamation: Requires preparation of water conservation plans by agencies receiving construction funds for water projects, or those managing or operating Bureau facilities (reservoirs) serving a designated minimum of acres of agriculture. Updates to these plans are due every five years. New criteria for these plans is being developed in response to HR 429 regarding the Central Valley Project.

State Water Resources Control Board: Requires preparation and implementation of water conservation plans as a condition of receiving loans or grants from the Board, or for new water rights permits.

Department of Water Resources: As required by the Governor in 1991, due to the drought all urban water purveyors of designated size must prepare and submit a drought (water shortage) response plan to DWR. The plans must include specific programs to reduce water demand during periods of severe water shortage, as defined in the Plan. DWR also administers the requirement for urban water utilities to prepare an urban water management plan and updates every five years.

Memorandum of Understanding for Best Management Practices (MOU) **- Urban:** The MOU is a voluntary agreement to implement 16 identified urban best management practices and consider potential best management practices for future adoption. This MOU is now under consideration by the State Water Resources Control Board to become mandatory standards for all affected parties in water rights decisions regarding the Bay-Delta.

9.4 POTENTIAL SOURCES OF GROUNDWATER POLLUTION

SOURCE	CONTAMINANT
NATURALLY OCCURRING SOURCES	
Rocks and Soils	Aesthetic Contaminants: Iron and iron bacteria; manganese; calcium and magnesium (hardness) Health and Environmental Contaminants: Arsenic; asbestos; metals; chlorides; fluorides; sulfates; sulfate-reducing bacteria and other microorganisms
Contaminated Water	Excessive sodium; bacteria; viruses; low pH (acid) water
Decaying organic matter	Bacteria
Geological radioactive gas	Radionuclides (radon, etc.)
Natural hydrogeological evens and formations	Salt water/brackish water intrusion (or intrusion of other poor quality water); contamination by a variety of substances through sink-hole infiltration in limestone terrain
AGRICULTURAL SOURCES	
Animal feedlots and burial areas	Livestock sewage wastes; nitrates; phosphates; chloride; chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests on livestock; coliform[4] and non-coliform bacteria; viruses
Manure spreading areas and storage pits	Livestock sewage wastes; nitrates
Livestock waste disposal	Livestock sewage wastes; nitrates
Crop areas and irrigation sites	Pesticides;[5] fertilizers;[6] gasoline and motor oils from chemical applicators
Chemical storage areas and containers	Pesticide[5] and fertilizer[6] residues
Agricultural drainage wells canals	Pesticides;[5] fertilizers;[6] bacteria; salt water (In areas where the fresh-saltwater interface lies at shallow depths and where the water table is lowered by channelization, pumping, or other causes)

RESIDENTIAL SOURCES

Common household	*Common Household Products:*[8] Household cleaners; oven cleaners; drain cleaners; toilet cleaners; disinfectants; metal polishes; jewelry cleaners; shoe polishes; synthetic detergents; bleach; laundry soil and stain removers; spot removers and dry cleaning fluid; solvents; lye or caustic soda; household pesticides;[9] photochemicals; printing ink; other common products. *Wall and Furniture Treatments:* Paints; varnishes, stains; dyes; wood preservatives (creosote); paint and lacquer thinners; paint and varnish removers and deglossers; paint brush cleaners; floor and furniture strippers. *Mechanical Repair and Other Maintenance Products:* Automotive wastes; waste oils; diesel fuel; kerosene; #2 heating oil; grease; degreasers for driveways and garages; metal degreasers; asphalt and roofing tar; tar removers; lubricants; rustproofers; car wash detergents; car waxes and polishes; rock salt; refrigerants
Lawns and gardens	Fertilizers,[5] herbicides and other pesticides used for lawn and garden maintenance[10]
Swimming pools	Swimming pool maintenance chemicals[11]
Septic systems, cesspools, and sewer lines	Seepage; coliform and non-coliform bacteria;[4] viruses; nitrates; heavy metals; synthetic detergents; cooking and motor oils; bleach; pesticides;[9,10] paints; paint thinner; photographic chemicals; swimming pool chemicals;[11] septic tank/cesspool cleaner chemicals;[12] elevated levels of chloride, sulfate, calcium, magnesium, potassium, and phosphate
Underground storage tanks	Home heating oil
Apartments and condominiums	Swimming pool maintenance chemicals;[11] pesticides for lawn and garden maintenance and cockroach, termite, ant, rodent, and other pest control;[9,10] wastes from onsite sewage treatment plants; household hazardous wastes[13]

MUNICIPAL SOURCES

Schools and government offices and grounds	Solvents; pesticides;[9,10] acids; alkalis; waste oils; machinery/vehicle servicing wastes; gasoline and heating oil from storage tanks; general building wastes[13]
Park lands	Fertilizers;[6] herbicides,[10] insectides[9]

Public and residential areas infested with mosquitoes, gypsy moths, ticks, ants, or other pests	Pesticides[5,9]
Highways, road maintenance depots, and deicing operations	Herbicides in highway rights-of-way;[5,10] road salt (sodium and calcium chloride); road salt anti-caking additives (ferric ferrocyanide, sodium ferrocyanide); road salt anticorrosive (phosphate and chromate); automative wastes[7]
Municipal sewage treatment plants and sewer lines	Municipal wastewater; sludge;[14] treatment chemicals[15]
Storage, treatment, and disposal ponds, lagoons, and other surface impoundments	Sewage, wastewater; nitrates; other liquid wastes; microbiological contaminants
Lands areas applied with wastewater or wastewater byproducts	Organic matter; nitrate; inorganic salts; heavy metals; coliform and non-coliform bacteria;[4] viruses; nitrates; sludge;[14] non-hazardous wastes[16]
Storm water drains and basins	Urban runoff; gasoline; oil; other petroleum products; microbiological contaminants
Combined sewer overflows (municipal sewers and storm water drains)	Municipal wastewater; sludge;14 treatment chemicals;15 urban runoff; gasoline; oil; other pretroleum products; road salt; microbial contaminants
Water supply wells, monitoring wells, older wells, domestic and live-stock wells, unsealed and abandoned wells, and test hole wells	Surface runoff; effluents from barnyards, feedlots, septic tanks or cesspools; gasoline; used motor oil; road salt
Sumps and dry wells	Storm water runoff; excess irrigation water; stream flow; cooling water; treated sewage effluent; other substances that may contain contaminants, such as nitrates, metals, detergents, synthetic organic compounds, bacteria and viruses

COMMERCIAL SOURCES

Auto repair shops	Waste oils; solvents; acids; paints; automotive wastes;[7] miscellaneous cutting oils

Barber and beauty shops	Perm solutions; dyes; miscellaneous chemicals contained in hair rinses
Cemeteries	Leachate; lawn and garden maintenance chemicals[10]
Construction trade areas and materials (plumbing, heating and air conditioning, painting, paper hanging, decorating, dry wall and plastering, acoustical insulation, carpentry, flooring, roofing and sheet metal, wrecking and demolition, etc.)	Solvents; asbestos; paints; glues and other adhesives; waste insulation; lacquers, tars; sealant; epoxy waste; miscellaneous chemical wastes
Country clubs	Fertilizers;[6] herbicides;[5,10] pesticides for controlling mosquitoes, ticks, ants, gypsy moths, and other pests;[9] swimming pool chemicals;[11] automotive wastes
Dry cleaners	Solvents (perchloroethylene, petroleum solvents, freon); spotting chemicals (trichloroethane, methylchloroform; ammonia, peroxides, hydrochloric acid, rust removers, amyl acetate
Gasoline service stations	Oils; solvents; miscellaneous wastes
Golf courses	Fertilizers;[6] herbicides;[5,10] pesticides for controlling mosquitoes, ticks, ants, gypsy moths, and other pests[9]
Above-ground and underground storage tanks	Heating oil; diesel fuel; gasoline; other petroleum products; other commercially used chemicals
Storage, treatment, and disposal ponds, lagoons, and other surface impoundments	Hazardous and non-hazardous liquid wastes;[16] seepage; sludge[14]

Pollution Source Footnotes:

[1]In general, groundwater contamination stems from the misuse and impropoer disposal of liquid and solid wastes; the illegal dumping or abandonment of household, commercial, or industrial chemicals; the accidental spilling of chemicals from trucks, railways, aircraft, handling facilities, and storage tanks; or the improper siting, design, construction, operation, or maintenance of agricultural, residental, municipal, commercial, and industrial drinking water wells and liquid and solid waste disposal facilities. Contaminants also can stem from atmospheric pollutants, such as airborne sulfur and nitrogen compounds, which are created by smoke, flue dust, aerosols, and automobile

emissions, fall as acid rain, and percolate through the soil. When the sources listed in this table are used and managed properly, groundwater contamination is not likely to occur.

[2]Contaminants can reach groundwater from activities occurring on the land surface, such as industrial waste storage; from sources below the land surface but above the water table, such as septic systems; from structures beneath the water table, such as wells; or from contaminated recharge water.

[3]This table lists the most common wastes, but not all potential wastes. For example, it is not possible to list comtaminants contained in storm water runoff or research laboratory wastes.

[4]Coliform bacteria can indicate the presence of pathogenic (disease-causing) microorganisms that may be transmitted in human feces. Diseases such as typhoid fever, hepatitis, diarrhea, and dysentery can result from sewage contamination of water supplies.

[5]Pesticides include herbicides, insecticides, rodenticides, fungicides, and adicides. EPA has registered approximately 50,000 different pesticide products for use in the United States. Many are highly toxic and quite mobile in the subsurface. An EPA survey found that the most common pesticides found in drinking water wells were DCPA (dacthal) and atrazine, which EPA classifies as moderately toxic (class 3) and slightly toxic (class 4) materials, respectively.

[6]The EPA National Pesticides Survey found that the use of fertilizers correlates to nitrate contamination of ground water supplies.

[7]Autmotive wastes can include gasoline; antifreeze; automatic transmission fluid; battery acid; engine and radiator flushes; engine and metal degreasers; hydraulic (brake) fluid; and motor oils.

[8]Toxic or hazardous components of common household products are noted in Table 3-2.

[9]Common household pesticides for controlling pests such as ants, termites, wasps, flies, cockroaches, silverfish, mites, ticks, fleas, worms, rats and mice can contain ingredients including napthalene, phosphorus, xylene, chloroform, heavy metals, chlorinated hydrocarbons, arsenic, strychnine, kerosene, notrosamines, and dioxin.

[10]Common pesticides used for lawn and garden maintenace (i.e., weed killers, and mite, grub and aphid controls) include such chemicals as 2,4-D; chlorphrifos; diazinon; benomyl; captain; dicofol; and methoxychlor.

[11]Swimming pool chemicals can contain free and combined chlorine; bromine; iodine, mercury-based, copper-based, and quaternary algicides; cyanuric acid; calcium or sodium hypochlorite; muriatic acid; sodium carbonate.

[12]Septic tank/cesspool cleaners include snythetic organic chemicals such 1,1,1 trichloroethane, tetrachloroethylene, carbon tetrachloride, and methylene chloride.

[13]Common wastes from public and commercial buildings include automotive wastes; rock salt; and residues from cleaning products that may contain chemicals such as xylenols, glycol esters, ispropanol, 1,1,1,-trichlorethane, sulfonates, chlorinated phenolys, and cresols.

[14]Municipal wastewater treatment sludge can contain organic matter; nitrates; inorganic salts; heavy metals; coliform and non-coliform bacteria; and viruses.

[15]Municipal wastewater treatment chemicals include calcium oxide; alum; activated alum, carbon, and silica; polymers; ion exchange resins; sodium hydroxide; chlorine; ozone; and corrosion inhibitors.

[16]The Resource Conservation and Recovery Act (RCRA) define a hazardous waste as a solid waste that may cause an increase in mortality or serious illness or pose a substantial threat to human health and the environment when improperly treated, stored, transported, disposed of, or otherwise managed. A waste is hazardous if it exhibits characteristics of ignitability, corrosivity, reactivity, and/or toxicity. Not covered by RCRA regulations are domestic

sewage; irrigation waters or industrial discharges allowed by the Clean Water Act; certain nuclear and mining wastes; household wastes; agricultural wastes (excluding some pesticides); and small quantity hazardous wastes (i.e., less than 220 pounds per month) generated by businesses.

[17]X-ray developers and fixers may contain reclaimable silver, glutaldehyde, hydroquinone, phenedone, potassium bromide, sodium sulfite, sodium carbonate, thiosulfates, and potassium alum.

[18]This table lists potential groundwater contaminants from many common industries, but it does not address all industries.

MONTECITO WATER DISTRICT
GROUNDWATER MONITORING PROGRAM

WELL WATER LEVEL DATA

NAME/ADDRESS	USGS WELL #	MWD WELL #	SPR 83	FALL 94	SPR 95	FALL 95	SPR 96	FALL 96	SPR 97	FALL 97	1 YEAR CHANGE	CURRENT VS. 1983
		FEET ABOVE SEA LEVEL:										
VALLEY CLUB RD EAST		1-1		212.62	221.02	221.02	221.02	221.02	221.02	193.42	-27.60	
VALLEY CLUB RD WEST		1-2		213.00	221.58	221.58	221.58	221.58	221.58	210.58	-11.00	
EVR #8		1-3		205.32	218.58	210.21	218.58	207.58	218.58	212.48	4.90	
925 BROOKTREE RD		1-4		418.16	426.74	421.86	425.54	420.82	424.24	424.94	4.12	
1359 EAST MTN DR		1-5		499.84	512.56	503.95	510.10	501.25	507.10	503.70	2.45	
633 PICACHO LN	8M2	1-6		DRY	271.90	196.57	188.00	NA	126.10	40.90		
550 HOT SPRINGS RD	7R1	1-7	270.71	215.49	249.51	233.92	253.72	224.12	240.72	240.72	16.60	-29.99
550 HOT SPRINGS RD	7R2	1-8	276.15	217.66	257.25	226.60	254.52	215.39	230.82	230.42	15.03	-45.73
VC GOLF COURSE	15D2	1-9	252.12	229.67	252.00	237.64	247.00	246.80	246.80	228.00	-18.80	-24.12
2109 BOUNDARY DR	9Q1	1-10	237.98	224.83	243.07	230.84	231.13	226.11	230.33	226.22	0.11	-11.76
2109 BOUNDARY DR	9Q2	1-11	240.23	224.25	244.33	228.85	233.03	228.05	231.63	224.83	-3.22	-15.40
1983 INVERNESS LN	16C1	1-12	209.47	200.84	215.00	207.13	209.40	205.26	210.70	201.90	-3.36	-7.57
1988 INVERNESS LN	9P1	1-13	236.88	217.71	236.00	226.41	228.90	223.80	207.50	218.90	-4.90	-17.98
1683 E VALLEY RD	8R2	1-14	227.34	208.05	227.52	217.66	223.90	217.16	221.80	213.10	-4.06	-14.24
LIVE OAKS WELL	17B4	1-15	195.75	184.10	205.50	191.07	203.50	191.33	199.39	187.70	-3.63	-8.05
600 EL BOSQUE RD	8Q2	1-16	247.56	198.40	226.00	210.71	233.00	206.11	216.00	261.90	55.79	14.34
HODGES WELL	8P1	1-17	193.60	179.68	195.50	184.78	195.50	182.50	191.20	182.40	-0.10	-11.20
650 SAN YSIDRO RD	8L1	1-18	250.00	243.23	251.00	NA	251.00	243.46	251.00	247.79	4.33	-2.21
OFFICE WELL	8P3	1-19	204.98	180.30	196.72	183.84	194.28	180.63	190.10	179.50	-1.13	-25.48
810 ROMERO CANYON RD		1-20		379.92	388.80	386.50	388.79	381.50	387.67			
650 RANDALL RD		1-21		281.96	287.30	284.17	286.07	284.62	283.47	280.07	-4.55	
965 BROOKTREE RD		1-24		453.71	456.55	455.25	456.10	455.30	457.89	451.90	-3.40	
ENNISBROOK #3		1-26		196.14	210.33	204.99	210.33	204.48	210.33	136.23	-68.25	
873 KNOLLWOOD DR		1-28		437.30	438.67	478.33	483.58	474.76	480.28			
969 BROOKTREE RD		1-29		475.96	482.28	479.39	485.07	481.17	481.27	444.07	-37.10	
1485 E MOUNTAIN DR		1-30		379.42	382.91	378.43	379.99	380.13	382.77			

MONTECITO WA[illegible] DISTRICT
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WELL WATER LEVEL DATA

NAME/ADDRESS	USGS WELL #	MWD WELL #	SPR 83	FALL 94	SPR 95	FALL 95	SPR 96	FALL 96	SPR 97	FALL 97	1 YEAR CHANGE	CURRENT VS. 1983
		FEET ABOVE SEA LEVEL:										
570 MEADOW WOOD LN		1-31		252.17	270.62	254.82	254.86	267.67	243.25			
193 E MOUNTAIN DR		1-32		554.67	580.07	578.67	579.01	580.17	576.77			
704 PARK LN		1-33		315.67	346.29	329.75	330.76	322.17	334.67	314.57	-7.60	
1521 E VALLEY RD		1-34		172.50	181.50	181.50	181.50	178.29	NA			
WESTMONT COLLEGE		1-35		480.51	491.49	488.71	491.37	506.12	487.29			
260 CLOYDON CIRCLE		1-36		379.01	387.07	383.50	390.07	386.50	392.67			
1678 E VALLEY RD		1-37		189.91	214.38	199.08	208.38	198.08	203.97	192.98	-5.10	
890 COYOTE RD		1-38		531.96	535.14	533.33	532.23	526.90	529.33			
749 FUERA LN		1-40		310.65	330.20	323.92	326.70	323.88	293.88			
627 LILAC DR		1-42		257.75	325.84	288.50	277.20	291.32	281.50	253.50	-37.82	
872 LADERA LN		1-43		NA		730.00	736.73	734.59	736.40			
1419 E MOUNTAIN DR		1-44		313.58	350.08	347.91	355.79	352.48	353.88			
1972 TOLLIS AVE		1-45		351.47	381.84	370.83	371.55	348.32	360.06			
788 PARK HILL LN		1-46		477.21	NA	NA	478.11	479.21	481.01	478.71	-0.50	
1075 COLD SPRINGS RD		1-47		611.00	615.25	NA	611.50	604.13	NA			
695 ASHLEY ROAD (LOTUSLAND)		1-48		437.00	493.00	461.00	461.00	468.00	454.00	470.00	2.00	
1413 SCHOOL HOUSE R	17E1	2-1		NA	32.55	34.76	36.50	21.50	37.30	23.40	1.90	
1065 CAMINO VIEJO RD	17E3	2-2		281.24	282.29	282.96	284.47	282.71	290.67	289.57	6.86	
1053 CAMINO VIEJO RD	17E4	2-3		284.34	285.81	302.34	288.14	NA	NA	NA		
1120 HILL RD		3-1		4.30	5.14	4.80	4.20	4.80	4.60	3.40	-1.40	
LAS ENTRADAS 2		3-2		51.07	60.41	53.80	55.07	53.17	55.07	58.77	5.60	
130 OLIVE MILL LN	18R1	3-3	23.59	NA	17.77	25.03	26.50	22.89	21.10	22.97	0.08	-0.62
S B CEMETERY	13R1	3-5	5.71	6.70	6.65	7.57	6.30	7.70	9.17	12.89	5.19	7.18
1076 FAIRWAY RD	19C4	3-6		3.93	-4.66	4.11	0.50	4.18	4.00	NA		
BILTMORE HOTEL	19H3	3-7	6.93	2.83	2.13	3.55	2.85	3.19	2.34	3.45	0.26	-3.48
NEAL WELL	17N1	3-8	37.23	25.05	27.60	31.59	29.00	26.20	30.70	35.20	9.00	-2.03
HOWARD SCHOOL	17L1	3-9	30.14	10.40	32.73	16.53	29.66	13.86	25.03	15.66	1.80	-14.48
1599 SINALOA DR-DEEP	17K2	3-10	31.48	17.20	22.79	22.85	22.10	20.99	25.40	18.70	-2.29	-12.78

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MONTECITO WA[illegible]R DISTRICT
GROUNDWATER MONITORING PROGRAM

WELL WATER LEVEL DATA

FEET ABOVE SEA LEVEL:

NAME/ADDRESS	USGS WELL #	MWD WELL #	SPR 83	FALL 94	SPR 95	FALL 95	SPR 96	FALL 96	SPR 97	FALL 97	1 YEAR CHANGE	CURRENT VS. 1983
1599 SINALOA DR (S)	17K1	3-11	23.66	16.32	26.40	22.55	24.30	17.91	22.80	16.10	-1.81	-7.56
LE1-PADEN WELL	16M3	3-12		56.19	13.93	1.94	13.31	12.71	14.71	12.31	-0.40	
168 POMAR LN	17Q2	3-13	14.43	4.56	20.46	8.95	13.01	6.83	12.61	7.51	0.68	-6.92
1640 N JAMESON LN	17Q3	3-14	23.05	7.85	20.88	12.95	19.89	10.28	19.90	15.50	5.22	-7.55
157 LOUREYRO RD	16N1	3-15	8.78	6.74	10.98	11.72	10.20	8.30	10.30	NA		
271 MIDDLE RD		3-16		50.52	55.63	57.25	62.52	65.52	71.52	73.42	7.90	
1123 GLENVIEW RD		3-17		182.63	183.79	185.26	187.20	187.83	189.00			
VILLA ESCONDIDO		3-18		5.09	6.61	6.90	6.90	6.88	7.89	7.00	0.12	
1278 SPRING RD		3-19		383.11	384.00	383.21	383.80	383.06	383.60	383.40	0.34	
MONTECITO DEL MAR		3-20		10.97	11.50	11.79	11.60	12.15	13.30	12.30	0.15	
AMAPOLA	17K3	3-22	26.67	13.26	25.84	19.26	23.91	-15.50	23.88	3.81	19.31	-22.86
3165 PADARO LN	23G3	4-1	19.26	9.95	16.09	12.61	17.28	11.03	12.70	10.10	-0.93	-9.16
EDGEWOOD RANCH #2	23F6	4-2	22.17	9.41	13.81	12.43	15.24	12.06	14.24	9.84	-2.22	-12.33
340 TORO CYN RD		4-3		128.25	147.31	138.77	138.00	130.98	137.95			
545 TORO CYN RD		4-4		350.50	342.24	353.38	337.55	NA	352.90			
2900 TORITO RD		4-5		311.75	310.84	NA	286.65	290.54	280.52			
368 LAMBERT RD	23C4	4-6		33.92	40.27	38.75	34.92	36.92	48.52	NA		

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