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RAYMOND BASIN

BACKGROUND FACT SHEET

1. Basin Size - 40 sq. mi. (25,600 Ac.)

2. Location - The Raymond Basin is east of the Upper Los Angeles River Area (ULARA). The Verdugo Basin and Monk Hill Basin are hydraulically connected (Refer to Figures 1 and 2).

3. Recharge - 30,622 AF/yr. (Safe yield - calculated in 1952). Spreading facilities capacity is approximately 41,000 AF/yr.

4. Water Demand - 63,637 AF (year 1990-91). Groundwater extractions were 30,812 AF, with imports (33,642) and surface diversions (3,258 AF) supplying the remainder.

5. Water Agencies - 16 agencies, including the cities of Pasadena, Sierra Madre, Arcadia, Altadena, San Marino and La Canada-Flintridge.

6. Storage Characteristics - The storage capacity is estimated to be 1.4 million AF (year 1990), with an unused capacity of 400,000 AF.

7. Water Quality - Generally, there is a good quality of water within the Basin, with Total Dissolved Solids (TDS) ranging from 145 to 1,050 mg/1; nitrates (NO_3) range up to 85 mg/1. Low levels of Volatile Organic Chemicals (VOC) have been found in some areas.

8. Water Rights - There are 16 parties to the judgment (original-1944), with a reevaluation of the safe yield in 1952. The safe yield was revised from 21,451 AF/yr. to 30,622 AF/yr. The Management Board, along with the DWR are preparing the annual report.

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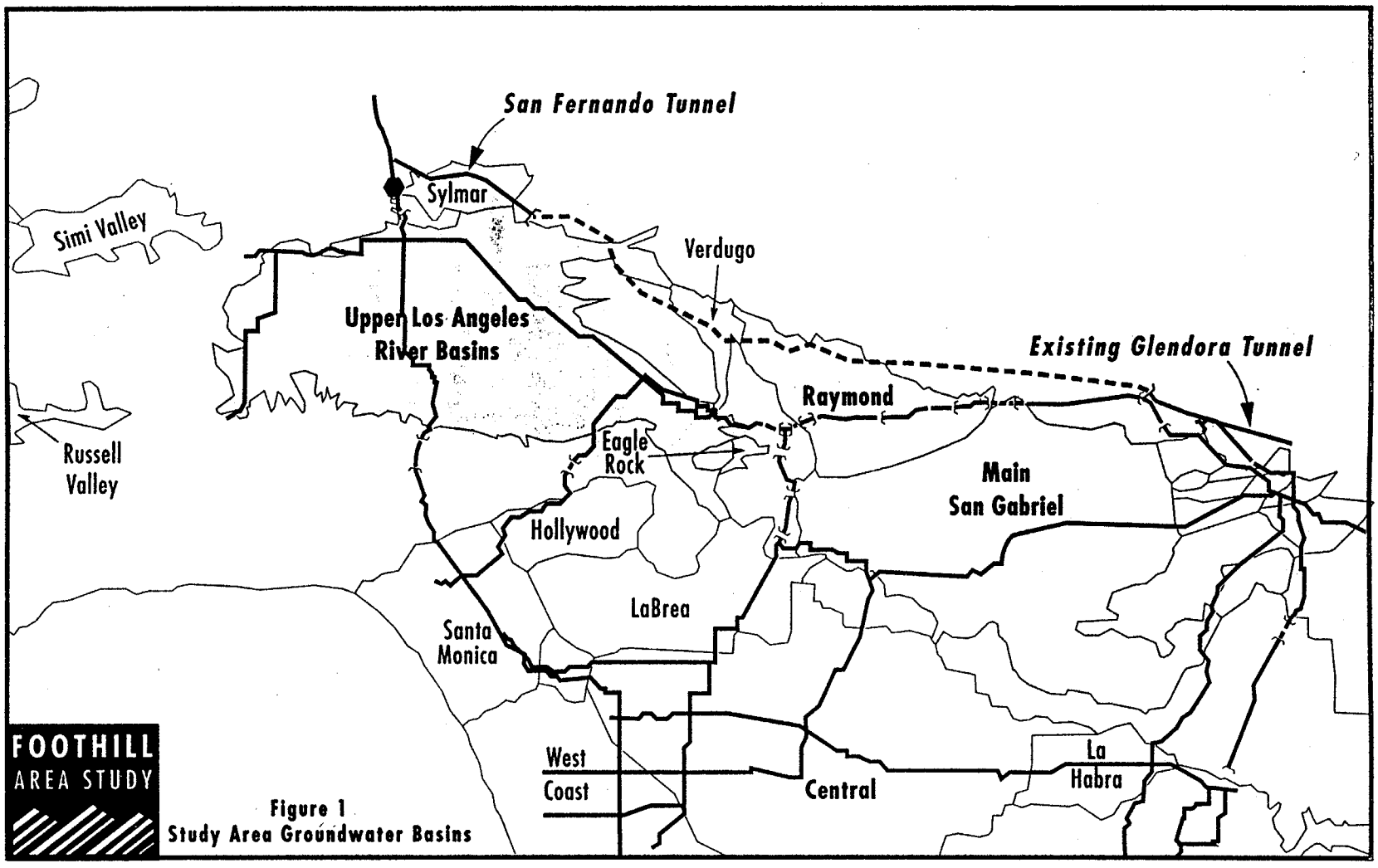
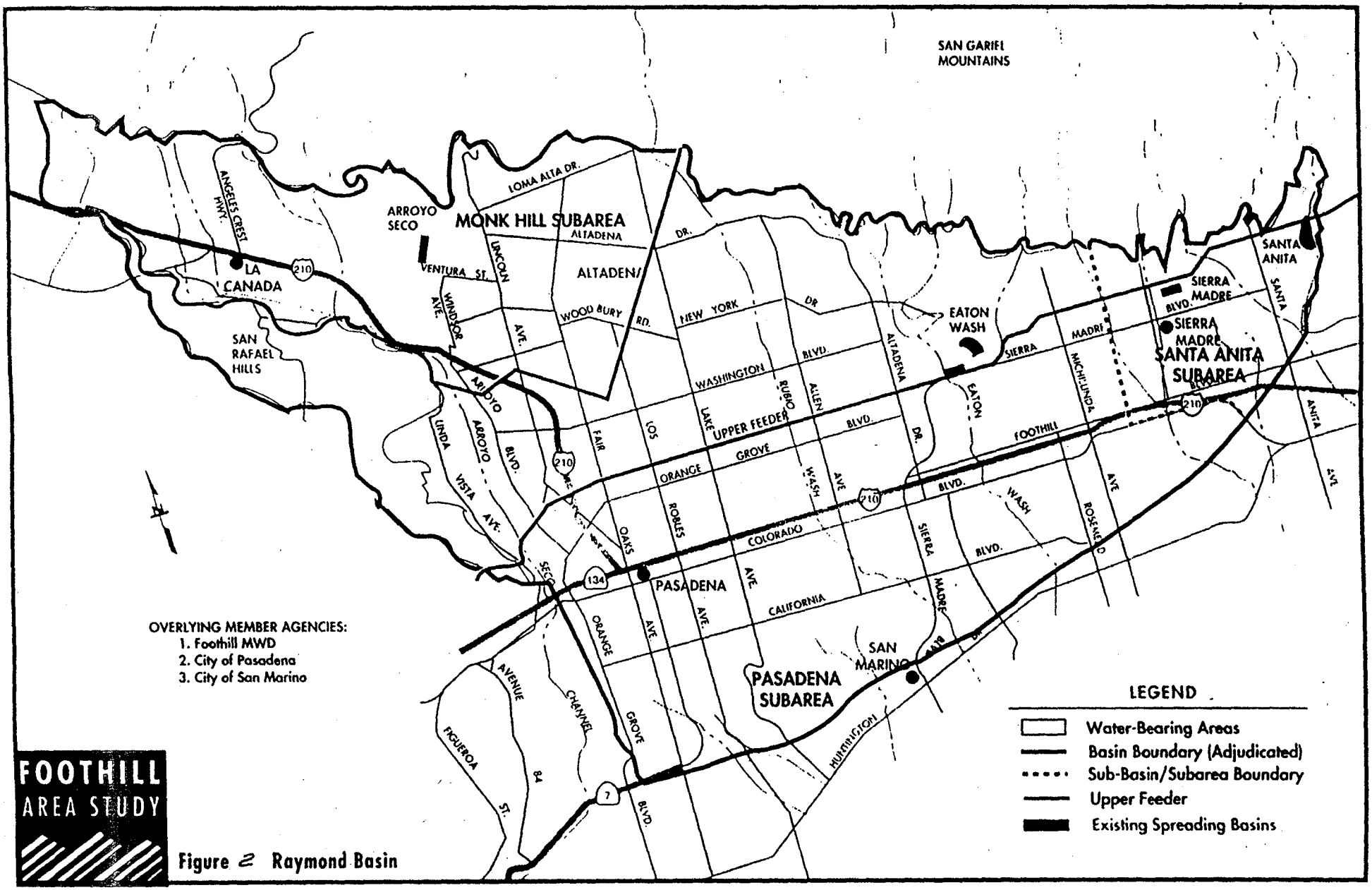


Figure 1
Study Area Groundwater Basins



FOOTHILL AREA STUDY

Figure 2 Raymond Basin

Maintaining Water Quality Protections

The quality of water in the Basin is generally good. It has not suffered from the widespread contamination evident in some of Southern California's other groundwater basins.

However, in some areas of the Basin, the presence of nitrates and/or volatile organic compounds (VOCs) have resulted in the shutdown or limited use of some wells. Because of regular water quality monitoring and management, water served by Basin pumpers meets standards established by local, state and federal regulatory agencies.

Under State Department of Health Services guidelines, the Raymond Basin Management Board has coordinated a sampling, analysis and monitoring program throughout the Basin to ensure the Basin water continues to meet all health and safety requirements. The Board also works closely with regulatory agencies to help prevent further contamination within the Basin.

To maintain water quality and to restore production of local water wells, cleanup programs are currently underway. The first of these programs is the City of Pasadena's construction of a treatment plant to remove VOC contamination from four of Pasadena's water wells located in the Monk Hill Subarea. The plant was paid for in full by the Jet Propulsion Laboratory (JPL). The treatment method used is air stripping with activated carbon off-gas pollution control. This process assures that the contaminants are removed from the water but are not released to the air.

Additional investigations are currently being conducted to more precisely determine the contamination extent, origin and remediation required to achieve contamination cleanup within the Basin.

What Can You Do to Protect Your Water Supply?

Because water is not in endless supply, the Management Board and the 16 purveyors served by the Raymond Basin urgently stress the need to implement daily water conservation practices. Brochures, guidelines, and related information on ways to conserve water are available at your local water agency's office.

Serving:

City of Alhambra
City of Arcadia
California American Water Company
East Pasadena Water Company
H. E. Huntington Library and Art Gallery
Kinneloa Irrigation District
La Canada Irrigation District
Las Flores Water Company
Lincoln Avenue Water Company
Pasadena Cemetery Association
City of Pasadena
Rubio Canon Land and Water Association
San Gabriel County Water District
City of Sierra Madre
Sunny Slope Water Company
Valley Water Company

The Raymond Basin Management Board
4536 Hampton Road, P.O. Box 686
La Canada Flintridge, CA 91012
(818) 790-4036

What is the Raymond Basin?

It's too simplistic and misleading to say that the Raymond Basin is a major underground lake, because it's not. However, like a lake, the Raymond Basin stores fresh water. Water from rainfall and mountain flows that has accumulated on top of the earth's surface soaks into the underground where it is stored in soils and rocks.

Managed by the Raymond Basin Management Board, the Basin supplies over half of the overlying area's total annual water needs and is one of the most valuable local resources.

Covering approximately 40 square miles, the Raymond Basin is bounded on the north by the San Gabriel Mountains, on the south and east by the San Gabriel Valley and on the west by the San Rafael Hills (as shown on the map). It is an underground alluvial valley comprised of boulder, gravel, sand, silt and clay deposits. Because of its natural formations and barriers, the Raymond Basin is replenished by surface water flows from the San Gabriel Mountains, including the Arroyo Seco, Eaton Wash and Santa Anita Wash.

As much as 1,500,000 acre feet of water can be collected in this underground water table. This amount is staggering, when you consider that just one acre foot of water is about 326,000 gallons, or enough to serve two average families for one year.

From this undergound supply, water is pumped by 16 different water purveyors to serve customers' daily needs throughout the area. For many of the overlying communities, the Raymond Basin is their principal water supply.

Setting California's Standard for Water Management

Historically, the Raymond Basin has provided water for many beneficial uses. Until the population boom of the 1920's, the Basin primarily served agriculture. During the 1800's there was an adequate supply to meet the area's agricultural water needs until shortages occurred at the turn of the 20th century when many areas of Southern California experienced severe water shortages.

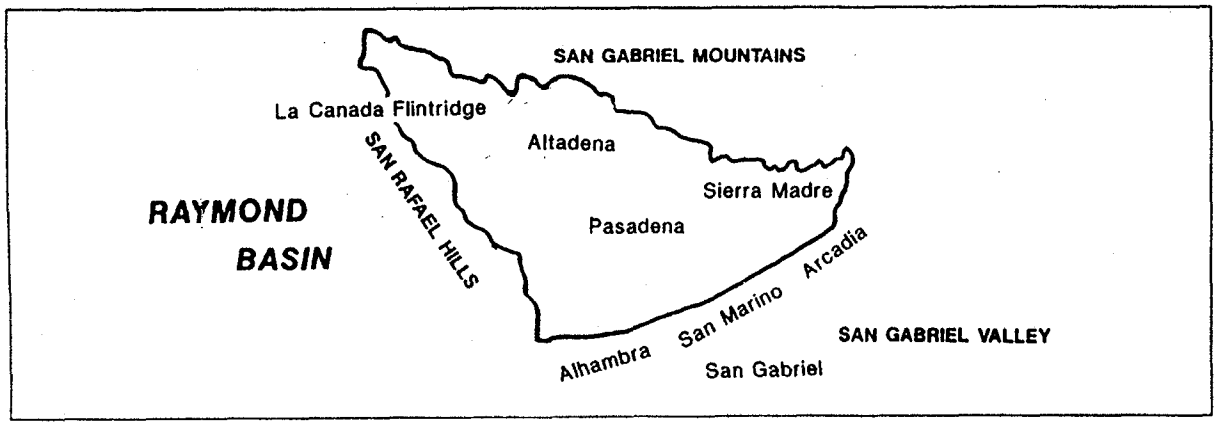
Water supply and demand continued to be an increasing problem and by the 1930's, it was evident that the available water supply was inadequate to serve all of the needs of a growing population. Not only did the immediate communities within the Raymond Basin rely on this supply but other communities south of the area as well.

To ensure that all of these communities received a portion of the water, legal actions beginning in 1937 established the Raymond Basin as the first adjudicated groundwater basin in the state. Under the adjudication, a court of law determined who had a right to extract water and the maximum annual amount of water allowed to be pumped by each producer.

This "safe yield" concept allows an annual fixed amount of water to be used by the 16 pumpers served by the Basin. The Raymond Judgment set a standard for careful management and protection of all groundwater basins throughout California.

Prior to 1984, the administration of the Basin was under the authority of the State Department of Water Resources (DWR) serving as Watermaster. During that time, the Raymond Basin Advisory Board acted in an advisory capacity. In 1984, the Raymond Basin Judgment was amended to form the Management Board which now serves as Watermaster.

Currently, DWR provides technical assistance to the Management Board which consists of 10 representatives appointed by the water purveyors within the Basin. The Management Board oversees the implementation of the adjudication provisions of the Judgment and approves plans for storage of local and imported water in the Basin.



Keeping a Vigilant Eye on Water Issues Ahead

Future water demand for the Raymond Basin is expected to increase at a very low rate. Although the area overlying the Basin is fully developed, there has been a tendency toward higher density development through construction of more multi-family housing units. Continuation of this trend could increase water demands by as much as one percent annually.

This projection has created the need to study and review measures which will help the Management Board effectively meet the water demands ahead. Expanded groundwater storage programs are currently under review. These programs would allow imported water deliveries from the Metropolitan Water District of Southern California to be stored during rainy seasons and to be pumped from wells for use during dry seasons. This "conjunctive use" storage concept is particularly attractive considering that the adequacy of Southern California's supplemental water supply, imported from the Colorado River and from Northern California, is being strained by the population explosion in Southern California.

Before these programs can be fully implemented, cost effectiveness and protection of the Raymond Basin's present water quality must be carefully studied.

CHRONOLOGY OF THE RAYMOND BASIN

1880 Southern California land development boom begins

1881 First wells drilled in Raymond Basin to supply water for irrigated agriculture and expanding municipalities

1908 U.S. Geological Survey report on Raymond Basin published, showing 141 wells in operation

1913 Overdraft of Raymond Basin begins

1914 City of Pasadena Water Department initiates a program to replenish the basin by conserving and spreading storm runoff on gravel beds at the foot of the San Gabriel Mountains. Pasadena continued the spreading program until 1924, by which time it had replenished the basin by more than 20,000 AF, using water that otherwise would have made its way to the Los Angeles River

1924 Pasadena terminates its spreading program partly because of the sharp decline in available runoff due to another dry cycle that began in 1922. Through the remainder of the 1920s, underground water levels dropped, some wells failed and longer pumping lifts raised operating costs in the others. The drop in water levels was not just seasonal; they no longer recovered in the spring

Raymond Basin users continued to pump groundwater without fully understanding the effects of their actions on each other and on the basin. A full description of the basin's geology and underground water storage characteristics did not appear until 1934

1928 In the meantime, Pasadena focused on acquiring a supplemental water supply. Consequently, Metropolitan Water District of Southern California was established to build and operate a Colorado River aqueduct, although this water would not be available for at least a decade

California Division of Water Resources granted Pasadena permits to store and divert flood flows of the San Gabriel River and divert up to 4,000 AF of water per year

1929 Pasadena voters approved a $10 million bond issue to finance the construction of Morris Dam on the San Gabriel River and a conduit to the city

1932 San Gabriel Valley Protective Association sued to prevent Pasadena from building the dam and diverting the water. MWD helped resolve the dispute by agreeing to purchase Morris Dam from Pasadena once Colorado River water

became available.

1934 California Division of Water Resources published Bulletin 45, giving a full description of the basin's geology and storage characteristics. It was not until the early 1940s that users learned the basin had been in overdraft every year since 1913, and that the annual overdraft had averaged 7,000 acre feet, or roughly 33% of the average annual safe yield.

1935 Pasadena officials called together representatives of other known Raymond Basin producers, reviewed the published reports of DWR and attempted to negotiate a pumping reduction on a cooperative rather than an adversarial basis. These efforts failed and city officials contemplated legal action.

Pasadena officials had reached the limits of their willingness to act alone. The city reduced pumping somewhat when it began to receive additional supplies from the San Gabriel River. But to redress the overdraft on its own, Pasadena would have to cut its production by one-half and import the expensive Colorado River water when available, while other basin users continued to meet all their needs with groundwater. This Pasadena was unwilling to do.

1937 Pasadena chose instead to defend its right as a senior Raymond Basin appropriator. On September 23, 1937, Pasadena initiated proceedings in Superior Court against Alhambra and other major Raymond Basin water users. The action sought to adjudicate and quiet title to Pasadena's rights in the basin, and to enjoin the annual overdraft. The trial court required Pasadena to amend its complaint to name as defendants all entities in the basin pumping more than 100 AF annually. There were 30 defendants in all. The judge also ruled that the suit was not a simple action to quiet title but was a general adjudication of water rights in the basin.
City of Pasadena v City of Alhambra et al., was the first basinwide adjudication of groundwater rights in California and the first to use the Court Reference Procedure under the California Water Code. That procedure authorized the referral of cases involving the determination of water rights to the Division of Water Resources by the state Department of Public Works for investigation of the physical facts.

1939 20 parties were involved in the court reference procedure and petitioned the court to refer the factual issues to DWR for investigation. The judge directed the referee to determine the "safe yield" of the basin and ascertain whether there was a surplus or an overdraft.

The investigation was expensive and time-consuming. Nevertheless, the referee's investigation avoided multiple concurrent investigations by several parties and provided the parties and court with a coherent, single view of the

Raymond Basin and its problems.

1943 Referee's report filed in Raymond Basin litigation; this draft report described the basic geology of the Raymond Basin and specified the location of the Monk Hill, Pasadena and Santa Anita subareas. The draft report stated the safe yield for Raymond Basin as a whole was 21,900 AF per year and recommended limiting withdrawals to the safe yield and using imported water to meet further demands.

As the referee's draft report circulated among the parties, most of them tried to work out a settlement. Litigation had changed the default condition of the negotiations. Before litigation, failure to negotiate a settlement simply continued the status quo--the pumping race. With litigation underway, if the parties failed to achieve a negotiated settlement, the case would go to trial and the court would decide the parties' water rights. Since Raymond Basin was the first groundwater basin to be adjudicated and California water rights law was very complex, the possible outcomes of a trial were highly uncertain. Waiting for the judge's decision was risky.

The parties already had spent four years and considerable sums of money on this dispute. A negotiated settlement offered the possibility of minimizing additional expenses. Negotiation was facilitated by the presence of shared counsel; one attorney was either counsel or special counsel for sixteen of the parties. This unusual communication link made it easier to reach a cooperative agreement.

1943 Most parties agreed to appoint a committee of seven attorneys and engineers to work out a stipulated agreement that could be presented to the court. All but two parties agreed to the stipulation which provided:
1) admission that taking of the water was adverse to the claims other parties, thus satisfying the requirements of a superior prescriptive right;
2) allocation of the basin's safe yield among the parties;
3) declaration and protection of each party's right to a specified proportion of the safe yield;
4) arrangement for the exchange of pumping rights among parties

On April 5, 1944, Judge Collier designated the Division of Water Resources to serve as watermaster for the stipulation

1944 Judge Collier signed the judgment on December 23, 1944, adopting the stipulation worked out by the parties. By mid 1944, all of the parties except the California-Michigan Land and Water Company had agreed to the stipulation. His decision is known as "mutual prescription". The judge accepted the determination of a "present unadjusted right" defined as the highest amount of

water continuously produced during a five-year period prior to the filing of the lawsuit. Each party owned this right by prescription, and the rights were of equal priority. The judge then defined a "decreed right" for each party which was that party's present unadjusted right adjusted downward about one-third so that the sum of all parties' decreed rights matched the estimated safe yield.

The stipulation and judgment in *Pasadena v. Alhambra* completed the first phase of institution building in Raymond Basin. Water users had constituted a governance structure for the basin through the adjudication process. The stipulation and judgment also established a management program for the basin, within and subject to this basin governance system. The management program was fairly simple, a fixed safe-yield operation. Nevertheless, the provisions of the stipulation and judgment had designated the set of authorized users of the basin and provided for their entry and exit; assigned them rights to specific quantities of pumped water each year and provided for the exchange, lease or sale of those rights; and limited them in the aggregate to the basin's estimated safe yield.

1945 *Pasadena v. Alhambra* judgment appealed by California-Michigan Land and Water Company; the basic governance structure and management program were quickly called into question. As the judge anticipated, his decision based on the stipulation's idea of mutual prescription was the basis for the California-Michigan Land and Water Company appeal

1947 In response to California-Michigan's appeal, the District Court of Appeal reverses and remands *Pasadena v. Alhambra*

1949 In response to an appeal filed to the District Court of Appeals decision, the California Supreme Court affirmed *Pasadena v. Alhambra* overturning the Court of Appeal and affirming the judge's original judgement. The Supreme Court also considered the interests of the various publics served by Raymond Basin water producers. Proportionate reduction by each producer would be less disruptive of the local water economy than the complete elimination of rights for some. Without explicitly endorsing the judge's mutual-prescription reasoning, the Supreme Court sustained his result. This had the effect, intended or not, of adding a new doctrine to California water law.

Although a new doctrine had been added, the California law of water rights had not been overturned or revolutionized. *Pasadena v. Alhambra* had been decided and affirmed without overruling any previous water rights decisions. Mutual prescription was not substituted for the old scheme, but allowed to develop alongside it. *Pasadena v. Alhambra* provided an alternative capacity in which groundwater users could resolve overdraft problems. With the Supreme Court's approval of *Pasadena v. Alhambra*, a community of water

users who had worked out their own settlement of an overdraft could approach a court with some assurance that the judge would recognize the settlement and place public authority behind it. *Pasadena v. Alhambra* allowed users of an overdrafted basin to constitute their own basin governance systems and management programs.

The advent of mutual prescription meant that pumpers in every nonadjudicated basin in the state faced the uncertain situation of not knowing when a basin could become overdrawn. Therefore, the decision in *Pasadena v. Alhambra* had the unintended effect of encouraging pumpers in other basins to increase pumping in order to enlarge and protect their right after a potential adjudication.

1950 City of Pasadena requested redetermination of Raymond Basin safe yield based on observed changes in basin conditions. The court granted the motion on November 17, 1950 and appointed DWR as referee to make the review.

1955 The DWR Report of Referee filed October 5, 1954 increased the estimated safe yield to a total of 30,622 AF. The Court issued a Modification of Judgment on April 29, 1955, increasing the decreed rights of the parties proportionally to a total of 30,622 acre feet, effective July 1, 1955.

1974 On January 17, 1974, the second modification of Raymond Basin judgment was signed allowing parties credit for spreading of canyon diversions in spreading grounds in the vicinity of the Arroyo Seco, Eaton Wash, and Santa Anita Creek

source of above information: "Dividing the Waters" by William Blomquist

1984 On March 16, 1984, the third modification of Raymond Basin Judgment was approved, reconstituting the basin governance system by assigning watermaster responsibilities to Raymond Basin Management Board, successor to the Advisory Board. The board's authority to manage storage water in the basin ushered in the era of conjunctive use and provided the mechanism for local management of the groundwater resource while retaining the safe yield concept of the original adjudication.

1992,1993 October 7, 1992 and March 10, 1993: Long Term Storage policies adopted and Basin storage capacity determined and allocated to parties for their use; an important step in allowing all parties to benefit from the storage potential of the Basin