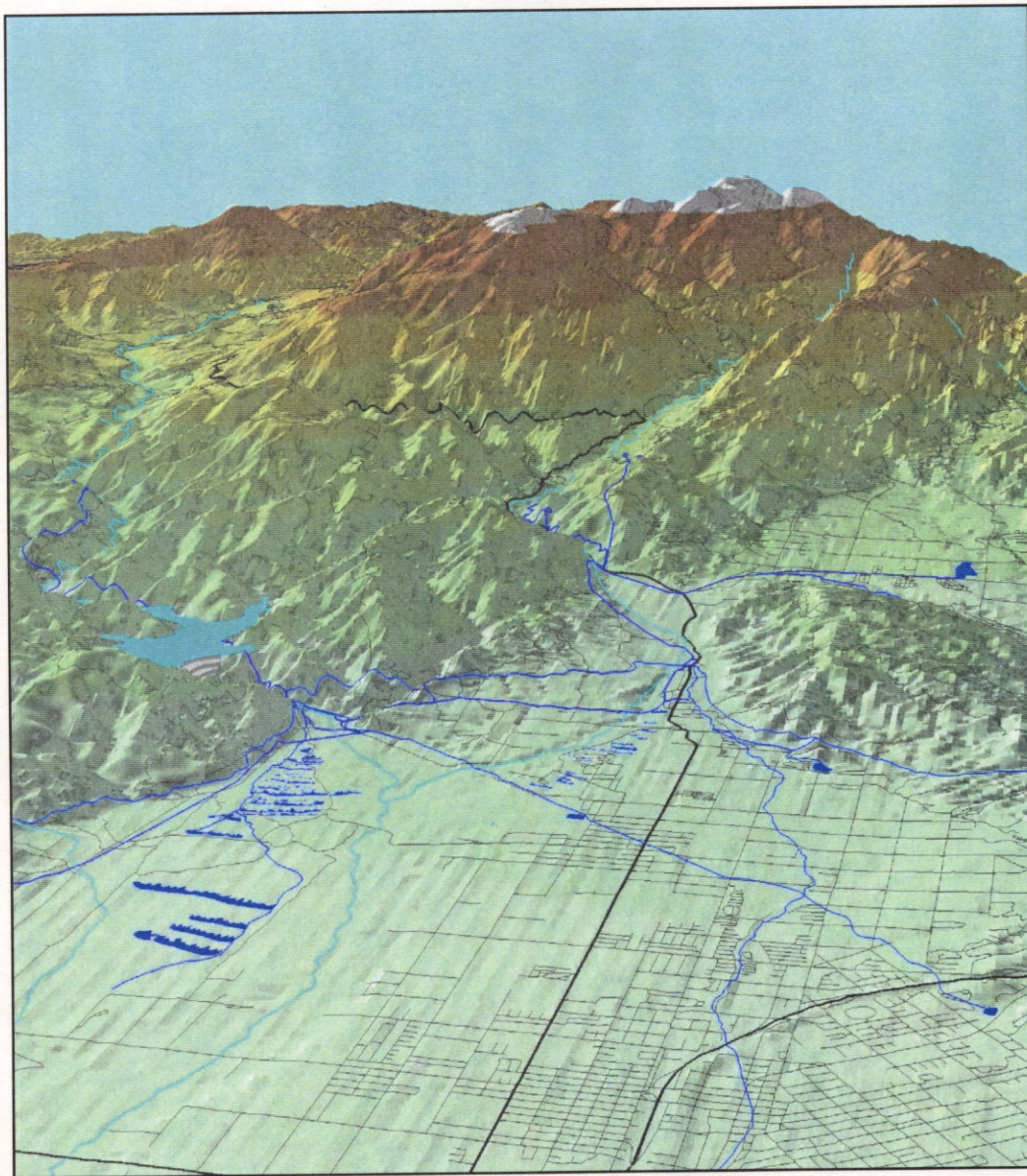


BUCKET FOR BUCKET

*A layperson's guide to the Santa Ana River - Mill Creek
Cooperative Water Project Agreement.*



March 2001

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PREFACE

The Santa Ana River – Mill Creek Cooperative Water Project, commonly referred to as the Exchange Plan, is an Agreement among ten agencies, adopted May 3, 1976. The concept, originally conceived for purposes of delivering supplemental water to the remote, higher elevation Yucaipa area, provides local water purveyors the flexibility to deliver water in the most efficient manner possible, regardless of water rights and facility ownership.

Remarkably, the Exchange Plan Agreement has not been amended since its adoption in 1976. That the Agreement has stood the test of time is truly a compliment to the authors of the Agreement. The fact that the Agreement has never been amended appears to be largely due to its ability to provide enough detail to operate the Exchange Plan while remaining flexible enough to handle changing conditions. Not surprisingly, a document which is able to accomplish such a feat is complex and not particularly easy to read. Its complexity does not arise from the length of the document. On the contrary, considering how much is covered in the document, it is rather brief. It is this combination of brevity and “legalese” which make the document difficult to read and understand...at least the first time through!

This document is an attempt to explain the Exchange Plan and its operation in plain language. Because this is not a legal document, it is able to provide examples, new figures, and new tables which help explain the background of the Exchange Plan. Because this document is easier to read, we suggest reading this document before reading the Exchange Plan Agreement. The document has been divided into two parts which are further broken down into sections. The first part, *Overview of the Exchange Plan*, explains the Agreement itself and how the Exchange Plan was designed to work. The second part, *Exchange Plan Operation*, explains the actual day-to-day operation of the Exchange Plan.

Bucket for Bucket was prepared by a committee of staff members from the San Bernardino Valley Municipal Water District and the San Bernardino Valley Water Conservation District. □

Introduction

Water is undoubtedly one of the most valuable natural resources known to man. Indeed, without it, there would be no life. In addition to sustaining life, water also plays a vital, yet largely unnoticed, role in our daily lives. We depend upon water for bathing, washing our clothes, irrigating our yards, cooking certain meals, and for recreation. Additionally, some of our businesses are completely dependent upon water for their very existence. For example, without water, farmers would not be able to cultivate the crops and livestock that end up in our local grocery stores. When it comes right down to it, the communities in which we live, the jobs at which we work and our overall quality of life are all dependent upon water.

Whether we recognize it or not, water is an extremely important part of our lives. The importance of water to our lives sets the stage for the importance of the collection and the delivery of this precious resource. Water collection and delivery can be quite challenging, particularly in the desert known as Southern California. In Southern California, the semi-arid climate which attracts residents also provides tremendous challenges to the water agencies who serve the area. Since long periods of drought and short periods of heavy rainfall are common in the area, water agencies must efficiently manage supplies when they are available.

The San Bernardino region lies at the upper portion of the Santa Ana River watershed in Southern California. There are three primary sources of water available to this area: 1) stream water from Mill Creek and the Santa Ana River; 2) local groundwater; and 3) imported water from northern California via the State Water Project. Although the San Bernardino area is fortunate to have a relatively abundant water supply, water and agricultural industry leaders in the San Bernardino area still face the challenges of managing the generous water resources to meet water demands throughout the area. One of the biggest challenges was supplying the Yucaipa area with supplemental water. Due to Yucaipa's relatively remote location at the far eastern side of the San Bernardino Valley, its elevation of approximately 2,900 feet, and its lack of water rights to local water from Mill Creek, it appeared as though serving supplemental water to the area would require a costly array of pipelines and pump stations. Surprisingly, the final solution involved a strategy where existing resources, existing facilities and some new facilities were shared amongst the water community to deliver water economically and efficiently to Yucaipa and others.

This concept of solving the age old question of water management by cooperatively sharing public and private assets was presented in the **Santa Ana River – Mill Creek Cooperative Water Project Agreement**, commonly referred to as the “**Exchange Plan**”. On October 30, 1973, the Exchange Plan Committee met for the first time to discuss the concept of the plan and the commitments of each participating entity, or Party. The Parties to the Agreement included Bear Valley Mutual Water Company, Crafton Water Company, East San Bernardino County Water District (now East Valley Water District), Lugonia Water Company, North Fork Water Company, City of Redlands, Redlands Water Company, San Bernardino Valley Municipal Water District, San Bernardino Valley Water Conservation District, and Yucaipa Valley County Water District (now Yucaipa Valley Water District). On May 3, 1976, members of the Exchange Plan Committee formally entered into the Exchange Plan Agreement. The Agreement provides for the beneficial

use of local water and imported water using various exchanges and transfers to provide the most economical, efficient, and dependable water supply, while minimizing the expense to water users and taxpayers. In its simplest form, the Exchange Plan is commonly described as a "bucket for bucket exchange". A Party to the Agreement provides a "bucket" of their water to a second Party and the second party provides a "bucket" of water from an alternate supply back to the original Party.

Since the Exchange Plan was adopted in 1976, it continues to provide water economically and efficiently to all of the Parties. Additional facilities will be constructed beginning in 1999 which will provide added flexibility to the Plan as it continues to operate into the future. □

Purpose of the Exchange Plan

Arguably, the single greatest challenge to water suppliers throughout the ages was conquering elevation, or delivering water uphill. Before the advent of pumps, societies would primarily develop lands along the edge of their water source. The construction of water transmission facilities such as canals and pipelines allowed societies to develop new communities in areas which were not immediately adjacent to a water supply. The advent of pumps enabled people to develop the higher elevations which did not have a gravity fed supply of water. However, there is a saying in the water business that the water is free, it's the facilities required to move the water which costs money. Thus, although pumps allowed the development of higher elevation areas, their use increased the cost to deliver the water. As a result, the use of pumps is avoided wherever possible to reduce delivery costs.

Due to the hilly terrain of the East San Bernardino Valley, water purveyors in this area have always faced the challenge of delivering water to higher elevations. In most cases the challenge has been met by locating storage facilities so they are able to receive and to serve water by gravity. However, this option is not available in all areas of the East San Bernardino Valley.

The town of Yucaipa is situated at an elevation of roughly 2,900 feet. Although Mill Creek flows could be delivered to Yucaipa by gravity, Yucaipa does not have any water rights to the flows of Mill Creek. Thus, prior to the Exchange Plan, Yucaipa was forced to rely upon other supplies to meet its needs.

As Yucaipa's population grew, the largest water purveyor, Yucaipa Valley County Water District, determined that the groundwater supply would not provide an adequate supply into the future. Because Yucaipa has no rights to Mill Creek water, they began working with the San Bernardino Valley Municipal Water District (Valley District) to obtain a supplemental supply of water. One reason Valley District was formed is to provide supplemental water from the California State Water Project (import water) to the inhabitants of the East San Bernardino Valley stretching from Rialto in the West to Yucaipa in the East. At the present time, Valley District's seventeen-mile Foothill Pipeline delivers import water from the Devil Canyon powerplant to the Santa Ana River. However, the end of the Foothill Pipeline is still some eight miles from Yucaipa and approximately 1,000 feet lower in elevation.

Valley District identified two alternatives for delivering supplemental water to Yucaipa: (1) pump import water directly to Yucaipa or (2) deliver import water to Yucaipa by a three-level exchange. The three-level exchange is generally described in Table 1.

In a three-level exchange, the entities which have entitlements to local water in Mill Creek and the Santa Ana River agreed to deliver a portion of their entitlement water to where it's needed in exchange for an equal amount of water from an alternate source. Figure 1 provides a graphical representation of the elevations which had to be overcome as well as an overview of the facilities used to move water by exchange. The advantages of this concept is that many of the deliveries could be made by gravity flow, thereby reducing the

need for pump stations. Additionally, since Mill Creek water is delivered to Yucaipa instead of import water, the Foothill Pipeline did not have to be extended into Yucaipa. The reduced facility costs of the three-level exchange concept made it the selected alternative and became one of the primary purposes of the Exchange Plan.

Table 1. Three-level exchange to Yucaipa.

Level 1	Mill Creek water is delivered to Yucaipa by gravity.
Level 2	Santa Ana River water is delivered to the Mill Creek users by gravity.
Level 3	Import water is delivered to the Santa Ana River users by gravity via Foothill Pipeline.

Although supplemental water delivery to Yucaipa was one of the primary purposes of the Exchange Plan it certainly was not the only purpose. The Exchange Plan itself describes the purpose more generally as a means for securing the maximum efficiency and economy in the use of the local and imported water supplies. The Parties to the agreement are free to exchange water with each other, under the terms of the agreement, whenever beneficial. Another benefit which became one of the big selling points of the Exchange Plan was the ability to supplement local water supplies with imported water from the California State Water Project. This supplemental supply provides added flexibility and a measure of reliability during storm events when the river is too turbulent to use or during periods of drought. □

Parties to the Agreement

The Parties to the Exchange Plan can generally be characterized as public water agencies and private water companies that provide water service to the East San Bernardino Valley. Most of the Parties to the Agreement are entitled to local water from the Santa Ana River and/or Mill Creek. The San Bernardino Valley Municipal Water District has an entitlement to imported water from the California State Water Project. The San Bernardino Valley Water Conservation District has licenses to replenish the groundwater basin using excess local water. Yucaipa Valley County Water District, now known as Yucaipa Valley Water District, had no rights to local water when the Exchange Plan was written. However, in 1999, Yucaipa Valley Water District purchased shares of Bear Valley Mutual Water Company stock providing them entitlement to water in the Santa Ana River. Since the Agreement was adopted in 1976, there have been no changes to the Parties (also referred to as **eligible entities**, or **members**) of the Exchange Plan. Table 2. provides a complete list of the Exchange Plan membership including name changes.

Table 2. Exchange Plan Parties (Eligible Entities).

Exchange Plan Parties in 1976	Name Change
Bear Valley Mutual Water Company	
City of Redlands	
Crafton Water Company	
East San Bernardino County Water District	East Valley Water District
Lugonia Water Company	
North Fork Water Company	
Redlands Water Company	
San Bernardino Valley Municipal Water District	
San Bernardino Valley Water Conservation District	
Yucaipa Valley County Water District	Yucaipa Valley Water District

Figure 2. shows the general location of the areas served by each party.

Membership in the Exchange Plan may only change when one of the Parties sells their water rights or when a new Party is added to the original membership. To protect the investment of all of the Parties, each Party agreed to have a lien placed on their water rights. The lien obligates the seller and buyer to enter into an agreement under which the buyer assumes all of the obligations under the Exchange Plan. Once this agreement is delivered to the Management Committee, the buyer automatically becomes a new member of the Exchange Plan.

In addition to becoming a member of the Exchange Plan by purchasing water rights, the Exchange Plan also includes a provision for adding **new members**. Procedurally, all prospective new members must complete the following:

1. Submit an application to the Management Committee.
2. Obtain approval of the application by the Management Committee.
3. Obtain written consent of all existing Parties, not in default, to the Agreement.

Once the above tasks are completed, the prospective party becomes a new member of the Exchange Plan. □

Exchange Plan Members

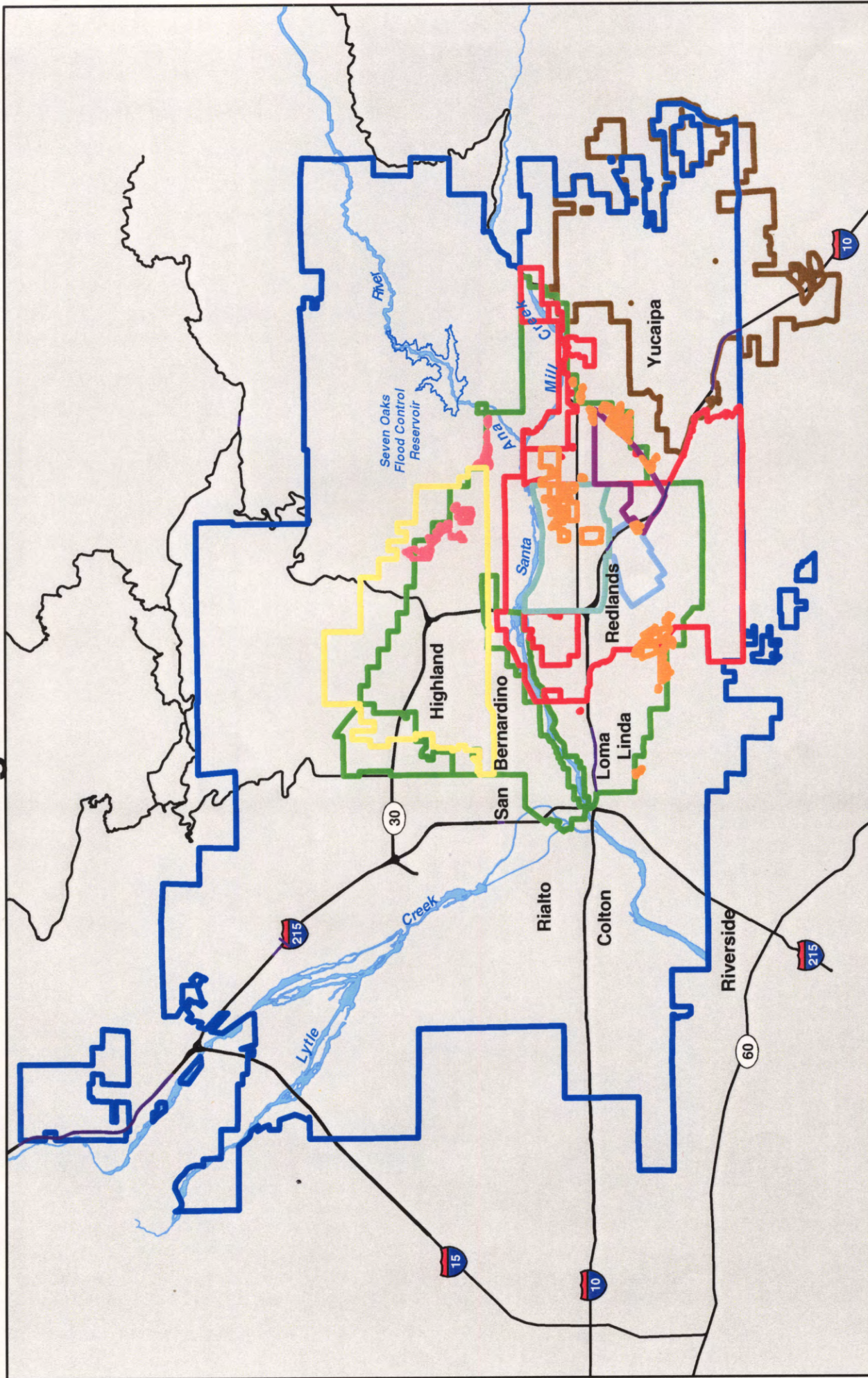


Figure 2

Water Rights

There is a colorful quote which is often used in the water business, "Whiskey is for drinking...water is for fightin'!" That single quote does well to describe the atmosphere surrounding the volatile subject of water rights. Amongst those who claim water rights, there is an ever present fear that their claimed rights may be lost. As a result, the Exchange Plan was very careful not to go into any great detail on the subject of water rights. Instead, the Agreement basically recognizes all member's claims to water rights and states that it will in no way alter or transfer any water rights.

Two exhibits in the Exchange Plan, Exhibit A, *Entitlements to Water*, and Exhibit B, *Entitlement Water Maximum Instantaneous Rates of Flow and Delivery Points*, are the closest the Exchange Plan Agreement gets to quantifying water rights along the Santa Ana River and Mill Creek. However, even these two figures are very carefully written so as not to quantify specific rights along either of the two streams. Exhibit A describes the general "entitlements" to Santa Ana River and Mill Creek water and references two figures (Plates) which provide the schematic layout of the facilities used to convey Santa Ana River water and Mill Creek water respectively. Exhibit B provides the **maximum instantaneous rates of flow** of the facilities and provides the specific **delivery points**. A summary of Exhibit A and Exhibit B is outlined in Tables WR.1 and WR.2 below. Please note that Southern California Edison Company is only allowed to divert water to generate power.

Exhibit A in the Exchange Plan clearly states that it is not the intent of the Exchange Plan Agreement to do anything which will in any way impact the quantities of water each of the Parties is entitled to receive. In fact, the Exchange Plan clearly states that all Parties have the rights that they claim unless a court determines otherwise. Additionally, the Parties each agreed that no other Party may condemn or take, without consent of the owner, water rights, sources of supply, stock, or anything else which is subject to the terms of the Agreement provided the owner is not in default. Should someone other than a Party to the Agreement dispute one of the Party's water rights, the Party is responsible to pay any costs associated with defending their own claimed water rights. Should the Exchange Plan Agreement itself be attacked, Valley District pledged to defend the Agreement.

To ensure successful operation of the Exchange Plan into the future, the Plan requires a very important element...water! If any of the water included in the Exchange Plan were to be withheld from the Exchange Plan, the entire Plan would be in jeopardy. The authors of the Exchange Plan were aware of this fact and included several clauses to secure each of the water sources required to successfully operate the Plan. By signing the Exchange Plan Agreement, each of the Parties made a **covenant** binding themselves and any future successors to the provisions of the Agreement. Each of the individual Parties also granted a **lien** on their water rights to the other Parties in the Agreement. The covenant and lien protects the investment of all of the Parties by ensuring that none of the Parties can withdraw their water rights from the Exchange Plan. Because the lien is against the water right and not against the entity, it is transferred with the water right to any **heir, successor, transferee, or assign**. The procedure for selling water rights from one of the Parties requires an agreement which

transfers all of the obligations of the Exchange Plan to the new owner. This agreement must be delivered to the Management Committee for the transaction to be valid. □

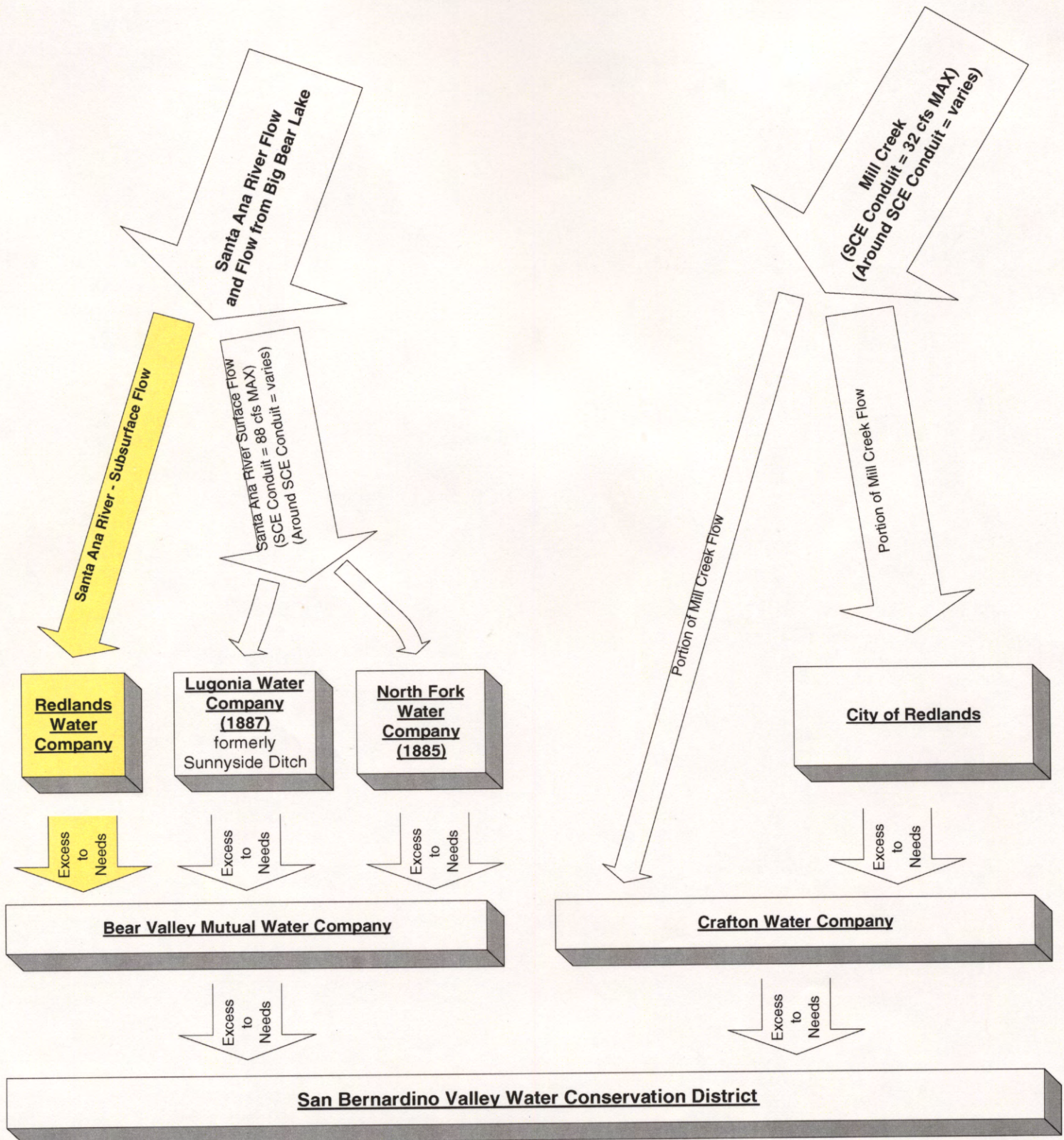
Table3. Summary of Exchange Plan Exhibits A and B for the Santa Ana River.

SANTA ANA RIVER				
Entity	Diversion Point	Delivery Point	Quantity	Reference(s)
Southern California Edison Company (SCE)	Confluence of Bear Creek and Santa Ana River	SCE Powerhouses 1, 2, and 3.	88 cfs (not a consumptive right)	Agreement with Bear Valley Mutual Water Company. FERC license.
Bear Valley Mutual Water Company	Forebay to SCE Powerhouse No. 3	Bear Valley Highline	9 cfs (capacity controlled by Crafton Heights Pipeline Company)	Agreement between North Fork and Bear Valley. Agreement between Lugonia Water Company (South Fork) and Bear Valley.
North Fork Water Company Lugonia Water Company Bear Valley Mutual Water Company	Tailrace of SCE Powerhouse No. 3	North Fork and Bear Valley: existing North Fork box located on the North side of the Conservation District main canal and up to 3 cfs at the East Highlands Water Company weir. Lugonia and Bear Valley: Redlands Aqueduct above the Mentone Reservoir.	79 cfs (remaining flow)	
San Bernardino Valley Water Conservation District	Mouth of the Santa Ana Canyon	Existing main canal located on the south side of Greenspot Road (NE quarter of Section 7, T1S, R.2W).	Storm flows and waters in excess of the needs of Bear Valley, Lugonia, and North Fork.	State of California license numbers 2831 and 2832
City of Redlands	Tunnel at mouth of Santa Ana Canyon (subsurface flow).	Redlands Aqueduct above the Mentone Reservoir.	none given in Exchange Plan.	

Table 4. Summary of Exchange Plan Exhibit A and B for Mill Creek.

MILL CREEK				
Entity	Diversion Point	Delivery Point	Quantity	Reference
Southern California Edison Company (SCE)	Mill Creek near Forest Home in Mill Creek Canyon.	SCE Powerhouses 1 and 2-3.	32 cfs (not a consumptive right)	Agreements with water purveyors and FERC license.
Crafton Water Company	Across from SCE Powerhouse No. 1	Zanja near the Boullion Box and the influent pipeline for the Henry Tate Filter Plant	none given in Exchange Plan.	Certain deeds and other factors between Redlands and Crafton.
City of Redlands	Across from SCE Powerhouse No. 1	Henry Tate Filter Plant South of Mill Creek Road.	none given in Exchange Plan.	Certain deeds and other factors between Redlands and Crafton.
San Bernardino Valley Water Conservation District		Mill Creek Channel above the existing intake structure located on the south bank of Mill Creek (NW quarter section 21, T1S, R2W).	Storm flows and waters in excess of the needs of Crafton Water Company and City of Redlands	

Figure 3. Local Water Rights Claims



Source(s): Hinkley, Horace P., Water Rights & Water Requirements of Entities Involved in the East Valley Water Exchange Plan, October 1973.
 Telephone conversation with Mike Huffstutler of City of Redlands, August 5, 1999.

RMT
 12/29/1999

Facilities

The Exchange Plan reduces water delivery costs through sharing existing facilities, minimizing the need for new facilities, and reducing pumping costs. Valley District agreed to design and construct the **Exchange Plan facilities** necessary to deliver water at the maximum flow rates to the delivery points specified in the Plan. Valley District hired Bechtel Incorporated to help design the necessary Exchange Plan facilities. The facilities were designed for a dual purpose: (1) to provide Exchange Plan deliveries and (2) to ultimately transport import water for Valley District and **San Geronio Pass Water Agency (Pass Agency)**. Valley District entered into a contract with the Pass Agency in July of 1970. The agreement gives the Pass Agency the option to obtain capacity in certain Valley District facilities and receive deliveries of water through those facilities. The Exchange Plan facilities constituted a portion of the water transmission facilities outlined in the 1970 agreement. The Pass Agency did elect to participate in the cost of the Exchange Plan Facilities and is, therefore, entitled to receive water through these facilities. Bechtel presented their design in a report entitled "Water Transmission Project Phase 3, Cooperative Water Project Design Criteria Report" dated November 1974. The proposed facilities are presented in the Exchange Plan as Plate 1, *Conceptual Plan of Cooperative Water Project Facilities and Associated Water Facilities* (see pouch herein).

The Exchange Plan facilities provide for capacity needs of the Exchange Plan and capacity needs for Valley District and the Pass Agency. The **minimum capacities** for the first increment of Exchange Plan facilities is included below¹:

Table 5. Minimum capacities of the first increment of Exchange Plan facilities.

Description	Minimum Capacity (cfs)
North Fork Canal Temporary Turnout	30
Pumping Plant No. 5	12
Pumping Plant No. 5 Discharge Line	12
Foothill Pipeline to Redlands Aqueduct Turnout	30
SBVMWD High Line	25
Pumping Plant No. 4 to Redlands	20
Connection to Redlands Tate Filter Plant	32
Crafton – Zanja Turnout	10
Turnout to Mill Creek above Conservation District Spreading Intake	25
Pumping Plants and Pipelines Connecting SBVMWD	As needed
Phase 2 Foothill Pipeline to SBVMWD High Line	

Valley District agreed to make every reasonable effort to commence construction of the first increment of the Facilities on or before April 1, 1977 and to bring the first increment of the facilities to completion with reasonable diligence. Construction of additional increments was to be scheduled by the Valley District based upon the need to meet water demands as determined by Valley District and the Management Committee. Construction of the facilities by Valley District was subject to the following conditions:

- a. Valley District reserved the right not to construct any facilities for an Eligible Entity that is not a Party to the Agreement until that Eligible Entity becomes a Party to the Agreement.

- b. Construction of facilities connecting to Southern California Edison facilities was contingent upon satisfactory completion of an agreement with the Edison Company.
- c. Construction of all facilities was/is contingent upon receiving the necessary approvals and permits. The Valley District pledged to do their part to obtain all necessary approvals and permits with "reasonable diligence".
- d. Construction of facilities was/is contingent upon the necessary funds being available to the Valley District.

Each of the Parties retained **ownership, operation, maintenance, and replacement responsibility** for its own facilities. Thus, each Party operates its own facilities to make the deliveries which are approved by the Management Committee. Since Valley District paid to design and construct the Exchange Plan Facilities, Valley District is responsible for the operation, maintenance, and replacement of those facilities.

The facilities shown in the Exchange Plan (see Plate 1) represent a "wish list" of facilities which provides ultimate operational flexibility and also includes alternative facility alignments. However, not all of the facilities shown in the Exchange Plan are required to successfully operate the Plan. One example of a facility which provided operational flexibility but was not needed at startup of the Plan is the "Yucaipa/SGPWA Line" (see Plate 1). The Yucaipa/SGPWA Line connects the "SBVMWD High Line" to the "Mill Creek/Yucaipa Line" thereby allowing direct delivery of import water to Yucaipa. Plate 2 shows the Exchange Plan facilities that have been constructed or will be constructed by 2002.

The Exchange Plan does not include a schedule for construction of **new facilities**. Instead, the Exchange Plan simply states that facilities will be constructed as needed. In 1999, the State of California Department of Water Resources in cooperation with Valley District and the Pass Agency began construction of Phase I of the East Branch Extension of the State Water Project (see Plate 2). This project will provide the facilities necessary to deliver import water directly to Yucaipa and onto the Pass Agency. Although the alignment differs and the facility names have changed, the Phase I facilities represent construction of Pumping Plant No. 1, Pumping Plant No. 2, Pumping Plant No. 3, and the Yucaipa/SGPWA Line originally presented in the Exchange Plan (see Plate 1). Phase II of the East Branch Extension project will involve construction of facilities which will connect the Foothill Pipeline directly to the proposed Crafton Hills Pump Station. These Phase II facilities will bypass the Exchange Plan facilities thereby adding the operational flexibility to deliver import water without interrupting service through the Exchange Plan. □

¹ Santa Ana River – Mill Creek Cooperative Water Project Agreement, Exhibit D, May 3, 1976.

Deliveries

As previously stated, the primary objective of the Exchange Plan is to deliver water where it is needed by the most cost effective means possible. However, that is easier said than done! The authors of the Exchange Plan first had to identify the various water sources, delivery locations, water quality requirements, and delivery priorities. All of these issues had to be addressed before one drop of water could be delivered through Exchange Plan Facilities.

With the exception of Yucaipa Valley Water District, each Party brings a certain amount of water resources to the Exchange Plan. These resources are generally described in the Plan as “**local water**” and “**import water**”. Local water is defined as all water supplies except import water available to an Exchange Plan Member. Import water is defined as water from the California State Water Project. Depending upon the details of the delivery, the water is further classified as “entitlement water”, “exchange water”, “deferred exchange water”, “simultaneous exchange water”, or “supplemental water”. Each of these classifications was assigned a delivery priority and a delivery charge (see Water Charges).

Entitlement water, as defined in the Exchange Plan, is local water to which an entity is entitled based on agreements, licenses, deeds, historic information and other factors which were established at some point prior to entering into the Exchange Plan Agreement. The authors of the Exchange Plan were very careful to explain that entitlement water, as defined under the terms of the Exchange Plan, *is not* a definition of an entity’s existing water rights or an attempt to establish water rights (see Water Rights).

In addition to entitlement water, the Exchange Plan also characterizes local water or import water delivered to an entity during an exchange as **exchange water**. There are two types of exchanges recognized by the Exchange Plan: (1) simultaneous exchange and (2) deferred exchange. A **simultaneous exchange** involves delivery of a Party’s entitlement water to a receiving Party at essentially the same time as the first Party receives an equal amount of make-up, or exchange, water from an alternate source. One example, of a simultaneous exchange is the three-level exchange to Yucaipa. In this case, direct delivery of import water to Yucaipa is not possible due to a lack of facilities. Instead, Yucaipa receives local water from Mill Creek, the Mill Creek users receive local water from the Santa Ana River and the Santa Ana River users receive import water from the State Water Project. In this scenario, Mill Creek is considered supplemental water because Yucaipa has no water to exchange. Since the Mill Creek users and Santa Ana River users have local water to exchange, the “make-up” water from the Santa Ana River and the State Water Project that is delivered to them in exchange for their primary supply is considered exchange water. When all of these deliveries occur at essentially the same time, it is referred to as a simultaneous exchange.

Another type of exchange is referred to as a **deferred exchange**. A deferred exchange is the same as a simultaneous exchange except that the giving Party agrees to take delivery of their make-up, or “exchange”, water at a later date. The Party agreeing to take delivery of exchange water at a later date receives *deferred exchange water credits* which may be redeemed for water anytime within a two-year period from the time the

credits are accumulated, unless another arrangement is approved by the Management Committee.

The final type of water defined in the Exchange Plan is **supplemental water**. Supplemental water is defined as any water that is delivered to a Party other than their own entitlement water or exchange water. For example, in a three-level exchange to Yucaipa, Yucaipa is said to receive supplemental water since they are not entitled to Mill Creek water and they have no water to exchange. Import water can also be classified as supplemental water when it is directly delivered to an entity and is not part of an exchange.

Given the various sources available to the Exchange Plan, the Management Committee may deliver water to any eligible Party. The Management Committee is charged with making deliveries which result in the maximum efficiency and economy of the available resources. Exchange Plan water deliveries are subject to:

- (1) Any rules and regulations adopted by the Management Committee.
- (2) Scheduling requirements of the Management Committee.
- (3) Payment of any charges.
- (4) Limitations of available water supplies and available capacity in the delivery facilities (including Valley District's Foothill Pipeline).

All deliveries proposed by the Management Committee are subject to the **delivery priorities** assigned to the Exchange Plan facilities and other associated facilities. The Exchange Plan is based upon a spirit of mutual cooperation amongst all of the Parties. Each of the Parties shares their water and their facilities in order to deliver water in the most efficient manner possible. However, the Exchange Plan also recognizes that each of the independent Parties have a significant investment in their own facilities and have their own delivery responsibilities. It is the significant investment and individual delivery responsibilities which sets the delivery priorities within the Exchange Plan. Basically, each of the Parties reserved the right to use their own facilities first before making them available to the Exchange Plan. This policy also applies to the Exchange Plan facilities owned by Valley District and the Pass Agency. Any use by Valley District and/or Pass Agency takes precedence over any Exchange Plan delivery.

In addition to assigning priorities based upon ownership of the facilities, certain water deliveries are assigned a higher priority than others. For example, a simultaneous exchange is assigned a higher priority than a Party moving entitlement water through Exchange Plan facilities for their own individual benefit. Table 6 provides a complete list of the delivery priorities along with specific examples. Provided that the water is available and there are no other constraints prohibiting delivery, the Management Committee schedules deliveries based on this list of priorities.

Table 6. Delivery priorities for Exchange Plan facilities.

Priority	Delivery Classification	Example
Highest ↓ Lowest	Valley Water District and/or Pass Water Agency use.	Delivery of import water to Valley District or the Pass Agency.
	Simultaneous exchange water	Delivery of Santa Ana River water to Mill Creek users and import water to Santa Ana River users at essentially the same time.
	Deferred exchange water	Delivery of water against a Party's valid deferred exchange water credits.
	Supplemental water	Sale of local water or import water from one Party to another.
	Entitlement water delivered through Cooperative Water Project Facilities	Bear Valley Mutual Water Company delivering Santa Ana River water through the Greenspot Pipeline (Exchange Plan facility).
	Any use of the Cooperative Water Project Facilities by parties other than eligible entities.	Use of the Greenspot Pipeline to transport water to anyone other than an eligible entity.

From time to time, **temporary reduction or complete termination of deliveries** may occur to accommodate routine maintenance or upgrades. Additionally, Exchange Plan facilities may be taken out of service due to "dirty" water caused by storm events. Each of the Exchange Plan members are obligated to notify the Project Manager of any scheduled shutdowns or any other interruption in water deliveries. The Project Manager is given the responsibility for managing system outages to minimize impacts on all of the Parties.

In the event service is interrupted at any of the Exchange Plan or associated facilities, deferred exchange water credits will accrue for any Party who is delivering entitlement water to another Party but is unable to receive exchange water due to the facility outage. Deferred exchange water credits accrued during a facility outage are not subject to the normal two-year expiration.

Should facility outages or water shortages make it impossible for the Project Manager to deliver water as provided for in the Exchange Plan, the Project Manager must notify all of the members of a temporary discontinuance of service until delivery schedules can be met or the source of the service interruption can be remedied. During the temporary discontinuance, each Exchange Plan member reverts back to historical conditions (delivery conditions before implementation of the Exchange Plan). Once the Project Manager concludes deliveries may resume, all Parties of the Exchange Plan are notified and Exchange Plan deliveries resume.

Water quality is dependent upon many different factors. Quality may be degraded due to the introduction of organic compounds, inorganic compounds, chemicals, or even dirt due to a storm event or other upstream activities. The Exchange Plan recognizes the importance of water quality with the simple, yet elegant requirements that (a) the quality of the water exchanged must meet a standard that ensures it is suitable for its intended use and (b) the quality of water must adhere to applicable water quality standards issued by any governmental agency. The Parties each agreed to operate their facilities in a manner which would not impair or degrade the quality of the water. If any Party is found to be in violation of any government water quality standards, that Party shall be allowed to revert back to historical conditions until its water quality meets the required standards.□

Water Charges

Members of the Exchange Plan agreed to pay charges depending upon how the Exchange Plan is used. Separate fees were generated for delivery of simultaneous exchange water, deferred exchange water, supplemental water, and entitlement water. In a **simultaneous exchange**, a Party delivers an amount of their entitlement water to another Party at “substantially” the same time as they receive an equal amount of “exchange water” from another source. There is no charge to any Party for a simultaneous exchange.

Unlike a simultaneous exchange, there may be a charge for a **deferred exchange**. The cost for delivery of deferred exchange water is equal to the total of all additional costs required to deliver the deferred exchange water as compared to delivering the water as a simultaneous exchange. For example, given adequate supplies, no pumping is required to deliver entitlement water and exchange water in a simultaneous exchange. If a Party takes delivery of their deferred exchange water during a dry year, which requires the water to be pumped, the Party would be responsible for paying the pumping costs.

In addition to water exchanges, the Exchange Plan also provides for the delivery of **supplemental water**. Supplemental water can be generally defined as water which augments a Party's supply. The charge for using the Exchange Plan to deliver supplemental water is calculated based upon the volume of water, in acre-feet (one acre-foot of water is approximately equal to the volume of water it would take to fill an area the size of a football field one foot deep). The charge for supplemental water delivery covers a portion of the personnel expenses incurred by Valley District to deliver import water, the cost of any energy requirements incurred by Valley District to convey supplemental water or entitlement water, and the “lost energy charge”. The “lost energy charge” is paid to Southern California Edison to cover their cost to generate power at an alternate location while their facilities are bypassed during an exchange. The charge for supplemental water was originally calculated using the highest value of two formulas. However, these formulas were only valid for a ten (10) year period ending in 1986. Following that ten (10) year period, the Parties agreed that the Valley District would set the charge. Currently Valley District charges a subsidized fee for delivery of State Water Project water (import water) to Devil Canyon Power Plant and charges an additional conveyance fee to deliver the water anywhere in the Valley District system.

The Exchange Plan facilities are available to the Parties of the Exchange Plan for delivery of their **entitlement water**. However, when the facilities are used for this purpose, the water is subject to the Valley District conveyance charge. Like the charge to convey supplemental water, the conveyance charge for delivering entitlement water through Exchange Plan facilities was originally calculated by a formula which was used for a ten (10) year period ending in 1986. Like the supplemental water charge, following the ten (10) year period, Valley District was given the authority to set the charge. However, the Exchange Plan specifically limits the charge to all of the costs of making such deliveries including, but not limited to, operations, maintenance, energy, repair, replacement, overhead, and capital costs. Currently, the conveyance charge for delivery of entitlement water through Exchange Plan facilities is the same as the conveyance charge for delivery

of supplemental water through the Valley District system. The Exchange Plan provides for one exception to the conveyance charge. The Management Committee, with the approval of the Valley District Board of Directors, may elect to waive the conveyance fee for transmission of "...all or any portion of the 9 cfs presently going from the forebay of the Santa Ana No. 3 to the Boullioun Box..." through Exchange Plan facilities. In other words, as long as the combined flow through the Highline and Exchange Plan facilities does not exceed 9 cfs, there is no conveyance charge. Once the total flow exceeds 9 cfs, the amount above 9 cfs is subject to the conveyance charge.

Under the terms of the Exchange Plan, the Project Manager **invoices** the Parties for any water charges on a monthly basis. Payment is due to the Project Manager within thirty (30) days of receiving the invoice. The Project Manager is then required to forward all payments to Valley District within five (5) days of receipt. □

Management

The success of the Exchange Plan is largely dependent upon the ability to enforce the rules contained therein. Without the ability to enforce the agreement, it would never work. The authors of the Exchange Plan recognized this fact and, similar to the Federal government, set up a system of enforcement which includes a “legislative branch” and an “executive branch”. The legislative branch of the Exchange Plan can be characterized as the **Management Committee**. The executive branch of the Exchange Plan can be characterized as the **Project Manager** who is given responsibility to implement the Plan and to provide a check and balance of the Management Committee. Since the Agreement was signed in 1976, the San Bernardino Valley Water Conservation District has acted as Project Manager of the Exchange Plan.

The Management Committee is comprised of one (1) representative from each of the Parties of the Exchange Plan. Committee members are appointed by the Party they represent and serve a four (4) year term or until they are replaced. The Committee is required to meet regularly. A vote by a majority of the Committee members who are not in default of the Exchange Plan is required for the Committee to take any action. Once an action has been approved, the Project Manager of the Exchange Plan is responsible for implementing the action. The Chairman or any three (3) members may call a special meeting. At the beginning of each year, the Committee appoints a chairman and officers from amongst the Committee members and also selects a secretary who may be, but need not be, a Member of the Committee. The Exchange Plan outlines **five areas of responsibility for the Management Committee**:

- A. Setting operating rules, regulations and policies not specifically covered in the Exchange Plan.
- B. Approving or disapproving requests for scheduling deliveries of water.
- C. Supervising the work of the Project Manager.
- D. Assisting in resolving disputes between Parties
- E. Advising Valley District on pertinent facilities design, construction, operations and pricing policies.

The administrative expenses for the Project Manager and any costs incurred by the Management Committee, not including compensation of the Management Committee members, is paid by Valley District. The amount of these expenses may not exceed the annual **budget** as set forth in the annual budget agreement between Valley District, the Management Committee, and the Project Manager, without the consent of Valley District.

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Legal

SOUTHERN CALIFORNIA EDISON AGREEMENTS

Through agreements with local water purveyors and licenses from the Federal Energy Regulatory Commission (FERC), Southern California Edison has the right to generate power using local water from the Santa Ana River and Mill Creek. This right caused Edison to invest in the construction of three power plants along the Santa Ana River and two powerplants on Mill Creek.

To deliver Santa Ana River water to Mill Creek users without pumping, requires that the water be delivered from the Greenspot Forebay (Forebay). The Forebay is the “reservoir” which feeds the Bear Valley Highline and the Valley District Greenspot Pipeline. Delivery of water to the Greenspot Forebay means that the water will not go through the Edison Powerhouse 2-3 for power generation. This loss in power generation to Edison must be made up at a conventional power plant (natural gas, coal, etc.). Thus, delivering Santa Ana River water to Mill Creek users costs Edison money in the form of fuel and other costs associated with providing power from another facility. Resolution of this problem required all of the affected parties to reach an acceptable agreement. Realizing that this issue would take a long time to resolve, the Parties chose to approve the Exchange Plan before completing an agreement with Edison. Instead, Valley District pledged to work with reasonable diligence to make new arrangements and agreements with Edison, Crafton, and Bear Valley.

A final agreement with Edison was successfully reached in 1982, six years after the Exchange Plan was adopted! The agreement provides Edison with a fee for every acre-foot of water that bypasses their facilities. The fee is often referred to as the “lost energy charge” because it compensates Edison for a loss in energy production due to operation of the Exchange Plan.

BREACH OF THE EXCHANGE PLAN AGREEMENT

If one of the Parties does not comply with the terms of the Exchange Plan, a breach has occurred. Although any of the Parties may claim a breach, the breach must be certified by (a) receiving concurrence from the Project Manager or (b) receiving concurrence from two (2) other members of the Management Committee. If the Party claiming the breach is unable to obtain concurrence by one of the two methods mentioned above, the Management Committee takes no action. If the Party claiming the breach obtains concurrence, then the Party suffering the breach (which is itself not in default) may withhold delivery of its Entitlement Water and revert to Historical conditions until the breach is remedied. If the Parties are unable to settle the breach, the Exchange Plan specifically states that nothing within the Plan shall prevent any Party from seeking judicial relief.

WITHDRAWAL FROM THE EXCHANGE PLAN AGREEMENT

The Parties agreed to protect their investment in the Exchange Plan by ensuring that it was difficult, if not impossible, to withdraw from the Agreement. As a result, none of the Parties may withdraw from the Agreement unless they can obtain written consent from all of the other Parties.

AMENDMENTS TO THE EXCHANGE PLAN AGREEMENT

Realizing that there may be a need to modify the Exchange Plan in the future, a provision was included to allow the Plan to be amended by a written agreement of all of the parties. Since the Exchange Plan was adopted in 1976, there have been no amendments. □

Exchange Plan Operation

The Exchange Plan allows the water resources of the eastern San Bernardino Valley to be utilized to their fullest extent by sharing water resources, existing facilities and new facilities. The existing facilities, owned by various Parties, are called Associated Water Facilities. The new facilities, owned and operated by Valley District, are called Cooperative Water Project Facilities. The Management Committee is given operational authority over all of the shared resources and facilities. The Project Manager is given the responsibility to implement the decisions of the Management Committee.

The Exchange Plan loosely describes the **defined operational procedure** required for water delivery through the Plan. The process starts with a Party requesting water delivery. The request is forwarded to the Management Committee for approval. If approved, the request is forwarded onto the Project Manager for implementation. The Project Manager develops a delivery schedule based upon all of the delivery requests, the available resources, facility restrictions, and the defined delivery priorities (see Deliveries). If the Project Manager is unable to fulfill a delivery request by exchange, Exchange Plan deliveries may be temporarily interrupted or the delivery may continue as a deferred exchange. When deliveries are temporarily interrupted, the Project Manager may revert to historical conditions until delivery is possible.

Another option available to the Project Manager when a simultaneous exchange is not possible is a Deferred Exchange. A deferred exchange occurs when one Party in an exchange does not have enough available resources to provide “make-up” water to the second Party. Instead, the first Party “defers” delivery of the “make-up” water to the second Party. Procedurally, an “account” is set up for the second Party and *deferred exchange credits* are “deposited” into the account. The amount of credits is equal to the amount of water that the first Party owes the second Party. The second Party may take delivery of the deferred exchange water in the account any time within a two-year period. After two years, the credits expire.

For the most part, the Exchange Plan operates as defined. However, the **current operational procedure** differs from what is presented in the Exchange Plan. For instance, even though Section 6 of the Agreement states that the Management Committee must approve all exchanges, none have ever been formally approved. Exchanges still occur, but without formal approval by the Committee. Regardless of the operational procedure, the Exchange Plan has succeeded in meeting the needs of the parties since 1976. No agricultural acreage has gone dry and replacement or “exchange water” has been brought in from the State Water Project to keep everybody “whole”. The differences between the defined operational procedure, written in the Exchange Plan, and the actual operational procedure are due mainly to institutional and political posturing.

Once a water delivery has been scheduled, the Project Manager must make the necessary arrangements to deliver the water through the facilities available to the Exchange Plan. Figure 4 provides a look at the complex **water delivery system** available to the Project Manager. To use the figure, locate each of the three water sources: Santa Ana River, Mill Creek, and State Water Project water. Having located all

of the water sources on the Figure, you can now start at each source and work your way through the virtually endless delivery possibilities. This complex delivery system is further complicated by the ingenious design of the Cooperative Water Project Facilities which allows water from different sources to flow in the same pipe. In addition, many of the pipelines can transport water in either direction providing the ultimate in operational flexibility to the Project manager. Perhaps the best way to explain the operation of the Exchange Plan facilities is to look at a few different **operational scenarios**.

SCENARIO I – TWO LEVEL EXCHANGE

The simplest of the Exchange Plan operations is a two-level exchange which requires only two of the three available water sources. In this scenario, Santa Ana River water is delivered by exchange to a citrus grove located on the mesa east of Mentone. The first “level” of this exchange is delivery of Santa Ana River water from the Greenspot Forebay to the citrus grove via the Greenspot Pipeline. To make up for the Santa Ana River water delivered to the grove, an equal amount of State Water Project water is delivered through the Foothill Pipeline to the Santa Ana River users. Figure 5 highlights all of the facilities required in this scenario. Because this exchange removes water from the Greenspot Forebay before it can be used for power generation, Edison must be compensated through payment of the “lost energy charge” (see Water Charges). However, the “lost energy charge” is much less than the cost to pump State Water Project water up to the grove. This scenario illustrates the efficiency and cost savings of using high elevation water to meet high elevation demands which is a common theme among all of the scenarios.

SCENARIO II – THREE LEVEL EXCHANGE

In this scenario, supplemental water is delivered from the State Water Project to the Yucaipa area by exchange. The exchange is initiated by gravity delivery of Mill Creek water to the Yucaipa area. To make up for the lost Mill Creek water, an equal amount of Santa Ana River is delivered by gravity from the Greenspot Forebay to the Mill Creek Users (City of Redlands Tate Treatment Plant, the Crafton Water Company Unger Lane Turnout), or the SBVWCD Mill Creek Spreading Facilities. Finally, to make up for the loss of Santa Ana River water, an equal amount of State Water Project water is delivered via the Foothill Pipeline to the San Bernardino Valley Water Conservation District spreading grounds or to the Santa Ana River Users at the Bear Valley Sandbox. Figure 6 highlights all of the facilities required in this scenario. As in Scenario I, high elevation water is used to meet high elevation demands and Edison is compensated by the “lost energy charge” since the water bypasses their facilities.

SCENARIO III – WATER BANKING WITH THE CALIFORNIA DEPARTMENT OF WATER RESOURCES

In this scenario, a Party who is entitled to local water from the Santa Ana River, exchanges their entitlement water during the winter months, when it is available, for State Water Project water from the California Department of Water Resources (DWR) delivered at a later date. Since the DWR is not a Party to the Exchange Plan, this arrangement is accomplished through a separate contract and not under the Exchange Plan. The “deferred exchange” is initiated by delivery of Santa Ana River water to the Devil Canyon Afterbay via the Foothill Pipeline. Make-up water from the State Water Project is then

delivered to the Santa Ana River user anytime within the calendar year of the initial delivery of Santa Ana River water. Note that the one-year time limit on delivery of "deferred exchange water" differs from the two-year period time limit provided by the Exchange Plan. The difference in policy is due to a DWR policy that SWP Water cannot be allocated for more than one calendar year. Because this type of exchange allows storage of water for withdrawal at a later date, it is often referred to as "water banking". Figure 7 highlights all of the facilities required in this scenario. □

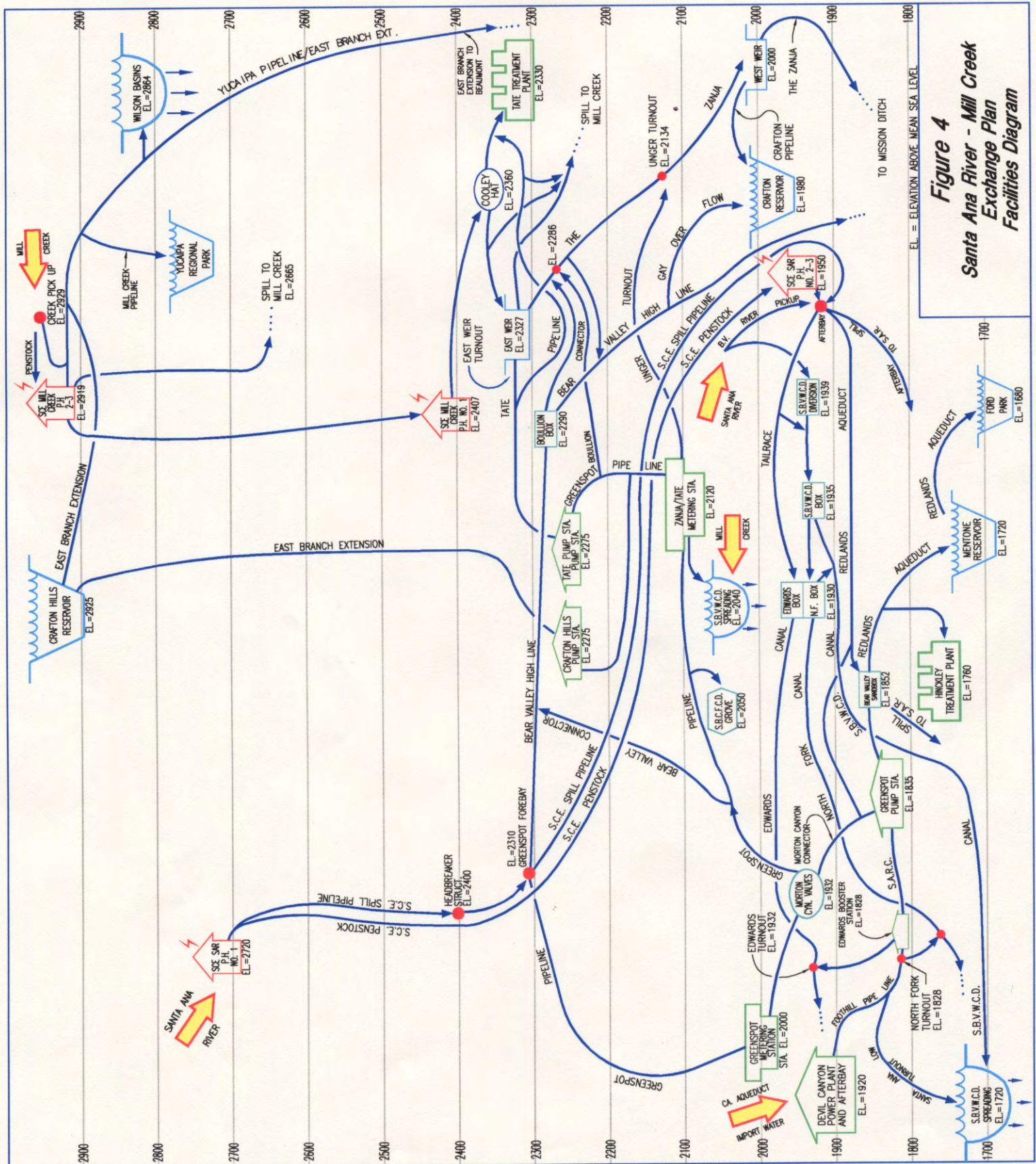
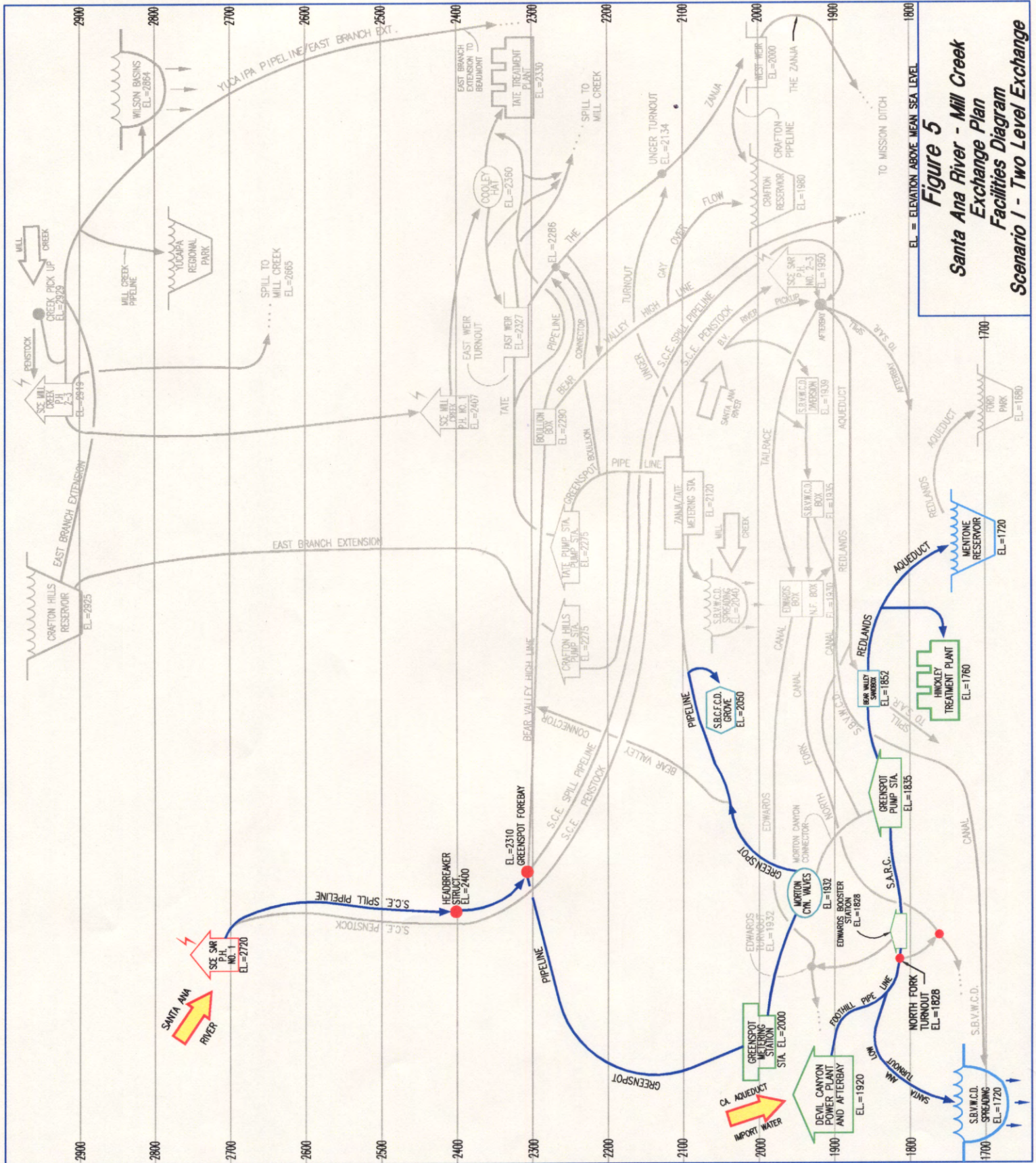


Figure 4
Santa Ana River - Mill Creek
Exchange Plan
Facilities Diagram



EL = ELEVATION ABOVE MEAN SEA LEVEL

Figure 5
Santa Ana River - Mill Creek
Exchange Plan
Facilities Diagram
Scenario I - Two Level Exchange

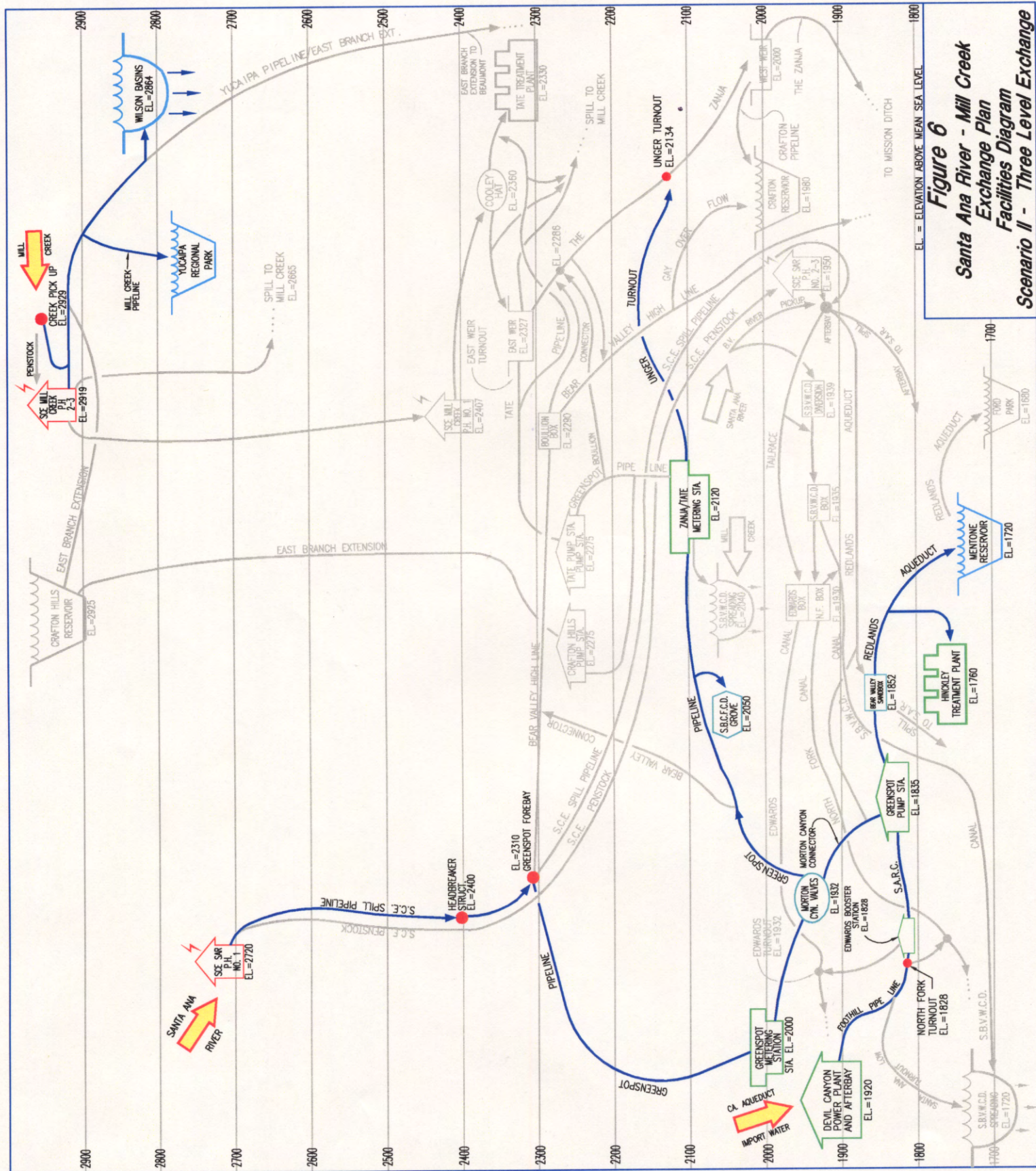


Figure 6
Santa Ana River - Mill Creek
Exchange Plan
Facilities Diagram
Scenario II - Three Level Exchange

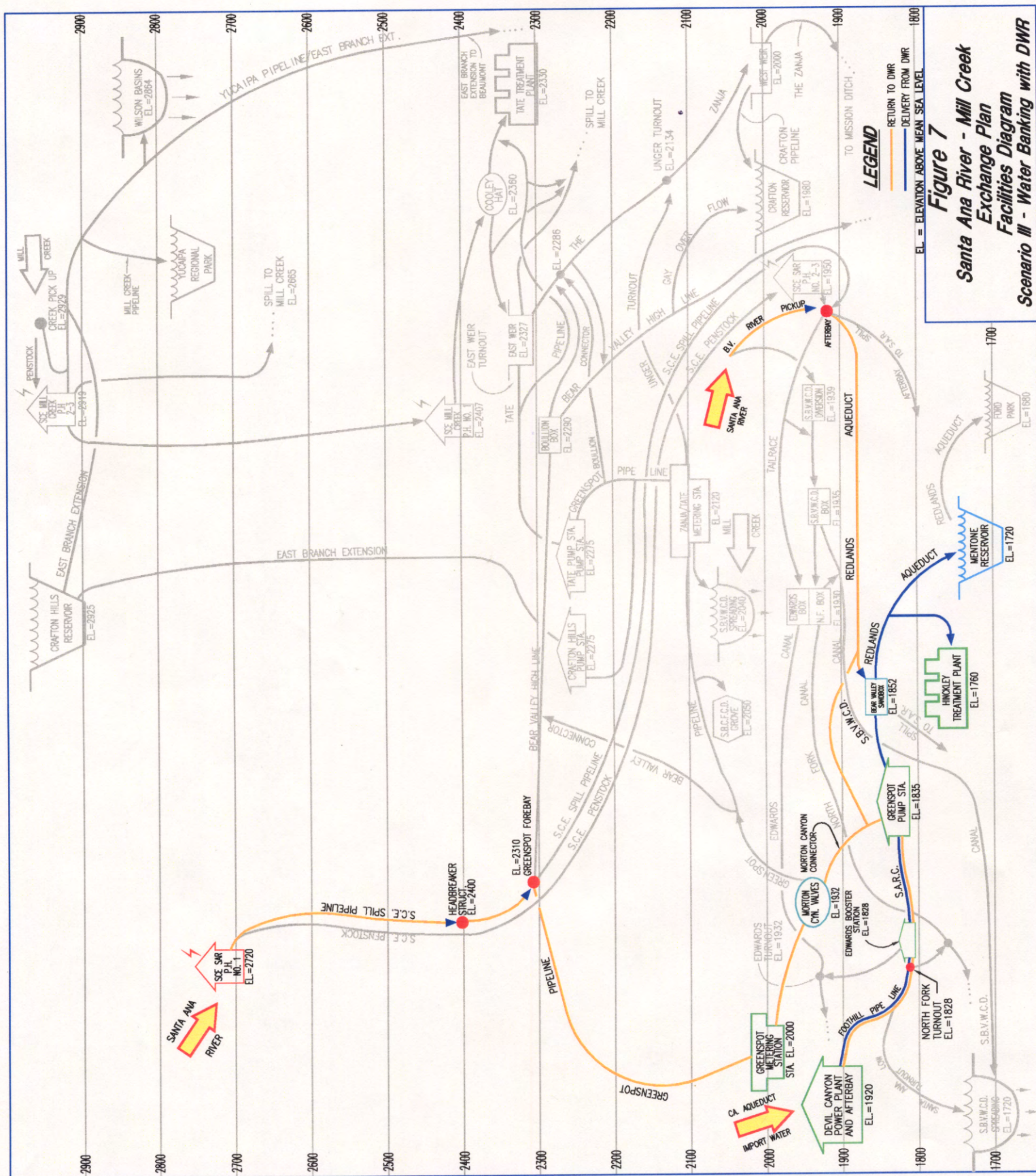
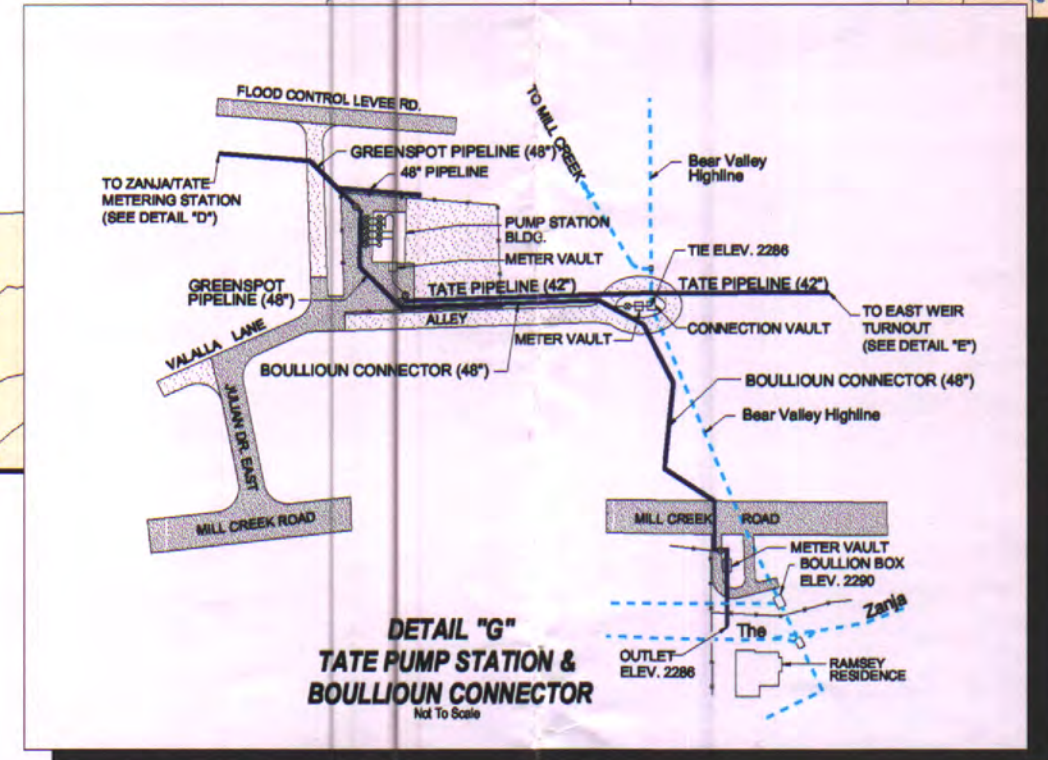
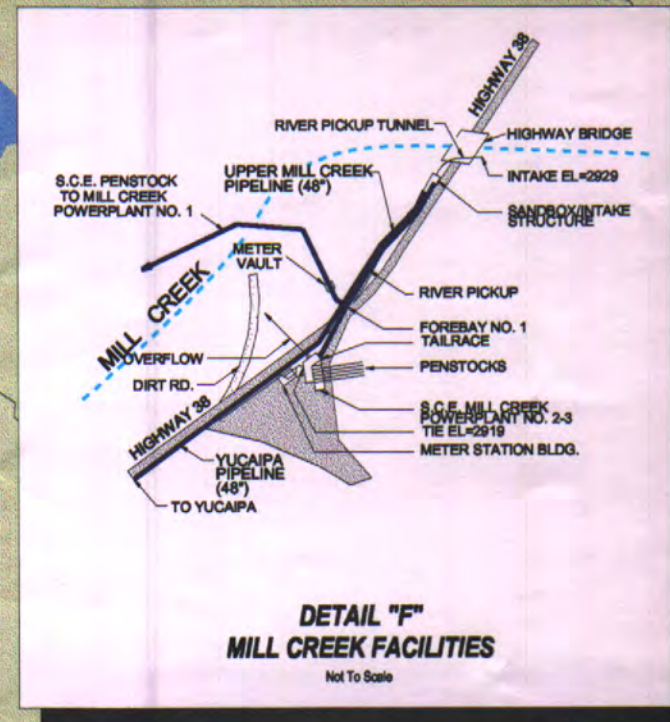
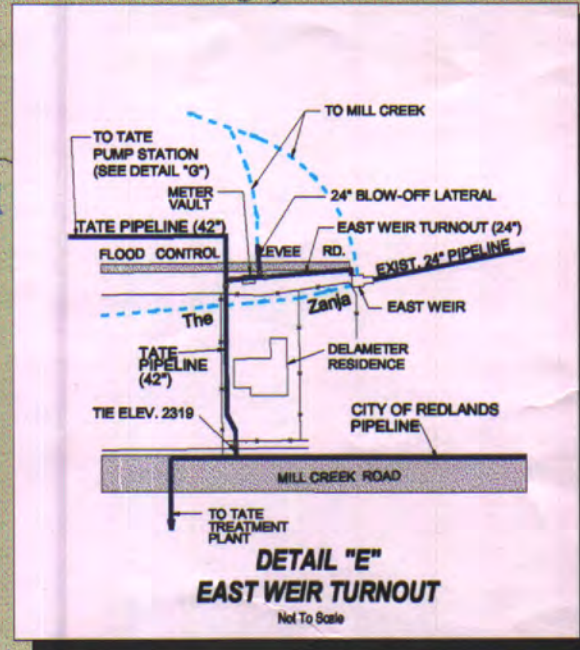
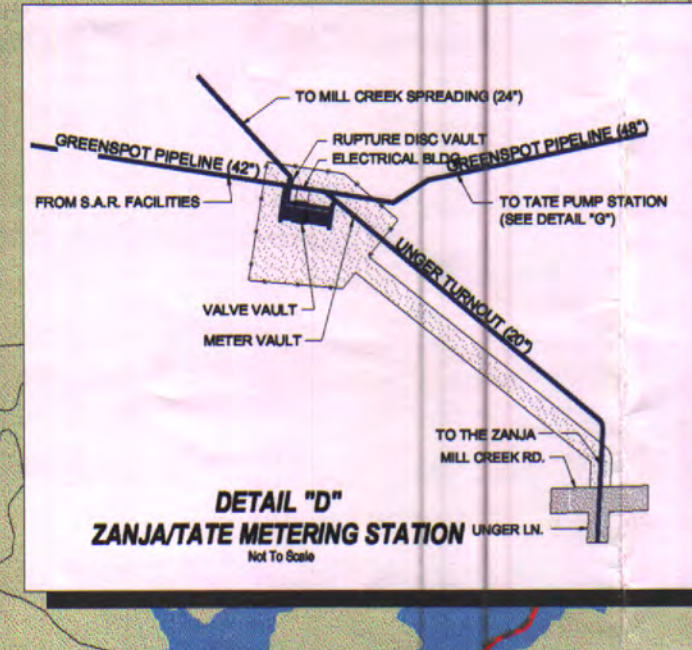
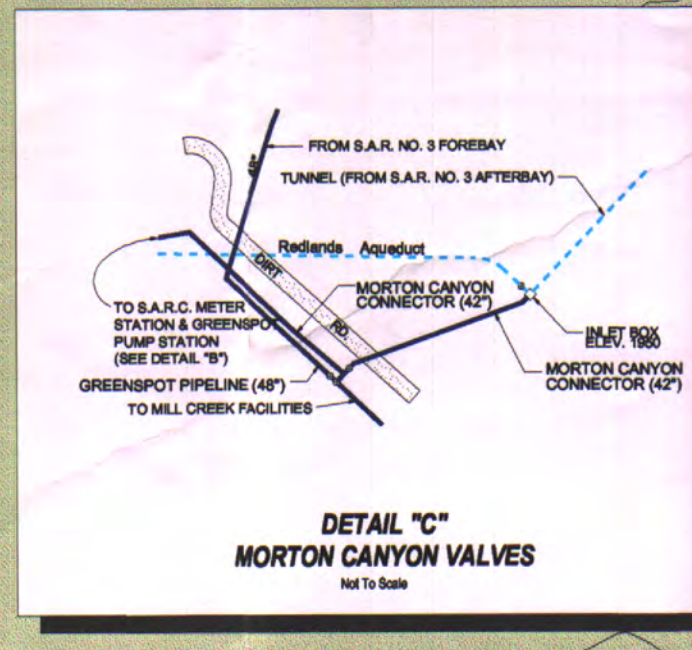
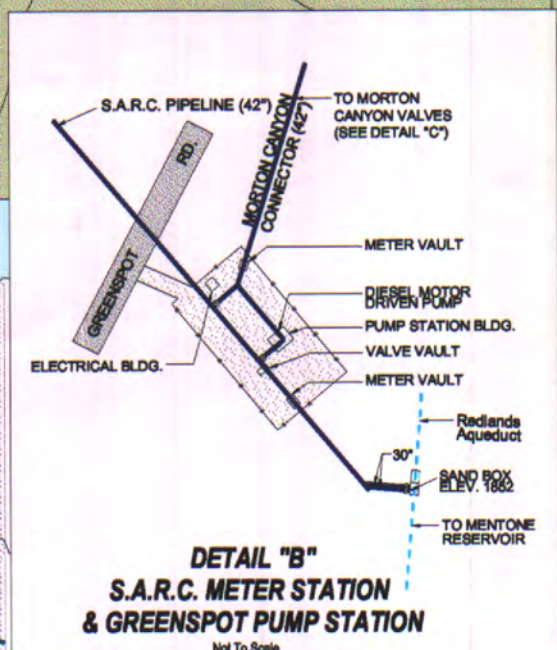
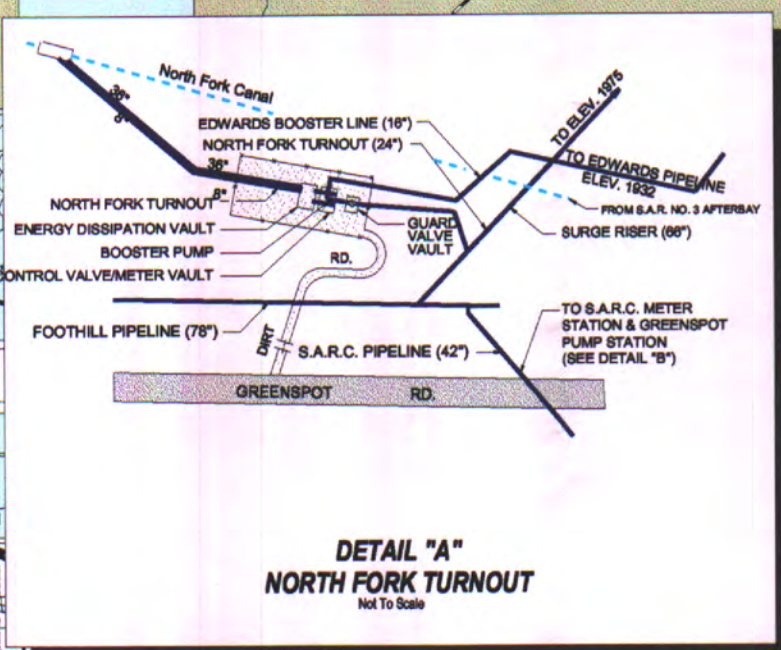
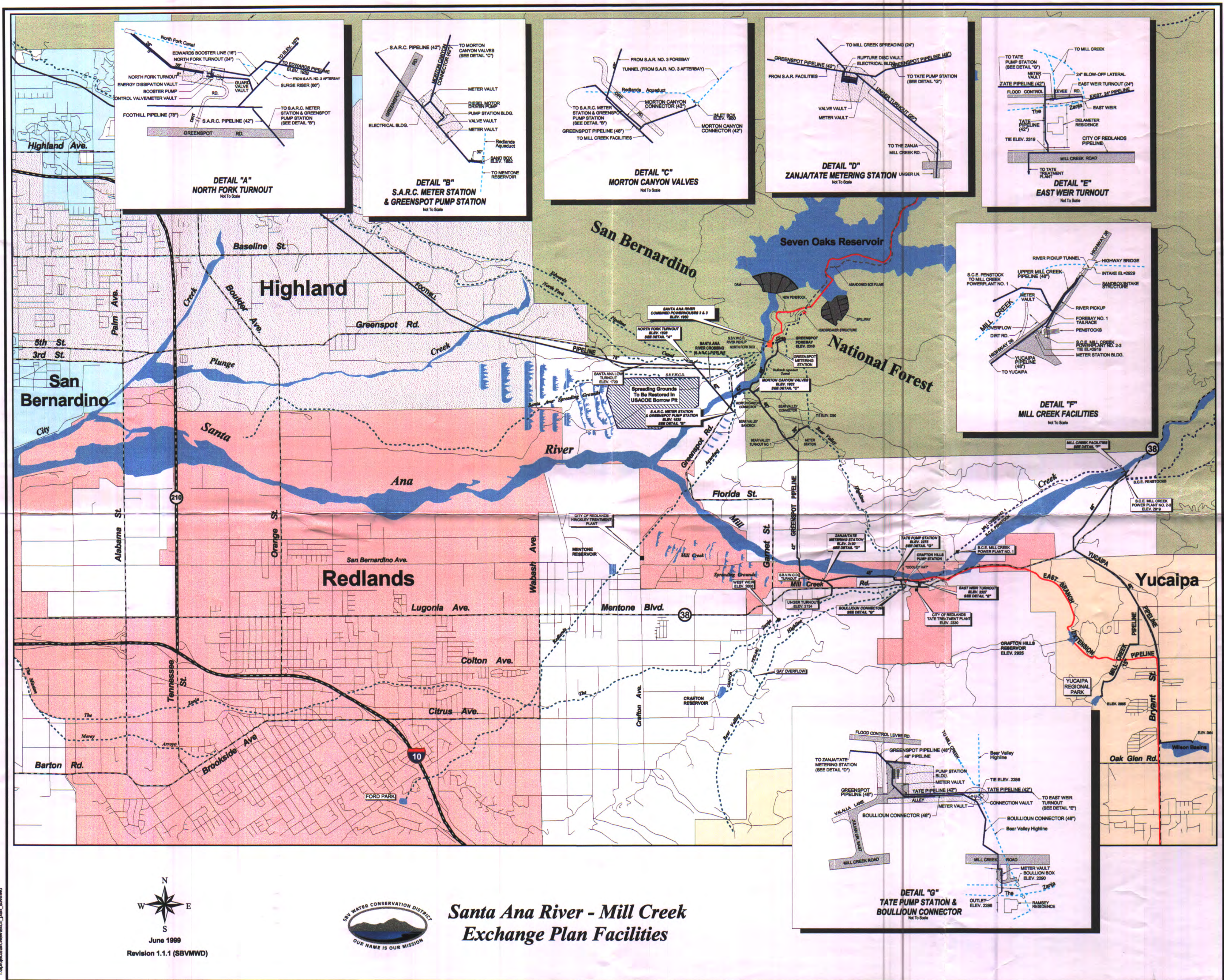


Figure 7
Santa Ana River - Mill Creek
Exchange Plan
Facilities Diagram
Scenario III - Water Banking with DWR



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June 1999
Revision 1.1.1 (SBVMWD)



Santa Ana River - Mill Creek Exchange Plan Facilities