

Overview of the Management of Treated Effluent from the Tapia Water Reclamation Facility

Las Virgenes – Triunfo Joint Powers Authority Report No. 2540

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Executive Summary

The Las Virgenes – Triunfo Joint Powers Authority (JPA) operates the Tapia Water Reclamation Facility (Tapia) that serves approximately 100,000 residents in the Las Virgenes Municipal Water District (Las Virgenes) and Triunfo Sanitation District (Triunfo) service areas. Both agencies provide sanitation, recycled water distribution, and potable water service within their respective districts.

Tapia produces approximately 10,000 acre feet per year of treated effluent that must be managed by one or more of the following options: 1) disposal to the Malibu Creek; 2) disposal to the 005 discharge point; 3) disposal through JPA operated spray fields; and/or 4) distribution through the recycled water system developed both jointly by the JPA and through individual efforts by Las Virgenes and Triunfo.

The least expensive and most direct option for managing the treated effluent is to discharge to the Malibu Creek. Creek discharge requires no pumping (electricity) and very little infrastructure (capital, labor or maintenance costs) to accomplish. Discharge to Malibu Creek, however, is *prohibited* seven (7) months out of each calendar year¹. To manage its treated effluent and to maximize beneficial use (both during and outside of the creek avoidance period), the JPA directs significant amounts of treated effluent through the recycled water system.

Approximately 6,000 acre feet of treated effluent are “recycled” or reused each year through efforts of the JPA. In Ventura County, recycled water is transmitted through approximately sixteen (16) miles of pipeline owned by the Calleguas Municipal Water District and the Triunfo Sanitation District. Within the Las Virgenes service area, recycled water is moved through approximately 68 miles of transmission and distribution pipelines. Of the 68 miles of pipelines, approximately 44 miles (65%) of the system were financed through activities of the JPA. The balance, approximately 24 miles (35%) were paid for by the Las Virgenes Municipal Water District or developers working with Las Virgenes.

The purpose of this report is to help characterize significant milestones related to the development of the JPA’s recycled water system. In addition to the background information provided in the series of Questions/Answers provided below, maps detailing the recycled water system’s significant features and flows by service area are provided in Section 2.

1. *What are the organizational differences between the agencies involved (Las Virgenes, Triunfo, and Calleguas) and how is that significant to this report?*

The Las Virgenes Municipal Water District (LVMWD) was formed under the Municipal Water District Law of 1911 for the purpose of distributing water for domestic and municipal purposes and to provide sanitation services. LVMWD is a member public agency of the Metropolitan Water District of Southern California (Metropolitan) and purchases water directly from Metropolitan. The Triunfo Sanitation District (Triunfo) was formed under Division 5 of the Health and Safety Code for the purpose of providing sanitation service. Triunfo distributes potable

¹ Tapia NPDES Order No. R4-2010-0165.

water through the Oak Park Water Service, which it owns. The potable water is purchased from the Calleguas Municipal Water District – also a member public agency of the Metropolitan Water District of Southern California. Triunfo also retails recycled water that is purchased from Calleguas (Calleguas gets its recycled water from Triunfo, who purchases the recycled water from the JPA).

2. What is the significance of LVMWD's relationship with Metropolitan?

Through LVMWD's status of as a "member public agency of Metropolitan", the JPA is eligible to participate in financing programs related to recycled water system development sponsored by Metropolitan. Two significant examples include:

- The JPA Western System expansion (1983 agreement for approximately 12 miles of pipeline, a pumping station and a reservoir) for which Metropolitan provided approximately \$7.3 million in capital contribution in exchange for entitlement to a portion of the recycled water produced by the project. In 1993, the JPA bought out Metropolitan's interest in the agreement for \$3 Million. Triunfo's share was \$882,000; Las Virgenes' share was \$2,118,000.
- In 1989, the JPA entered into an agreement with Metropolitan for the Calabasas Reclaimed Water System extension (Local Resource Program). The project included the installation of approximately 7 miles of 4-10 inch distribution pipe (Calabasas) and 3 miles of 24-inch parallel trunk line from Mulholland to Las Virgenes' headquarters. In exchange for the JPA's investment, Metropolitan subsidized the cost of delivering up to 700 acre feet per year through the expanded system. The 25 year term of this agreement ends in fiscal year 2014-2105, at which point the JPA will have received approximately \$2.2 million through this agreement. It should be noted that the LRP funds are not included in the calculation of the wholesale recycled water rate, so the expiration will not have any impact on that calculation.

It is worth mentioning that since the Metropolitan LRP revenue is *not* included in the wholesale recycled water rate calculation, JPA participants receive the benefit as a direct off-set to agency expenses (from the \$2.2 million above, approximately \$1,550,000 goes to Las Virgenes and \$650,000 to Triunfo).

While these projects were sponsored by Metropolitan – a potable water agency – they served to accomplish the JPA's goal of expanding the disposal management options for treated effluent coming from Tapia.

3. Are there other examples of outside agencies funding JPA water system expansion?

In 2009, the United States Bureau of Reclamation awarded the JPA a \$2 million grant to construct a 24" recycled water pipeline from Tapia to Mulholland Highway.

4. How was Tapia effluent characterized in the original JPA agreement?

Nothing in the original JPA agreement or four subsequent amendments referred to Tapia wastewater treatment plant effluent as “recycled water”. Prior to 1982, recycled water was considered effluent (discharge to Malibu Creek at this point was prohibited eight months per year). The Joint Ventura Agreement contemplated that the parties will share in the cost of effluent disposal facilities (70/30 split). Significant projects constructed during this period include: 1) Las Virgenes Valley Pipeline; 2) Reservoir 2 (at LVMWD Headquarters); 3) Calabasas (Eastern) Reclaimed water pump station; and 4) Reservoir 3 and pipelines to Calabasas Golf course.

5. What changed after 1982?

The Regional Water Quality Control Board (RWQCB) permitted year-round discharge into Malibu Creek if tertiary filters were added to the Tapia treatment plant. Filters were installed and a low cost effluent disposal option was achieved by discharging to Malibu Creek. At this point in time, JPA partners had the option to either choose creek discharge or expand their recycled water system (for effluent disposal) on their own.

6. Does the JPA own any facilities in Ventura County?

No. Characterization of the development of the recycled water system in Ventura County is provided in Question 7, below.

7. What are some of the important milestones in the development of the recycled water system in Ventura County?

The first extension into Ventura County was constructed in the late 1980’s. Las Virgenes was offered the option to participate in the construction of the pipeline as required by the Agreement, but was encouraged by Triunfo not to. This project was completed with TSD as the sole participant.

Plans to extend the recycled water system into Ventura County to North Ranch, through the Oak Park area were designed by the Joint Venture, with Triunfo as administering agent. Las Virgenes was offered the option to participate in funding this project, and did so at a level of 70.6%.

In the early 1990’s when plans for the North Ranch system were nearly complete, the Calleguas Municipal Water District decided its role in Ventura County would be as the wholesale water agency of both potable and recycled water supplies. Calleguas purchased the Lake Sherwood pipeline from Triunfo and paid for the design effort expended by the Joint Venture for the North Ranch system. Calleguas redesigned and constructed the pump station, tank and main transmission line to North Ranch. California Water Service converted the North Ranch golf course to recycled water.

Following the purchase of the private mutual water company serving potable water to the Oak Park community, Triunfo offered Las Virgenes the option to participate in funding recycled water systems in that community, however the offer was declined.

Using recycled water delivered by the Triunfo Sanitation District, private companies and developers also helped extend the recycled water system in Ventura County. California Water Service extended its recycled water distribution system to new customers in Ventura County. Lake Sherwood developers extended their recycled water distribution system, including construction of an underground storage tank. These private projects were completed without requests for participation of the JPA.

8. ***What are the three different groups shown on the maps in Section 2 of this report? What is the significance of each group?***

The maps provided in Section 2 show the transmission and distribution systems (pipes in the ground) that are responsible for moving the treated effluent from Tapia to disposal (005 discharge point) and to recycled water distribution points (Las Virgenes/Triunfo).

Group A (28.8 miles) - The JPA's recycled water transmission or "Backbone" system.

This series of pipelines transmits water from Tapia to the 005 discharge point and to two (2) Ventura County connection points. Without the backbone, movement of treated effluent between the points identified above would not be possible.

Group B (15.6 miles) – JPA funded distribution system. This group includes distribution (typically smaller diameter pipelines) pipelines that were necessary for the participation in the two programs described in Question 2, above.

Group C (23.8 miles) - Distribution system funded by either Las Virgenes or through developer agreements. These pipelines were paid for by either Las Virgenes or by developers with agreements with Las Virgenes. From a budget standpoint, the operations and maintenance expense for this group resides 100% with Las Virgenes. There is no cost to JPA partners for this portion of the system.

The maps also indicate recycled water sales data (one year average sales data based on 2009-2013 data). The recycled water sales information shows Las Virgenes Municipal Water District Accounts (groups A, B and C) and sales from Triunfo's two primary recycled water service areas, Oak Park and Lake Sherwood.

9. ***Why is replacement cost used and how was it calculated?***

Replacement cost method was used to develop an "apples to apples" comparison of the value of the transmission and distribution components of the recycled water system within the Las Virgenes service area. The replacement cost calculation was made using construction cost estimating criteria based on unit prices for 4", 6", 8", 10", 12", 14", 16", 18", 20" and 24" pipelines extended across every foot of pipeline identified in this study.

10. *Is recycled water a commodity or waste? Which is correct?*

Recycled water system expansion projects prior to the 1982 Joint Venture agreement, were funded appropriately for effluent disposal projects. After 1982, both agencies chose the option of developing a recycled water transmission/distribution system rather than use the creek discharge disposal option.

Commencing in May 1998, Malibu Creek discharge was prohibited by the RWQCB for seven (7) months per year. The sale of recycled water makes up the largest option for creek avoidance based on volume.

The 2009 Joint Exercise of Powers Agreement (Article Four: Effluent Disposal) identifies recycled water distribution as one of four (4) options for disposing of treated effluent. Under the umbrella category of "Tapia effluent management", discharge of effluent to the Malibu creek *and* distribution of effluent through the recycled water system to recycled water customers both achieve the same goal.

11. *What is the benefit to JPA partners to participate in a recycled water projects outside of the agency's service area?*

As discussed previously in this report, expansion of the recycled water system enhances the JPA capability to manage treated effluent from Tapia. Additionally, as pointed out in Question 2, partners can benefit from programs that either aren't available - or aren't being pursued - within their service area. Examples include Metropolitan's Local Resource Programs (LRP).

Additionally, when effluent is managed through the recycled water system, costs associated with moving the water and maintaining the necessary infrastructure are paid for by the end user through the JPA wholesale recycled water rate. Put in another context, recycled water customers pay for the pumping that is associated with the disposal of recycled water.

12. *What percentage of recycled water sales happens during the prohibition or "creek avoidance" period?*

Approximately 75% of all recycled water sales (by JPA partners) are during the creek avoidance (or prohibition) period. Without this level of retail recycled water retail sales during the prohibition period, the volume of treated effluent that must be disposed would triple.

13. *Without the existing recycled water system, what options would the JPA have for effluent management?*

The 2005 "Tapia Effluent Alternative Study" (Report No. 2321.03) identifies a number of alternatives/enhancements for managing effluent from Tapia. While the study was commissioned to identify mechanisms for achieving 100% creek avoidance, the projects are options to manage effluent that can be implemented in addition to (or in lieu of) the JPA's recycled water system. It should be noted that each of the projects featured on the narrowed down list of 13 projects has significant capital outlay and ongoing operations and maintenance

requirements that would likely make the option more expensive than investment in the recycled water system.

At a minimum, the *cost of disposing* the treated effluent that is currently recycled during the prohibition period would equal the pumping costs to get the water to the discharge point. Currently, through sale of the recycled water, retail customers pay this expense.

14. Summary

The following tables summarize data provided on the included maps.

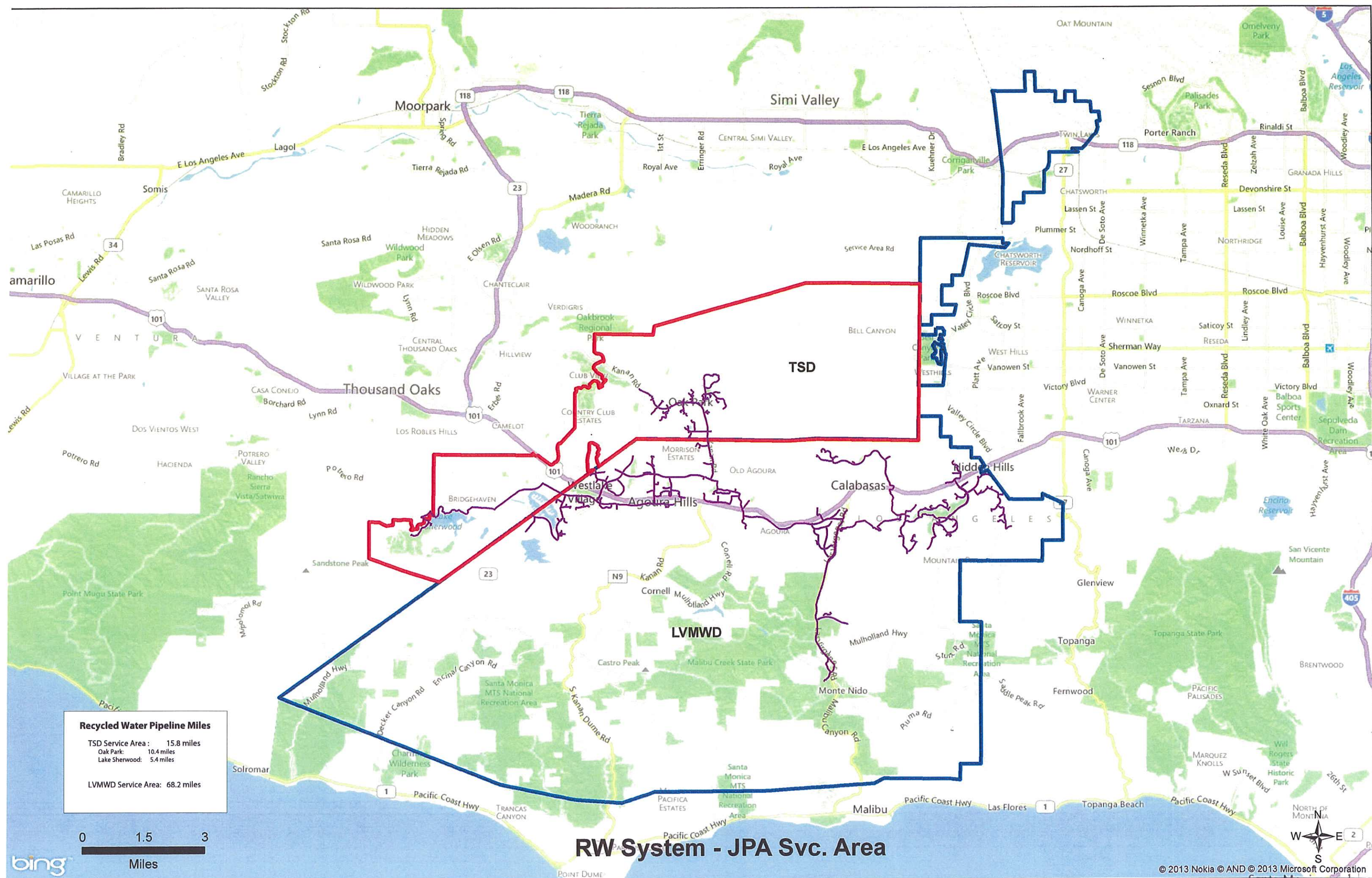
Table 1: Investment by Agency

	RW System Pipeline Grouping			Total
	A	B	C	
Las Virgenes	\$ 15,990,900	\$ 3,741,800	\$ 7,500,000	\$ 27,232,700
Triunfo	\$ 6,659,100	\$ 1,558,200	\$ -	\$ 8,217,300
Total Replacement:	\$ 22,650,000	\$ 5,300,000	\$ 7,500,000	\$ 35,450,000

Table 2: Annual Recycled Water Sales by Agency

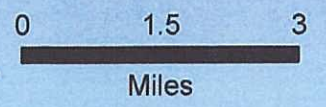
	Las Virgenes		Triunfo		Total
	Prohibition	Non-Prohib.	Prohibition	Non-Prohib.	
Group A	1,069	376			1,445
Group B	982	354			1,336
Group C	1,413	575			1,988
Triunfo			1,277	269	1,546
Total:	3,464	1,305	1,277	269	6,315

Recycled Water System Maps - 2

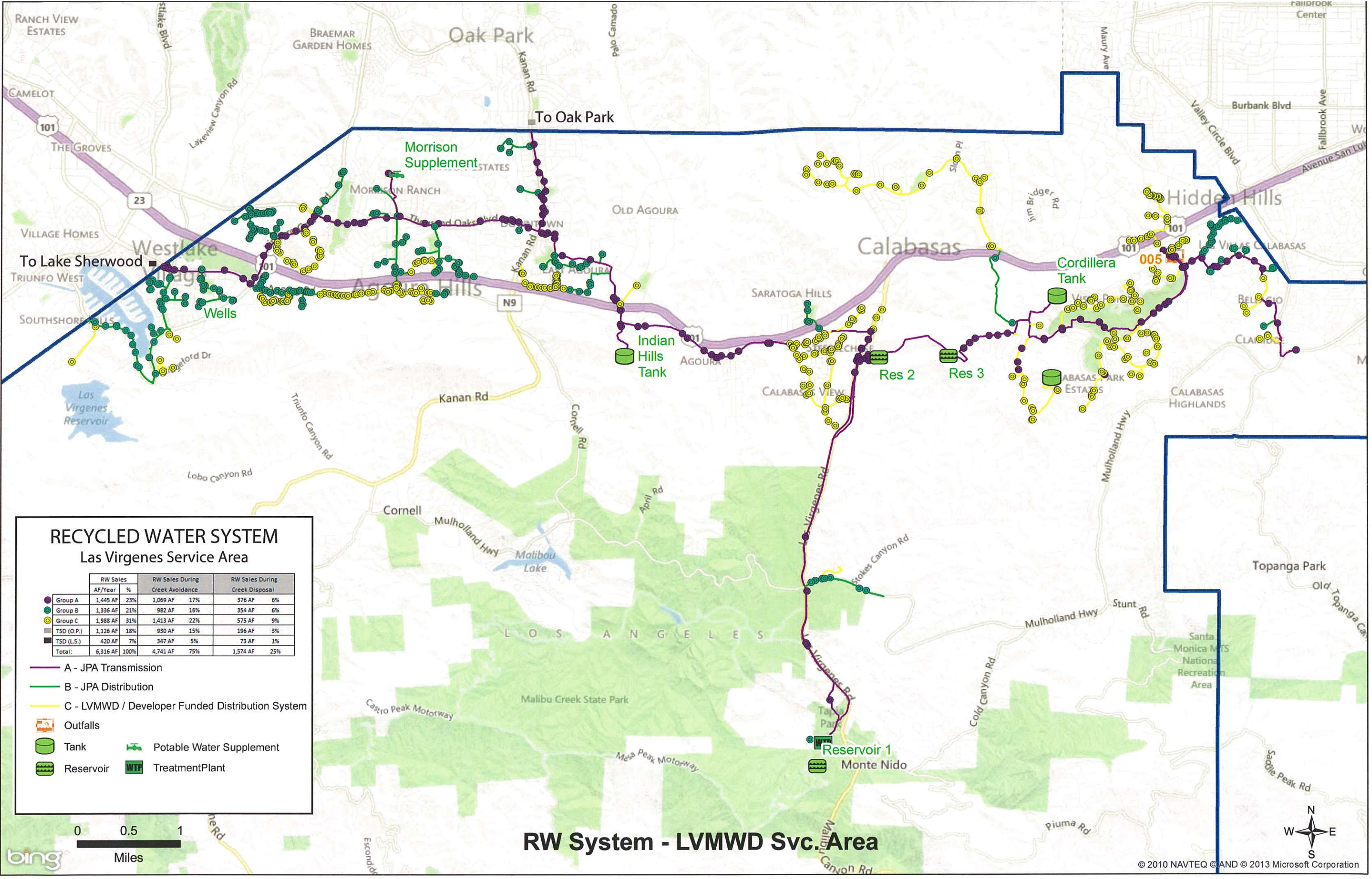


Recycled Water Pipeline Miles

TSD Service Area :	15.8 miles
Oak Park:	10.4 miles
Lake Sherwood:	5.4 miles
LVMWD Service Area:	68.2 miles



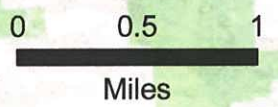
RW System - JPA Svc. Area



RECYCLED WATER SYSTEM Las Virgenes Service Area

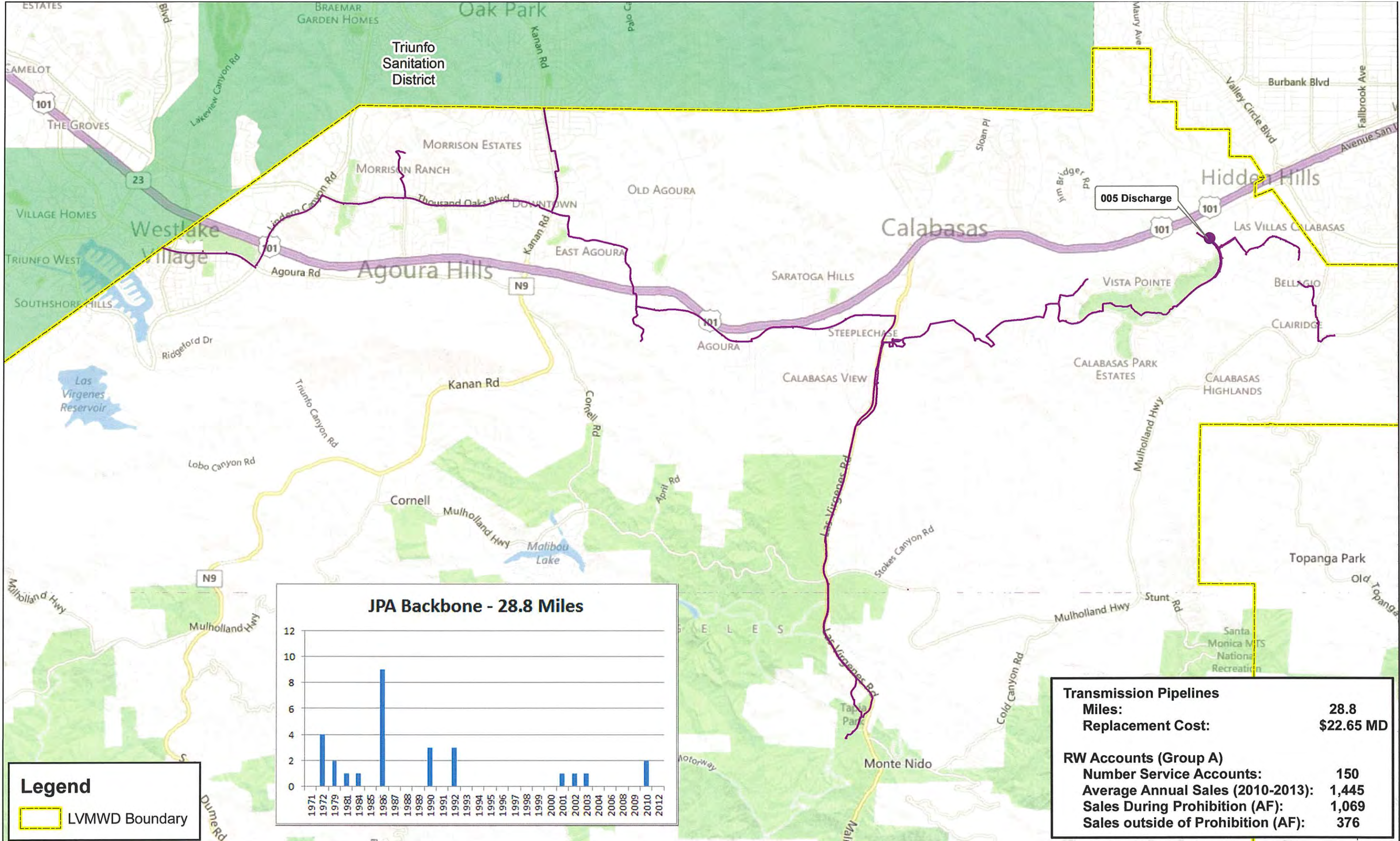
	RW Sales		RW Sales During Creek Avoidance		RW Sales During Creek Disposal	
	AF/Year	%	AF	%	AF	%
Group A	1,445 AF	23%	1,069 AF	17%	376 AF	6%
Group B	1,336 AF	21%	982 AF	16%	354 AF	6%
Group C	1,988 AF	31%	1,413 AF	22%	575 AF	9%
TSD (O.P.)	1,126 AF	18%	930 AF	15%	196 AF	3%
TSD (L.S.)	420 AF	7%	347 AF	5%	73 AF	1%
Total:	6,316 AF	100%	4,741 AF	75%	1,574 AF	25%

- A - JPA Transmission
- B - JPA Distribution
- C - LVMWD / Developer Funded Distribution System
- Outfalls
- Tank
- Reservoir
- Potable Water Supplement
- Treatment Plant



RW System - LVMWD Svc. Area



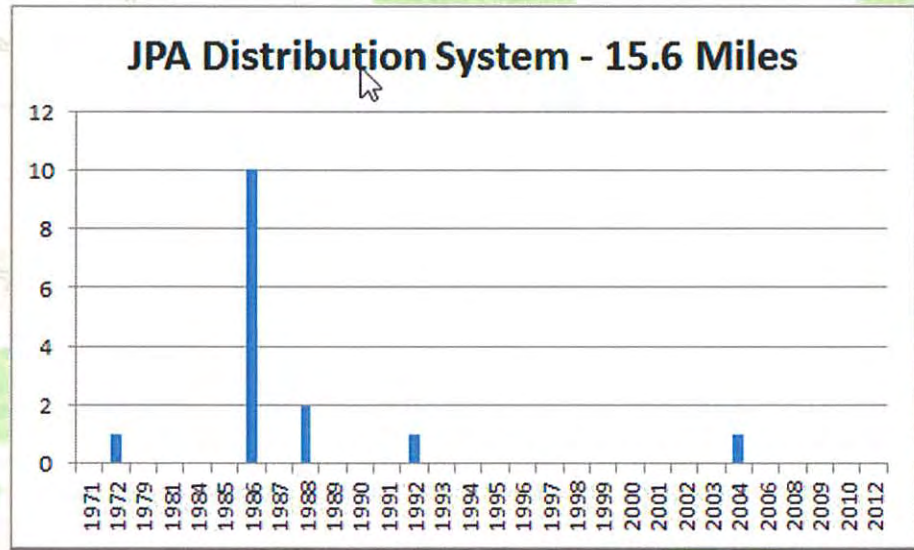
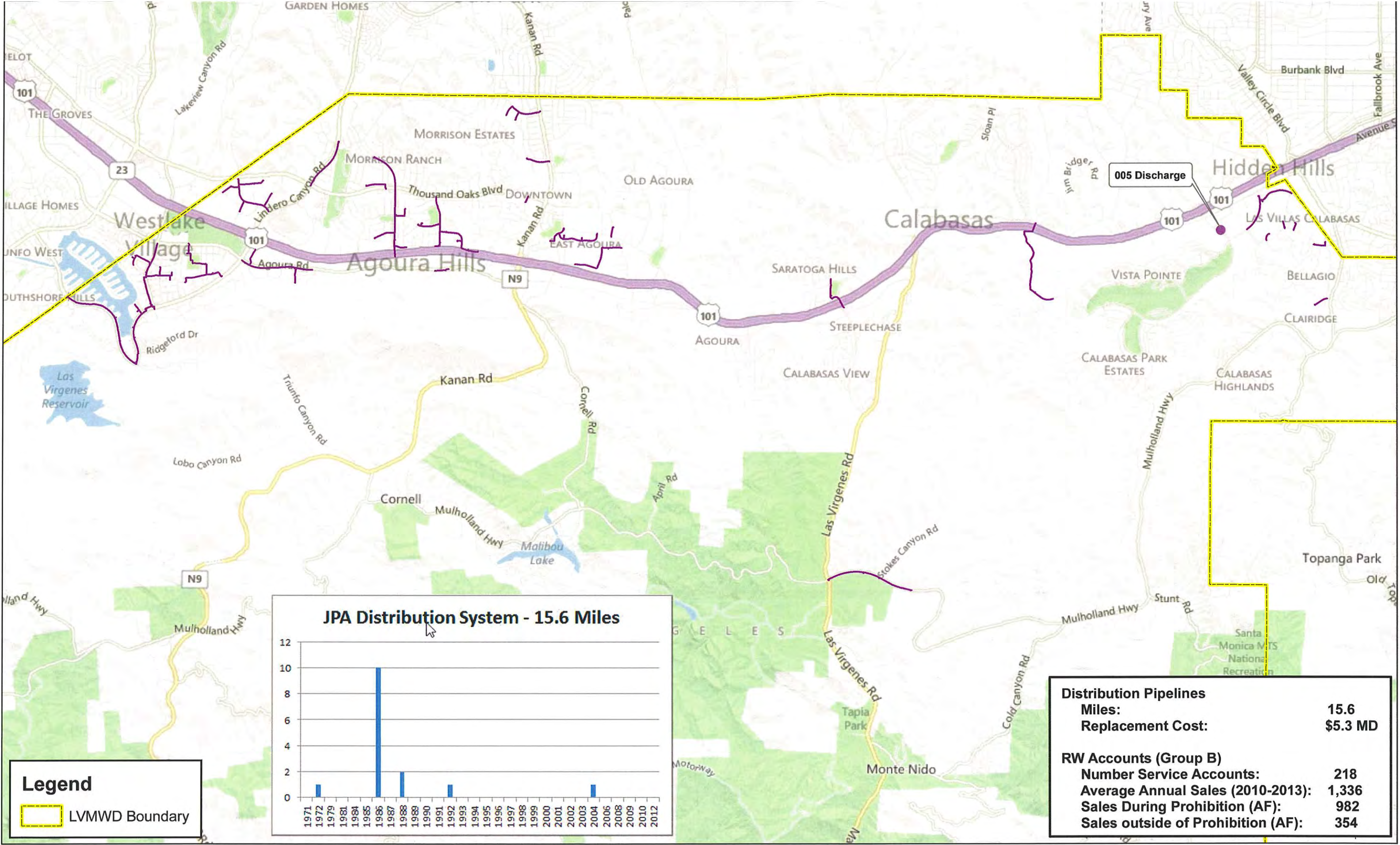


Legend
 LVMWD Boundary



Group A - Joint Venture Transmission System





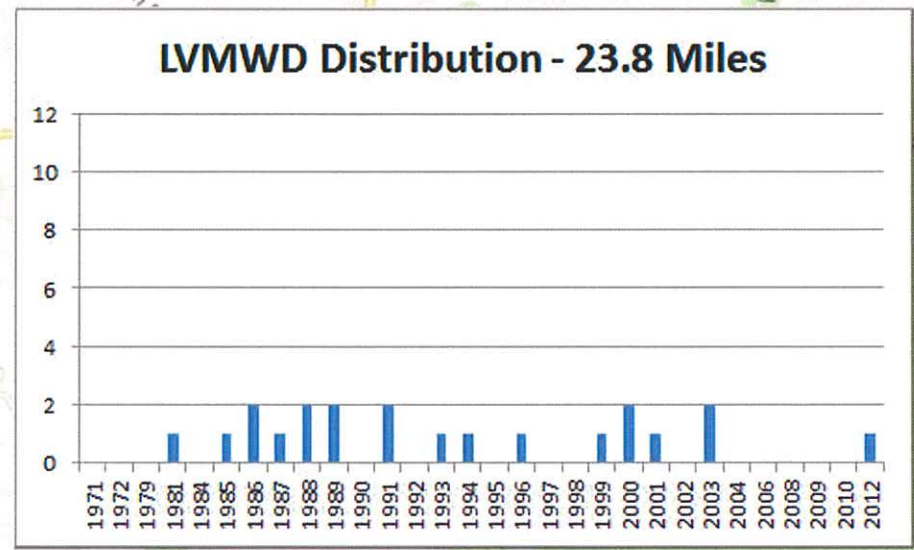
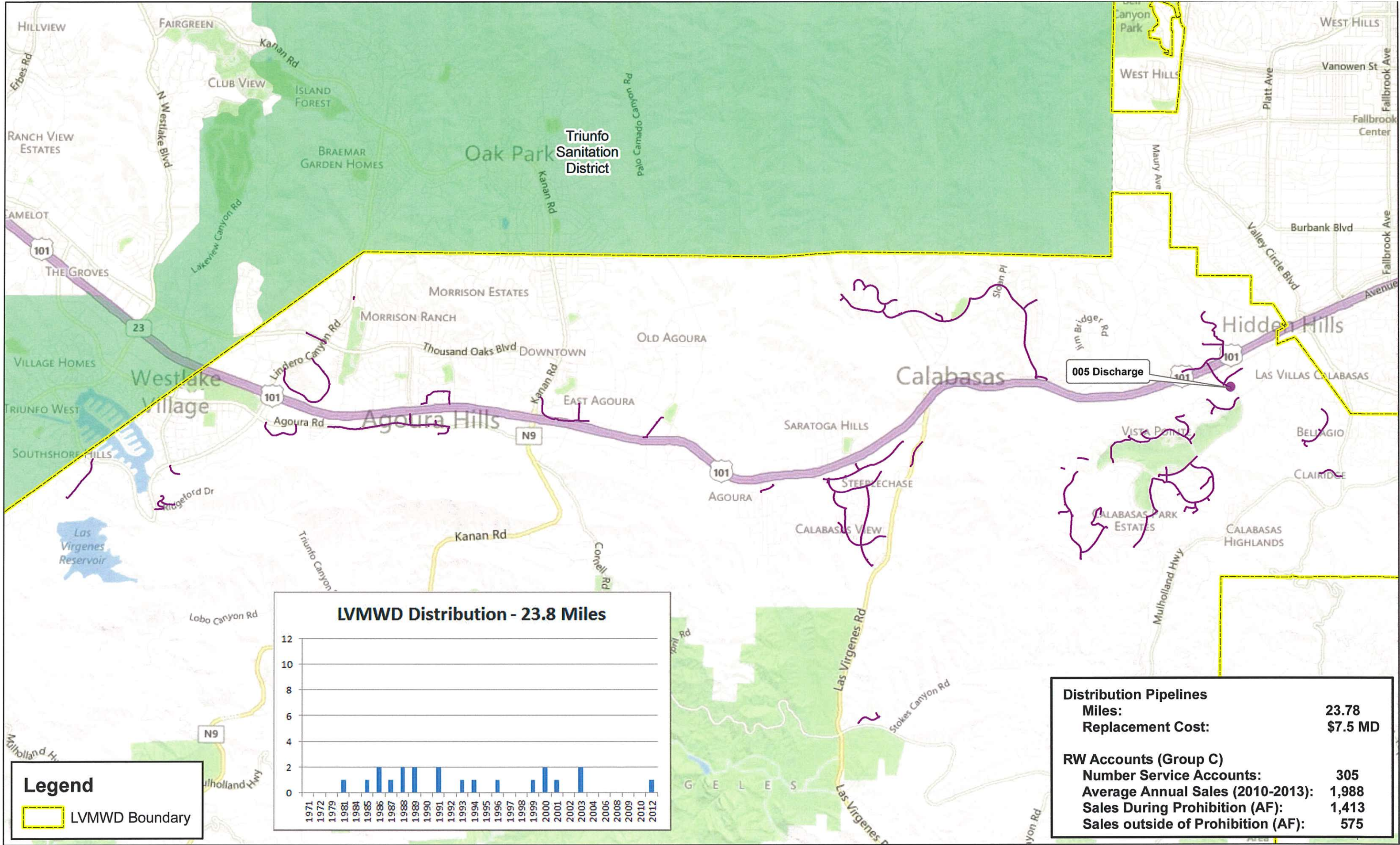
Distribution Pipelines	
Miles:	15.6
Replacement Cost:	\$5.3 MD
RW Accounts (Group B)	
Number Service Accounts:	218
Average Annual Sales (2010-2013):	1,336
Sales During Prohibition (AF):	982
Sales outside of Prohibition (AF):	354

Legend
 LVMWD Boundary



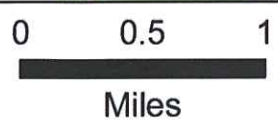
Group B - JPA Funded Distribution System





Distribution Pipelines	
Miles:	23.78
Replacement Cost:	\$7.5 MD
RW Accounts (Group C)	
Number Service Accounts:	305
Average Annual Sales (2010-2013):	1,988
Sales During Prohibition (AF):	1,413
Sales outside of Prohibition (AF):	575

Legend
 LVMWD Boundary



Group C - LVMWD / Developer Funded Distribution System

