



Valley Water

# Coyote Percolation Dam History Booklet

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# Coyote Percolation Dam History Booklet

This documentation, and related signage installed near the site of the Coyote Percolation Dam, was prepared in 2024 by Rincon Consultants, Inc. to support mitigation measures for the Coyote Percolation Dam Replacement Project per Stipulation III.B of the Programmatic Agreement between the Federal Energy Regulatory Commission and the California State Historic Preservation Officer Regarding Activities Associated with the Anderson Dam at the Anderson Dam Hydroelectric Project (FERC Project No. 5737-007) Santa Clara County, California executed in 2020.

#### *Cover Image:*

Downstream side of Coyote Percolation Dam, July 14, 1965. L.D. Wilson Photographer (photograph from Valley Water's archives).

#### *Back Cover Image:*

View of Coyote Percolation Dam from east abutment showing former concrete derrick crane base in foreground, camera southeast. William Dewey, photographer, February 16, 2022 (photograph from Valley Water's archives).



**Figure 1.** The Coyote Percolation Dam is located 11 miles downstream of Anderson Dam and is used by Valley Water to impound water within the 32-acre Coyote Percolation Pond for the purpose of groundwater recharge.

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# COYOTE PERCOLATION DAM HISTORY

## VALLEY WATER'S HISTORIC DAM SYSTEM

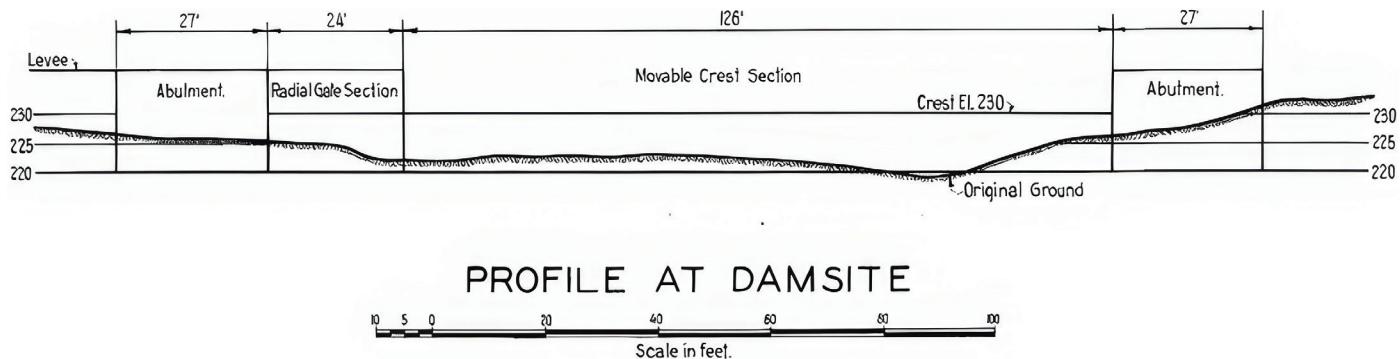
The Coyote Percolation Dam was built in 1934 as part of a system of water conservation facilities developed by the Santa Clara Valley Water Conservation District (SCVWCD). Throughout the early 1900s, much of the Santa Clara Valley was used for agricultural purposes with small population centers in San José, and communities to its south, including Morgan Hill and Gilroy. High groundwater levels at the time easily provided wells with water for farming and population centers. However, severe drought conditions and an increase in water pumping, including irrigation of two-thirds of the valley's agricultural lands, caused groundwater levels to drop during the 1910s. By the end of the 1920s, the groundwater table had dropped about 50 feet in four years, increasing pumping costs and causing ground subsidence. These factors led Santa Clara Valley leaders and local engineers to seek solutions to replenish the groundwater table. Early efforts included a proposal in 1921 by hydraulic engineer Frederick H. "Fred" Tibbetts and his partner, Stephen Kieffer, following a study of the Santa Clara Valley's water issues. The plan called for a water conservation district and the construction of reservoirs and flood control channels to recharge groundwater resources. Voters approved a measure to establish the SCVWCD in 1929.<sup>1</sup>

Between the 1930s and 1950s, these facilities helped increase groundwater levels in the valley and meet demand for water use in agricultural irrigation and growing communities.<sup>2</sup>

Seven dams were constructed between 1934 and 1936, including Coyote Percolation Dam in 1934, Coyote Dam in 1936, and the Almaden, Calero, Vasona, Guadalupe, and Stevens Creek dams in 1935. The dams, and downstream percolation structures, like Coyote Percolation Dam, restored water table levels by the early 1940s. Although the water table was restored, water usage increased in the mid-1940s as communities in the Santa Clara Valley grew during and after World War II. This led to a need for additional dams to store water and related infrastructure to manage the water's flow after leaving the reservoir. To add additional water storage capacity, the Anderson Dam was completed in 1950 and the Lenihan Dam at Lexington Reservoir, was completed in 1952. In 1987, the SCVWCD annexed the South Santa Clara Valley Water Conservation District, adding Chesbro and Uvas dams, which were built in the 1950s, to its system. The SCVWCD eventually became known as Valley Water and formalized this moniker when it rebranded in 2019.<sup>3</sup>

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1. Christopher McMorris and Samuel Skow, "Historic American Engineering Record: Coyote Percolation Dam (State Dam No. 72-000), San José, Santa Clara County, California" (JRP Historical Consulting, LLC, 2022), 5-6; Santa Clara Valley Water District (Valley Water), "FY 2020/2021 Operating and Capital Budget," (Valley Water, 2022), 2-6 and 2-7, [https://www.valleywater.org/sites/default/files/FY%202020-21%20Adopted%20Budget%20Report%20FY20-21\\_SH0923.pdf](https://www.valleywater.org/sites/default/files/FY%202020-21%20Adopted%20Budget%20Report%20FY20-21_SH0923.pdf).
  2. McMorris and Skow, "Historic American Engineering Record," 5.
  3. McMorris and Skow, "Historic American Engineering Record," 5-8.

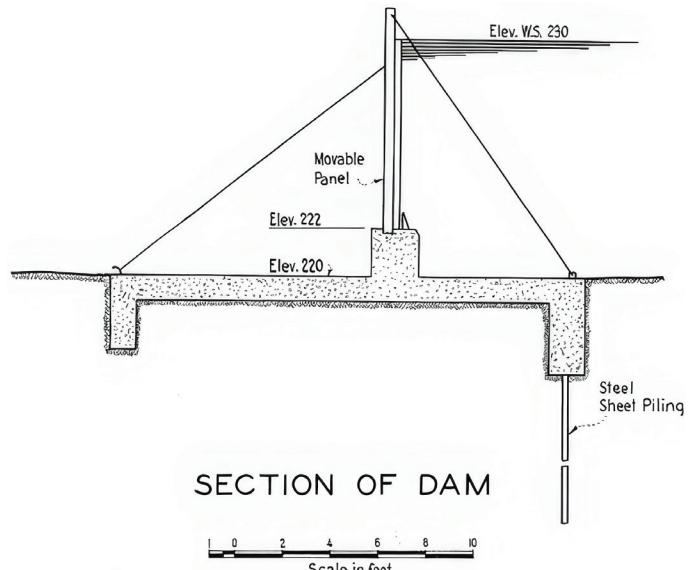
# COYOTE PERCOLATION DAM HISTORY



*Figure 2.* Engineer's drawing of Coyote Percolation Dam's site profile showing a levee, abutments, and the movable crest section, where the dam's flashboard would be positioned for water flow control. Fred H. Tibbetts, Santa Clara Valley Water Conservation District: Coyote Percolation Reservoir to Accompany Water Right Application, File No. 2023-84, May 1935 (on file at Valley Water's Archives).

## HISTORIC SIGNIFICANCE SANTA CLARA VALLEY WATER DISTRICT DAMS HISTORIC DISTRICT

In May 2023, the California Office of Historic Preservation determined the Coyote Percolation Dam eligible for inclusion in the National Register of Historic Places and the California Register of Historical Resources as a contributor to the Santa Clara Valley Water District Dams Historic District. This historic district includes the dams and related structures that formed the original elements of the Valley Water's system, which were constructed between 1934 and 1950. The historic district is significant for providing water to the Santa Clara Valley and maintaining higher groundwater levels and as an innovative water system representing the work of engineer, Fred H. Tibbetts.<sup>4</sup>



*Figure 3.* Engineer's section drawing of Coyote Percolation Dam. Fred H. Tibbetts, Santa Clara Valley Water Conservation District: Coyote Percolation Dam, South of San Jose, California, File No. 1933-21, August 1933, 2024-B-40, Sheet 2 of 3 (on file at Valley Water's archives).

4. Santa Clara Valley Water District, "Letter to Julianne Polanco: FERC\_2018\_0403\_001 Coyote Percolation Dam Replacement Project, City of San Jose, Santa Clara County, Draft Resolution of Effect. May 24, 2023." On file with Valley Water.

# COYOTE PERCOLATION DAM HISTORY

## COYOTE PERCOLATION DAM DESIGN AND CONSTRUCTION

Coyote Percolation Dam exemplified early twentieth-century water-conservation infrastructure. This dam was among the earliest structures built in the system originally developed by Valley Water. Engineer Fred H. Tibbets and Builder/Contractor Floyd O. Bohnett led the design and construction of the Percolation Dam. The design of the dam called for a reinforced concrete sill along the creek streambed, steel sheet piling walls to protect the upper edge of the dam, and flexible reinforced concrete block mattress work at the lower edge. Raising and lowering the dam helped manage water flow. When raised, it allowed the water level within the creek's percolation area to rise about 10 feet. When lowered, excess water was released to manage flooding, particularly during winter months. Levees along each side of the dam provided additional protection from flood damage.<sup>5</sup>

As built in 1934, the dam featured:<sup>6</sup>

- A 150-foot-wide concrete sill between the north and south abutments
- Two 15-foot-long, steel sheet pile cutoff walls beneath the upstream wall at both abutments
- A cable-anchored, concrete-block mattress that extended 25 feet downstream from the sill along the creek floor and up the interior slopes of both levees
- A flashboard made of 21, 6-foot, removable panels that managed water flow and storage in the related Coyote Percolation Pond. Each panel was made of 12 horizontal wood planks bolted to a metal frame.
- A metal catwalk with a cable car for work crews to access the flashboard panels

- Portable utility buildings with removable roofs for storage and retrieval of the flashboard panels
- Two derrick cranes to assist in flashboard panel removal and transport of the panels to the utility buildings
- West and east levees
- A concrete diversion dam and ditch downstream of Metcalf Road at the south end of the reservoir

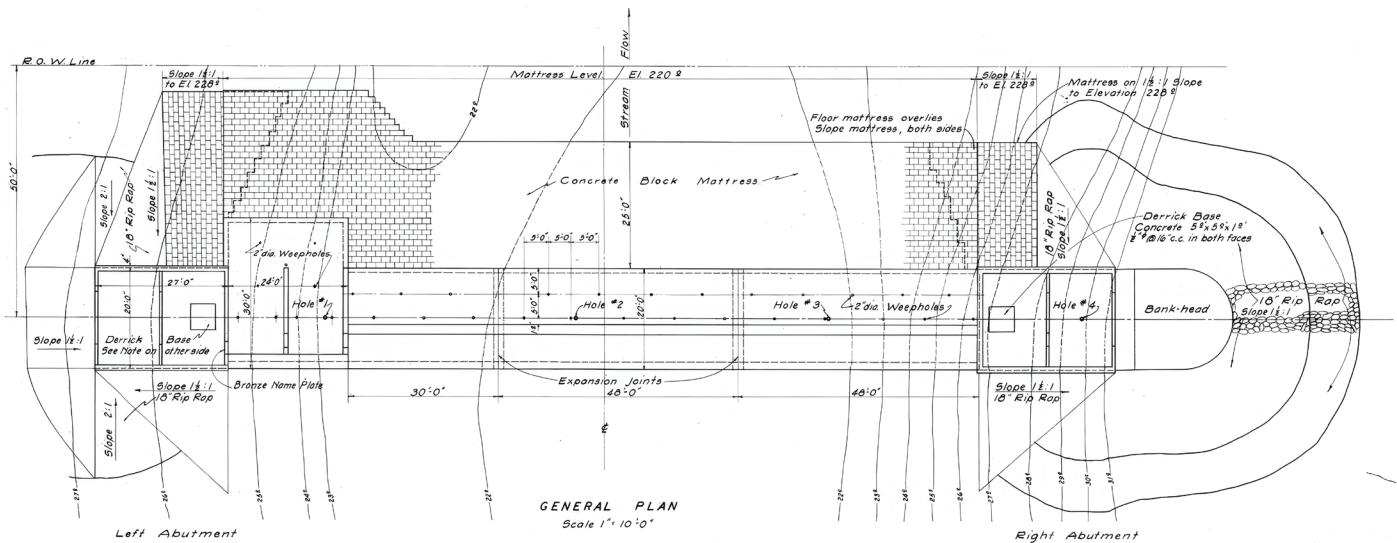


*Figure 4.* Historic view of the Coyote Percolation Dam. Photographer unknown. Coyote Percolation Dam, erosion of left bank [photograph], June 27, 1960 (photograph on file at Valley Water's archives).

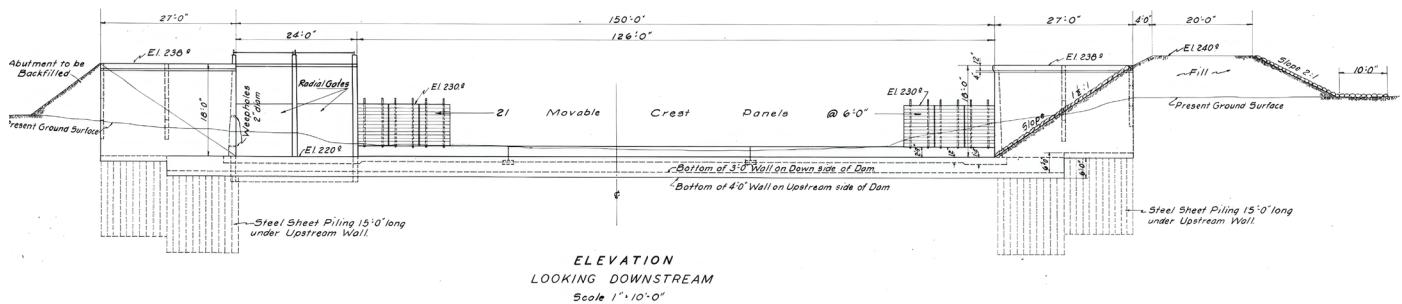
5. McMorris and Skow, "Historic American Engineering Record," 8-9.

6. McMorris and Skow, "Historic American Engineering Record," 8-10.

# COYOTE PERCOLATION DAM HISTORY



**Figure 5.** Historic plan of the Coyote Percolation Dam showing its general plan view (top-down). Fred H. Tibbetts, Santa Clara Valley Water Conservation District: Coyote Percolation Dam, South of San Jose, California, File No. 1933-21, August 1933, 2024-B-40, Sheet 1 of 3 (on file at Valley Water's archives).

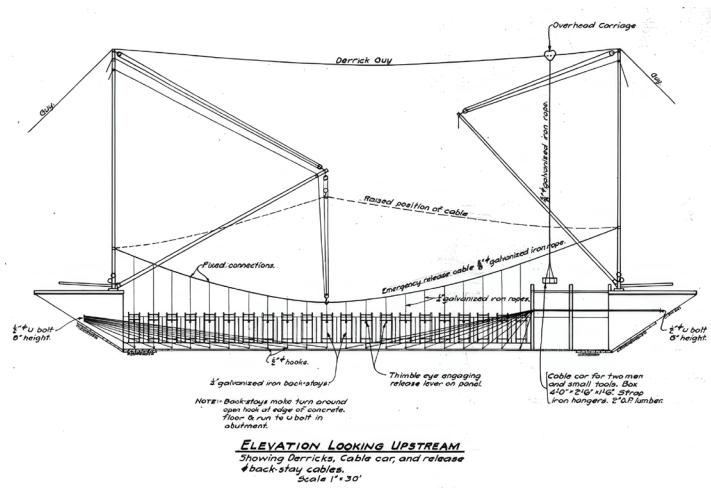


**Figure 6.** Historic plan of the Coyote Percolation Dam showing its general elevation view (head-on). Fred H. Tibbetts, Santa Clara Valley Water Conservation District: Coyote Percolation Dam, South of San Jose, California, File No. 1933-21, August 1933, 2024-B-40, Sheet 2 of 3 (on file at Valley Water's archives).

# COYOTE PERCOLATION DAM HISTORY



**Figure 7.** Historic view showing water flowing over the Coyote Percolation Dam's flashboard while a staff member oversaw crane operations. Photographer unknown, Coyote Percolation Dam, February 1, 1934 (on file at Valley Water's archives).



**Figure 8.** Historic Coyote Percolation Dam elevation plan showing key features of the dam from a similar perspective as the historic photograph above. Fred H. Tibbets, Santa Clara Valley Water Conservation District: Coyote Percolation Dam, South of San Jose, California, File No. 1933-21, August 1933 (on file at Valley Water's archives).

# COYOTE PERCOLATION DAM HISTORY



*Figure 9.* A derrick crane placed removed flashboard panels next to a utility building at the Coyote Percolation Dam. The removable gable roof appears to the right of that building. Photographer Unknown, Coyote Percolation Dam, April 8, 1935 (on file at Valley Water's archives).

## FRED H. TIBBETTS, CIVIL ENGINEER

Civil engineer Fred H. Tibbetts (1882-1938) designed Valley Water's original water conservation system, including the Coyote Creek percolation facilities, and guided the development of water-conservation infrastructure in the Santa Clara Valley between 1921 and 1938. He was born in Wisconsin and relocated to Santa Clara County with his family at age 10, around 1892. Tibbetts earned civil engineering degrees at the College of the Pacific in San José and the University of California (UC), Berkeley, where his studies included fieldwork for the U.S. Department of Agriculture's study

of the Santa Clara Valley in 1904. In addition to teaching at UC Berkeley, Tibbetts worked as a private consultant by 1919, where he investigated artesian wells in Pleasanton and Livermore Valley and supervised reclamation and flood-control projects in the Sacramento Valley. In the 1920s and 1930s, he served as chief engineer for several water districts, working on several infrastructure projects—including highways, sanitation, land division, bridges, harbors, hydropower, and railroads—throughout California, Arizona, Nevada, Oregon, and Alaska.<sup>7</sup>

7. McMorris and Skow, "Historic American Engineering Record," 12.

# COYOTE PERCOLATION DAM HISTORY

## ADDITIONS AND ALTERATIONS TO THE COYOTE PERCOLATION DAM AFTER 1934<sup>8</sup>

- Late 1960s: Original concrete block mattress washed away during flood - replaced with concrete armoring
- 1977-1978: Original timber flashboards replaced with steel panel flashboards and original derrick cranes and cable car system removed
- 1997: Metal radial gates replaced in-kind
- 1999: Concrete fish ladder added
- 2007: Fish screen added to the east levee, upstream from the dam
- 2014: New steel panel flashboards installed to replace those installed in 1978



*Figure 10.* Contextual view of the west side of the Coyote Percolation Dam. William Dewey, photographer, February 16, 2022 (on file at Valley Water's archives).



*Figure 11.* View of the downstream side of the Coyote Percolation Dam. William Dewey, photographer, February 16, 202 (on file at Valley Water's archives).

8. McMorris and Skow, "Historic American Engineering Record," 10-11.

## COYOTE PERCOLATION DAM HISTORY



*Figure 12.* View of west side of Coyote Percolation Dam, camera facing east. Taken February 16, 2022, by photographer William Dewey (on file at Valley Water's archives).

# COYOTE PERCOLATION DAM HISTORY

## PREPARERS

Josh Bevan, Architectural Historian – Rincon Consultants, Inc.

Margo Nayyar, Cultural Resources Principal – Rincon Consultants, Inc.

Danny Meigh, Senior Graphic Designer – Rincon Consultants, Inc.

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"Photograph 5. View of Coyote Percolation Dam from east abutment showing former concrete derrick crane base in foreground, camera facing southeast." February 16, 2022. Found in: McMorris, Christopher and Samuel Skow, "Historic American Engineering Record: Coyote Percolation Dam (State Dam No. 72-000), San José, Santa Clara County, California." JRP Historical Consulting, LLC, 2022. On file at the Santa Clara Valley Water District Library, San José, California.

"Photograph 9. Detail View of Upstream (East) Side of Metal Flashboard Panels, Camera Facing Northwest." February 16, 2022. Found in: McMorris, Christopher and Samuel Skow, "Historic American Engineering Record: Coyote Percolation Dam (State Dam No. 72-000), San José, Santa Clara County, California." JRP Historical Consulting, LLC, 2022. On file at the Santa Clara Valley Water District Library, San José, California.

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"Coyote Percolation Dam [alternate view]." April 8, 1935. Facility ID No. 9248: Coyote Percolation System, File No. 675002123. On file at Santa Clara County Water District Library, San José, California.

"Coyote Percolation Dam." February 1, 1934. Facility ID No. 9248: Coyote Percolation System, File No. 675003069. On file at Santa Clara County Water District Library, San José, California.

"Coyote Percolation Dam, erosion of left bank." June 27, 1960. Facility ID No. 9248: Coyote Percolation System, File No. 675003072. On file at Santa Clara County Water District Library, San José, California.

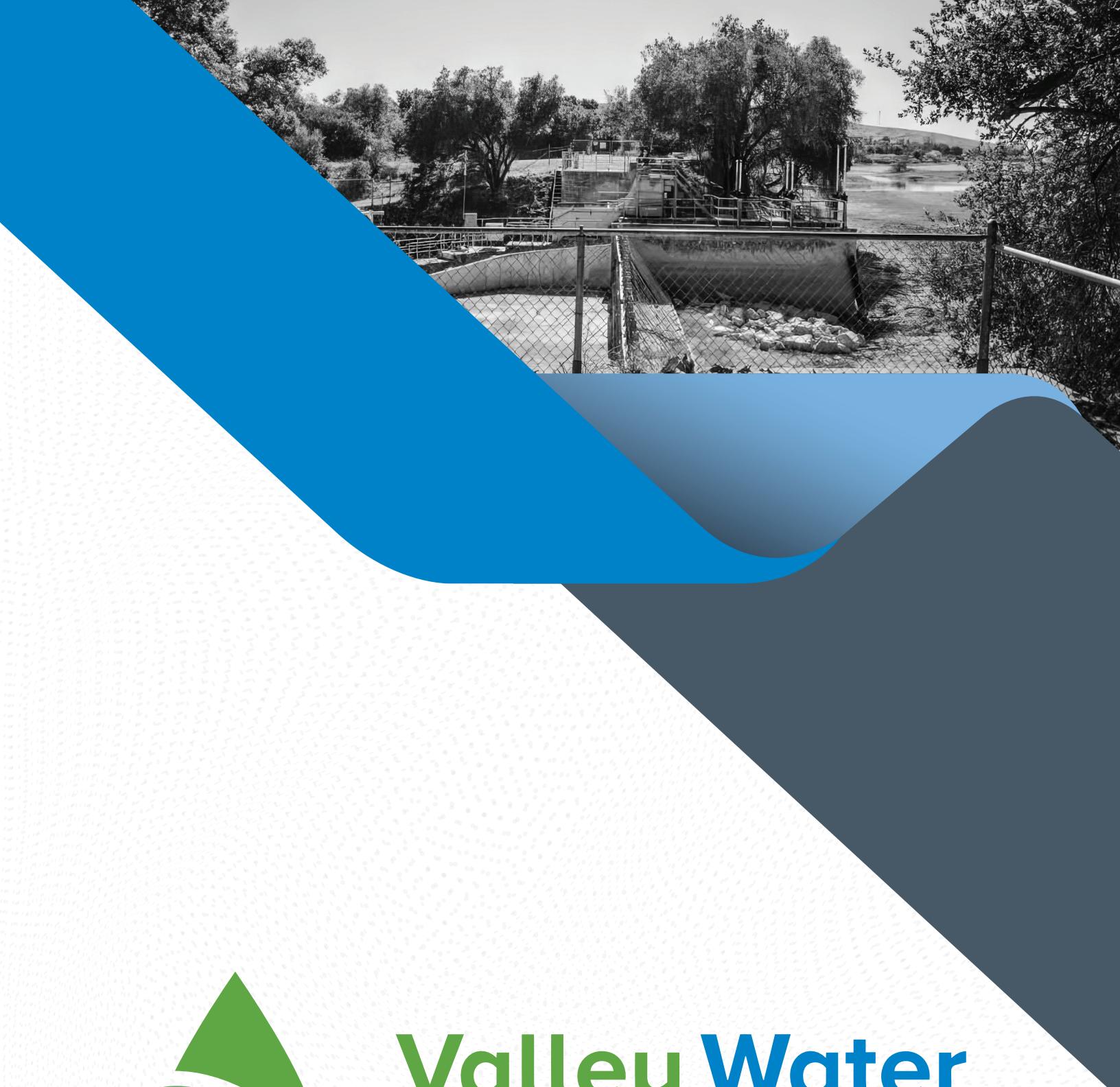
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"Santa Clara Valley Water Conservation District: Coyote Percolation Reservoir to Accompany Water Right Application." File No. 2023-84, May 1935, Record No. 2949. On file at the Santa Clara Valley Water District Library, San José, California.

### *Wilson, L.D.*

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# Valley Water

Clean Water • Healthy Environment • Flood Protection

Santa Clara Valley Water District  
5750 Almaden Expressway, San José, CA 95118-3686  
Phone: (408) 265-2600 Fax: (408) 266-0271  
[valleywater.org](http://valleywater.org)