

STATE OF CALIFORNIA
CALIFORNIA NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF SAFETY OF DAMS

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUS

Name of Dam Santiago Creek Dam No. 75 County Orange
Type of Dam Earth Type of Spillway Concrete weir and open channel
Water is 26 feet below spillway crest and 46 feet below dam crest.
Weather Conditions Sunny
Contacts Made Danielle Drake with IRWD and Steve Sweeney with Serrano Water District
Reason for Inspection Maintenance Inspection

Important Observations, Recommendations or Actions Taken

The enlargement application filed on December 17, 2021, is progressing through the design phase, and construction is expected to begin in 2025. The application work consists of constructing a new inclined outlet intake structure, a new spillway, and widening the crest of the dam with a mechanically stabilized earth (MSE) wall.

Because several portions of this dam are expected to be replaced or improved in the next year, the following maintenance items, observed during this inspection, will not need to be addressed:

- Repair the crack in the concrete liner on the upstream face, located between Piezometers R1 and R6 (Photo 2).
- Repair spalls with exposed concrete and damaged section of concrete in the spillway (Photo 9).
- Remove sediment and vegetation from the left side of the spillway approach.

However, if the enlargement project is significantly delayed, these maintenance items will need to be addressed during routine maintenance work.

The following maintenance items, identified during this inspection, need to be addressed during routine maintenance work:

- Longstanding erosion rills on the downstream face of the dam need to be repaired during routine maintenance work (Photo 6).
- Existing rodent burrows need to be collapsed, backfilled, and compacted (Photo 5).

The alteration application filed on June 24, 2020, and approved on September 21, 2020, consists of geotechnical investigations to support the replacement of the outlet intake and spillway, and to support a crack study at the dam. Reportedly, the work is complete. The completed work will be verified during the next annual maintenance inspection.

Rainfall data needs to be included in future piezometer data plots.

Conclusions

From the known information and visual inspection, the dam, reservoir, and the appurtenances are judged safe for continued use.

Observations and Comments

<u>Dam</u>	The crest appeared to be level and well-aligned. The crest narrows to ~9 feet near the right end of the embankment (Photo 4). The visible portions of the upstream concrete-lined face and groins appeared uniform and stable. A significant crack was observed on the upstream face near the crest hinge point, located between Piezometers R1 and R6. As part of the enlargement application, the crest is being widened with an MSE wall, which will include demolishing this area of cracked concrete. However, if the application work is significantly delayed, the crack will need to be repaired
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Photos taken? Yes X No _____
cc for Owner/Book

Inspected by C. M. Lancaster *cmk* 7/12/2024
Date of Inspection 3/26/2024
Date of Report 7/1/2024

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUS

Name of Dam Santiago Creek Dam No. 75

Date of Inspection 3/26/24

Observations and Comments

	<p>during routine maintenance. The downstream face has several erosion rills that have developed over time near the lower half of the embankment. While it has taken several years for the erosion rills to develop, the expectation is that they will only increase in size. The erosion rills need to be repaired during routine maintenance work.</p>
<u>Spillway</u>	<p>The approach, control section, and downstream channel were clear and unobstructed. The concrete surfaces show signs of age with longstanding diagonal cracking on the right wall, spall locations with exposed rebar, and a damaged section of concrete near the downstream end of the left wall. The spillway appears to be in serviceable condition and is going to be replaced as part of the enlargement application mentioned above. However, if the project is significantly delayed, repairs will need to be made to the spalls and damaged sections of concrete during routine maintenance work.</p>
<u>Outlet</u>	<p>The low-level outlet controls consist of 8 upstream gates/valves that are located in the outlet tower, 2 downstream diversion valves, and a blowoff valve. The lower 4 valves in the outlet tower are silted in and inoperable. All operable controls were last fully cycled in our presence on June 14, 2022. Reportedly the owner last operated the controls in the spring of 2024.</p> <p>As part of the enlargement application mentioned above, the outlet tower will be demolished, and a new inclined outlet intake structure will be constructed, which will serve as the upstream controls for the low-level outlet at the dam.</p>
<u>Seepage</u>	<p>No signs of seepage were observed on the downstream face, groins, or toe of the dam. The undrain outfalls in the spillway were dry.</p>
<u>Inst</u>	<p>Instrumentation at this dam consists of 5 survey monuments, 7 open well multistage piezometers, and 5 single stage piezometers. The latest instrumentation report was transmitted to DSOD on May 31, 2023, covering data through calendar year 2022. The instrumentation data was reviewed in our June 27, 2023, inspection report, which concluded that the data shows the dam is performing satisfactorily. As requested in the report, rainfall data needs to be included in the piezometer data plots.</p>

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Photo 1. Right side of the upstream face of the dam.



Photo 2. Crack in the upstream concrete liner.

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Name of Dam Santiago Creek

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Date of Inspection 3/26/24



Photo 3. Downstream face of the dam.

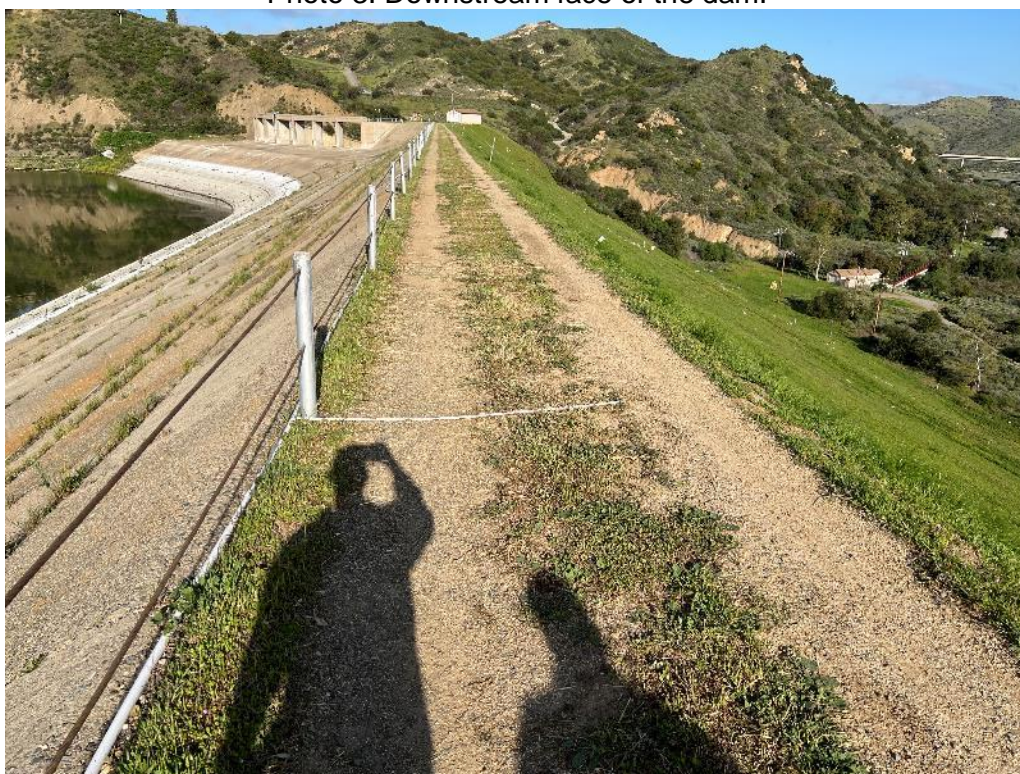


Photo 4. Thin section of the crest.

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Photo 5. Example of rodent activity.



Photo 6. Example of erosion rills on the downstream face of the dam.

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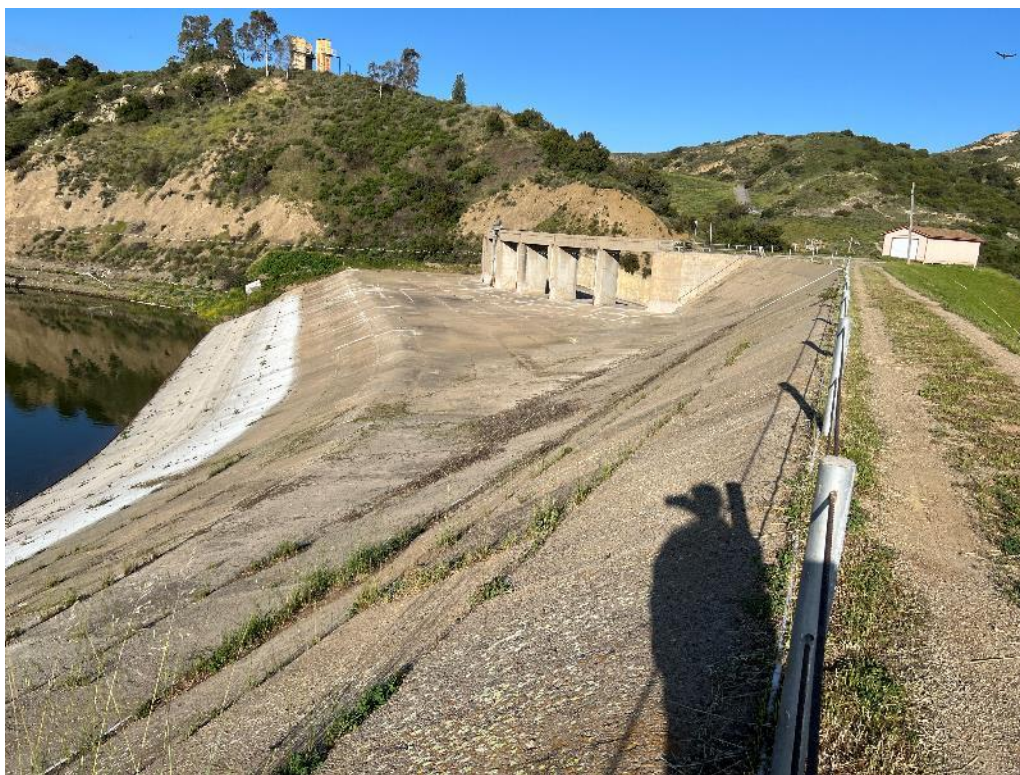


Photo 7. Spillway approach and control section.

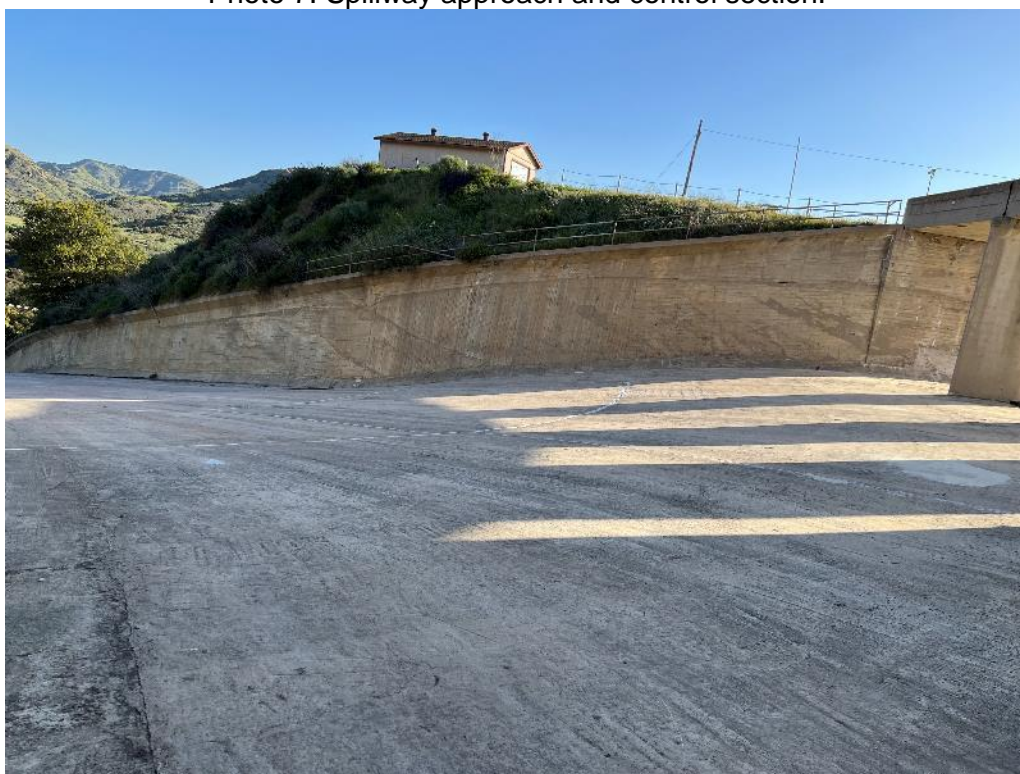


Photo 8. Diagonal cracks in the right spillway wall.

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Photo 9. Missing section of concrete at the downstream end of the spillway chute and flip bucket.