

Keith Hadick, President (Division 3)  
Randy Sharer, Vice President (Division 7)  
Casey Conrad, Treasurer (Division 6)  
Andrew Adam, Secretary (Division 2)  
Gerald Mahoney, Director (Division 4)  
Vacant, Director (Division 1)  
Vacant, Director (Division 5)



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**SANTA MARIA VALLEY WATER CONSERVATION DISTRICT  
BOARD OF DIRECTORS  
REGULAR MEETING**

**October 17, 2024 – 6:30 p.m.**

2255 S. Broadway, Ste. 8E, Santa Maria, California

Members of the Public may also join the meeting via Zoom:

<https://us06web.zoom.us/j/89283522552?pwd=ivyQkaTtvASduYa45ivQFV5hwkaGOM.1>

Meeting ID: 892 8352 2552

Passcode: 697604

One tap mobile

+16694449171,,89283522552#,,,,\*697604# US

Or Dial +1 669 444 9171 US

**AGENDA**

**1. CALL TO ORDER**

- a. Roll Call
- b. Pledge of Allegiance

**2. PUBLIC COMMENT**

*Members of the public may address the Board on any subject within the jurisdiction of the Board and which is **not** on the agenda for Regular Meetings or that **is** on the agenda for Special Meetings. The public is encouraged to work through District staff to place items on the agenda for Board consideration. No action can be taken on matter not listed on the agenda. Comments are limited to five (5) minutes.*

**3. ADDITIONS TO THE AGENDA**

*Items may be added to the agenda in accordance with Section 54954.2(b) of the Government Code, upon a determination by a two-thirds vote of the members of the legislative body present at the meeting, or, if less than two thirds of the members are present, a unanimous vote of those members present, that there is a need to take immediate action and that the need for action come to the attention of the District after the Agenda was posted.*

**4. APPROVAL OF AGENDA**

Recommended Action: Motion to approve Agenda as published.

**5. CONSENT CALENDAR**

*Items on the Consent Calendar are routine items that come before the Board of Directors on a regular basis. Unless a Director or member of the public requests separate discussion/action on an item, all items on the Consent Calendar will be considered for approval on one motion.*

**a. Approval of Minutes**

Special Board Workshop of September 10, 2024

**b. Approval of Minutes**

Regular Meeting of September 19, 2024

**c. Approval of Minutes**

Special Meeting of September 19, 2024

**6. APPROVAL OF JOINT FUNDING AGREEMENT WITH USGS FOR WATER RESOURCE INVESTIGATIONS (\$38,820)**

Recommended Action: Motion to approve Joint Funding Agreement with USGS for Water Resource Investigations in an amount not to exceed \$38,820 for Water Year 2024-25

**7. APPROVAL OF CONTRACT EXTENSION FOR TEMPORARY DAM MONITORING SERVICES**

Recommended Action: Motion to approve contract extension with Gaedeke Hydrologic Services LLC for temporary dam monitoring services

**8. REPORTS AND INFORMATION**

**a. Report on Operations at Twitchell Dam --**

*The Board of Directors will hear a report on dam conditions.*

**b. Twitchell Operations Committee (TOC) – Director Conrad, Chair**

*The Board of Directors will hear an update from the TOC, which oversees all operational aspects of Twitchell Dam.*

*i. Report and recommendation on priority maintenance items*

*ii. Report and recommendation on contractor access procedures*

Recommended Action: Consider motion to approve committee recommendations on priority maintenance items and/or contractor access procedures

**c. Financial Committee -Director Conrad, Chair**

*Financial Reports are prepared and reviewed by the District's CPA, Carrie Troup.*

Recommended Action: Motion to receive and file report(s)

**d. Report from Horne-Director Hadick**

*The Board of Directors will hear an update from Horne re Cal/OES and FEMA.*

Recommended Action: Motion to receive and file report(s)

**9. DIRECTOR & STAFF REPORTS**

**a. Director Reports**

*Directors will report on any events or items of note concerning their Division/the District during the prior month, if any. Directors may also request placement of items on future agendas for Board consideration.*

**b. General Manager's Report**

*The interim General Manager will report on new or pending District matters and activities.*

**c. District Counsel Report**

*District Counsel will report on any relevant legal matters that may impact the District.*

**10. NEXT MEETING: November 21, 2024**

**11. ADJOURNMENT**

*Upon request, agendas can be made available in appropriate alternative formats to persons with disabilities, as required by section 202 of the Americans with Disabilities Act of 1990. Any person with a disability who requires a modification or accommodation in order to observe and participate in a meeting should direct such a request to the District Office at (805) 925-5212 at least 48 hours before the meeting, if possible.*

**POSTED/PUBLISHED: October 14, 2024**

Keith Hadick, President (Division 3)  
Randy Sharer, Vice President (Division 7)  
Casey Conrad, Treasurer (Division 6)  
Andrew Adam, Secretary (Division 2)  
Gerald Mahoney, Director (Division 4)  
Vacant, Director (Division 1)  
Vacant, Director (Division 5)



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**SANTA MARIA VALLEY WATER CONSERVATION DISTRICT  
BOARD OF DIRECTORS  
SPECIAL MEETING MINUTES  
September 10, 2024 – 5:00 p.m.**

District Office  
2255 S. Broadway, Ste. 8E  
Santa Maria, California

- 1. CALL TO ORDER:** With a quorum present, the meeting was called to order at 5:06 p.m.
  - a. ROLL CALL:** Present were Directors Hadick, Adam, Conrad and Sharer. (Director Mahoney arrived later in the meeting.) Also present was Interim General Manager Carol Thomas-Keefer.
  - b. PLEDGE OF ALLEGIANCE:** President Hadick led the Pledge of Allegiance.
- 2. PUBLIC COMMENT:** None
- 3. ADDITIONS TO AGENDA:** None
- 4. APPROVAL OF AGENDA:** On motion by Director Sharer, seconded by Director Adam, the agenda was approved as corrected. Motion carried: 5-0-0-2.
- 5. BOARD WORKSHOP ON DISTRICT STAFFING PLAN:** Following considerable discussion, the board reach consensus on the following items:
  - a. Proposed staffing level**

The board determined it would like to pursue hiring a full-time dam tender, a part-time dam tender, and a part-time office assistant.
  - b. Positions and required qualifications**

The board provided direction to the Interim General Manager for dam tender qualifications.
  - c. District as employer or contractor**

The board determined that it would likely serve as employer for the dam tender positions and possibly the office assistant position, rather than be a contractor.
  - d. Compensation package/benefits as employer**

The board reviewed its current compensation package and directed the Interim General Manager to research information on deferred compensation plans for board consideration.
  - e. Implementation timeline and budget**

The Interim General Manager was directed to move ahead with steps to recruit the three positions.
- 6. NEXT MEETING:** September 19, 2024

**7. ADJOURNMENT** - It was moved and seconded by Directors Adam and Sharer to adjourn at 7:03 p.m.

Minutes approved on \_\_\_\_\_

Keith Hadick, President

Submitted by Carol Thomas-Keefer

Keith Hadick, President (Division 3)  
Randy Sharer, Vice President (Division 7)  
Casey Conrad, Treasurer (Division 6)  
Andrew Adam, Secretary (Division 2)  
Gerald Mahoney, Director (Division 4)  
Vacant, Director (Division 1)  
Vacant, Director (Division 5)



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**SANTA MARIA VALLEY WATER CONSERVATION DISTRICT  
BOARD OF DIRECTORS  
REGULAR MEETING MINUTES – September 19, 2024**

District Office  
2255 S. Broadway, Ste. 8E  
Santa Maria, California

1. **CALL TO ORDER:** With a quorum present, the meeting was called to order at 6:31 p.m.
  - a. **Roll Call:** Present were Directors Conrad, Adam, Mahoney and Sharer. Also present were Ramon Elias; Matthew Scrudato; Carrie Troup, CPA; Sam Hurst, Horne LLC; District Counsel Keith Lemieux; and Interim General Manager Carol Thomas-Keefer.
  - b. **Pledge of Allegiance:** Vice President Sharer led the Pledge of Allegiance.
2. **PUBLIC COMMENT:** None
3. **ADDITIONS TO THE AGENDA:** None
4. **APPROVAL OF AGENDA:** On motion by Director Adam and seconded by Director Conrad, the agenda was approved. Motion carried: 4-0-0-3.
5. **CONSENT CALENDAR:** On motion by Director Conrad and seconded by Director Adam, the minutes of the Regular Meeting of August 15, 2024, and Special Meeting of August 15, 2024, were approved. Motion carried 4-0-0-3.
6. **APPROVAL OF UPDATED CONFLICT OF INTEREST CODE:** The Interim General Manager reported that the Conflict of Interest Code was only updated to include the General Manager's role; the rest of the Code remained the same. Following a brief discussion, on motion by Director Conrad and seconded by Director Adam, the updated Conflict of Interest Code was approved. Motion carried 4-0-0-3.
7. **CONSIDERATION OF ESTIMATE FOR PHASE 2 GATE MONITORING REPAIRS:** Following a brief discussion, on motion by Director Conrad and seconded by Director Adam, the Board approved the estimate from G-Tech for Phase 2 Gate Monitoring repairs in an amount not to exceed \$15,000.00, including an advance payment of up to 25 percent (\$3,750.00) for purchase of parts and equipment. Motion carried 4-0-0-3.
8. **REPORTS AND INFORMATION**
  - a. **Report on Operations at Twitchell Dam:** Director Conrad reported that releases from the dam are complete, the reservoir is still dewatering, and there is considerable sediment present.

**b. Twitchell Operations Committee (TOC):** Director Conrad reported that USBR conducted its annual site inspection earlier that day, and a report should be available soon. There was also a brief discussion on removal of fencing on the southeast side, and the need for placement of K-rail along the top of the dam.

**c. Financial Committee:** Ms. Troup reviewed the August month-end financial statements, along with invoices paid. She reported that the investments in Cal CLASS and the Community Bank were doing well. Director Sharer noted that the CD in the Community Bank would reach term in November; Ms. Troup will research new rates for a renewal and will bring additional information back to the committee. On motion made by Director Conrad and seconded by Director Adam, the financial statements for August were received and filed. Motion carried 4-0-0-3.

**d. Report from Horne:** Mr. Hurst reviewed activities for the past month, including progress on the report for the Lidar survey conducted earlier this month. On motion by Director Adam and seconded by Director Mahoney, the September report from Horne was received and filed. Motion carried 4-0-0-3.

## **9. DIRECTOR & STAFF REPORTS**

**a. Director Reports:** Director Mahoney suggested that the TOC begin to discuss mitigation activities.

**b. General Manager's Report:** Ms. Thomas-Keefer reported that she has reached out to USGS for information regarding renewal of the Cooperative Agreement for 2025 but has not yet received a response; she also reported that she is preparing the lists of consultants to receive the Request for Qualifications for on-call engineering services, and she has send that draft list to the directors for their information and review.

**c. District Counsel Report:** District Counsel Lemieux reported that his office is continuing to work with staff on development of several policies identified by the Grand Jury that the District should have in place and will ultimately be compiled into a district Administrative Code.

**10. NEXT MEETING:** October 17, 2024

**11. ADJOURNMENT:** It was moved and seconded by Director Adam and Director Mahoney to adjourn at 8:02 p.m.

Minutes approved on \_\_\_\_\_

Randy Sharer, Vice President

Submitted by Carol Thomas-Keefer

Keith Hadick, President (Division 3)  
Randy Sharer, Vice President (Division 7)  
Casey Conrad, Treasurer (Division 6)  
Andrew Adam, Secretary (Division 2)  
Gerald Mahoney, Director (Division 4)  
Vacant, Director (Division 1)  
Vacant, Director (Division 5)



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**SANTA MARIA VALLEY WATER CONSERVATION DISTRICT  
BOARD OF DIRECTORS  
SPECIAL MEETING MINUTES  
September 19, 2024 – 5:30 p.m.**

District Office  
2255 S. Broadway, Ste. 8E  
Santa Maria, California

**1. CALL TO ORDER:** With a quorum present, the meeting was called to order at 5:32 p.m.

**a. ROLL CALL:** Present were Directors Mahoney, Adam, Conrad and Sharer. Also present were Special Counsel Rich Adam; District Counsel Keith Lemieux; and Interim General Manager Carol Thomas-Keefer.

**b. PLEDGE OF ALLEGIANCE:** Vice President Sharer led the Pledge of Allegiance.

**2. PUBLIC COMMENT:** None

**3. APPROVAL OF AGENDA:** On motion by Director Mahoney, seconded by Director Adam, the agenda was approved as published. Motion carried: 4-0-0-3.

**4. ADJOURN TO CLOSED SESSION:** 5:35 p.m.

**CLOSED SESSION:**

**CONFERENCE WITH LEGAL COUNSEL; (Government Code 54956.9) Existing litigation: San Luis Obispo Coastkeeper, et.al. v. Santa Maria Valley Water Conservation District, et. al.**

**5. REPORT OUT OF CLOSED SESSION:** 6:05 p.m. -- District Counsel Lemieux stated that no reportable action was taken in Closed Session.

**6. ADJOURNMENT** - It was moved and seconded by Directors Adam and Mahoney to adjourn at 6:06 p.m.

Minutes approved on \_\_\_\_\_

Randy Sharer, Vice President  
Submitted by Carol Thomas-Keefer

# STAFF REPORT

**TO:** SMVWCD Board of Directors  
**FROM:** Carol Thomas-Keefer, Interim General Manager  
**DATE:** October 17, 2024  
**RE:** Renewal of Joint Funding Agreement with USGS for Cooperative Water Resource Program

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## **Background:**

The U.S. Department of the Interior, U.S. Geological Survey, (USGS) has provided the final costs for continuation of the cooperative water resources program for the period of October 1, 2024, through September 30, 2025. Through this agreement, USGS produces and reports a continuous record of discharge at streamflow gaging stations. The SMVWCD portion of the program costs for the coming year is \$38,820 and the USGS contribution is fixed at \$14,600, for a combined total program cost of \$53,420. These costs are further defined in Attachment 1 of the USGS letter.

The scope of work is included as Attachment 2 and details the equipment and processes used to collect and calculate flow data and water level measurements.

Approval of the joint funding agreement will allow USGS's work to continue for another year. The District's cost share of the 2023-24 agreement was \$35,800, or approximately \$3,000 less than the cost for 2024-25.

## **Fiscal Impact:**

The District has funded its portion of this program in the past, and the WY 2024-25 program contribution is included in the current year budget.

## **Recommendation:**

Staff recommends that the Board consider approval of the joint funding agreement with USGS for the cooperative water resources program, with a District contribution of \$38,820.

## **Attachments:**

- USGS Letter Agreement with detailed summary and scope of work





# United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
California Water Science Center  
6000 J Street  
Sacramento, CA 95819

October 8, 2024

Casey Conrad  
Treasurer  
Santa Maria Valley Water Conservation District  
P.O. Box 364  
Santa Maria, CA 93456

Dear Casey Conrad:

Attached is the Joint Funding Agreement (JFA) 25ZGJFA06000044, signed by our agency, for your approval to enact the cost changes to the project(s) California Water Science Center Water Resources Investigations, during the period October 1, 2024 through September 30, 2025 in the amount of \$38,820 from your agency. U.S. Geological Survey contributions for this agreement are \$14,600 for a combined total of \$53,420. If you are in agreement with this proposed program, please return the fully executed signed copy to [CAgageADMIN@usgs.gov](mailto:CAgageADMIN@usgs.gov) (preferred) or send one fully executed paper copy to Jonathan Esposito at the address in the letter head.

Federal law requires that we have a signed agreement before we start or continue work. Please return the signed agreement **as soon as possible**. If, for any reason, the agreement cannot be signed and returned by the date shown above, please contact Ben Glass at (805) 260-8135 or email [brglass@usgs.gov](mailto:brglass@usgs.gov) to make alternative arrangements.

This is a fixed cost agreement to be billed quarterly via Down Payment Request (automated Form DI-1040). Please allow 30-days from the end of the billing period for issuance of the bill. If you experience any problems with your invoice(s), please contact Jonathan Esposito at phone number (916) 278-3000 or [jesposito@usgs.gov](mailto:jesposito@usgs.gov).

The results of all work performed under this agreement will be available for publication by the U.S. Geological Survey. We look forward to continuing this and future cooperative efforts in these mutually beneficial water resources studies.

Sincerely,

Mark Dickman  
Director, Acting  
CA Water Science Center

Enclosure  
Detailed Summary

Fixed Cost Agreement YES[ X ] NO[ ]

THIS AGREEMENT is entered into as of October 1, 2024, by the U.S. GEOLOGICAL SURVEY, California Water Science Center, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the Santa Maria Valley Water Conservation District party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation for negotiated deliverables (see attached), herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50, and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) include In-Kind-Services in the amount of \$0.00

- (a) \$14,600 by the party of the first part during the period October 1, 2024 to September 30, 2025
- (b) \$38,820 by the party of the second part during the period October 1, 2024 to September 30, 2025
- (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of: \$0

Description of the USGS regional/national program:

- (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
- (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The Parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (<https://www.usgs.gov/office-of-science-quality-and-integrity/fundamental-science-practices>).

U.S. Department of the Interior  
U.S. Geological Survey  
Joint Funding Agreement  
FOR

Customer #: 600000820  
Agreement #: 25ZGJFA06000044  
Project #: ZG00GZV  
TIN #: 77-0324200

Water Resource Investigations

9. Billing for this agreement will be rendered quarterly. Invoices not paid within 60 days from the billing date will bear Interest, Penalties, and Administrative cost at the annual rate pursuant the Debt Collection Act of 1982, (codified at 31 U.S.C. § 3717) established by the U.S. Treasury.

**USGS Technical Point of Contact**

Name: Ben Glass  
Supervisory Hydrologic Technician  
Address: 3130 Skyway Drive  
Santa Maria, CA 93455  
Telephone: (805) 260-8135  
Fax: (805) 928-9220  
Email: brglass@usgs.gov

**Customer Technical Point of Contact**

Name: Casey Conrad  
Treasurer  
Address: P.O. Box 364  
Santa Maria, CA 93456  
Telephone: (n/a)  
Fax: (n/a)  
Email: cconrad@smvwcd.org

**USGS Billing Point of Contact**

Name: Jonathan Esposito  
Budget Analyst  
Address:  
Telephone: (916) 278-3000  
Fax: (n/a)  
Email: jesposito@usgs.gov

**Customer Billing Point of Contact**

Name: Carol Thomas-Keefer  
Interim General Manager  
Address: P.O. Box 364  
Santa Maria, CA 93456  
Telephone: (650) 587-7300 Ext 17  
Fax: (n/a)  
Email: districtoffice@smvwcd.org

U.S. Geological Survey  
United States  
Department of Interior

Santa Maria Valley Water Conservation District

Signature

Signatures

By \_\_\_\_\_ Date: \_\_\_\_\_

Name: Mark Dickman  
Title: Director, Acting  
USGS California Water Science Center

By \_\_\_\_\_ Date: \_\_\_\_\_

Name:  
Title:

By \_\_\_\_\_ Date: \_\_\_\_\_

Name:  
Title:

By \_\_\_\_\_ Date: \_\_\_\_\_

Name:  
Title:

FBMS Customer Number 600000820

SO Number \_\_\_\_\_

Agreement/PO Number 25ZGJFA06000044

### NON-FEDERAL CHECKLIST

**Elements of Agreement.** All elements on the checklist must be included in the agreement package when applicable. Indicate by N/A if the element is not applicable. Each section must be verified by initialing on the line provided. The items where a check mark exists in the Page # column are mandatory and the page number must be provided to identify where the element can be found in the agreement package. The agreement package consists of the signed agreement and/or modification; cover/acceptance letter, addendum, or email; completed and signed reimbursable agreement checklist; and any other supporting documentation (e.g., exception memo, special rate approval).

NON-FEDERAL CUSTOMER INFORMATION SECTION:	<i>Initials:</i> _____	
	<i>Page #</i>	<i>Comments</i>
1) Agreement/PO Number	√ 1	25ZGJFA06000044
2) Name of Organization	√ 1	Santa Maria Valley Water Conservation District
3) TIN ( <i>excluding foreign</i> )	√ 1	77-0324200
4) DUNS/UEI ( <i>if available</i> )	N/A	
5) Point of Contact	2	Casey Conrad
6) Address	2	P.O. Box 364, Santa Maria, CA, 93456
7) Office phone, Fax and/or Email	2	(n/a) / (n/a) / cconrad@smvwcd.org
8) Signature(s) and Date(s)	√ 2	
USGS INFORMATION SECTION:	<i>Initials:</i> _____	
	<i>Page #</i>	<i>Comments</i>
1) Organization and Cost Center	√ 1	California Water Science Center
2) Legal authority to enter into agreement	√ 1	Must be in the Agreement Package; 43 USC 36C; 43 USC 50, and 43 USC 50b
3) Project Chief/Principal Investigator	2	Ben Glass
4) Address	2	3130 Skyway Drive , Santa Maria CA 93455
5) Office phone, Fax and/or Email	2	(805) 260-8135 / (805) 928-9220 / brglass@usgs.gov
6) Signature(s) and Date(s)	√ 2	Is Agreement signed in accordance with Financial Delegations of Authority? For Non-Standard JFAs see SM 205.13.A
SCOPE OF WORK SECTION:	<i>Initials:</i> _____	
	<i>Page #</i>	<i>Comments</i>
1) Period of Performance	√ 1	Start & End Date; 10/1/2024 – 9/30/2025
2) Description of Services and Responsibilities	1	
3) Agreement Deliverables ( <i>if applicable</i> )		
4) Authority to Publish ( <i>if applicable</i> )	√ 1	
5) If in-kind services provided, describe in agreement including amount ( <i>if applicable</i> )		Voucher must be sent in with agreement. If not currently available., date you plan to forward to OAFM/FM
6) Equipment/Property requirements or restrictions ( <i>if applicable</i> )		
FUNDING INFORMATION SECTION:	<i>Initials:</i> _____	
	<i>Page #</i>	<i>Comments</i>
1) Total Amount of Agreement	√ 1	USGS \$14,600 / Cust \$38,820
2) Modification Number ( <i>if applicable</i> )	√	
3) Amount of Modification ( <i>if applicable</i> )	√	
4) Fixed Cost ( <i>if applicable</i> )	√ 1	fixed
5) Funding Limitations	√	Yes / No and include page # if yes
BILLING INFORMATION SECTION:	<i>Initials:</i> _____	
	<i>Page #</i>	<i>Comments</i>
1) Billing Address/Contact/Office Phone	√ 2	Carol Thomas-Keefer / P.O. Box 364 Santa Maria, CA 93456
2) Frequency of Billing	√ 2	____ Monthly ____ Quarterly ____ Semi-annual ____ Annual ____ In Advance
3) Mandatory Termination Clause	√ 1	
INTERNAL INFORMATION SECTION:	<i>Initials:</i> _____	
Miscellaneous (if Applicable):		<i>If Applicable:</i>
1) <a href="#">OPA Approval</a>		ARS number must be listed on agreements when OPA approval is required
2) <a href="#">Conflict of Interest (COI) Form - (for work with the private sector, non-profits and academic institutions)</a>		Must be available at Cost Center
3) Cost Share		Must be available at Cost Center
4) Special/Reduced Rate Approval		Must be scanned in FBMS for FM approval
5) Cover/Acceptance Letter		Copy of official letter to accept funds, state authority to publish, reimbursable, etc., must be filed with the agreement at the Center
6) Supports USGS Program		Write In – Functional Area: <b>G40CP0000</b>
7) Cost Calculations for Direct/Indirect Costs		Must be available at Cost Center
<b>Project Chief/Principal Investigator</b> ( <i>Name/Phone/Signature</i> ) Mark Dickman (916) 278-9111		<b>Date</b> Oct 8, 2024
<b>Cost Center Financial Reviewer</b> ( <i>Name/Phone/Signature</i> ) Jonathan Esposito (916) 278-3000		<b>Date</b> Oct 8, 2024

# STAFF REPORT

**TO:** SMVWCD Board of Directors  
**FROM:** Carol Thomas-Keefer, Interim General Manager  
**DATE:** October 17, 2024  
**RE:** Contract Extension for Temporary Dam Monitoring Services

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## **Background:**

In response to the immediate need for dam tending services while the District seeks to fill its dam tender positions, the District previously obtained proposals and subsequently retained the services of Gaedeke Hydrologic Consulting, LLC. Mr. Gaedeke has been performing the dam monitoring tasks on a near-daily basis since April, and he continues to perform the work reliably and with no issues.

The current contract with Gaedeke Hydrologic Consulting, LLC, expires October 31, 2024. While efforts are underway to recruit, hire and train new dam tenders, the District will need to continue contracting for dam monitoring services until such time as the new employees are in place. Mr. Gaedeke is willing to extend the contract at the daily weekday rate \$420 and weekend daily rate of \$390. Staff is proposing to extend the contract for another two months, through December 31, 2024. The contract language allows the District to terminate the contract earlier for any reason, so if a dam tender is hired and trained prior to the end of the year, the contract with Mr. Gaedeke could be ended at that time.

## **Fiscal Impact:**

The contract extension will add up to \$25,080 to the previous not-to-exceed amount of \$85,000, for a total not-to-exceed amount of \$110,080. Funds have been allocated in the 2024-25 budget year, and a portion of the cost will be offset by costs avoided in salaries and benefits.

## **Recommendation:**

The Board should consider approval of the contract extension with Gaedeke Hydrologic Consulting, LLC, for temporary dam monitoring services through December 31, 2024.

## **Attachment:**

- Proposed Amendment #5 to Agreement with Gaedeke Hydrologic Consulting, LLC

**AMENDMENT TO THE AGREEMENT WITH THE  
SANTA MARIA VALLEY WATER CONSERVATION DISTRICT  
AND CONTRACTOR**

Amendment No.: 5

Original Agreement Title (“Agreement”): Agreement for General Services with Santa Maria Valley Water Conservation District

Agreement Effective Date: April 5, 2024

Agreement Termination Date: December 31, 2024

Contractor Name: Gaedeke Hydrologic Consulting, LLC

Brief Description of Scope of Services (“Services”): Temporary Monitoring Services

This Amendment to the Agreement, made effective on the date executed by and between the Santa Maria Valley Water Conservation District, duly organized and existing under and by virtue of the laws of the State of California ("District"), and the above referenced Contractor with reference to the following facts which are acknowledged by each party as true and correct:

**RECITALS**

Whereas, District and Contractor entered into an Agreement on the Effective Date set forth above for the Services.

Whereas, District and Contractor wish to amend the Agreement as further set forth herein.

Whereas, the Agreement was previously modified by the following prior amendments: 3

**AMENDMENT**

NOW, THEREFORE, it is agreed by and between the parties as follows:

1. The above recitals are true and correct.
2. The following terms of the Agreement are hereby amended as of the effective date of this Amendment to read as follows:

The Contract Not To Exceed Amount is hereby increased from \$85,000.00 to \$110,080.00.

3. All other conditions of the Agreement shall continue in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to the Agreement to be executed on the dates set forth below.

Signature Page to Follow.

**IN WITNESS WHEREOF**, the Parties hereto have executed this Agreement on the date and year first-above written.

**DISTRICT:**

Santa Maria Valley Water Conservation District

By: \_\_\_\_\_

**Date: October 17, 2024**

APPROVED AS TO FORM:  
ALESHIRE & WYNDER, LLP

\_\_\_\_\_  
District Counsel  
Date:

**CONTRACTOR:**

**Two corporate officer signatures required when Contractor is a corporation, with one signature required from each of the following groups: 1) Chairperson of the Board, President or any Vice President; and 2) Secretary, any Assistant Secretary, Chief Financial Officer or any Assistant Treasurer. (Cal. Corp. Code § 313.) Appropriate attestations shall be included as may be required by the bylaws, articles of incorporation or other rules or regulations applicable to Contractor’s business City.**

By: \_\_\_\_\_

Name: Mike Gaedeke  
Title:  
Date:

By: \_\_\_\_\_

Name:Click or tap here to enter text.  
Title:Click or tap here to enter text.  
Date:

# COMMITTEE REPORT

**TO:** SMVWCD Board of Directors  
**FROM:** Twitchell Operations Committee  
**DATE:** October 17, 2024  
**RE:** Priority Maintenance Recommendations

---

## **Background:**

The Twitchell Operations Committee (TOC) held a special meeting on October 15, 2024, to discuss priority maintenance items for Board consideration. Recommendations are for maintenance projects that would be undertaken during the current fiscal year using budgeted maintenance funds.

Recommendations for priority projects include:

- Removal of rocks at overflow tunnel
- Road improvements (cattle guards, drainage, pot hole repair, etc)
- Staff gages (clean and repair or resurvey and replace or add new downstream)
- K-rail placement along top of dam
- Shaft house maintenance (piping, service hydraulic lines, service engine, spool valve)
- Keyhole and stilling basin clean-out (sediment management)

## **Fiscal Impact:**

Since the recommendations are pending board approval, no estimates have been obtained. However, the current year budget anticipated a considerable investment in deferred maintenance (\$350,000) and sediment management (\$400,000), so sufficient funding should be available. Some funding may also be available through the Twitchell Management Authority for recommended projects that have already received TMA funding authorization.

## **Recommendation:**

The Board should consider authorizing the TOC and staff to move ahead with some or all of the priority maintenance projects as recommended by the TOC.



**Santa Maria Valley Water Conservation District**  
**Profit & Loss Budget vs. Actual**  
 July through September 2024

25% of the year has elapsed	Jul - Sep 24	Budget	\$ Over Budget	% of Budget
<b>Ordinary Income/Expense</b>				
<b>Income</b>				
<b>Charges for Services</b>				
4877 · Other Special Assessment	0.00	1,200,000.00	-1,200,000.00	0.0%
<b>Total Charges for Services</b>	<b>0.00</b>	<b>1,200,000.00</b>	<b>-1,200,000.00</b>	<b>0.0%</b>
<b>Intergovernmental Revenue</b>				
4220 · Homeowners Prop Tax-Stat	0.00	1,495.00	-1,495.00	0.0%
4690 · Homeownrs Prop Tx/pymts in Lieu	0.00	200.00	-200.00	0.0%
<b>Total Intergovernmental Revenue</b>	<b>0.00</b>	<b>1,695.00</b>	<b>-1,695.00</b>	<b>0.0%</b>
<b>Taxes</b>				
3011 - Property Tax-Unitary	0.00	3,400.00	-3,400.00	0.0%
3015 - PT Prior Yr Escapes Sec	0.00	700.00	-700.00	0.0%
3020 - Property Tax-Current Uns	0.00	15,000.00	-15,000.00	0.0%
3028 - RDA Pass-Through Payment	0.00	1,200.00	-1,200.00	0.0%
3010 · Property Tax-Current Sec	0.00	395,000.00	-395,000.00	0.0%
3023 · PT PY Corr/Escapes Unsec	0.00	475.00	-475.00	0.0%
3025 · Property Tax-Other Cnty	0.00	156,000.00	-156,000.00	0.0%
3029 · RDA RPTTF Distributions	0.00	5,300.00	-5,300.00	0.0%
3050 · Property Tax- Prior Unsecured	0.00	470.00	-470.00	0.0%
3054 · Supplemental Prop Tax	0.00	4,350.00	-4,350.00	0.0%
3056 · Supplemental Prop- Prior	0.00	85.00	-85.00	0.0%
3057 · PT-506 INT,480 CIOS/CIC	0.00	35.00	-35.00	0.0%
<b>Total Taxes</b>	<b>0.00</b>	<b>582,015.00</b>	<b>-582,015.00</b>	<b>0.0%</b>
<b>Use of Money and Property</b>				
3382-Interest Savings Acct	6,710.57	25,000.00	-18,289.43	26.84%
3380 · Interest Income	10,856.74	40,000.00	-29,143.26	27.14%
<b>Total Use of Money and Property</b>	<b>17,567.31</b>	<b>65,000.00</b>	<b>-47,432.69</b>	<b>27.03%</b>
5909 · Other Miscellaneous Revenue	1,501.55			
<b>Total Income</b>	<b>19,068.86</b>	<b>1,848,710.00</b>	<b>-1,829,641.14</b>	<b>1.03%</b>
<b>Expense</b>				
<b>1 - Salaries &amp; Employee Benefits</b>				
6100 · Regular Salaries	0.00	130,000.00	-130,000.00	0.0%
6500 · FICA Contribution	0.00	8,100.00	-8,100.00	0.0%
6550 · FICA/Medicare	0.00	1,900.00	-1,900.00	0.0%
6600 · Health Insurance Contrib	0.00	27,000.00	-27,000.00	0.0%
6700 · Unemployment Ins Contrib	0.00	1,000.00	-1,000.00	0.0%
6900 · Workers Compensation	0.00	7,000.00	-7,000.00	0.0%
<b>Total 1 - Salaries &amp; Employee Benefits</b>	<b>0.00</b>	<b>175,000.00</b>	<b>-175,000.00</b>	<b>0.0%</b>

**Santa Maria Valley Water Conservation District**  
**Profit & Loss Budget vs. Actual**  
 July through September 2024

25% of the year has elapsed	Jul - Sep 24	Budget	\$ Over Budget	% of Budget
<b>2 - Services and Supplies</b>				
7050 - Communications	1,299.47	10,000.00	-8,700.53	13.0%
7060 - Food	0.00	2,500.00	-2,500.00	0.0%
7090 - Insurance	14,830.65	23,000.00	-8,169.35	64.48%
7110 - Directors Fees	2,600.00	30,000.00	-27,400.00	8.67%
7120 - Maintenance-Equipment	0.00	22,000.00	-22,000.00	0.0%
7121 - Operating Supplies	4,050.60	26,000.00	-21,949.40	15.58%
7200 - MTC-Struct/Impr & Ground	25,753.05	100,000.00	-74,246.95	25.75%
7324 - Audit Fees	0.00	6,300.00	-6,300.00	0.0%
7430 - Memberships	0.00	3,900.00	-3,900.00	0.0%
7450 - Office Expense	4,078.92	13,500.00	-9,421.08	30.21%
7460 - Professional & Spec Svcs	36,725.50	225,000.00	-188,274.50	16.32%
7506 - Administration Fees	784.00	7,400.00	-6,616.00	10.6%
7507 - ADP Fees	0.00	3,410.00	-3,410.00	0.0%
7508 - Legal Fees	10,368.42	190,000.00	-179,631.58	5.46%
7509 - Other Expense - BOE	0.00	22,000.00	-22,000.00	0.0%
7510 - Contractual Services	43,805.60	90,000.00	-46,194.40	48.67%
7580 - Rents/Leases-Structure	4,200.00	17,000.00	-12,800.00	24.71%
7710 - Watershed Planning	0.00	19,000.00	-19,000.00	0.0%
7711 - Groundwater Planning	3,780.00	12,000.00	-8,220.00	31.5%
7731 - Gasoline, Oil, Fuel	3,746.23	20,000.00	-16,253.77	18.73%
7732 - Training & Travel	0.00	3,000.00	-3,000.00	0.0%
7760 - Utilities	7,024.11	8,000.00	-975.89	87.8%
<b>Total 2 - Services and Supplies</b>	<b>163,046.55</b>	<b>854,010.00</b>	<b>-690,963.45</b>	<b>19.09%</b>
<b>3 - Fixed Assets</b>				
8000 - Deferred Maintenance	0.00	350,000.00	-350,000.00	0.0%
8100 - Structures/Structure Imprvmnts	0.00	240,000.00	-240,000.00	0.0%
8200 - Land Improvements (Roads)	0.00	100,000.00	-100,000.00	0.0%
8300 - Equipment	323.92	45,000.00	-44,676.08	0.72%
8400 - Sediment Management	0.00	400,000.00	-400,000.00	0.0%
<b>Total 3 - Fixed Assets</b>	<b>323.92</b>	<b>1,135,000.00</b>	<b>-1,134,676.08</b>	<b>0.03%</b>
<b>Total Expense</b>	<b>163,370.47</b>	<b>2,164,010.00</b>	<b>-2,000,639.53</b>	<b>7.55%</b>
<b>Net Ordinary Income</b>	<b>-144,301.61</b>	<b>-315,300.00</b>	<b>170,998.39</b>	<b>45.77%</b>
<b>Other Income/Expense</b>				
<b>Other Income</b>				
9999 - Operating Transfer In	0.00	315,300.00	-315,300.00	0.0%
<b>Total Other Income</b>	<b>0.00</b>	<b>315,300.00</b>	<b>-315,300.00</b>	<b>0.0%</b>
<b>Net Other Income</b>	<b>0.00</b>	<b>315,300.00</b>	<b>-315,300.00</b>	<b>0.0%</b>

**Santa Maria Valley Water Conservation District**  
**Profit & Loss Budget vs. Actual**  
 July through September 2024

25% of the year has elapsed

	Jul - Sep 24	Budget	\$ Over Budget	% of Budget
<b>Net Income</b>	-144,301.61	0.00	-144,301.61	100.0%

The financial report omits substantially all disclosures required by accounting principles generally accepted in the United States of America; no assurance is provided on them.

**Santa Maria Valley Water Conservation District**

**Cash Balances Report**

As of September 30, 2024

**TOTAL**

**Current Assets**

**Checking/Savings**

California Class	1,010,856.74
Community Bank CDMaturity Nov16	508,904.74
Community Bank of Santa Maria	564,057.78
Community Bank of SM-Saving	57,013.59
Community Bank SM-Agency Fund	100.00

<b>Total Checking/Savings</b>	<b>2,140,932.85</b>
-------------------------------	---------------------

**Santa Maria Valley Water Conservation District**  
**Vendors**  
**September 2024**

	Type	Date	Num	Memo	Debit
<b>ANDY ADAM</b>					
	Check	09/03/2024	6364	AUG 2024	300.00
Total ANDY ADAM					<u>300.00</u>
<b>ASSURED PARTNERS OF CALIFORNIA</b>					
	Check	09/03/2024	6358	INV # 2435920 CASEY CONRAD	260.00
Total ASSURED PARTNERS OF CALIFORNIA					<u>260.00</u>
<b>CARRIE TROUP, CPA</b>					
	Check	09/03/2024	6366	INV # 0824W	2,950.00
Total CARRIE TROUP, CPA					<u>2,950.00</u>
<b>CASEY CONRAD</b>					
	Check	09/03/2024	6362	AUG 2024	400.00
Total CASEY CONRAD					<u>400.00</u>
<b>COMCAST</b>					
	Check	09/03/2024	6365	SERVICES AUG 22-SEP 21, 2024	76.91
Total COMCAST					<u>76.91</u>
<b>FRONTIER</b>					
	Check	09/14/2024	6370	805-925-8989-010168-5	171.41
Total FRONTIER					<u>171.41</u>
<b>GERALD MAHONEY</b>					
	Check	09/03/2024	6363	AUG 2024	300.00
Total GERALD MAHONEY					<u>300.00</u>
<b>KEITH HADICK</b>					
	Check	09/03/2024	6360	AUG 2024	300.00
Total KEITH HADICK					<u>300.00</u>
<b>LINDE GAS &amp; EQUIPMENT INC.</b>					
	Check	09/14/2024	6369	44733390	103.14
Total LINDE GAS & EQUIPMENT INC.					<u>103.14</u>
<b>PG&amp;E</b>					
	Check	09/03/2024	6354	ACCT # 2084099541-7	1,954.70
	Check	09/03/2024	6355	9469185104-5	102.35
	Check	09/03/2024	6356	0008320880-1	44.43
	Check	09/14/2024	6371	ACCT # 2084099541-7	1,958.03
Total PG&E					<u>4,059.51</u>
<b>RANDY SHARER</b>					
	Check	09/03/2024	6361	AUG 2024	300.00

**Santa Maria Valley Water Conservation District**  
**Vendors**  
**September 2024**

	<b>Type</b>	<b>Date</b>	<b>Num</b>	<b>Memo</b>	<b>Debit</b>
Total RANDY SHARER					300.00
<b>REGIONAL GOVERNMENT SERVICES</b>					
	Check	09/03/2024	6359	CONTRACT SERVICES FOR JULY 2024	8,673.50
Total REGIONAL GOVERNMENT SERVICES					<u>8,673.50</u>
<b>TEIXEIRA FARMS</b>					
	Check	09/03/2024	6367	RENT OCTOBER 2024	1,400.00
Total TEIXEIRA FARMS					<u>1,400.00</u>
<b>US BANK</b>					
	Check	09/03/2024	6357	MSFT	25.00
	Check	09/03/2024	6357	MSFT	54.00
	Check	09/03/2024	6357	ADT SECURITY	51.99
	Check	09/03/2024	6357	FREE CONFERENCE	3.00
	Check	09/03/2024	6357	ADT SECURITY	80.89
	Check	09/03/2024	6357	PC MECHANICAL	323.92
	Check	09/03/2024	6357	SANTA MARIA WASH N LUBE-	78.15
	Check	09/03/2024	6357	PC MECHANICAL	20.00
	Check	09/03/2024	6357	HOME DEPOT	412.16
Total US BANK					<u>1,049.11</u>
<b>VERIZON</b>					
	Check	09/14/2024	6368	INV 9972173885	51.64
Total VERIZON					<u>51.64</u>
<b>TOTAL</b>					<u><u><b>20,395.22</b></u></u>



Sediment Accumulation Analysis  
and Volume Vs Elevation  
Calculations using Global Mapper

AERIAL LIDAR SURVEY FOR, THE AOI KNOWN AS  
"Twitchell Reservoir"

JUAN BELTRAN  
CEO | LIDAR AMERICA INC

**P R E S E N T E D    B Y:**  
**Juan Beltran**  
**CEO LiDAR America INC**

**AERIAL LIDAR SURVEY FOR, THE AOI KNOWN AS "Twitchell  
Reservoir"**

**Collaborators**

**LIDAR processing Department, LiDAR America**

**Breian Leonardo Méndez Flores Department of Geodesy, LiDAR  
management & Topography, LiDAR America**

**Stanley Gray PLS – Ground Control Points**

**Attention**

**Sam Hurst**

**Senior Manager, Government Services  
Horne**

**O: 601.326.1000 | M: 512.968.8688**

**[Sam.Hurst@horne.com](mailto:Sam.Hurst@horne.com)**

**[www.horne.com](http://www.horne.com)**



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## 1. Abstract.

This report presents the results of the 2024 Aerial LIDAR Survey of Twitchell Reservoir, conducted to assess sediment accumulation since the 2018 survey. The focus is on comparing elevation data from the two surveys to calculate sediment volume and identify areas of significant deposition. This analysis will aid the Santa Maria Valley Water Conservation District in their ongoing water conservation and sediment management efforts.

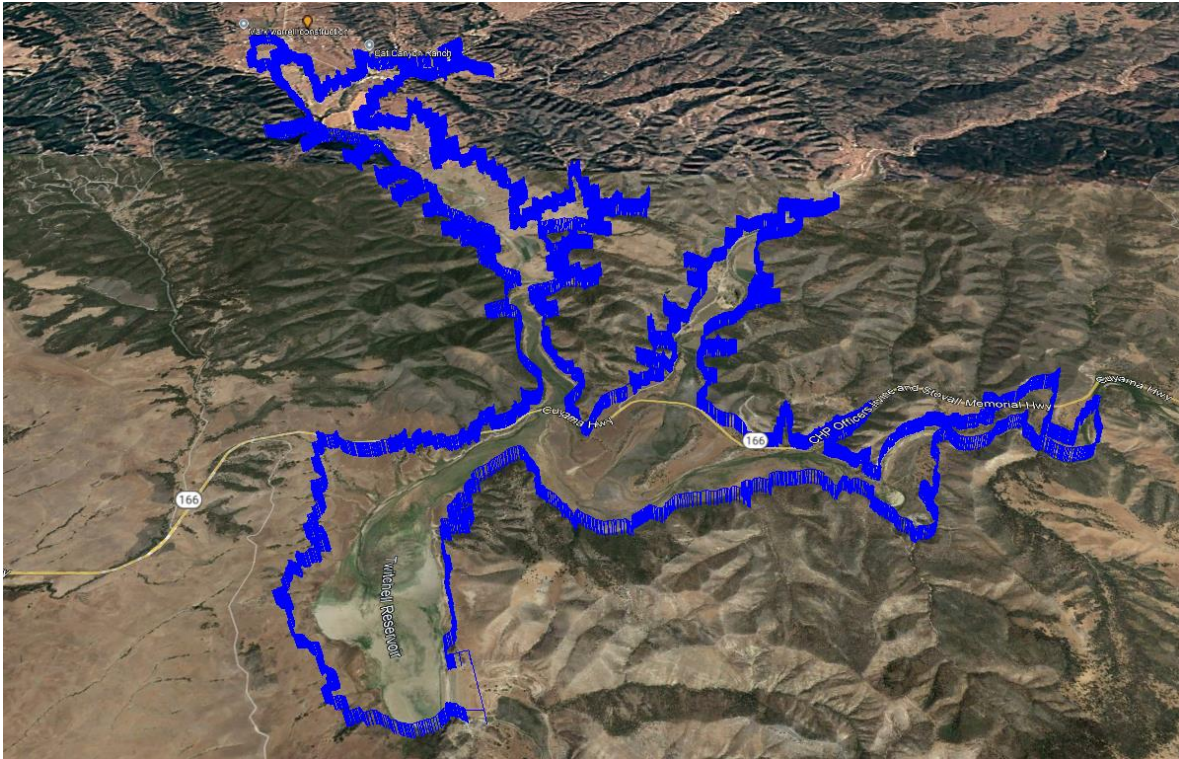
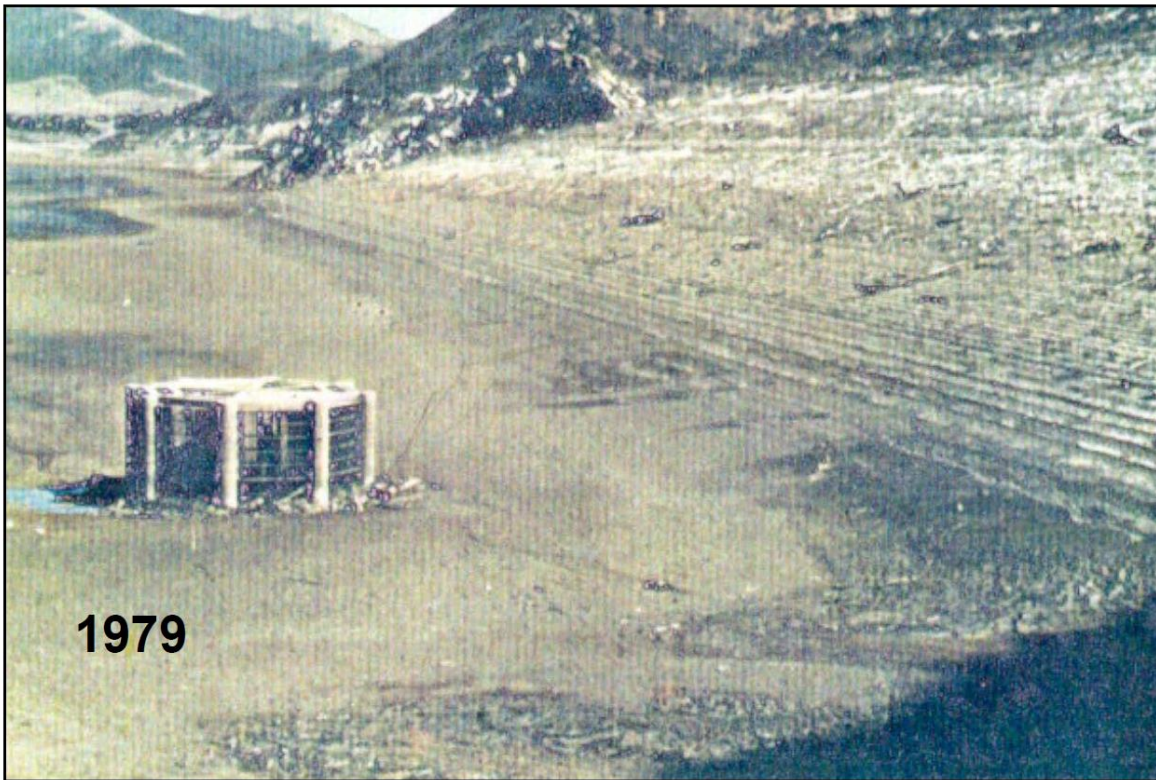
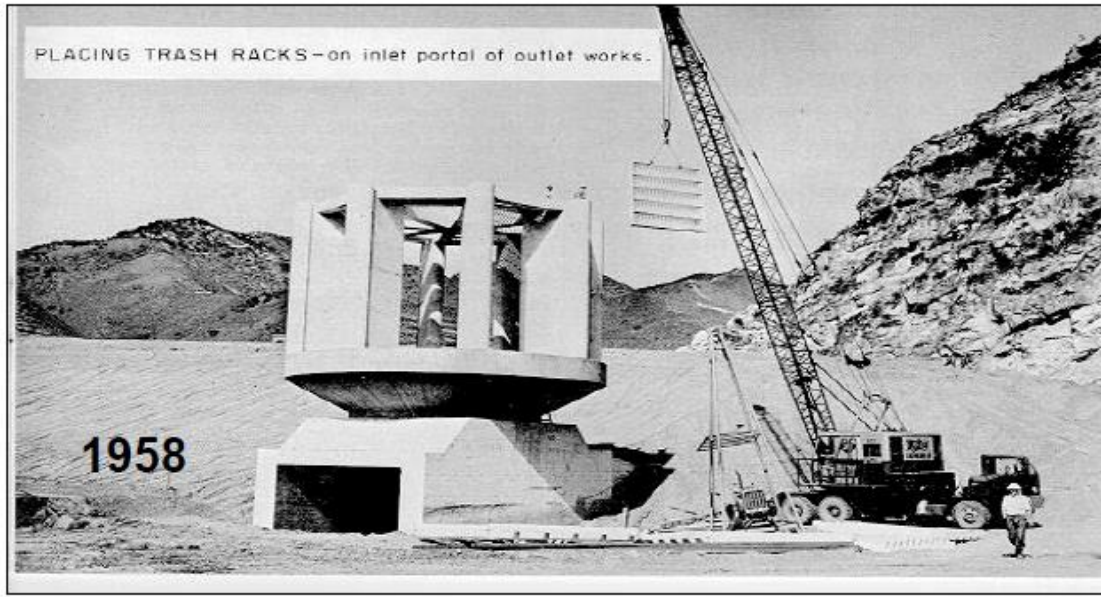


FIGURE 1 -AOI



## 2. Pictorial History.















No Pictures from 2011 or 2012 are available because of water in the reservoir.





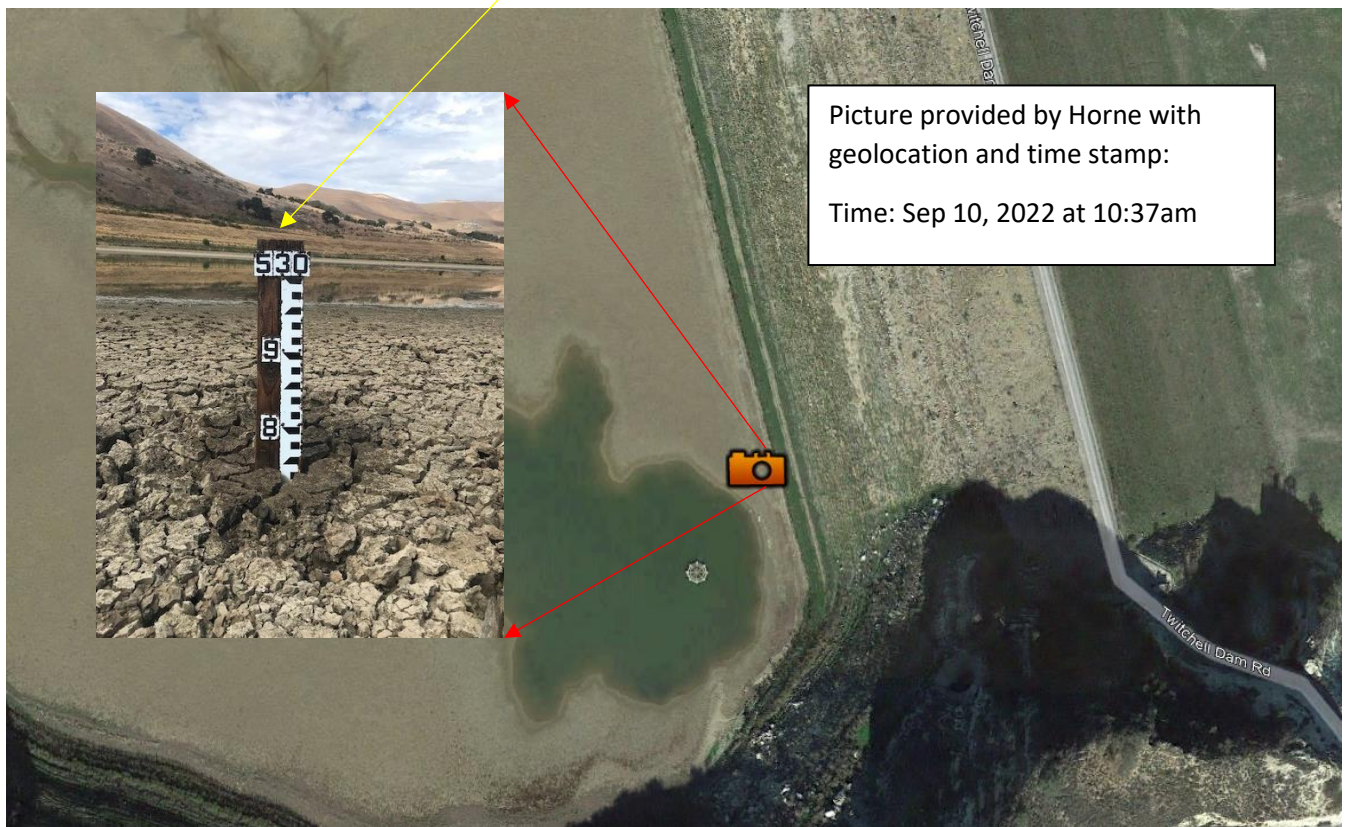
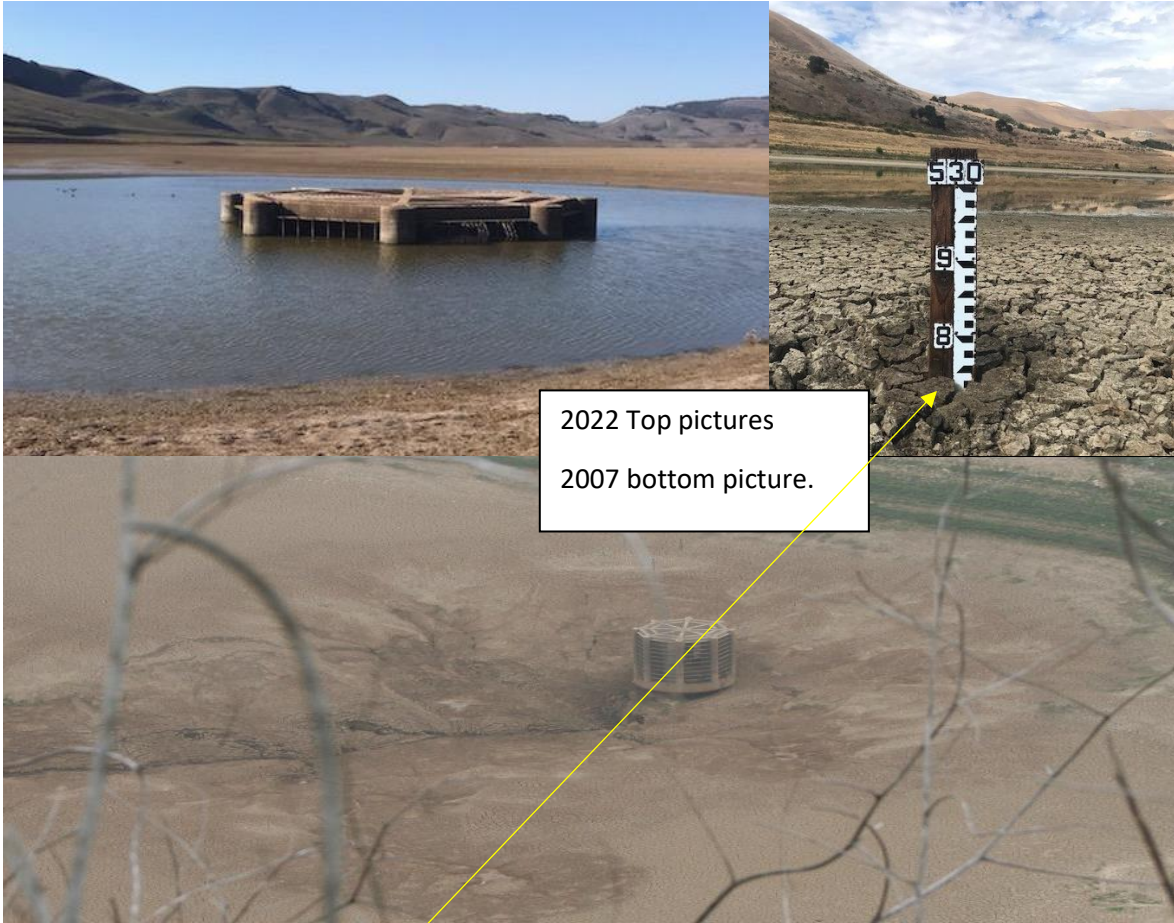


General Appearance 2007 to 2015 (Last time reservoir was empty was 2015). Generally corresponds with 2012 Survey





2022





2024

Sep 1<sup>st</sup> 2024, 5:08 pm





### 3. Introduction

The Twitchell Reservoir serves a critical role in water storage and flood control for the Santa Maria Valley. Over time, sediment accumulation has reduced its effective storage capacity, necessitating regular surveys to monitor changes. In this project, Horne Inc. commissioned an aerial LIDAR survey to compare data from 2018 and 2024, estimating sediment accumulation and performing Elevation vs. Volume calculations to understand the impact on the reservoir's capacity.

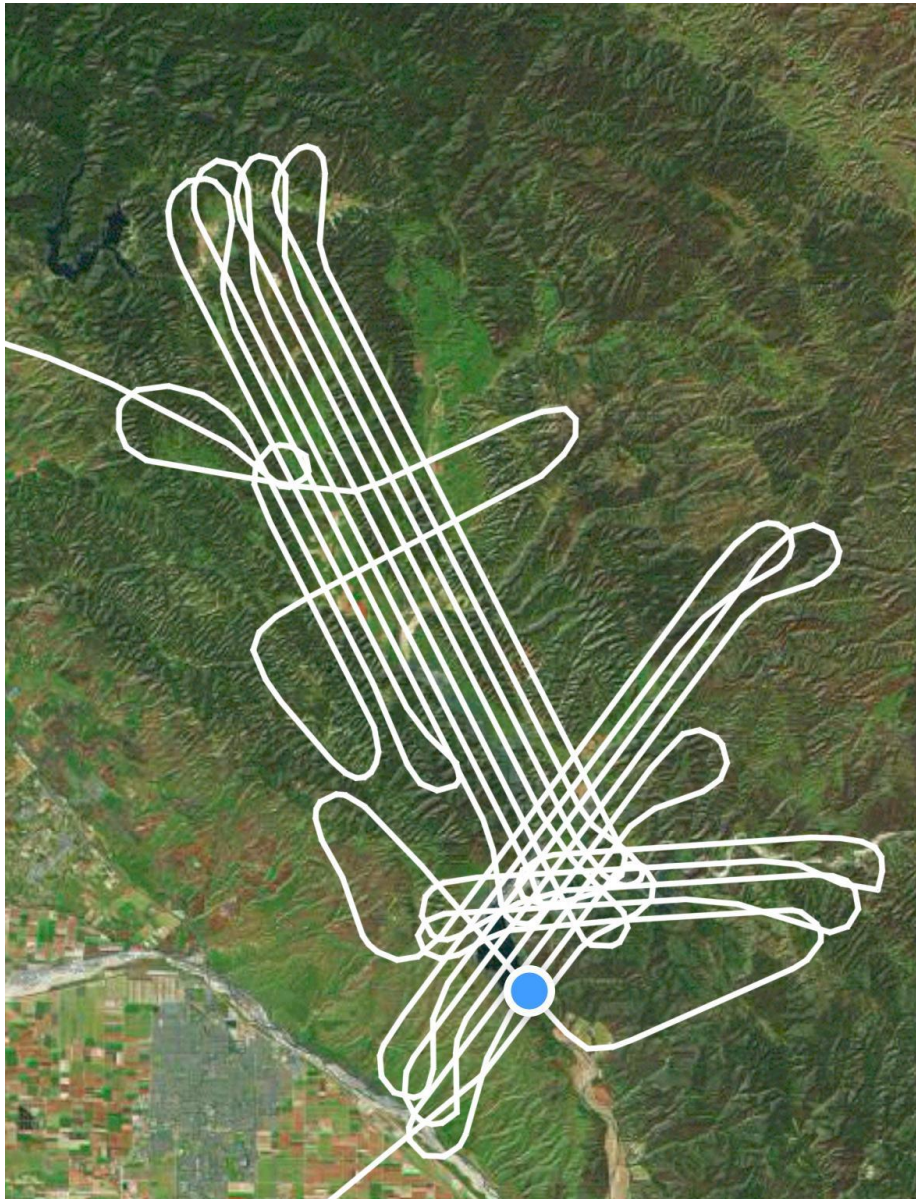


FIGURE 2 -FLIGHT LINES - AOI

#### 4. Data Collection:

The 2024 Aerial LIDAR survey was conducted on September 2nd, 2024, using a Cessna aircraft outfitted with high-resolution LIDAR sensors. The following steps were completed:

1. Mobilization: The survey team arrived in Santa Maria on September 1st, 2024. Ground Control Points (GCPs) were set up across the area of interest to ensure data accuracy.
2. Flight Operations: The aerial data acquisition took place from 1:30 PM to 5:47 PM on September 2nd. Weather and field conditions were optimal, allowing for comprehensive data capture over the 5,905.6-acre reservoir.
3. Post-Flight Activities: Additional GCPs were placed on September 3rd to support accuracy assessments.



FIGURE 3 -GCPs

For more details, please refer to the Baseline Processing Report signed.pdf file Attachment1

## Baseline Processing Report

### Processing Summary

Observation	From	To	Solution Type	H. Prec. (US survey foot)	V. Prec. (US survey foot)	Geodetic Az.	Ellipsoid Dist. (US survey foot)	ΔHeight (US survey foot)
P516 --- CGP01 (B1)	P516	CGP01	Fixed	0.013	0.039	157°37'33. 6"	47462.064	-285.644
P516 --- GCP03 (B2)	P516	GCP03	Fixed	0.013	0.051	165°05'10. 5"	38475.252	57.765
P516 --- CGP01 (B3)	P516	CGP01	Fixed	0.024	0.037	157°37'33. 7"	47462.065	-285.588
P516 --- GCP02 (B4)	P516	GCP02	Fixed	0.013	0.048	165°42'52. 1"	43243.104	178.272

### Acceptance Summary

Processed	Passed	Flag	Fail
4	4	0	0



09/13/2024

FIGURE 4 -BASELINE PROCESSING REPORT SIGNED

## 5. Data Processing:

### Post-processing, trajectories and calibration

After aerial acquisition, the data containing the flight paths, coverage areas and flight kinematics information such as IMU and GNSS Lever arms, are sent to the post-processing department. The LiDAR points are referenced to a fixed GPS station that collects information from the known position while the capture flights are carried out. These flights, in turn, collect information about their trajectory and the kinematics of the aircraft through a GPS system and an inertial measurement unit (IMU). Using the POSpac processing software, it is necessary to set the start and end times of the flights, as well as the level arms and mounting angles. The static and dynamic GPS information are post-processed after each acquisition flight to obtain better accuracy of the position of the aircraft for each instant of measurement. POSpac helps to generate a trajectory file that includes the corrected information of the aircraft for all sets of positioning data obtained during the entire flight. The generated trajectory file will be incorporated into a Smoothed Best Estimated Trajectory (SBET) file that contains accurate and continuous information of the position of the aircraft.

After the SBET generation, it is necessary to make some revisions in the data to ensure the precision in the generation of the LAS files. The tests involve the review of the number of satellites (no less than 6), the IMU and the PDOP. With this last revision it is possible to ensure the accuracy of the position data of the aircraft, with which the final trajectory file can be generated, which will be sent to the LiDAR data processing department, as well as the photogrammetric processing department.

The next step is the generation of LAS files. Trajectory files, as well as data range (swaths) are the initial instruments. For every LiDAR flight executed it will be necessary to look for any type of anomalies in the data, such as data gaps. When the data has been corrected for any anomalies, the LMS data can be exported as LAS.

## LiDAR Data Processing

After post-processing of the data in POSpac and LMS, the resulting data (LAS and SBET files) is sent to the LiDAR data processing department. Each point belonging to the point cloud has a corrected position. This point cloud is classified using an algorithm to classify ground and objects according to their height and shape. Subsequently, an exhaustive quality control must be done manually.

- Methodology for LiDAR Classification

The first step in the creation of topographic products from LiDAR is classification of the point cloud. LiDAR America's GIS experts will ensure that the point cloud classification is consistent across the entire area of study. Our team will make sure that no more than 1 percent of the points possess a demonstrably erroneous classification value.

The point classification process is divided into the steps listed below, and described in the following subsections:

- Automated Filters
- Manual Editing
- Quality Check

- Automated Filters

The initial LiDAR point cloud classification is performed using automated TerraScan macros that our LiDAR Specialist have been created with the specific requirements of the project, considering different features as the topography, terrain relief, ground cover, and natural and man-made features.

To produce the classification requested, LiDAR America will create a project in TerraScan with a Semi-automatic approach. Where our GIS specialist created single instruction that expands automatically into a set of instructions to discriminate the

point of cloud considering the number of returns of a pulse, intensity, elevation, slope and height from the ground to classify the point cloud for height criteria.

- Manual Editing

Following the automated classification process, a supervised or manual classification of the LiDAR point cloud is performed in MicroStation through each tile with great precision to make sure that the points are classified correctly. The editing includes cross-section or profile views of points to aid in classification, as well as visualization to spot bare earth errors for re-classification. The MicroStation Design File is linked with DSM or DTM or LiDAR intensity images for a faster identification of features and/or terrain. A second verification shall be executed, to eliminate the need for extensive manual editing and replace it with pan across a bare earth surface of the entire project, this time in Global Mapper. This means faster review of the entire statistics and the dataset in order to find & isolate errors without manually opening each individual LiDAR file.



## 6. Digital Elevation Model (DEM) Generation:

Using the LIDAR data, a detailed Digital Elevation Model (DEM) was produced for the 2024 survey. This DEM was compared with the 2018 DEM to detect changes in terrain elevation and sediment deposition. Special attention was given to void areas in the 2018 data provided by the client, which were interpolated to ensure consistency across both datasets.

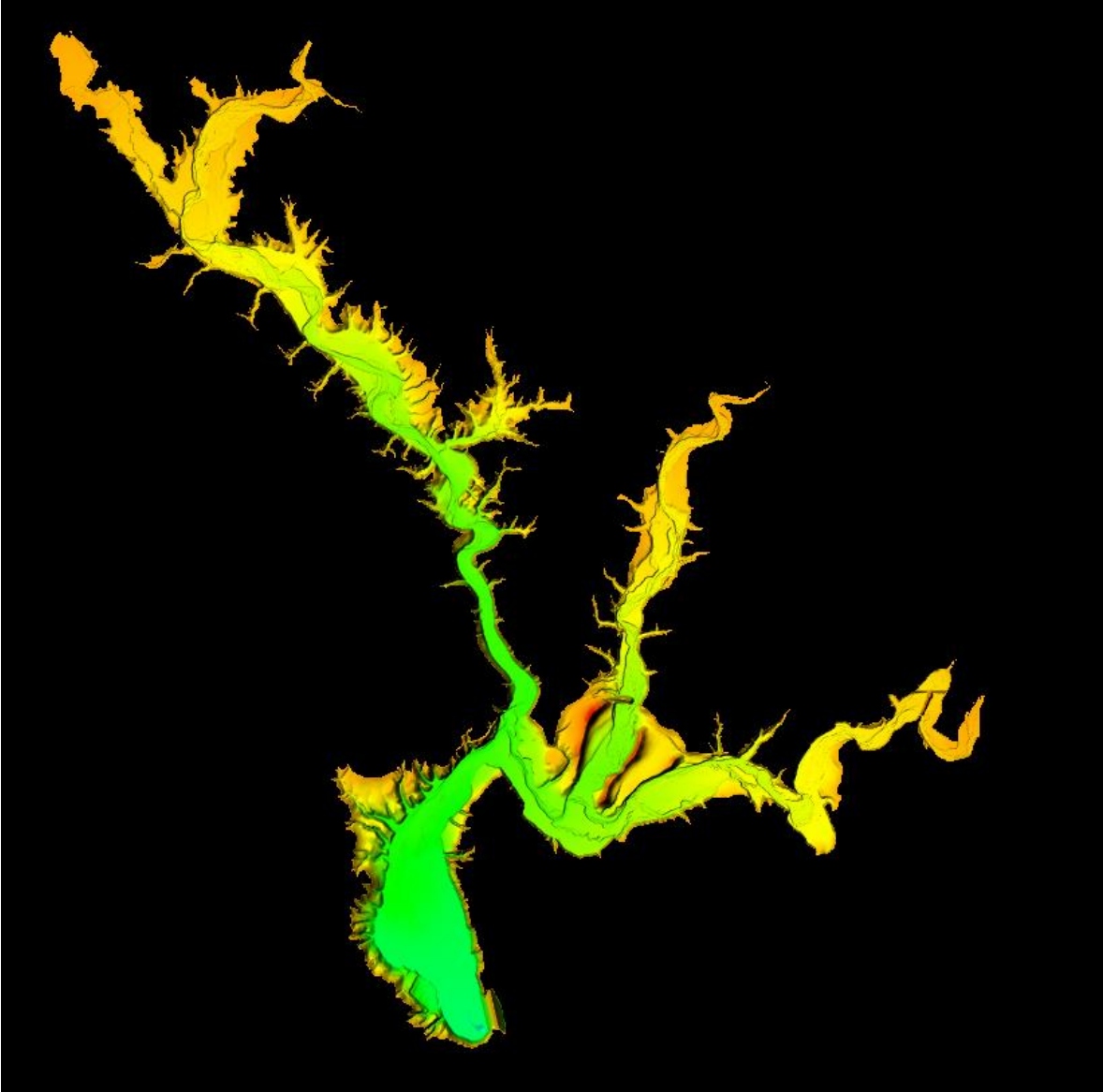


FIGURE 5 -DEM LIDAR 2024

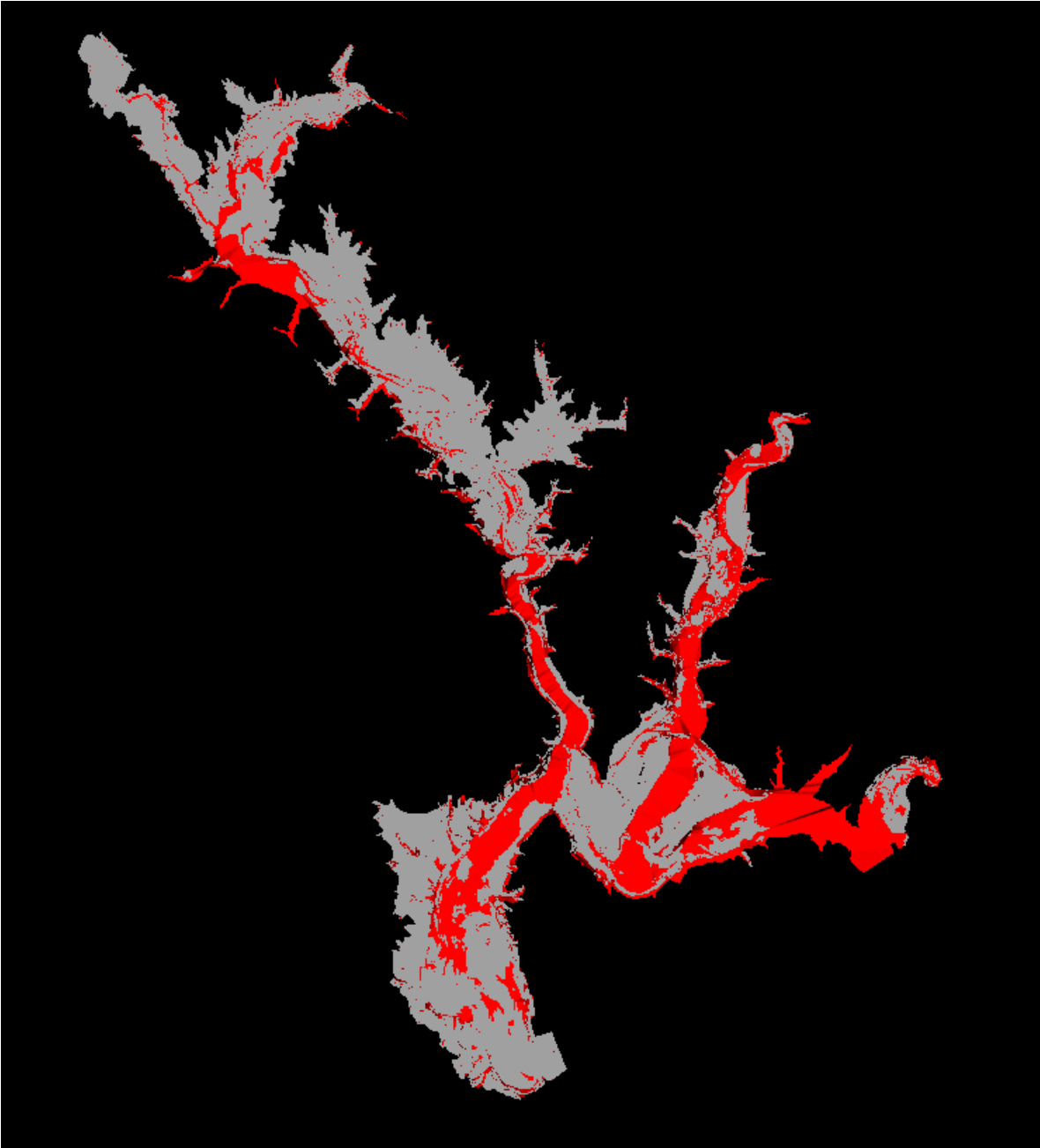


FIGURE 6 -2018 DATASET (RED REPRESENTS VOID AREAS)

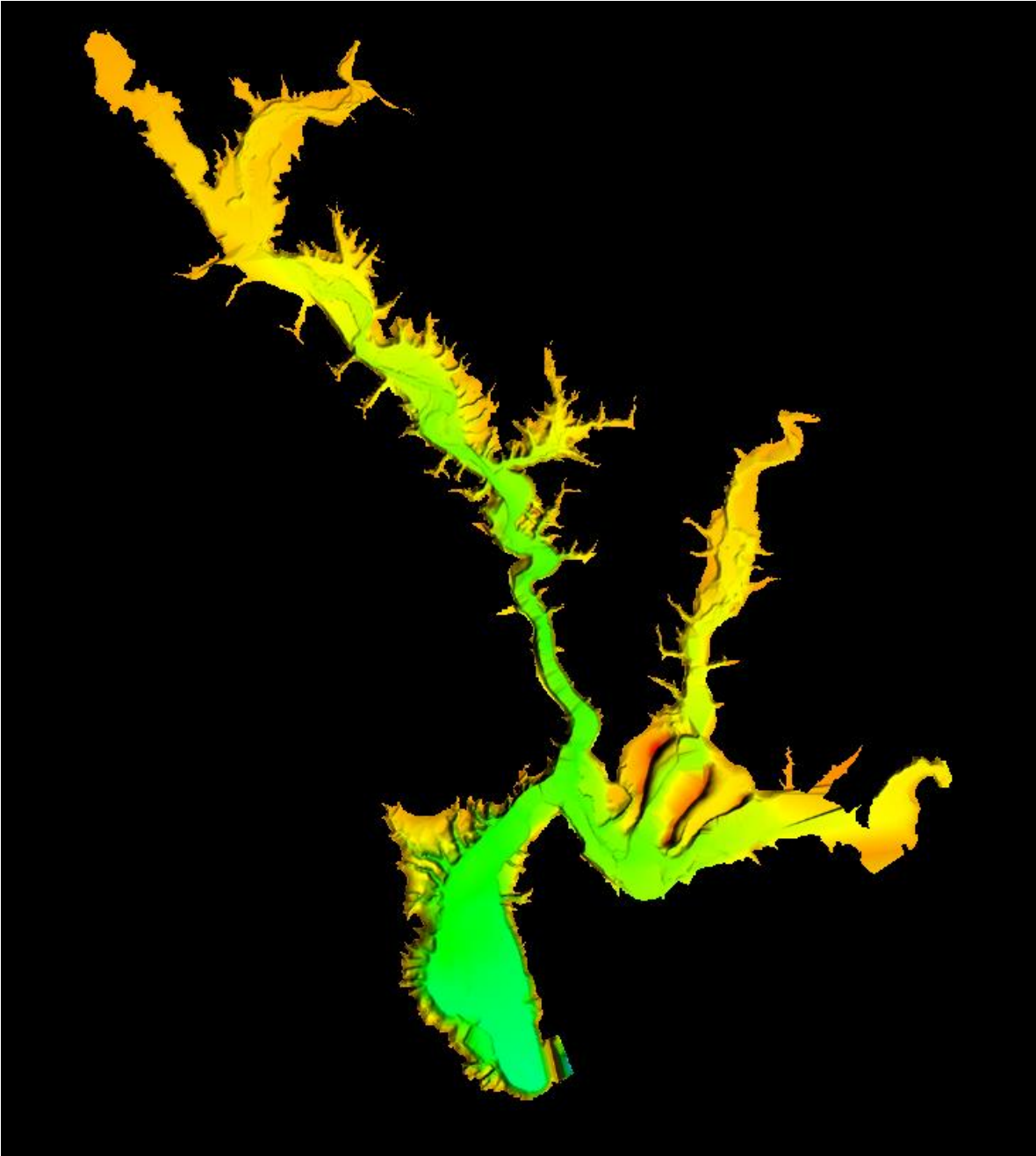


FIGURE 7 -DEM 2018 INTERPOLATED AND TRIANGULATED

## 7. Volume Calculation and Sediment Accumulation:

The Global Mapper software was used to perform volumetric calculations, measuring the volume of material between the 2018 and 2024 DEMs. The analysis focused on key areas where sediment accumulation was most prominent.

### 7.1. Analysis 1: Overall Reservoir (5,905.6 acres)

Sediment Source and Accumulation (2018 to 2024):

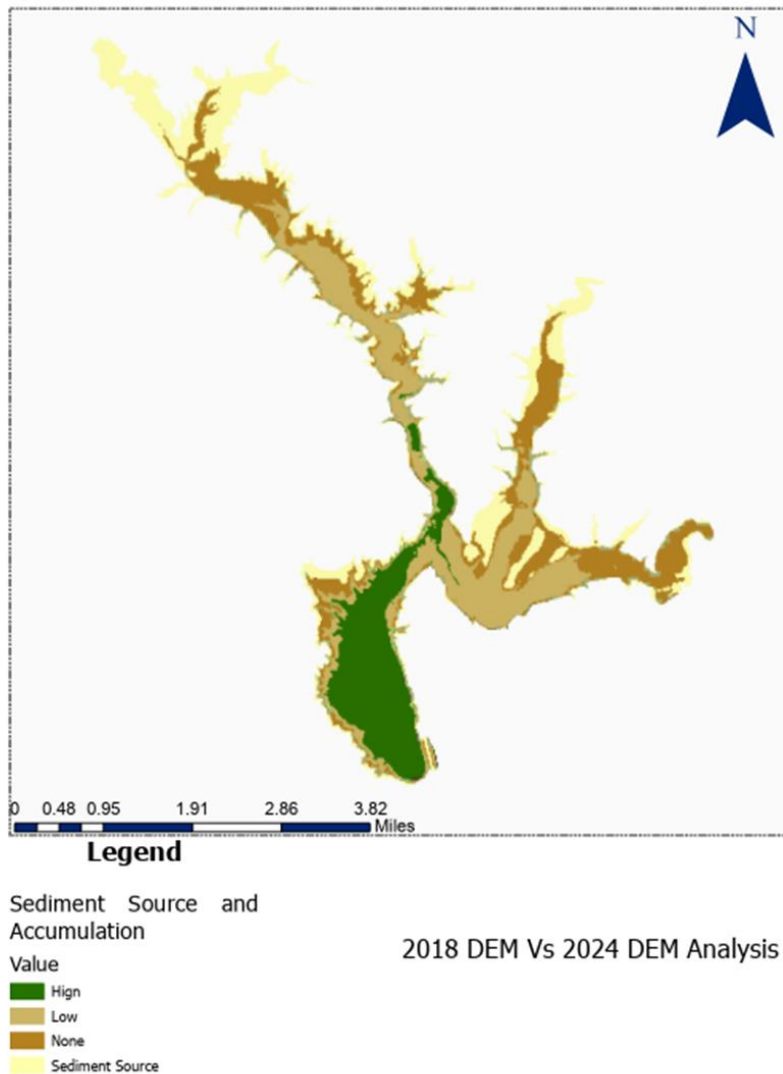


FIGURE 8 -SEDIMENT SOURCE AND ACCUMULATION.

To further validate the sediment accumulation, cross-sections were drawn across different zones of the reservoir, focusing on high-deposition areas such as the Lower Basin, Dam, and Intake areas.

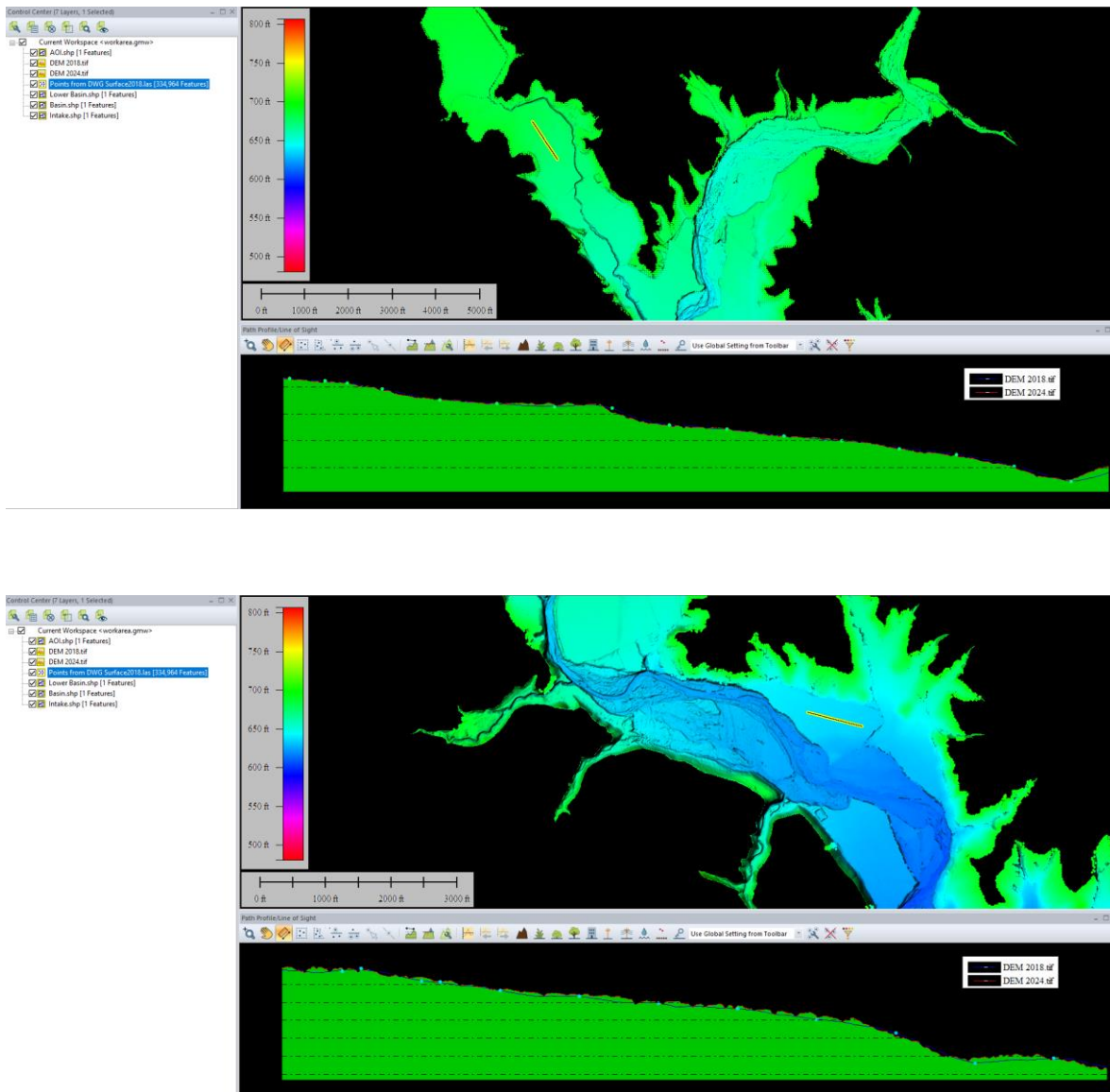


FIGURE 9 -CROSS-SECTIONS NORTH OF THE RESERVOIR

### Cross-Section 1: Lower Basin

Observations: The cross-section revealed consistent deposition across the lower elevations, with the largest build-up near the dam's upstream side.

Elevation Change: The difference between the 2018 and 2024 DEMs in this area shows an average elevation increase of 3.2 feet, corresponding to the calculated sediment volume of 1,639.75 acre-feet.

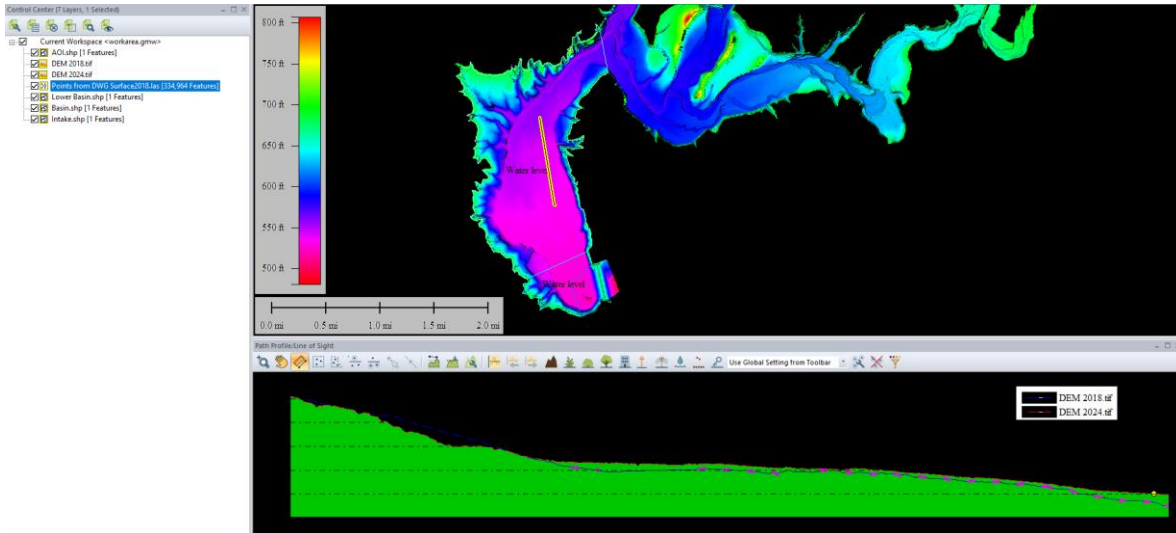


FIGURE 10 -LOWER BASIN NORTH CROSS SECTION

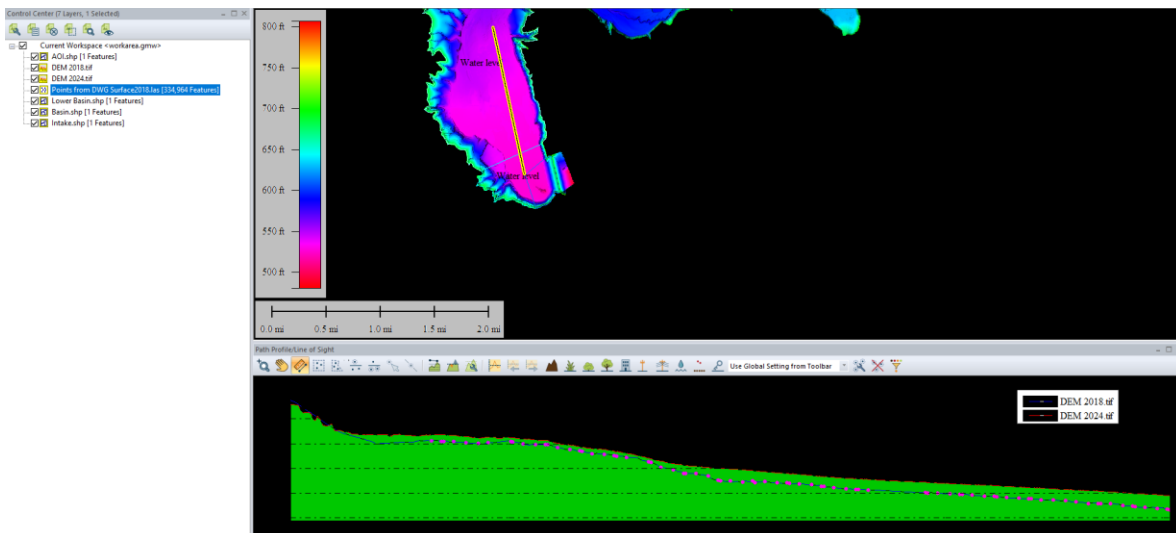


FIGURE 11 -LOWER BASIN TO DAM

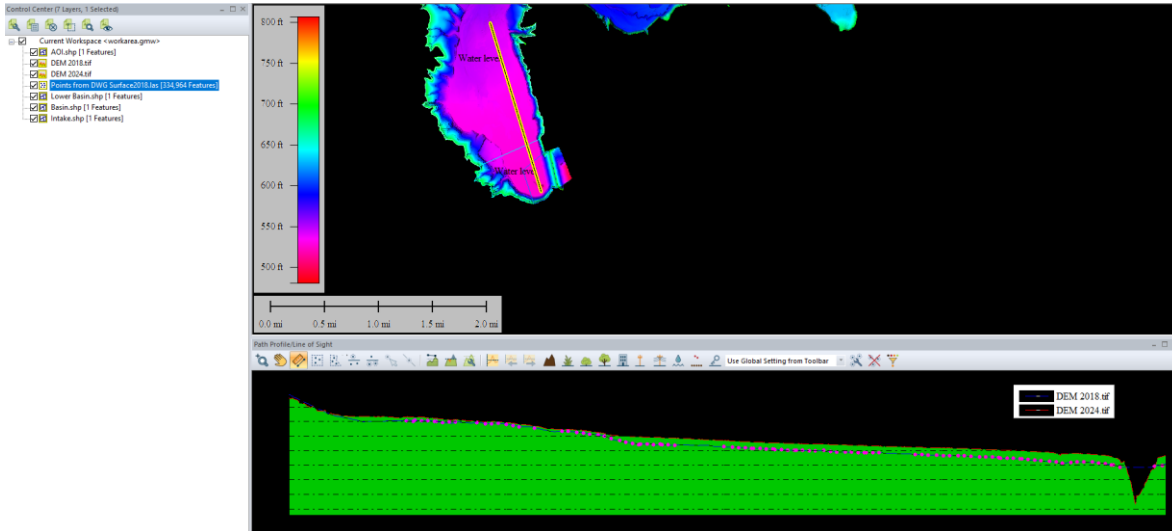


FIGURE 12 -LOWER BASIN TO INTAKE

### Cross-Section 2: Dam Area

Observations: The cross-section through the dam area indicated localized high sediment accumulation, especially along the western edge of the reservoir.

Elevation Change: A significant increase in elevation (2.5 feet on average) was detected, leading to the calculated volume of 349.03 acre-feet.

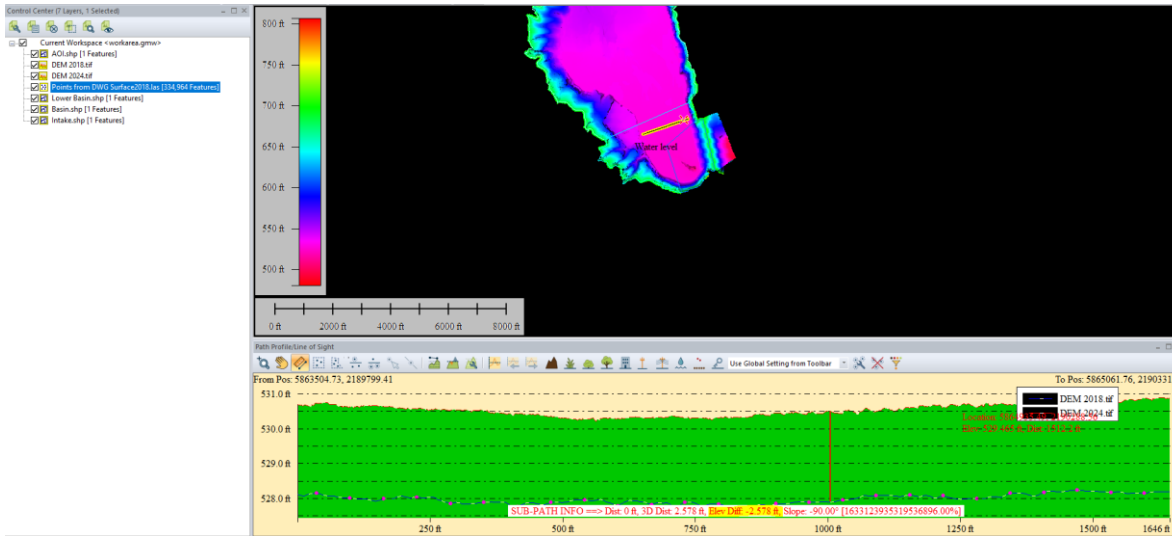


FIGURE 13 -DAM CROSS SECTION AND ELEVATION DIFFERENCE



### Cross-Section 3: Intake Area

Observations: The intake area showed gradual sediment build-up affecting water intake operations.

Elevation Change: The cross-section indicated an elevation increase of 2.93 feet, resulting in a sediment volume increase of 165.32 acre-feet.

These cross-sections provided additional verification of the sediment accumulation detected by the volumetric analysis, helping to pinpoint areas requiring further management.

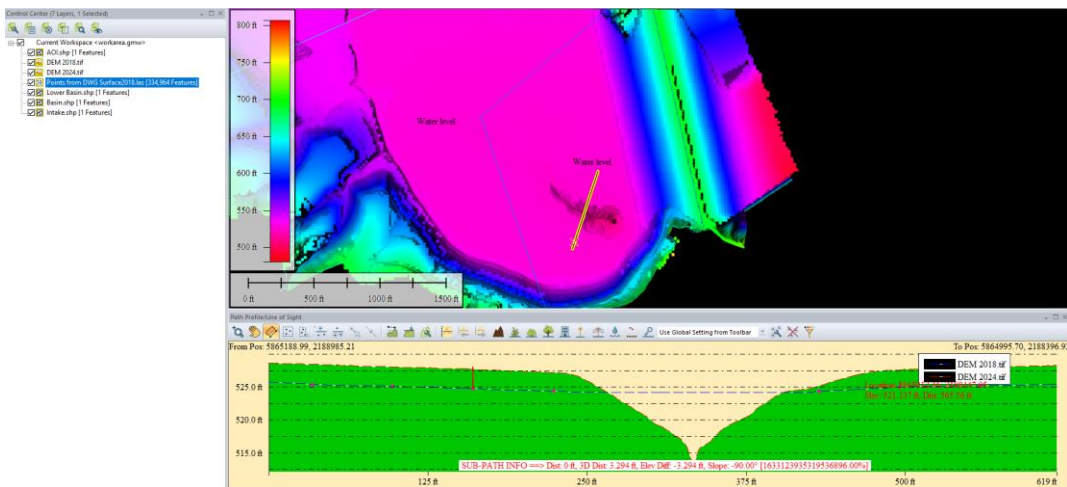


FIGURE 14 -INTAKE CROSS SECTION

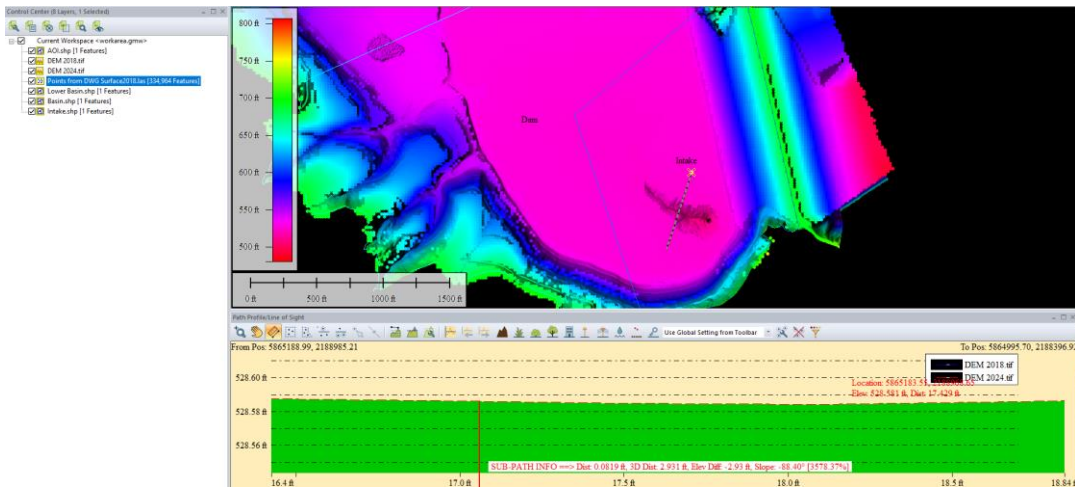


FIGURE 15 -INTAKE ELEVATION DIFFERENCE



## 7.2. Analysis 2: Lower Basin (1,353.2 acres)

2018 Sediment Volume: 121.08 acre-feet.

2024 Sediment Volume: 1,760.8317 acre-feet.

Increase in Sediment: 1,639.75 acre-feet, indicating significant deposition near the dam.

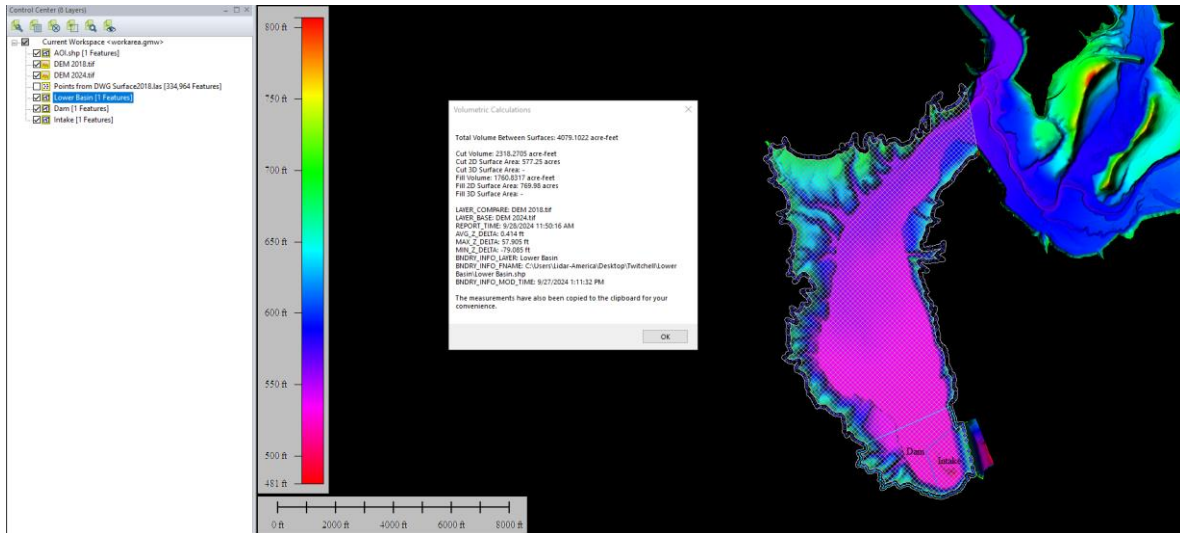


FIGURE 16 -LOWER BASIN AREA

Analysis 3: Dam Area (178 acres)

2018 Sediment Volume: 84.71 acre-feet.

2024 Sediment Volume: 349.03 acre-feet.

Increase in Sediment: 264.32 acre-feet, affecting dam operations.

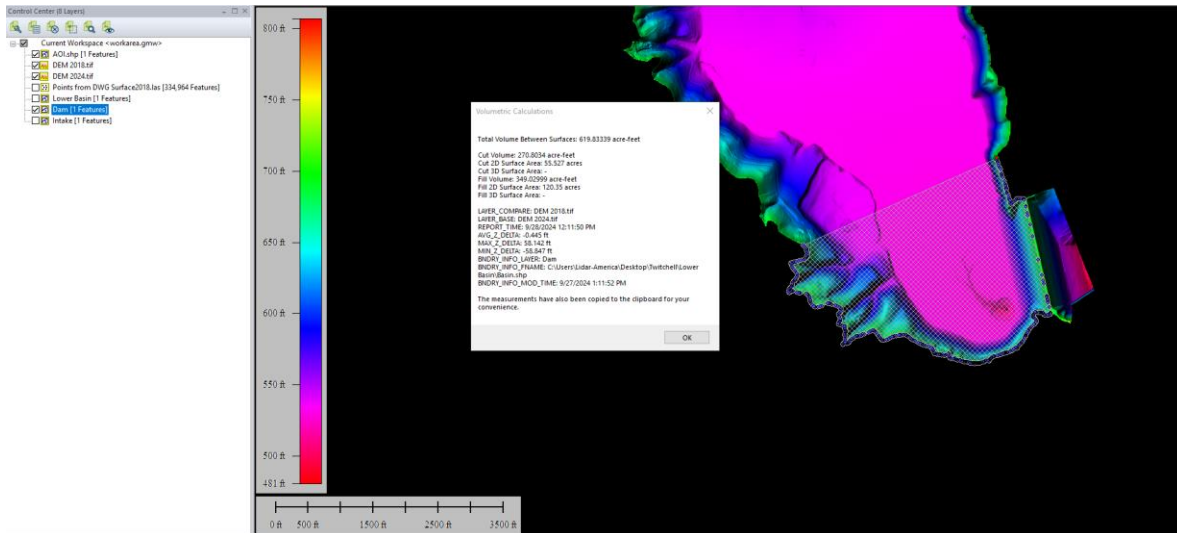


FIGURE 17 -DAM AREA

## 7.4. Analysis 4: Intake Area (59.335 acres)

2018 Sediment Volume: 81.13 acre-feet.

2024 Sediment Volume: 165.31782 acre-feet.

Increase in Sediment: 84.19 acre-feet, impacting intake functionality.

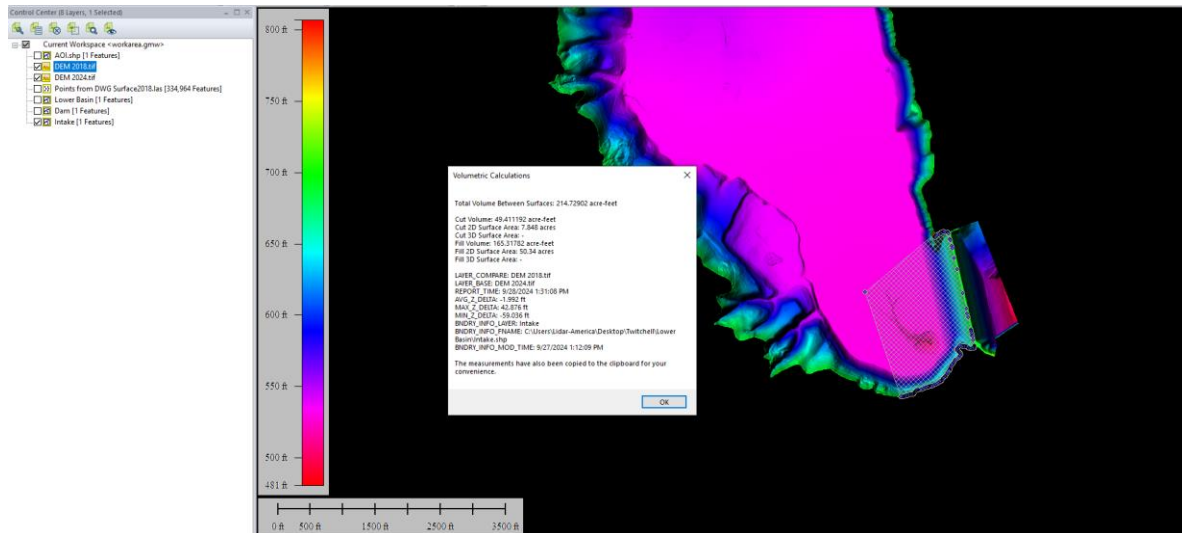


FIGURE 18 -INTAKE AREA

## 8. Volume Vs Elevation Calculations (in progress)

In addition to the sediment volumetric analysis, we conducted Volume vs. Elevation calculations to assess the reservoir's storage capacity at different elevations, considering the variability in dam crest elevation and the impact of sediment accumulation.

### Dam Crest Elevation Variability

Previous reports presumed the dam crest elevation to be a uniform 692 feet, but our detailed study revealed variability in the dam crest elevation. The highest point of the crest is indeed 692 feet, but the lowest point is at 690.3 feet, where water begins to spill over.

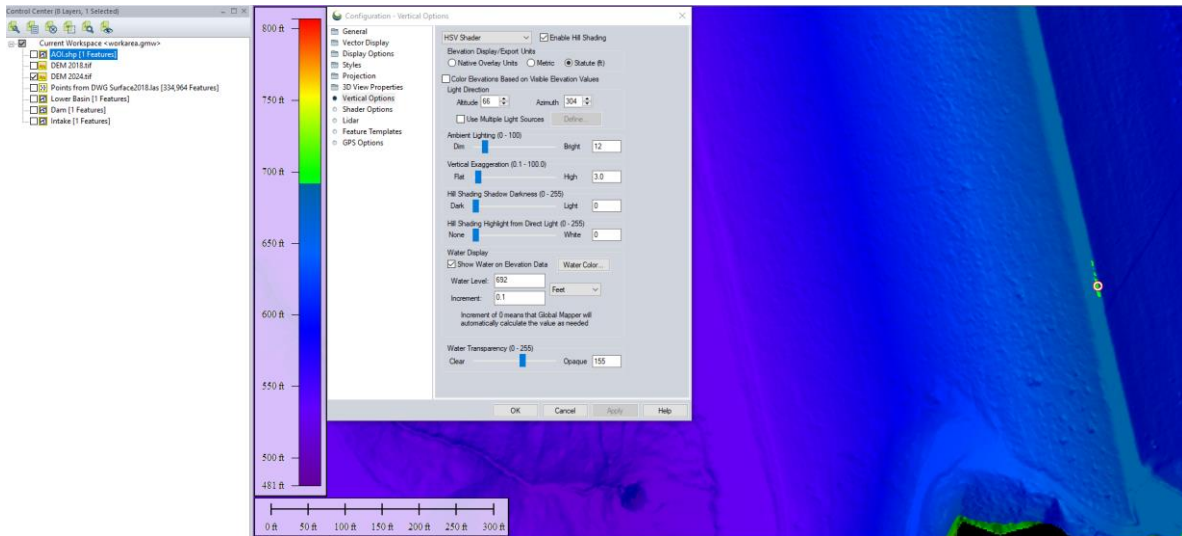


FIGURE 19- 692 ELEVATION POINT, WATER SPILLING OVER THE CREST

**Maximum Safe Water Elevation:** The maximum water elevation without spilling over is 690.3 feet. Once the water reaches 690.7 feet, it has already crossed the lowest point of the crest and starts spilling.

**Variable Crest Elevation:** While the crest's maximum elevation is 692 feet, the critical elevation for spillover is lower, at 690.3 feet, impacting reservoir storage capacity and flood management strategies.

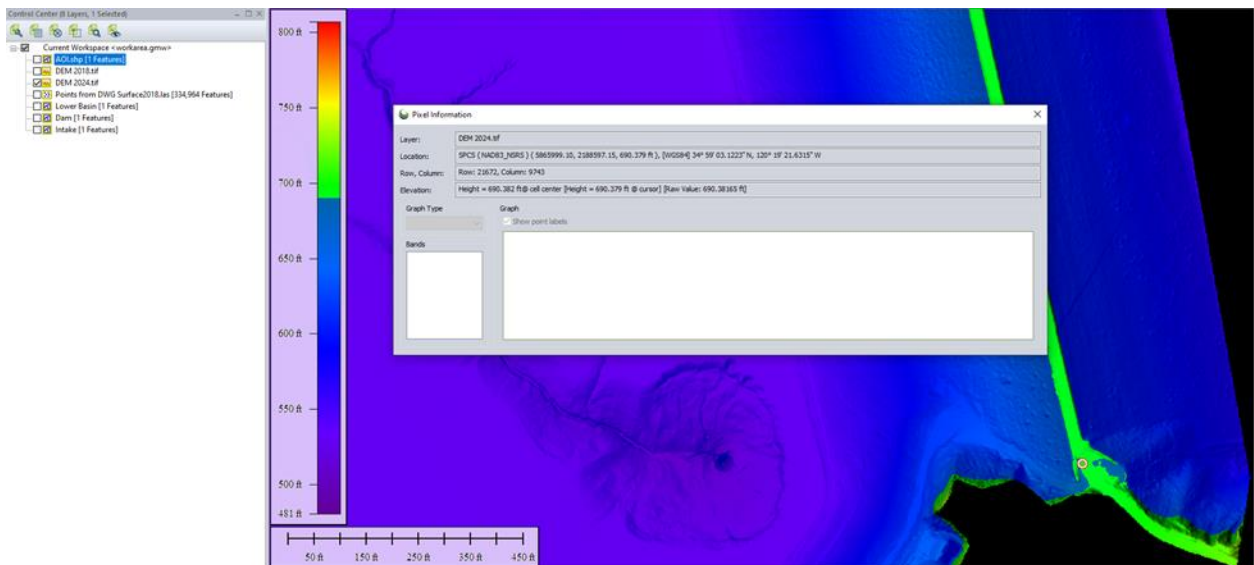


FIGURE 20- 690.3 CREST ELEVATION CLEAR OF WATER

### Impact on Volume vs. Elevation Calculations

The variable nature of the dam crest has been accounted for in the Volume vs. Elevation calculations. Additionally, sediment accumulation in key areas—

particularly the Lower Basin, Dam, and Intake areas—has led to a reduction in the reservoir’s water capacity at various elevations.

#### Preliminary Findings: Sediment Impact on Capacity

Sediment accumulation between 2018 and 2024 has significantly impacted the reservoir's capacity at different elevations. This is evident from the comparative analysis of reported water storage capacities:

- Elevation 529 ft:

2018 Capacity: 69 acre-feet.

2024 Capacity: 40.21 acre-feet.

Reduction: 28.79 acre-feet less capacity in 2024 due to sediment accumulation.

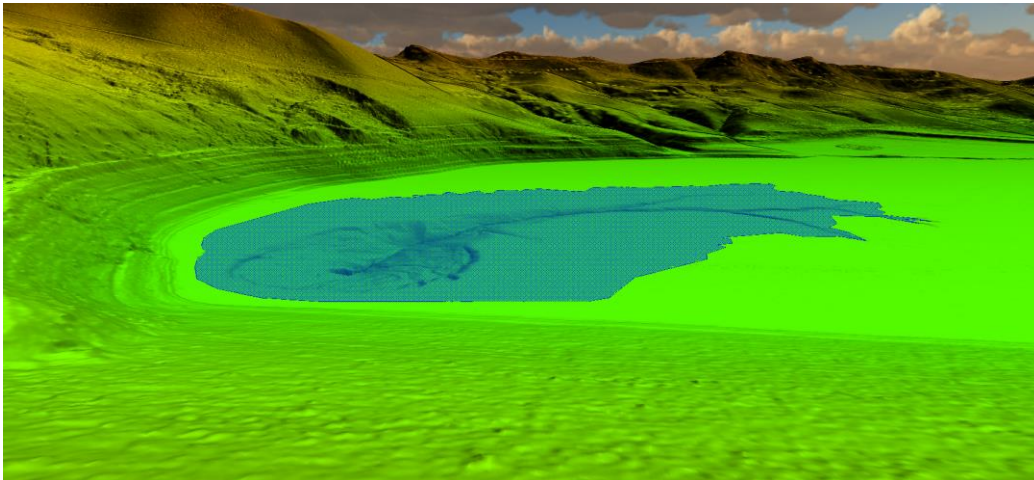


FIGURE 21 -529FT WATER LEVEL

- Elevation 543 ft:

2018 Capacity: 3,981 acre-feet.

2024 Capacity: 3,810.6 acre-feet.

Reduction: 170.4 acre-feet loss in capacity by 2024.



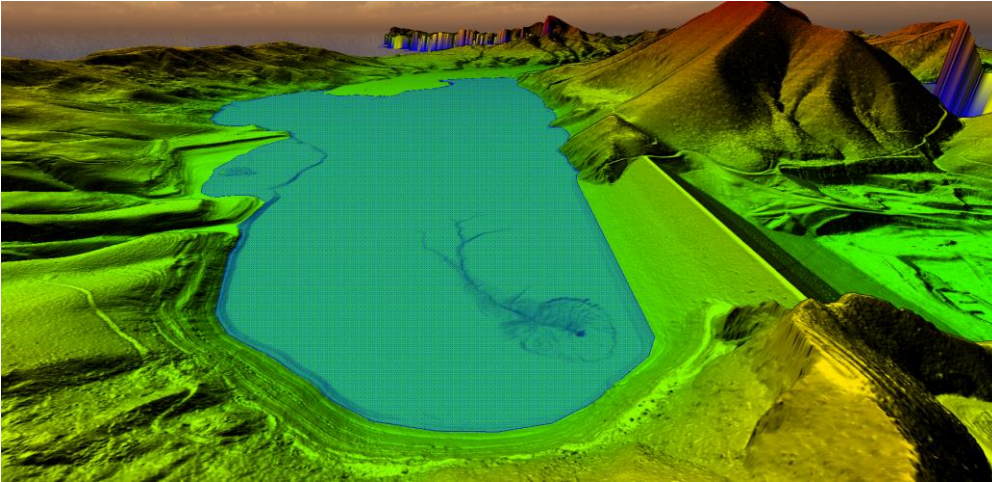


FIGURE 22 -543FT WATER LEVEL

- Elevation 557 ft:

2018 Capacity: 12,180 acre-feet.

2024 Capacity: 12,141.15 acre-feet.

Reduction: 38.85 acre-feet less capacity in 2024.

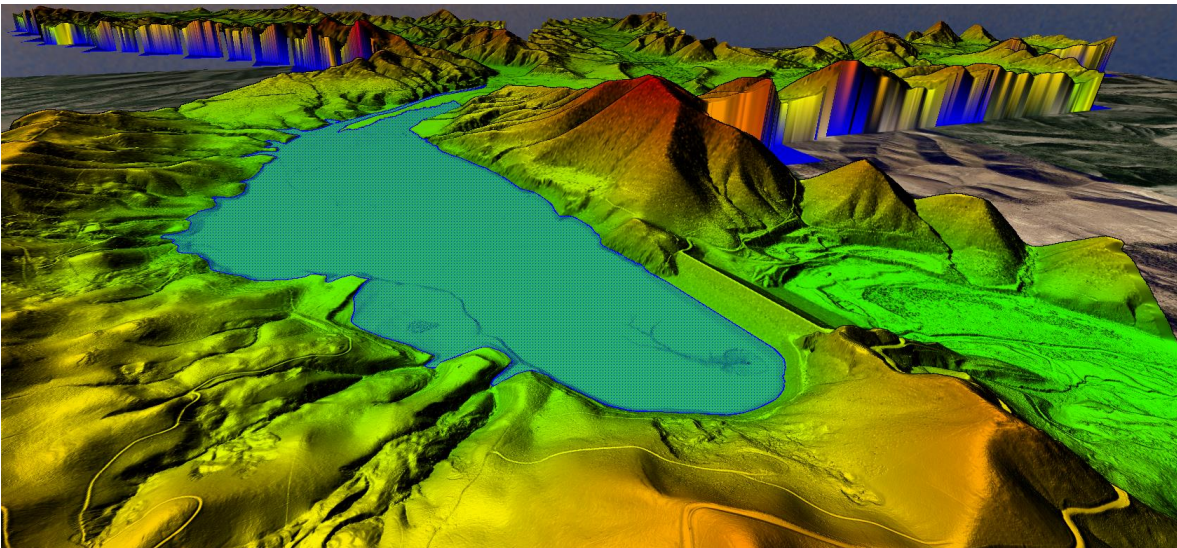


FIGURE 23 -557FT WATER LEVEL

These reductions in water storage capacity are direct consequences of sediment build-up, particularly in the Lower Basin, Dam, and Intake areas. The accumulation of sediment has effectively decreased the amount of water that can be stored at the same elevations compared to 2018, indicating the critical need for sediment management.

## 9. Conclusion (in progress):

The results of the 2024 Aerial LIDAR survey of Twitchell Reservoir, when compared with data from the 2018 survey, reveal substantial sediment accumulation, particularly in key areas such as the Lower Basin, Dam, and Intake. This accumulation has significantly impacted the reservoir's water storage capacity at \_\_\_\_\_ elevations, reducing its effectiveness in water conservation and flood management.

Our Volume vs. Elevation calculations demonstrate that the assumption of a uniform dam crest elevation at 692 feet was incorrect. The crest exhibits variability, with the highest point at 692 feet and the lowest at 690.3 feet, where water begins to spill. This variability has important implications for flood control, as it affects the point at which the reservoir starts to discharge excess water. The simulation shows that water begins spilling over the dam at 690.3 feet, well before it reaches the presumed maximum of 692 feet.

Additionally, sediment accumulation has reduced the reservoir's capacity at lower elevations. The preliminary capacity reduction findings are significant:

At 529 feet, the reservoir's capacity decreased from 69 acre-feet in 2018 to 40.21 acre-feet in 2024, a reduction of 28.79 acre-feet.

At 543 feet, the capacity dropped from 3,981 acre-feet in 2018 to 3,810.6 acre-feet in 2024, a reduction of 170.4 acre-feet.

At 557 feet, the capacity reduced from 12,180 acre-feet in 2018 to 12,141.15 acre-feet in 2024, a decrease of 38.85 acre-feet.

These reductions highlight the cumulative impact of sediment build-up on the reservoir's operational capacity and underline the importance of regular monitoring and proactive sediment management to prevent further loss of storage capacity. Without intervention, the continued accumulation of sediment will further diminish the reservoir's ability to store water and manage flood risks effectively.

The findings from this study emphasize the need for targeted dredging and sediment removal strategies, particularly in the Lower Basin, Dam, and Intake areas, where the most significant accumulation has occurred. Additionally, it is crucial to reassess flood management strategies considering the variable crest elevation and the critical role of the 690.3-foot threshold for spillover.

This comprehensive analysis underscores the reservoir's diminished capacity due to sedimentation and provides a roadmap for future conservation efforts, ensuring that the Twitchell Reservoir remains a valuable resource for the Santa Maria Valley Water Conservation District.

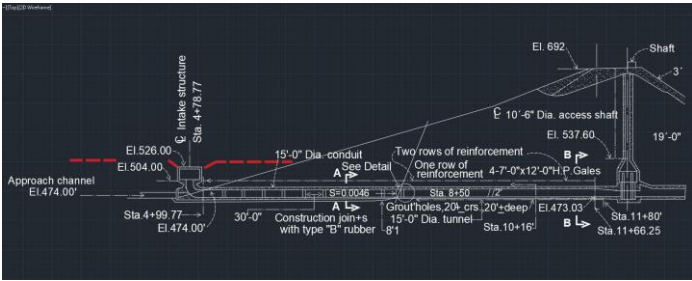


FIGURE 24 TWITCHELL DAM SYSTEM

10. Recommendations (in progress):

We recommend the integration of a Geographic Information System (GIS) to manage, visualize, and analyze the survey data and water capacity estimates to the water district. GIS technology enables efficient spatial data management, allowing for the creation of interactive maps, spatial queries, and data overlays. This integration will provide an invaluable tool for future data-driven decision-making and planning. Establish a comprehensive database within the GIS system to store historical data from the survey, water capacity estimates, and other relevant parameters. This archive will serve as a foundation for future analyses, studies, and comparisons, enabling a long-term perspective on the water distribution system's performance and trends.



## 11. References:

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**PREPARED BY THE SANTA MARIA VALLEY WATER CONSERVATION DISTRICT & MNS ENGINEERS INC.  
TWITCHELL RESERVOIR RESULTS OF 2018 AERIAL SURVEY & SEDIMENTATION UPDATE**

## 12. ATTACHMENT 1