BOARD OF ALDERMEN
REGULAR AGENDA
Monday, June 9, 2025
7:00 P.M.
Community Building
601 W Main Street
Odessa, MO 64076

The meeting can be viewed live on YouTube, by subscribing to @OdessaMO

CALL TO ORDER	Mayor Bryan Barner
PLEDGE OF ALLEGIANCE	Mayor Bryan Barner
ROLL CALL	City Clerk Karen Findora
WELCOME TO VISITORS	Mayor Bryan Barner
CONSENT AGENDA All matters under the Consent Agenda, are Considered to be routine by the Aldermen and will be enacted by one motion with no separate discussion. If separate discussion is desired, that item may be removed from the Consent Agenda and placed on the Regular Agenda by request of a member of the Aldermen.	Police May Rpt. Municipal Court May Rpt. Community Dev. April & May Rpt. S&P Global: Bond Rating Update

MAYOR REPORT

ALDERMEN REPORT

CITY ADMINISTRATOR REPORT

PUBLIC HEARING

PUBLIC COMMENTS

OLD BUSINESS

NEW BUSINESS

Recognition of Staff	Recognition of Phillip Salmon: Recipient of the 2025 Missouri Investigators Association 'Investigator of the Year' Award *Josh Thompson, Police Chief*
Appointment *District F Appointment*	West Central Missouri Solid Waste Management District F, Lafayette County Representation – Lindsey Adams *Shawna Davis, City Administrator*
Presentation *Odessa Reservoir Repairs*	Presentation of Reservoir Hydrogeological Study by Allstate Consultants, Cary Sayre & John Holmes. *Shawna Davis, City Administrator*
Next Scheduled Meeting	*Monday, June 23, 2025, at 7:00 p.m. Regular Session*
Adjourn	Pursuant to RSMO 610.021 (1) Legal actions, causes of action, litigation, or confidential attorney/client communication Pursuant to RSMO 610.021 (2) Real Estate Negotiations Pursuant to RSMO 610.021 (3) Personnel

Up-Coming Meetings / Events:

June 10 @ 9:30 a.m. - Odessa Municipal Court @ Community Building
June 17 @ 7:00 p.m. - Odessa Planning Commission Meeting @ Community Building
June 18 @ 7:00 p.m. - Odessa Park Board Meeting @ Community Building
June 19 – Junteenth – City Holiday – City Offices Closed
June 23 @ 7:00 p.m. – Board of Aldermen Meeting @ Community Building
July 4 – Independence Day – City Offices Closed
July 8 @ 9:30 a.m. - Odessa Municipal Court @ Community Building
July 14 @ 7:00 p.m. – Board of Aldermen Meeting @ Community Building
July 16 @ 7:00 p.m. - Odessa Park Board Meeting @ Community Building
July 17 @ 7:00 p.m. - Odessa Planning Commission Meeting @ Community Building
July 28 @ 7:00 p.m. – Board of Aldermen Meeting @ Community Building

Other Events:
For more information, please visit the City of Odessa website.

ELECTED OFFICIALS

	Mayor Bryan D. Barner	bryan.barner@cityofodessamo.com	(816) 985-0361
Ward 1	Alderwoman Mickey Starr	mickey.starr@cityofodessamo.com	(816) 260-8448
Ward 1	Alderwoman Karla Polson	karla.polson@cityofodessamo.com	(816) 739-2224
Ward 2	Alderwoman Donna Ehlert	donna.ehlert@cityofodessamo.com	(816) 263-9559
Ward 2	Alderman Mike Plachte	mike.plachte@cityofodessamo.com	(816) 263-9997
Ward 3	Alderman Bruce Whitsitt	bruce.whitsitt@cityofodessamo.com	(816) 565-6610
Ward 3	Alderman Collin Carrigan	collin.carrigan@cityofodessamo.com	(801) 829-8482

AMERICANS WITH DISABILITIES ACT

The City of Odessa is committed to ensuring compliance with the Americans Disabilities Act. Individuals who require an ADA accommodation to attend a meeting are encouraged to make those arrangements with the City Clerk at (816) 230-5577 ext. 6 or by email at karen.findora@cityofodessamo.com at least 72 hours in advance of the meeting to communicate their needs.

Posted June 6, 2025
City Hall & City Website
Emailed to The Odessan

Karen Findora, City Clerk
PO Box 128 · 228 S Second · Odessa, MO 64076
Email | Phone: (816) 230-5577 ext. 6 | www.cityofodessamo.com

Odessa Police Department

310 S First Street • Odessa, MO 64076
Phone: 816-633-7575 • Fax: 816-633-7221 • odessapd@cityofodessamo.com

June 3, 2025

Shawna,

Officers worked over **1,104 incidents** in May. Here are just a few statistics:

* 128 traffic stops
* 80 business, residence checks
* 25 mental health calls, check the well-being calls, or similar calls
* 36 various disturbances
* 39 assist other agency calls
* 59 follow-up investigations on previously reported incidents

We proudly commend **Lieutenant Phillip Salmon** for being named the **2025 Missouri Investigators Association Investigator of the Year**. This award recognizes his exceptional dedication to resolving crimes, providing justice, and fostering regional law enforcement cooperation. Lt. Salmon's pivotal role in solving a complex series of business burglaries across multiple counties in August 2021 was a key factor in his selection. His sharp investigative skills, collaboration with Detectives Griffin (Oak Grove PD) and DiNovi (Higginsville PD), also MOIA awardees, and successful deployment of a GPS tracking device led to suspect apprehension and recovery of stolen property. We sincerely appreciate Lt. Salmon's commitment to the Odessa community and our department, and offer our heartfelt congratulations on this deserved recognition.

We are currently seeking applications for **School Resource Officer**. Officer Dyllan Ratigan has resigned his full-time position and has accepted a full-time police position with a neighboring jurisdiction. Officer Ratigan will continue working for the department as a part-time reserve police officer. I hope to fill the assignment by the start of the 2025/2026 school year.

As part of our community engagement efforts, the **Odessa Police Department is launching a summer "Storytime"** event! We've partnered with the Trails Regional Library, where an Odessa Police Officer will read children's books twice in June and twice in July.

May 11 - May 17, 2025, the United States recognized **National Police Week 2025**. In 1962, President Kennedy proclaimed May 15 as National Peace Officers Memorial Day and the calendar week in which May 15 falls, as National Police Week. Established by a joint resolution of Congress, National Police Week pays special recognition to those law enforcement officers who have lost their lives in the line of duty for the safety and protection of others. It is a collaborative effort of many organizations that offers

honor, remembrance, and peer support, while allowing law enforcement, survivors, and citizens to pay homage to those who gave their lives in the line of duty.

On May 13, 2025, I attended a **Crisis Leadership and Decision-Making seminar** in Sedalia, Missouri. The seminar focused on case studies and decision-making models for senior government officials. Discussion focused on overcoming leadership challenges in planning and responding to critical incidents.

On May 14, 2025, nearly 600 5th grade DARE graduates attended the **2025 Lafayette County Law Enforcement Day** in Higginsville. This was the 31st annual Law Enforcement Day! SRO Dyllan Ratigan, Sergeant Derek Zarda with Hawkeye, Officer Austin Summitt, Officer Kane Dobson, and I attended the event and had a great time interacting with all of the students. Odessa graduated about 150 DARE students from the program, and they were all able to attend. We shared some photos of the event on social media.

On May 16, 2025, School Resource Officer Dyllan Ratigan conducted the **2024/2025 DARE program graduation** at the Odessa Upper Elementary School. SRO Ratigan provided DARE education to 5th grade students. Of these 5th grade student graduates, seven essay winners received free pool passes to the Odessa Aquatics Center to use this summer. This was SRO Ratigan second DARE education experience. SRO Ratigan did an excellent job presenting the DARE material to the students! I believe the DARE program is essential in helping children resist drug and alcohol temptation as well as learn valuable anti-bullying techniques. The DARE program culminates at the end of the school year with our countywide law enforcement day which will be held May 14, 2025.

On May 21, 2025, we successfully completed a **Missouri Department of Public Safety Law Enforcement Support Office, LESO Program audit**. The audit involved the Department of Defense property grant program that assists local agencies law enforcement goals preferencing counter-drug and counter terrorism activities.

On May 22, 2025, The Odessa Police Department was honored to have **received a grant from the Canadian Pacific Kansas City Railroad** in the amount of $2,500. CPKC is committed to working with local law enforcement agencies to provide extra rail safety, education, and/or enforcement to help keep the community safe. Our department plans to use these funds to assist with the formation of a first responder drone program, enhancing safety and operational effectiveness with real-time aerial intelligence. Thank you CPKC for your support – we look forward to continued collaborations.

On May 25, 2025, we celebrated the birthday of our **CIRT K9, Radar**! SRO Samantha Bell and Radar are a vital asset to both the Odessa community and our R-VII schools. Their deployment report for the past school year is attached, showcasing their phenomenal work!

Respectfully,

Josh Thompson
Chief of Police & Emergency Management Director

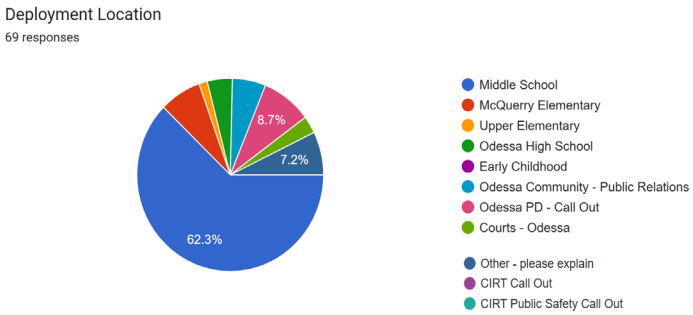

MOIA
MISSOURI
INVESTIGATORS ASSOCIATION


2025
NATIONAL
POLICE
RESPECT. HONOR. REMEMBER.
WEEK

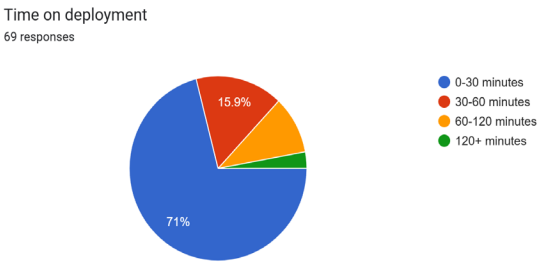

HAPPY
BIRTHDAY

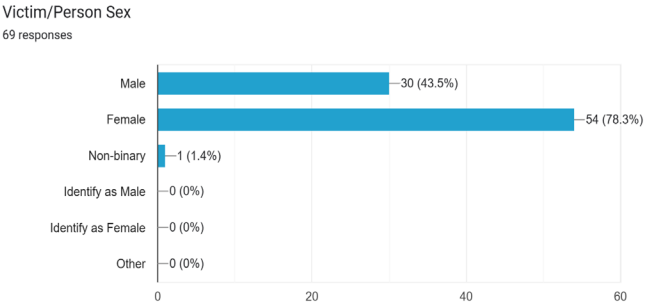

Summer
STORYTIME
June 6 & June 20 3-4 pm
July 11 & 25 10-11 am
Come and enjoy storytime with an Odessa Officer!
Trails Regional Library Odessa Branch
107 W Mason

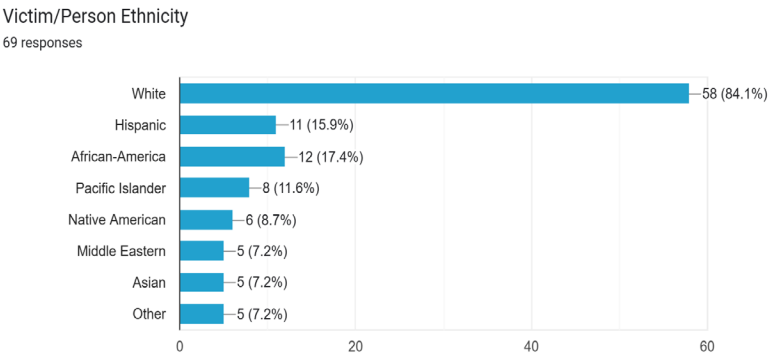
August 2024 - May 2025 Radar Deployment Stats

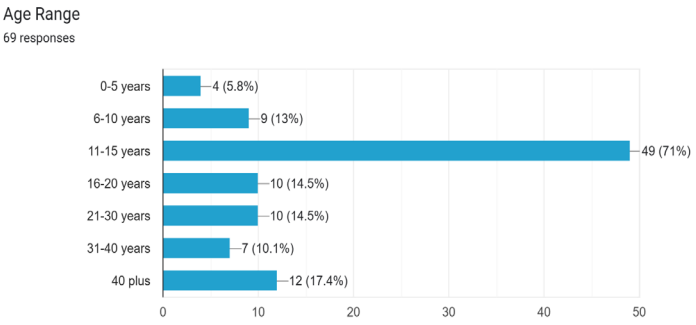


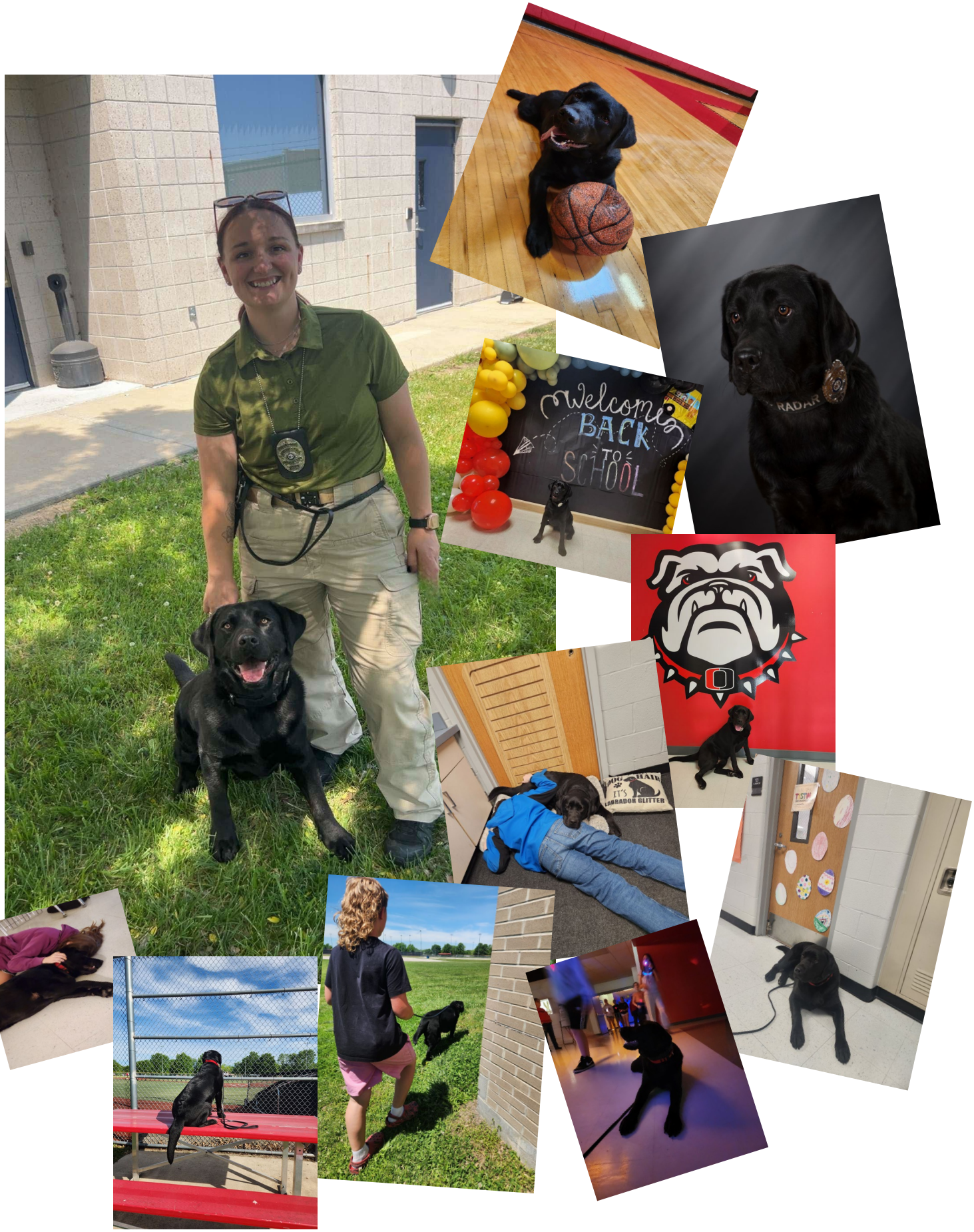
- Middle School - 43
- McQueery - 5
- Upper - 1
- High School - 3
- Early Childhood - 0
- Public Relations - 4
- PD-Call Out - 6
- Courts - 2
- Lafayette County Courts - 0
- Other - Non-Category - 5










Welcome
BACK
TO
SCHOOL
RADAR

IN THE CIRCUIT COURT OF LAFAYETTE COUNTY, MISSOURI
CITY OF ODESSA MUNICIPAL DIVISION

The Municipal Division of the Circuit Court of Lafayette County for the City of Odessa was held in regular session on May 13, 2025, at 9:30 am. Court is held in the Community Building Courtroom at 601 W Main St, Odessa.

Municipal Presiding Judge: **Carl Scarborough**
City Prosecuting Attorney: **Jeffrey W. Deane**
Municipal Court Clerk: **Jennifer LeBlanc**

In compliance with COR 4.29, please find attached the monthly Municipal Division Summary Reporting Form.

The next scheduled court date is June 10, 2025, at the Odessa Community Building.

MUNICIPAL DIVISION SUMMARY REPORTING FORM

Refer to instructions for directions and term definitions. Complete a report each month even if there has not been any court activity.

I. COURT INFORMATION	Municipality: City of Odessa	Reporting Period: May 1, 2025 - May 31, 2025
Mailing Address: 601 W MAIN STREET, ODESSA, MO 64076		
Physical Address: 601 W MAIN STREET, ODESSA, MO 64076	County: Lafayette County	Circuit: 15
Telephone Number:	Fax Number:	
Prepared by: Jennifer LeBlanc	E-mail Address:	
Municipal Judge: SCARBOROUGH		

II. MONTHLY CASELOAD INFORMATION	Alcohol & Drug Related Traffic	Other Traffic	Non-Traffic Ordinance
A. Cases (citations/informations) pending at start of month	16	331	97
B. Cases (citations/informations) filed	0	13	0
C. Cases (citations/informations) disposed			
1. jury trial (Springfield, Jefferson County, and St. Louis County only)	0	0	0
2. court/bench trial - GUILTY	0	0	2
3. court/bench trial - NOT GUILTY	0	0	0
4. plea of GUILTY in court	1	15	7
5. Violations Bureau Citations (i.e. written plea of guilty) and bond forfeiture by court order (as payment of fines/costs)	0	12	1
6. dismissed by court	0	3	1
7. *nolle prosequi*	0	1	1
8. certified for jury trial (not heard in Municipal Division)	0	0	0
9. TOTAL CASE DISPOSITIONS	1	31	12
D. Cases (citations/informations) pending at end of month [pending caseload = (A+B)-C9]	15	313	85
E. Trial de Novo and/or appeal applications filed	0	0	0

III. WARRANT INFORMATION (pre- & post-disposition)		**IV. PARKING TICKETS**	
1. # Issued during reporting period	13	1. # Issued during period	0
2. # Served/withdrawn during reporting period	2	☐ Court staff does not process parking tickets	
3. # Outstanding at end of reporting period	330		

MUNICIPAL DIVISION SUMMARY REPORTING FORM

COURT INFORMATION	Municipality: City of Odessa	Reporting Period: May 1, 2025 - May 31, 2025

V. DISBURSEMENTS

Excess Revenue (minor traffic and municipal ordinance violations, subject to the excess revenue percentage limitation)	
Fines - Excess Revenue	$1,595.50
Clerk Fee - Excess Revenue	$252.00
Crime Victims Compensation (CVC) Fund surcharge - Paid to City/Excess Revenue	$7.77
Bond forfeitures (paid to city) - Excess Revenue	$250.00
Total Excess Revenue	$2,105.27
Other Revenue (non-minor traffic and ordinance violations, not subject to the excess revenue percentage limitation)	
Fines - Other	$704.00
Clerk Fee - Other	$120.00
Judicial Education Fund (JEF) ☐ Court does not retain funds for JEF	$0.00
Peace Officer Standards and Training (POST) Commission surcharge	$31.00
Crime Victims Compensation (CVC) Fund surcharge - Paid to State	$221.03
Crime Victims Compensation (CVC) Fund surcharge - Paid to City/Other	$3.70
Law Enforcement Training (LET) Fund surcharge	$62.00
Domestic Violence Shelter surcharge	$62.00
Inmate Prisoner Detainee Security Fund surcharge	$62.00
Restitution	$0.00
Parking ticket revenue (including penalties)	$0.00
Bond forfeitures (paid to city) - Other	$150.00
Total Other Revenue	$1,415.73

Other Disbursements: Enter below additional surcharges and/or fees not listed above. Designate if subject to the excess revenue percentage limitation. Examples include, but are not limited to, arrest costs and witness fees.	
Court Automation	$217.00
Court Automation-Time Payment	$24.00
State's % of Time Pay Fee	$21.00
Time Payment Fee	$30.00
Total Other Disbursements	$292.00
Total Disbursements of Costs, Fees, Surcharges and Bonds Forfeited	$3,813.00
Bond Refunds	$50.00
Total Disbursements	$3,863.00

Building and Community Development

Compliance Update

April & May 2025

- **Planning & Zoning Meeting**

- April 17, 2025 meeting / Discussion Chapter 50 Zoning Changes, Appointed new Secretary, Steve Nance / Presentation of Out Going Planning Members: Marty Mcdermed, Ruth Beamer and Vicki Pavolvich / Zoning Work Shop #3,
- May 15, 2025 meeting /Continued Discussion Chapter 50, Zoning Changes,

- **The next Planning & Zoning meeting, June 17, 2025 / Zoning Work Shop #4**

- **Board of Adjustment Meeting**
- June 10, 2025, meeting / Ultimate Dance & Acro / 106 W Mason

Sec 50-721 Specific requirements for certain sign types

a) The sign face shall not exceed 70 square feet. The Studio requested a 40" x 62' monument sign.

b) Only one free-standing sign is permitted per lot. The Studio requested an additional sign.

- **Active Projects** - The Hill Subdivision, Pine Creek Townhomes, Benning & Johnson Drive, Jones Warehouse.

- **Completed / Certificate of Occupancy** - New Multifamily Dwelling (NMFD)
  501 Pine Dr. - April 24, 2025
  503 Pine Dr. - April 30, 2025
  504 Pine Dr. - May 12, 2025
  505 Pine Dr. - May 21, 2025

- **Completed / Certificate of Occupancy** New Single-Family Dwelling (NSFD) & (NMFD) Duplex

  a) New Single-Family Dwelling (NSFD)

  607 W Dryden - May 6, 2025
  108 S Johnson Dr. - May 30, 2025

  b) New Multi-Family Dwelling (Duplex)
  705 W Pleasant - April 24, 202

- **New Permits Issued** - New Multifamily Dwelling (NMFD) & New Single-Family Dwelling (NSFD)
  506 Pine Dr. Permit issued May 28, 2025
  507 Pine Dr. Permit Issued May 28, 2025
  509 Pine Dr. Permit Issued May 28, 2025
  411 Benning Permit Issued May 28, 2025
  707 W Kirkpatrick Permit issued April 2, 2025
  106 S Johnson Dr. Permit issued April 15, 2025
  112 S Johnson Dr. Permit issued April 15, 2025
  116 S Johnson Dr. Permit issued April 15, 2025
  617 W Dryden Permit issued May 9, 2025

- **Building Permits**
  a) Total for 2024 = 257
  b) Total YTD 2025 = 90

- **Permits & Inspections - April & May 2025**
- 707 W Kirkpatrick - NSFD, approved
- 206 E Main - Repair Sewer line, approved
- 717 W Main - New Deck, approved
- 503 W Kirkpatrick - New Furnace, approved
- 302 W Dryden - Repair Sewer line, approved
- 106 S Johnson Dr - NSFD, approved
- 112 S Johnson Dr. - NSFD, approved
- 116 S Johnson Dr. - NSFD, approved
- 507 Quail Creek Dr. - Foundation Repair, approved
- 809 S 2nd St - Foundation Repair, approved

- 808 Golf - Fence 6’ Wood, approved
- 507 Pine Dr. - NMFD, approved
- 506 Pine Dr. - NMFD, approved
- 509 Pine Dr. - NMFD, approved
- 411 E Benning - NMFD, approved
- 402 College Terr - Replace Concrete Pad, approved
- 206 W Wells - New Fence 6” Wood, approved
- 724 S 3rd St - Patio Cover, approved
- 325 S 1st - Demolition of House, approved
- 713 S 3rd St. - Repair Sewer line, approved
- 107 S 2nd - New Signage, approved
- 702 Greenton Cr - Plumbing Repair, approved
- 500 S 5th St - Repair Sewer line, approved
- 513 S Dyer - Fence 6’ Wood, approved
- 415 N 2nd St. - Signage, approved
- 400 N 40 Highway - Dumpster Enclosure, approved
- 700 Golf St - Fence 6’ Wood, approved
- 106 W Mason - Signage, approved
- 407 W Mason - Repair Sewer line, approved
- 617 W Dryden - NSFD, approved
- 315 Parklane - Signage, approved
- 1498 40 Highway - Parking lot fencing, approved
- 108 W Chestnut - Repair Sewer line, approved
- 936 Owl Creek PKWY - Remodel Deck, approved
- 106 W Mason - Addition of two doors, approved
- 1372 40 Highway - Repair parking lot, approved
- 209 W Mason - Install Drain tiles, approved
- 405 W College - Repair Electrical wiring, approved
- 622 W Main - Fence 6’ Wood, approved
- 302 N Johnson Dr. - Swimming Pool Above, approved
- 800 S 1st - Fence 6’ Wood, approved
- 513 S Connor - Fence 6’ Wood, approved

Research Update:

Odessa, MO Combined Waterworks And Sewerage System Bond Rating Affirmed At 'A-'; Outlook Is Stable

June 2, 2025

Primary contact

Diana Cooke
Chicago
1-3122337052
diana.cooke
@spglobal.com

Additional contact

Samantha Watkins
Denver
1-3037214483
samantha.watkins
@spglobal.com

Overview

- S&P Global Ratings affirmed its 'A-' rating on the City of Odessa, Mo.'s combined waterworks and sewerage system bonds.
- The outlook is stable.

Rationale

Security

We view bond provisions as neutral. Net revenue of the water and sewer system secures the bonds. Key bond provisions include a rate covenant set at 1.1x annual debt service and an additional bonds test set at 1.1x annual debt service based on the two most recently completed audited years.

Credit highlights

The rating reflects our view of the system's stable local economy, healthy days' cash on hand (DCOH), sufficient system capacity, and minimal capital needs. Offsetting these strengths are the system's small size, low nominal cash, and lack of long-term financial planning. Debt service coverage (DSC) has declined over the past few years due to relatively flat revenue growth and growing operational expenses. The city, however, maintains a track record of annual water rate increases and has no concrete plans to issue additional debt within the next two years. Management plans to cash-fund about $600,000 in water and sewer projects in fiscal 2026, which will draw reserves down to $2 million or just under one years' cash on hand, which we still view as comparable at the rating level.

The long-term rating further reflects our view of the system's:

- Diverse customer base, with beneficial geographic location just 30 miles outside of Kansas City, off Interstate 70 (I-70). The customer base has remained mostly flat, although the city is actively looking to expand its services as it has more than sufficient system-capacity. An I-70 interchange design and several residential developments in the pipeline should spur additional customer growth in future years.
- Affordable rates in the context of median household income. The city does not produce formal rate studies nor use financial projections to set rates; rather, rates are reviewed annually after completion of the city's audit. In recent years, the city has increased water rates by approximately 1%-3% annually. The city keeps sewer rates flat, instead changing the surcharge based on debt service and capital needs. It targets DSC above 1.1x--to remain in compliance with bond covenants-- although it maintains a track record of debt service above 1.2x, a level that we expect it will remain at over the rating horizon.
- Lower nominal reserves relative to those of higher-rated peers, although sufficient cash compared with operations. Across both the water and sewer system, the city had $2.7 million in unrestricted cash, or 479 DCOH, in fiscal 2023 (year-end March 31). Based on unaudited estimated results, there were no draws on cash in fiscal years 2024 and 2025, although the city plans to use approximately $600,000 in water and wastewater reserves to support various capital projects. Besides these draws, there are no further plans to spenddown reserves.
- Standard operational management, with more-than-sufficient system capacity in both the water and sewer systems, abundant water supply without drought risks, and relatively new assets with no significant capital needs. The city builds in sufficient contingencies into its budget for regular operations and maintenance to prevent unexpectedly dipping into its reserves on an annual basis.
- Standard management policies, including maintenance of a five-year capital plan, conservative budget development processes, and regular reporting on budget-to-actual results to the board. Offsetting these practices are the city's lack of long-term financial planning and typically delayed generally accepted accounting principles audits.
- Moderately sized debt burden, although no concrete debt plans through fiscal 2027. Based on the system's capital improvement plan, it might issue several million to support some capital projects beginning in fiscal 2028, although we don't expect this will materially change the system's debt profile. Furthermore, the city is seeking an additional water supply for redundancy and precautionary purposes, which would require significant debt, although this is well outside the outlook horizon. The city is also exploring decommissioning one of its wastewater plants for efficiency purposes, but this would be funded through a grant. Management noted there are no sizable critical capital needs on the horizon; with most capital needs related to ongoing maintenance.

Environmental, social, and governance

We analyzed the system's environmental, social, and governance factors relative to its enterprise and financial risk profiles and view them as neutral in our credit rating analysis. Social risk is mitigated by the service area's average income and affordable rates relative to income, providing additional rate-setting flexibility, if necessary. Environmental risk is mitigated by the absence of environmental risks, including compliance with permits, the absence of sanitary sewer overflows or consent decrees, and adequate capacity. Governance risk is mitigated by experienced staffing and proactive management despite some limited formalized policies and practices.

Outlook

The stable outlook reflects the system's minimal capital needs, healthy liquidity at the rating level, and potential economic growth on the horizon.

Downside scenario

We could lower the rating if operating performance deteriorates or the system issues significant new-money debt or realizes additional capital needs, weakening coverage and liquidity, without a plan to rebuild.

Upside scenario

In our view, the system's small scale of operations, which introduce outsized vulnerability and limits flexibility, would require material growth in coverage and liquidity and more formalized financial planning practices to warrant an upgrade.

Odessa, Missouri--Economic and financial data

		--Fiscal year-end--			
	Most recent	2023	2022	2021	Median (A-)
Economic data					
MHHEBI of the service area as % of the U.S.	96.0				79.0
Unemployment rate (%)	2.9				4.2
Poverty rate (%)	11.2				13.2
Water rate (6,000 gallons or actual) ($)	50.0				43.4
Sewer rate (6,000 gallons or actual) ($)	80.6				40.7
Annual utility bill as % of MHHEBI	2.5				1.4
Operational management assessment	Standard				Standard
Financial data					
Total operating revenues ($000s)		3,556	3,605	3,330	2,853
Total operating expenses less depreciation ($000s)		2,057	1,818	1,771	2,141
Net revenues available for debt service ($000s)		1,546	1,844	1,630	--
Debt service ($000s)		1,117	1,299	991	--
S&P Global Ratings-adjusted all-in DSC (x)		1.4	1.4	1.6	1.4
Unrestricted cash ($000s)		2,700	2,622	2,238	2,105
Days' cash of operating expenses		479	526	461	418
Total on-balance-sheet debt ($000s)		12,887	13,742	14,651	8,610
Debt-to-capitalization ratio (%)		48.4	50.1	52.3	50.0
Financial management assessment	Standard	--	--	--	Standard

Note: Most recent economic data available from our vendors. MHHEBI--Median household effective buying income. DSC--Debt service coverage.

Ratings List	
Ratings Affirmed	
Water & Sewer	
Odessa, MO Water and Sewer System	A-/Stable

The ratings appearing below the new issues represent an aggregation of debt issues (ASID) associated with related maturities. The maturities similarly reflect our opinion about the creditworthiness of the U.S. Public Finance obligor's legal pledge for payment of the financial obligation. Nevertheless, these maturities may have different credit ratings than the rating presented next to the ASID depending on whether or not additional legal pledge(s) support the specific maturity's payment obligation, such as credit enhancement, as a result of defeasance, or other factors.

Odessa Police Department

310 S First Street • Odessa, MO 64076
Phone: 816-633-7575 • Fax: 816-633-7221 • odessapd@cityofodessamo.com

May 27, 2025

Letter of Commendation for Lieutenant Phillip Salmon: Recipient of the 2025 Missouri Investigators Association Investigator of the Year Award

It is with profound honor and great pride that I formally commend **Lieutenant Phillip Salmon** for being recognized as the **2025 Missouri Investigators Association Investigator of the Year**. This distinguished award acknowledges his exemplary dedication to crime resolution, his commitment to providing closure and justice to victims, and his leadership in fostering regional cooperation among law enforcement entities.

Lieutenant Salmon's selection for this award was significantly influenced by his pivotal role in resolving a complex series of business burglaries that occurred in August 2021. This extensive investigation required coordination across numerous law enforcement jurisdictions, encompassing Lafayette, Johnson, Henry, Jackson, Boone, and Cooper Counties. Lieutenant Salmon's sharp investigative skills enabled him to identify the individuals responsible. Collaborating closely with detectives from the Oak Grove and Higginsville Police Departments, he diligently collected evidence that facilitated the successful deployment of a GPS tracking device on the suspect's vehicle. This led to the apprehension of the suspects following their involvement in additional burglaries, and ultimately resulted in the recovery and return of substantial stolen property.

Furthermore, Lieutenant Salmon has consistently demonstrated leadership in areas beyond direct investigation, successfully coordinating multi-agency training programs and developing innovative community outreach initiatives that have significantly enhanced public engagement.

On behalf of the Odessa Police Department, City Administrator Shawna Davis, and Mayor Bryan Barner, I extend our sincerest appreciation for Lieutenant Salmon’s firm commitment and invaluable contributions to the Odessa community, the City of Odessa, and our department. His achievement is a testament to his exceptional service, and we offer our heartfelt congratulations on this truly deserving recognition.

Respectfully,

Josh Thompson, Chief of Police

BOARD OF ALDERMEN ACTION REPORT

ISSUE: Appoint a representation for the Cities of Lafayette County to the West Central Missouri Solid Waste Management District F Executive Board.

ACTION REQUESTED: A Motion/Second to appoint Lindsey Adams for the Cities of Lafayette County to the West Central Missouri Solid Waste Management District F Executive Board.

BACKGROUND:
The West Central Missouri Solid Waste Management District F (District F) is one of several regional districts established across Missouri to enhance waste management and promote environmental sustainability. District F encompasses multiple counties in west-central Missouri and is coordinated through the West Central Missouri Regional Planning Commission. Its mission is to reduce the amount of solid waste sent to landfills by supporting waste reduction, reuse, recycling, and education.

The District provides grants and technical assistance to local governments, schools, non-profits, and businesses to help them develop recycling and waste reduction programs. It also supports public education efforts on recycling and environmental conservation, coordinates regional planning for solid waste and materials management, and ensures compliance with the Missouri Solid Waste Management Law through local initiatives. The District is funded by the Missouri Solid Waste Management Fund, which is primarily financed through a per-ton tipping fee on waste disposed of at all Missouri landfills. A portion of this fund is distributed annually by the Missouri Department of Natural Resources to the solid waste districts across the state.

Recently, the City of Odessa was contacted by District F, as it is the largest city in Lafayette County. In accordance with District F bylaws, the City has the first option to designate a successor to serve on the Executive Board, which convenes quarterly. The Mayor recommends appointing Lindsey Adams to the District F Board. Lindsey will effectively represent the area in our future efforts to ensure the community has accessible recycling options, including for hazardous waste, for which there are currently no disposal locations in the county. Additionally, she is well-informed about the community's needs as grant opportunities arise.

FINANCIAL CONSIDERATIONS: None

ATTACHMENTS: Letter to District F Chairperson

PREPARED BY:_____ DATED: June 9, 2025
Shawna Davis, City Administrator

City of Odessa
228 S Second Street • PO Box 128 • Odessa, MO 64076
Phone: 816-230-5577 • info@cityofodessamo.com
www.cityofodessamo.com

City of Odessa
225 S 2nd Street
Odessa, MO 64076

05/23/2025

West Central Missouri Solid Waste Management District F
2304 W. Broadway #196
Sedalia, MO 65301

Dear Chairperson Crooks,

Please accept the appointment of **Lindsey Adams** to serve as my alternate for the **City of Odessa** on the West Central Missouri Solid Waste Management District F Executive Board of Directors.

Sincerely,

Bryan D. Barner
Mayor, City of Odessa
228 S 2nd Street
Odessa, MO 64076

BOARD OF ALDERMEN ACTION REPORT

ISSUE: Discuss Reservoir Hydrogeological Study provided by Allstate Consultants

ACTION REQUESTED: No Action Required

BACKGROUND:
The City of Odessa owns two lakes that were previously used as the community's water supply. Since the 1980s, these lakes have only been utilized for recreational purposes. Because of the size of the reservoir and dam, they are regulated by the Missouri Department of Natural Resources (DNR). Currently, the dam has a DNR Hazard Classification of Class II. In 2019, the DNR indicated the need to reclassify it to Class I due to a new downstream subdivision. However, after further investigation, they withdrew that statement.

In October 2024, the City was informed of another planned downstream subdivision that has yet to be built or preliminarily platted by Lafayette County Planning and Zoning. This area has been rezoned from Agricultural to Rural Residential. Following this notification, the City requested

Allstate to complete a hydrogeological study, which had already been initiated, to explore cost-efficient options for repairing the spillway and dam. Major repairs to the spillway were completed in 2012, which included repairing the concrete slab panels. Parrish Construction handled this work for approximately $17,600 and The Judy Company also performed repairs for roughly $98,575. In 2015, further work was carried out by TerraFirm, costing around $135,515, to replace a concrete slab, perform void grouting, and seal cracks. Recently, DNR Dam Safety advised that additional deterioration has been observed. While the deterioration has slowed at this time, repairs will be necessary in the future, potentially influenced by weather conditions and significant rain events.

After the hydrogeological study was completed, City staff requested that Allstate provide updated engineering cost estimates. The study and estimates for the spillway and dam are attached, along with the most recent formal letter from the DNR Dam Safety Division.

FINANCIAL CONSIDERATIONS: Study cost was included in the General CIP for 2025-2026 and has been paid for.

ATTACHMENTS: Hydrogeological Study, Cost Estimates, DNR Letter.

PREPARED BY:_____ DATED: June 9, 2025
Shawna Davis, City Administrator

Odessa City Reservoir
Preliminary Engineering Report

November 20, 2024

John Holmes, P.E.

Allstate Consultants, LLC
3312 LeMone Industrial Blvd.
Columbia, MO 65201
Phone:(573) 875-8799
Fax: (573) 875-8850
E-Mail: jholmes@allstateconsultants.net

1.0 Introduction

In October 2019, the City of Odessa received a letter from Missouri Department of Natural Resources (MDNR) Dam and Reservoir Safety Program indicating that repairs were needed to the principal spillway of the Odessa City Reservoir (Figure 1-1) and that the dam was being elevated from Class II to Class I because of new development downstream. MDNR subsequently rescinded the class change, but have notified the City that any additional development downstream would require an upgrade to Class I.

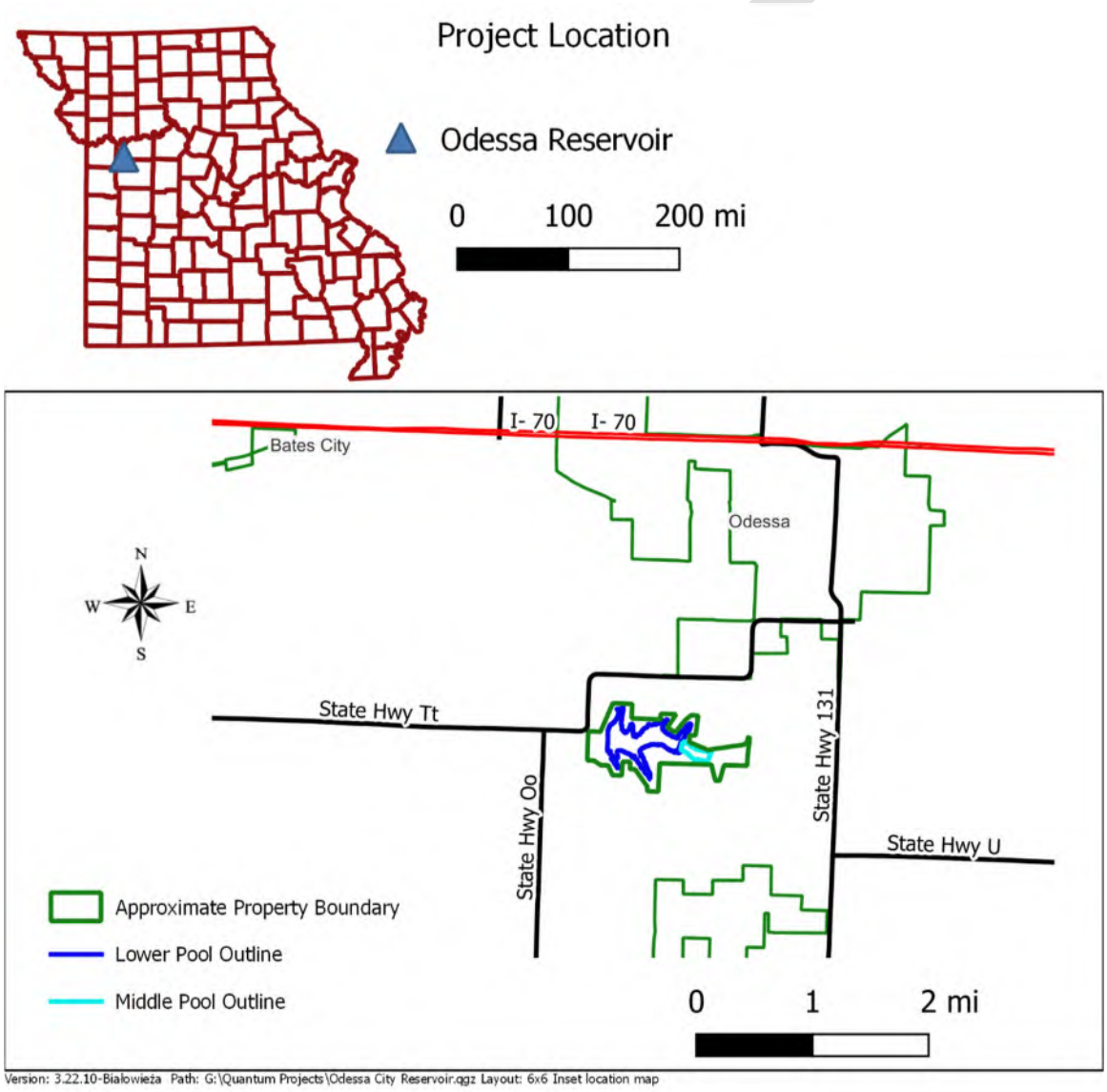


Figure 1-1, Project Location

Plans are underway to repair the spillway, but this Preliminary Engineering Report was contracted to determine how capacity could be increased to achieve Class I compliance prior to construction of the

repairs. The goal of this report is to determine if it would be more cost effective to add capacity as the spillway is being reconstructed.

The change from Class II to Class I would be significant because it means that the spillway capacity would have to be adequate to handle 75% of the PMP rainfall event instead of 50% as is required for Class II structures. For Lafayette County, the PMP flood rainfall totals are listed in Table 1-1. The duration of the storm that is most critical for the reservoir in question must be determined by the designer.

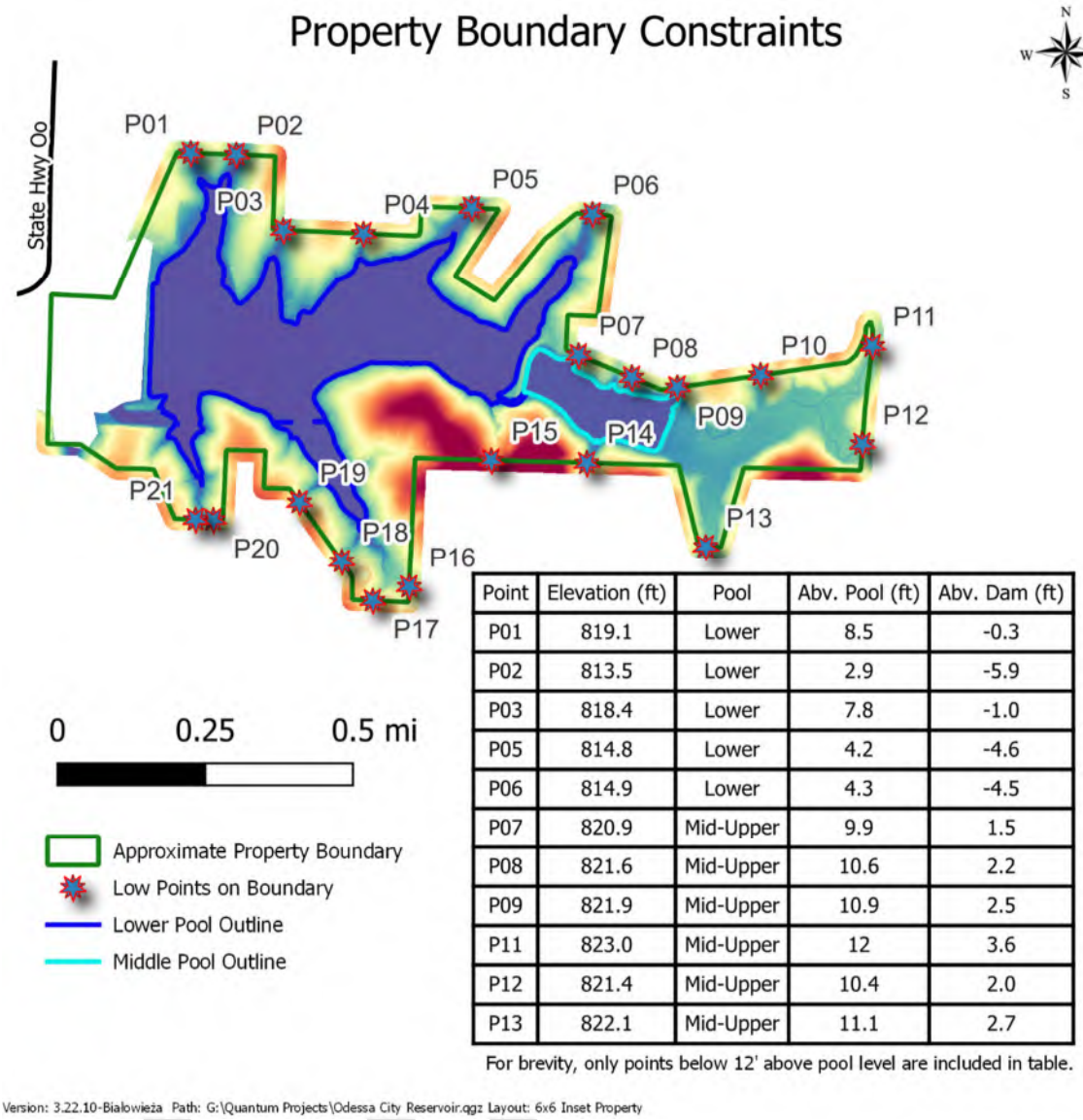
Table 1-1, Comparison of Class I and Class II Precipitation Amounts

Storm Duration	PMP Rainfall Amount (inches)	50% of PMP Rainfall (Class II) (inches)	75% of PMP Rainfall (Class I) (inches)	Increased rainfall requirement between Class I and II (inches)
6 hours	27.6	13.8	20.7	6.9
12 hours	33	16.5	24.75	8.25
24 hours	34.8	17.4	26.1	8.7
48 hours	38	19	28.5	9.5
72 hours	39	19.5	29.25	9.75

The current Odessa City Reservoir Dam on a tributary to the E. Fork of Sni-a-bar Creek was completed in 1965 with a dam height of 47 ft and length of 1,150'. According to the 2019 DNR Dams shapefile, the reservoir area is 90 acres with a 2,370-acre (3.70 mi^2) drainage area resulting in a watershed to surface area ratio of 26.3. At the upper end of the reservoir is the abandoned previous dam which was completed in 1944. It was notched when the current dam was constructed to allow equalization of the pools. It had a surface area of 17 acres. Both the current reservoir and the previous reservoir were originally water supply reservoirs, but their use for water supply has been discontinued. The primary purpose of the reservoir is now recreation.

The entire reservoir and upstream and downstream sections of the stream are in FEMA Zone A.

The reservoir lies in approximately 315 acres of land owned by the City of Odessa, including approximately 800' of the Tributary to Sni-a-Bar creek downstream of the dam. At the upper end of the property, the main reservoir tributaries from the east enter the park boundary at elevations of approximately 821.4' and 823.0'. There are other tributaries upstream of the dam that enter the park property at elevations as low as 813.5'. The surveyed low point in the dam is at an elevation of 819.4'. Figure 1-2 shows the locations where the reservoir pool could extend across the property boundary, depending on reservoir level.



Point	Elevation (ft)	Pool	Abv. Pool (ft)	Abv. Dam (ft)
P01	819.1	Lower	8.5	-0.3
P02	813.5	Lower	2.9	-5.9
P03	818.4	Lower	7.8	-1.0
P05	814.8	Lower	4.2	-4.6
P06	814.9	Lower	4.3	-4.5
P07	820.9	Mid-Upper	9.9	1.5
P08	821.6	Mid-Upper	10.6	2.2
P09	821.9	Mid-Upper	10.9	2.5
P11	823.0	Mid-Upper	12	3.6
P12	821.4	Mid-Upper	10.4	2.0
P13	822.1	Mid-Upper	11.1	2.7

For brevity, only points below 12' above pool level are included in table.

Version: 3.22.10-Bialowieża Path: G:\Quantum Projects\Odessa City Reservoir.qgz Layout: 6x6 Inset Property

Figure 1-2, Property Boundary Constraints

The dam spillway configuration includes several zones which are referenced as described in the original plans for the dam and described in figure 1-3. A concrete cutoff wall extended tangent to the centerline of the dam across the spillway acts as a short weir wall at elevation 810.6 and divides the east and west spillway channels. The principal (elevation 810.7) and auxiliary (Elevation 816.6) spillways are intended to drop flow from the west spillway channel down to the tributary to the E. Fork of Sni-a-bar Creek at elevation around 771'.

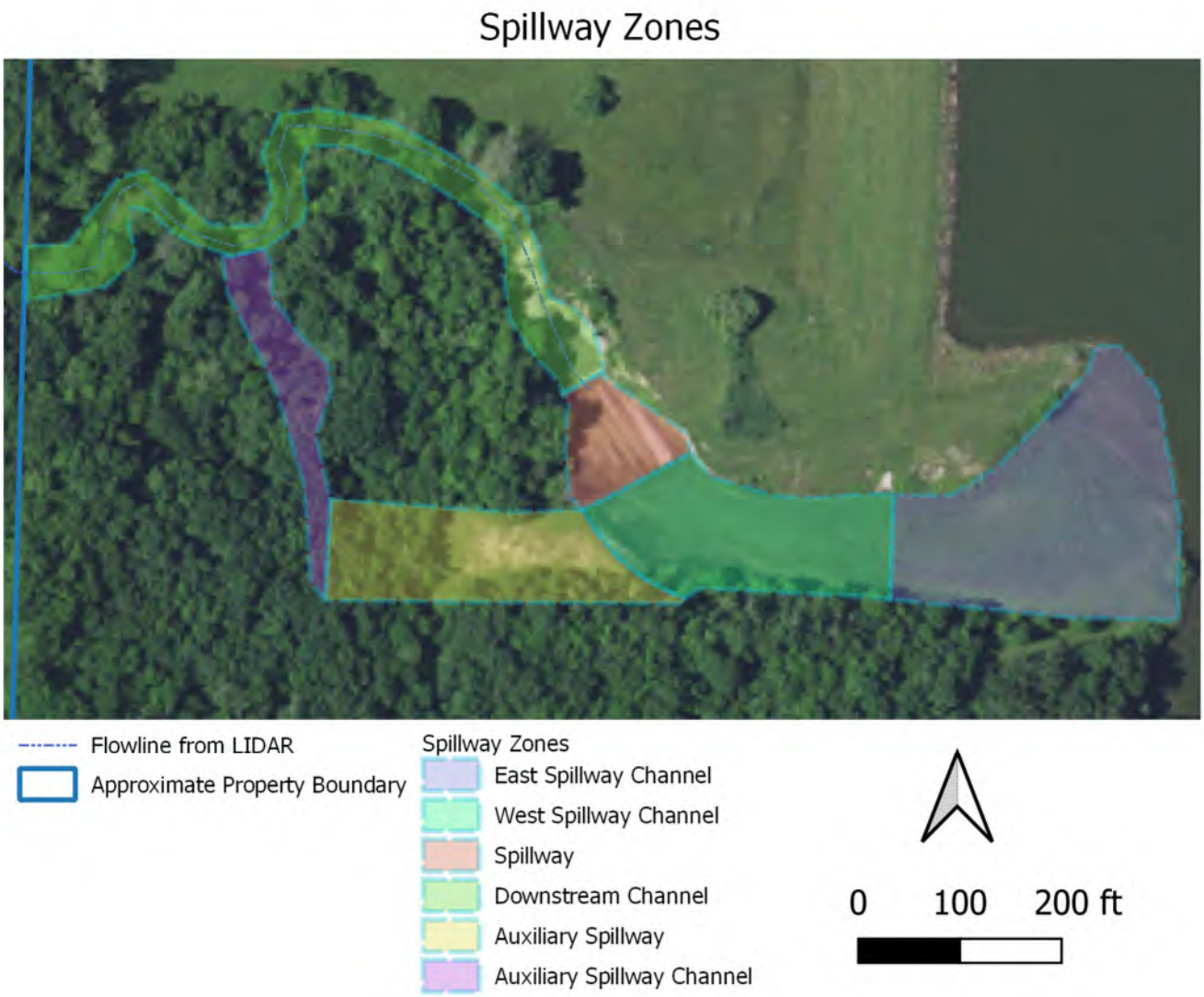


Figure 1-3, Reservoir Spillway Zones

As built plans from the original reservoir construction in 1964 were provided by the City of Odessa. Comparison of key elevations to current survey data suggests that there could be a difference in the datum and the dam could have been raised at some point in time. Based on the top of the spillway and the weir between the east and west flumes, it appears likely that there is a 0.6' difference in datums with surveyed elevations measuring 0.6' above plan elevations.

Table 1-2, Comparison of 1964 Plans to Current Survey Elevation		
Element	1964 Plan Elevation	Current Surveyed Elevation
Dam top	817.0'	819.4' to 820.75'
Pool Elevation	810.0'	810.6'
Weir Between East and West Flumes	810.0'	810.58' to 810.65'
East Flume Floor	Excavated to 810.0'	810.8' to 811.4'
West Flume Floor	Excavated to 810.0'	810.7'
Top of Spillway	810.0'	810.63 to 810.74'

Table 1-2, Comparison of 1964 Plans to Current Survey Elevation		
Element	1964 Plan Elevation	Current Surveyed Elevation
Auxiliary Spillway	815.0’	816.1’ (LiDAR indicates the spillway wouldn’t be functional until elevation 816.6’ due to high areas in the channel.

2.0 Methods

Due to the complexity of the spillway this project was modeled using a combination of GeoHECHMS and GeoHECRAS techniques. GeoHECHMS is a shell program provided by CivilGeo that was set up to run U.S. Army Corps of Engineers’ HEC-HMS version 4.8 utilizing SCS Curve Numbers for infiltration and the SCS Unit Hydrograph to calculate runoff. GeoHECHMS was used to estimate the reservoir inflows and reservoir routing.

GeoHECRAS is a shell program also provided by CivilGeo that was used to run U.S. Army Corps of Engineers’ HECRAS version 6.3.1 in 2D unsteady flow mode for development of rating curves reflecting the complex spillway hydraulics.

2.1 Hydrology - GeoHECHMS

The hydrologic model for the reservoir was completed in GeoHECHMS. GeoHECHMS was used to facilitate input and reporting utilizing the HEC-HMS version 4.5 computer software. The SCS Curve Number infiltration (loss) method and SCS Unit Hydrograph runoff (transform) method was used for determining the stormwater runoff. The Modified Puls routing method was used for routing the stormwater through the storage areas. No channel routing was needed. Figure 2.1-1 shows the basic schematic layout of the GeoHECHMS model.

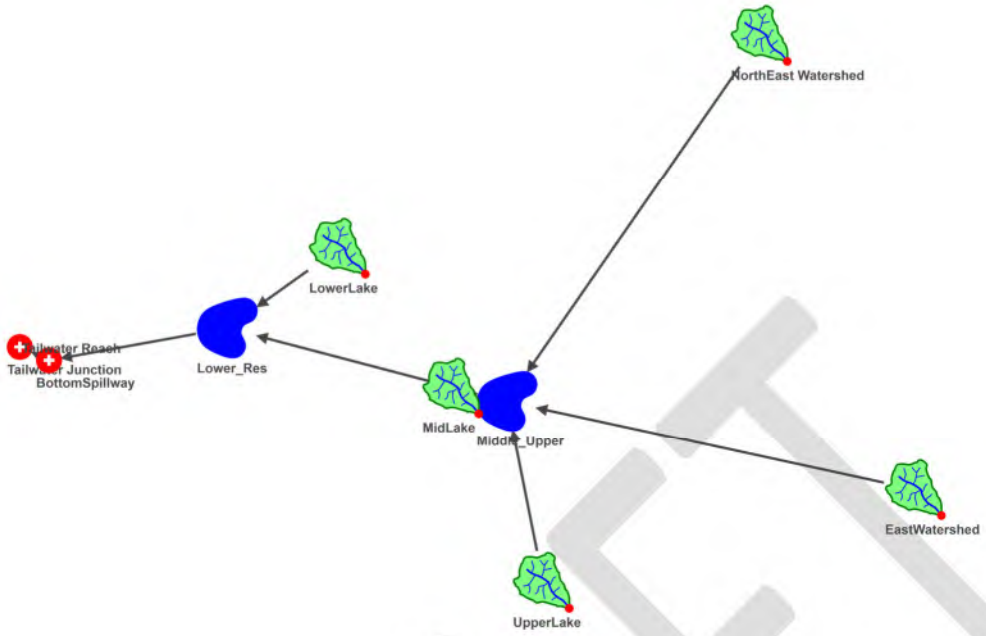


Figure 2.1-1, GeoHECHMS Schematic

Because the reservoir has remnant dams in the waterbody, it was initially split into three sections, and the watershed was divided such that each section could be addressed individually in the hydraulic modeling. However, there ended up being no advantage to hydraulically separating the upper two portions of the reservoir, so they were merged into one middle-upper pool. Table 2.1-1 and Figure 2.1-2 provide the details of the watersheds included in the modeling. Hydrologic inputs were calculated using GeoHECHMS' tools for compiling input data. Curve Number was assigned based on hydrologic soils group data from the NRCS Soil Survey Database and 2021 NLCD Land Cover (table 2.1-2). Impervious area was calculated from the 2021 NLCD Impervious Area data.

Table 2.1-1, Watershed Summary

Subbasin ID	Drainage Area (acres)	Initial Abstraction (in)	Curve Number	Impervious Surface (%)	Lag Time (minutes)	Peak Discharge (cfs)
EastWatershed	764.201	0.59	77.34	2.41	46.34	2,939.26
LowerLake	774.246	0.52	79.32	2.58	46.16	3,042.49
MidLake	70.878	0.48	80.57	1.41	8.87	327.80
NorthEast Watershed	377.356	0.56	78.17	10.80	28.07	1,600.30
UpperLake	314.343	0.66	75.18	2.42	27.54	1,282.12

Table 2.1-2, NRCS Curve Number (CN) Lookup Table					
NLCD Code	Land Cover	Soil Group A CN	Soil Group B CN	Soil Group C CN	Soil Group D CN
11	Open Water	100	100	100	100
21	Developed, Open Space	52	68	78	84
22	Developed, Low Density	81	88	90	93
23	Developed, Medium Density	84	89	93	94
24	Developed, High Density	88	92	93	94
31	Undeveloped, Barren Land	70	81	88	92
71	Undeveloped, Grassland	30	63	75	85
52	Undeveloped, Shrub/Scrub	30	42	55	62
43	Undeveloped, Mixed Forest	71	75	79	82
41	Undeveloped, Deciduous Forest	70	73	76	79
42	Undeveloped, Evergreen Forest	73	77	81	85
82	Agricultural, Cultivated Crops	62	74	82	86
81	Agricultural, Pasture/Hay	40	61	73	79
90	Wetlands, Forested	100	100	100	100
95	Wetlands, Non-Forested	100	100	100	100

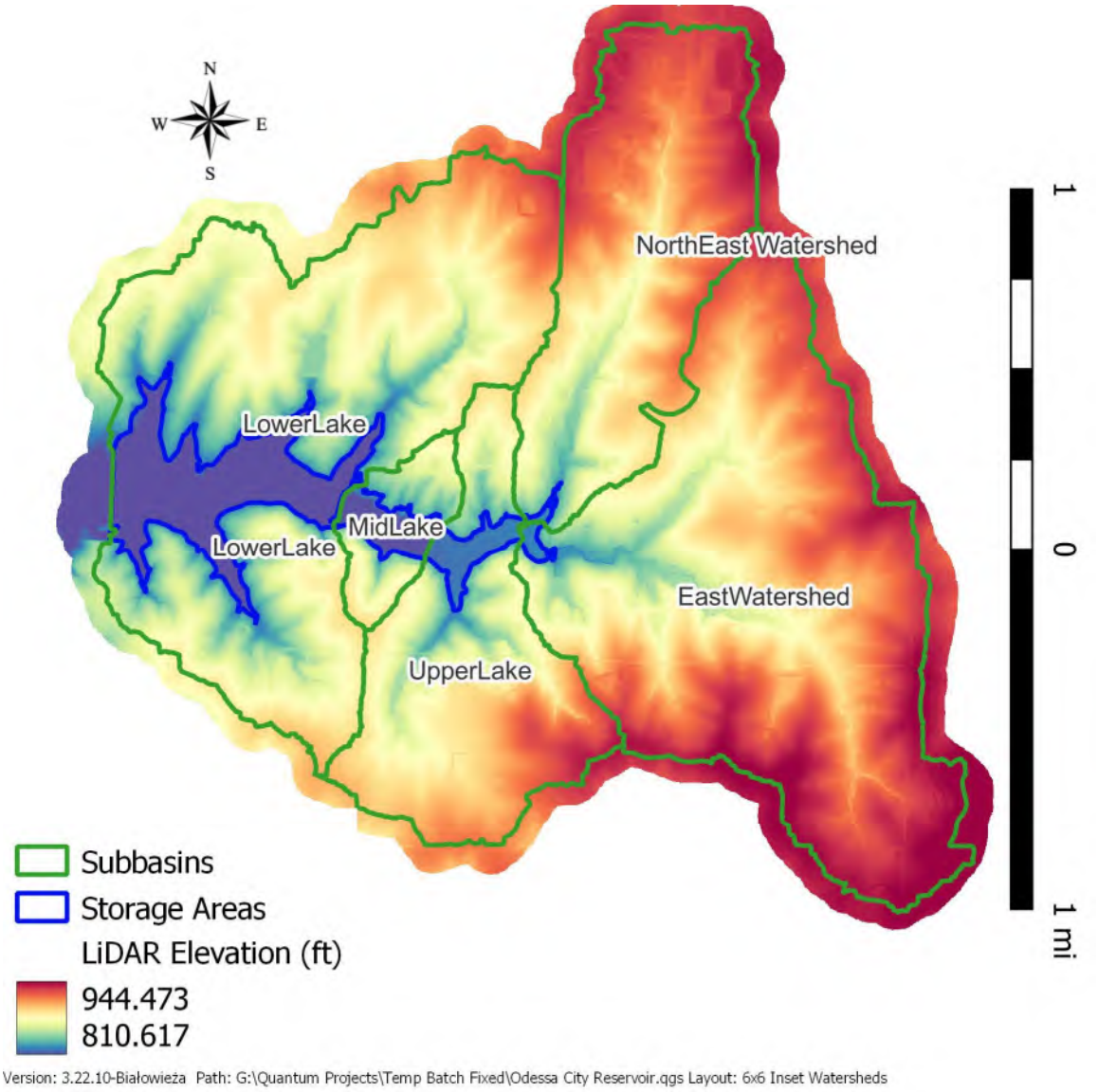


Figure 2.1-2, Watersheds

The two standard time of concentration methods described in Part 630, Chapter 15 of the NRCS National Engineering Handbook were calculated and to be conservative, the shorter of the two results was utilized for the GeoHECHMS model. Table 2.1-3 provides the details of the Time of Concentration calculations.

Table 2.1-3, Time of Concentration Calculation Details					
Basin	East Watershed	Lower Lake	MidLake	Northeast Watershed	Upper Lake
Watershed Lag Method					
Avg basin Slope	7.27%	7.77%	9.74%	7.10%	7.60%
CN	77.3	79.3	80.6	78.2	75.2
S	2.94	2.61	2.41	2.79	3.30
Lag (hr)	0.94	0.77	0.15	0.76	0.60
Lag (min)	56.41	46.16	8.87	45.44	35.80
Tc (min)	**94.02**	**76.94**	**14.78**	**75.73**	**59.66**
Velocity method					
Sheet Flow					
sheet flow length	100	100	100	100	100
sheet flow slope	0.0052	0.018	0.012	0.016	0.034
Sheet flow cover type	Grass- Short Grass Prarie	Grass- Short Grass Prarie	Grass- Short Grass Prarie	Grass- Short Grass Prarie	Grass- Short Grass Prarie
n	0.15	0.15	0.15	0.15	0.15
Sheet Flow Travel Time (min)	16.1	9.8	11.5	10.2	7.6
Shallow Concentrated Flow					
shallow conc length (ft)	1498.11	1686.77	755.79	1407.65	1423.29
Slope	0.019	0.026	0.039	0.024	0.026
Shallow Flow cover type	unpaved	unpaved	unpaved	unpaved	unpaved
k	0.491	0.491	0.491	0.491	0.491
V	2.2	2.6	3.2	2.5	2.6
Shallow Concentrated Flow Travel Time (min)	11.2	10.7	3.9	9.4	9.1
Channel Flow Segment 1					
Channel Length (ft)	9100	3848	776	7900	5000
n	0.045	0.045	0.045	0.045	0.045
Hyd Radius	1.1	0.8	0.44	1.7	0.71
Slope	0.012	0.019	0.058	0.011	0.012
V (ft/s)	3.8	3.9	4.6	4.9	2.9
Tt (min)	40.1	16.3	2.8	27.1	29.2
Channel Flow Segment 2					
Channel Length (ft)	1400	4952			
n	0.03	0.045			
Hyd Radius	1.2	2			
Slope	0.002	0.001			
V (ft/s)	2.4	1.3			
Tt (min)	9.9	64.0			
Total Channel Flow Travel Time (min)	50.0	80.2	2.8	27.1	29.2
Component Tc (min)	**77.2**	**100.7**	**18.2**	**46.8**	**45.9**
Selected Method	**Minimum of Watershed Lag and Velocity Results**				

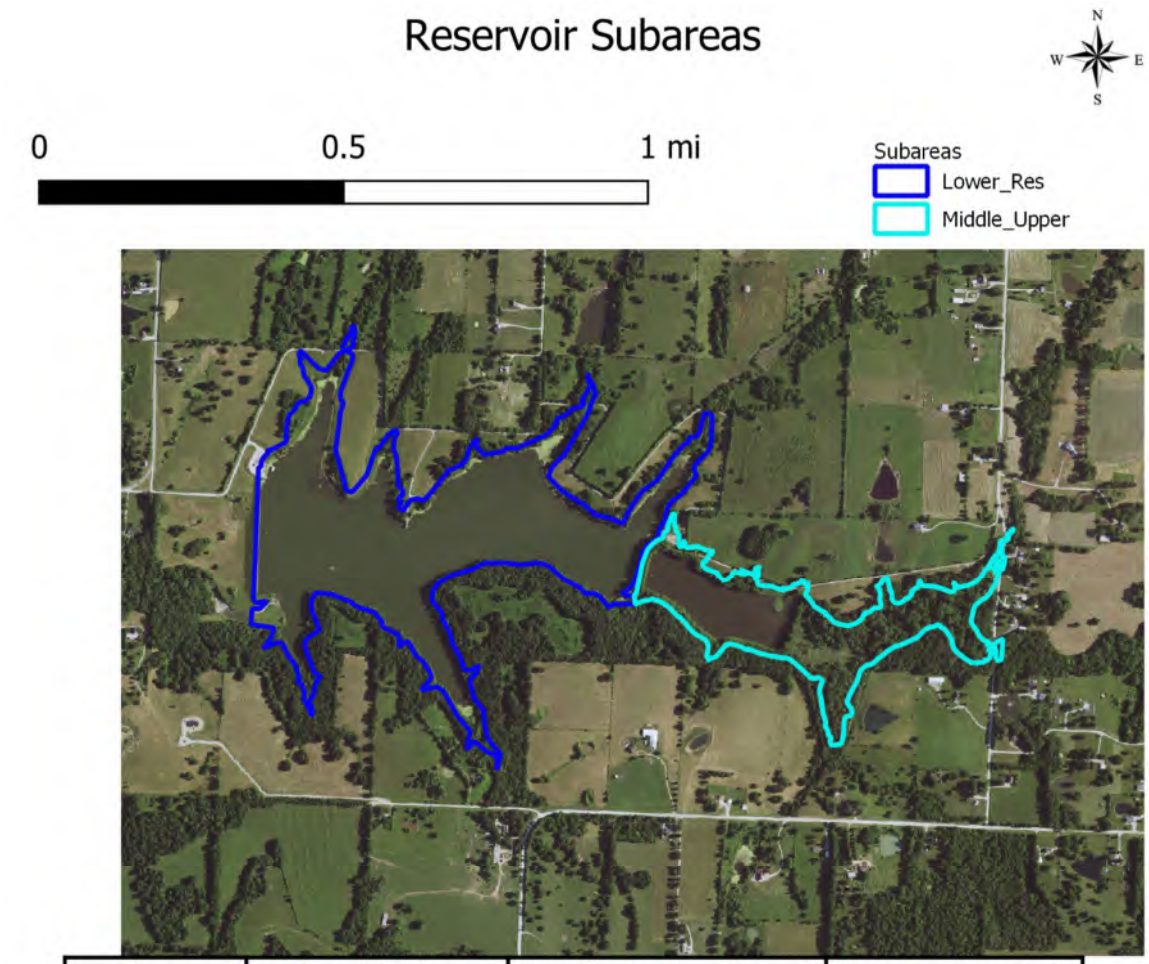
Table 2.1-3, Time of Concentration Calculation Details					
Basin	East Watershed	Lower Lake	MidLake	Northeast Watershed	Upper Lake
Selected Tc (min) for Hydrologic Calculations	**77.2**	**76.9**	**14.8**	**46.8**	**45.9**
Selected Lag Time (min) for Hydrologic Calculations	46.34	46.16	8.87	28.07	27.54

The GeoHECHMS "Compute Critical Storm" routine automates comparison of peak flows for different duration storms. The results of that tool for the existing conditions model are presented in Tables 2.1-4 and 2.1-4. These results indicate that the 6 hour storm is clearly the critical storm for the larger PMP based design floods. Because the difference between the 6 hour storm results and the longer duration storm events are relatively small and because we are not using this report for final design, we will only report 6 hour results for the remainder of this report.

Table 2.1-4 Lower Reservoir Critical Storm Analysis, Existing Conditions					
Peak Flows (cfs)					
Storm	10 Year	100 Year	1000 Year	50% of PMP	75% of PMP
Huff 2ndQ 6 Hr.	777	2,095	3,945	6,781	11,422
Huff 3rdQ 12 Hr.	880	2,252	3,986	6,106	9,520
Huff 4th Q 24 Hr.	880	1,802	3,016	4,056	6,288
Huff 4th Q 2 Day	614	1,156	1,837	2,398	3,697
Huff 4thQ 3 Day	452	848	1,333	1,684	2,592
Critical Storm	24 hour	12 hour	12 hour	6 hour	6 hour
Time to Peak	23.83 hrs	9.55 hrs	9.35 hrs	3.97 hrs	3.77 hrs

Table 2.1-5 Middle Upper Reservoir Critical Storm Analysis, Existing Conditions					
Peak Flows (cfs)					
Storm	10 Year	100 Year	1000 Year	50% of PMP	75% of PMP
Huff 2ndQ 6 Hr.	978	2,068	3,356	5,141	8,154
Huff 3rdQ 12 Hr.	918	1,794	2,906	4,297	6,506
Huff 4th Q 24 Hr.	709	1,342	2,154	2,849	4,338
Huff 4th Q 2 Day	458	834	1,294	1,663	2,532
Huff 4thQ 3 Day	352	616	957	1,206	1,862
Critical Storm	6 hour	6 hour	6 hour	6 hour	6 hour
Time to Peak	3.60 hrs	3.43 hrs	3.40 hrs	3.40 hrs	3.40 hrs

The GeoHECHMS model included the middle-upper and the lower reservoirs as storage elements (Figure 2.1-3). Please note that the 2,301 acre drainage area for the lower reservoir includes the 1,527 acre upper reservoir drainage area. Initially both storage elements were routed (Modified Puhls method) using outflow structures as described by survey and LiDAR data (Table 2.2-1).



Area	Surface Area (acres)	Contributing Area (acres)	Drainage Area Ratio
Lower_Res	109	2301	21.1
Middle_Upper	42.6	1527	35.8

Figure 2.1-3, Reservoir Subareas for GeoHECHMS model

2.2 Hydraulics

Table 2.2-1 provides basic data for the critical hydraulic controls affecting the reservoir.

Table 2.2-1 Hydraulic Control Data		
Hydraulic Control	Elevation	Length
Bottom of Spillway	771’	50’
Spillway Crest	810.7’	125’
Auxiliary Spillway Crest	816.6’	55’
Weir wall between east and west channel	810.6’	90’
Lower Reservoir Dam Low Point	819.4’	1,420’
Mid-Upper Reservoir main Spillway Elevation	809’ (812’) (two stage)	40’ (20’)

Table 2.2-1 Hydraulic Control Data		
Hydraulic Control	Elevation	Length
Mid-Upper Reservoir Auxiliary Spillway	822.5’	165’
Mid Upper Reservoir Dam Low Point	827.0’	583’

2.2.1 GeoHECRAS 2D Hydraulic Model

A 2 dimensional GeoHECRAS hydraulic model was used to develop rating curves for various spillway configurations, including the existing conditions (Figure 2.2.1-1). The model utilized 2006-2007 LiDAR data for Lafayette County downloaded from MSDIS for the bulk of the reservoir and February 2023 survey data for the dam and spillway.

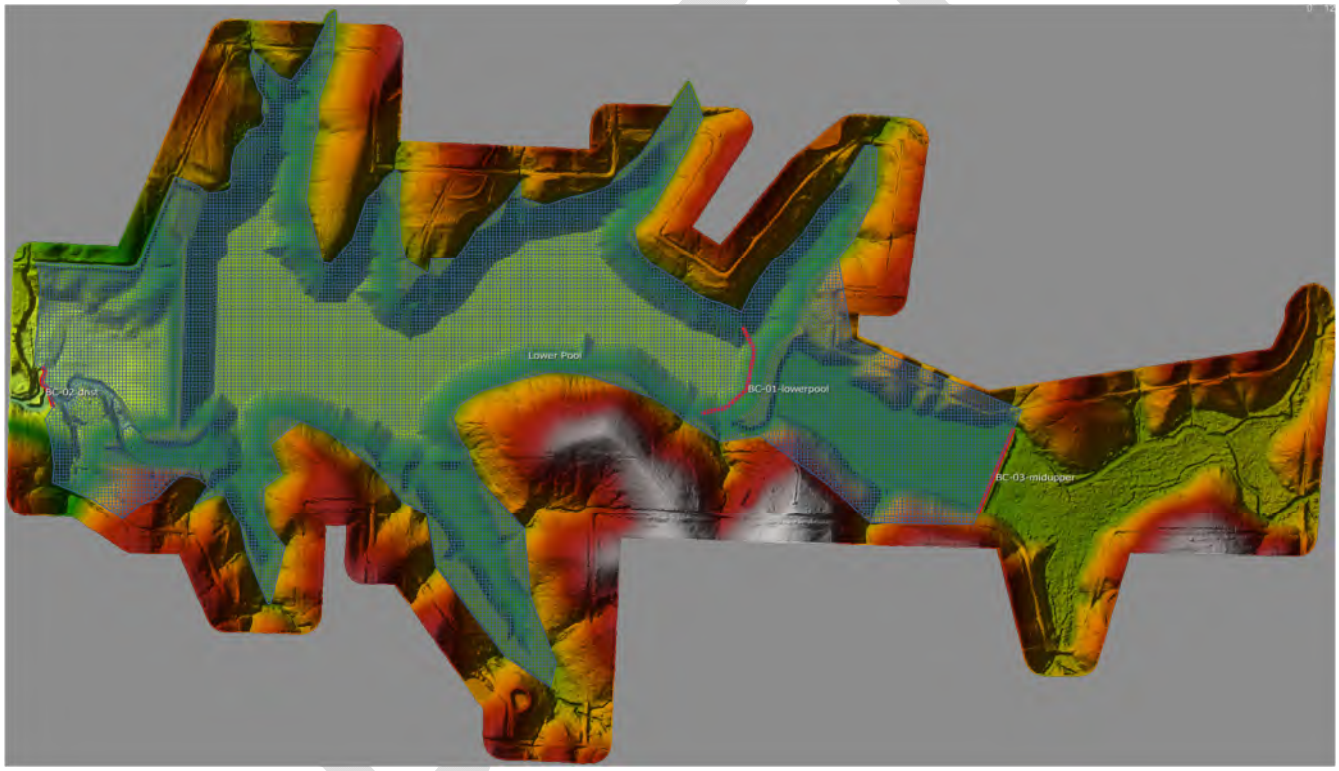


Figure 2.2.1-1, 2D Model Overview

The GeoHECRAS model was used to develop rating curves for the existing and proposed conditions. Its use was required to adequately model the complex hydraulics of flows from the body of the reservoir, through approximately 600’ of chute to the spillway. The HECRAS engine has multiple computational equation options depending on the complexity of the situation. The default diffusion wave option is a simplified form of the governing equations that provides a significantly quicker analysis of sufficient accuracy in many situations. While the more robust full Saint Venant equations take significantly longer to run, they do produce more accurate results. In this particular case, the full equations produced results that were significantly different (higher pool elevation) than the default diffusion wave method. The estimated peak elevation for the Class I storm was 819.29 by the default diffusion method and 821.0 by the full Saint Venant equations. Figure 2.2.1-2 shows the peak

elevations for the reservoir lower pool (TS-01) and the west flume (TS-03) using both sets of calculations (Saint Venant results denoted as “alt calcs”). Based on these large differences and the fact that the full equations are more accurate, the full Saint Venant equations were used for the GeoHECRAS modeling.

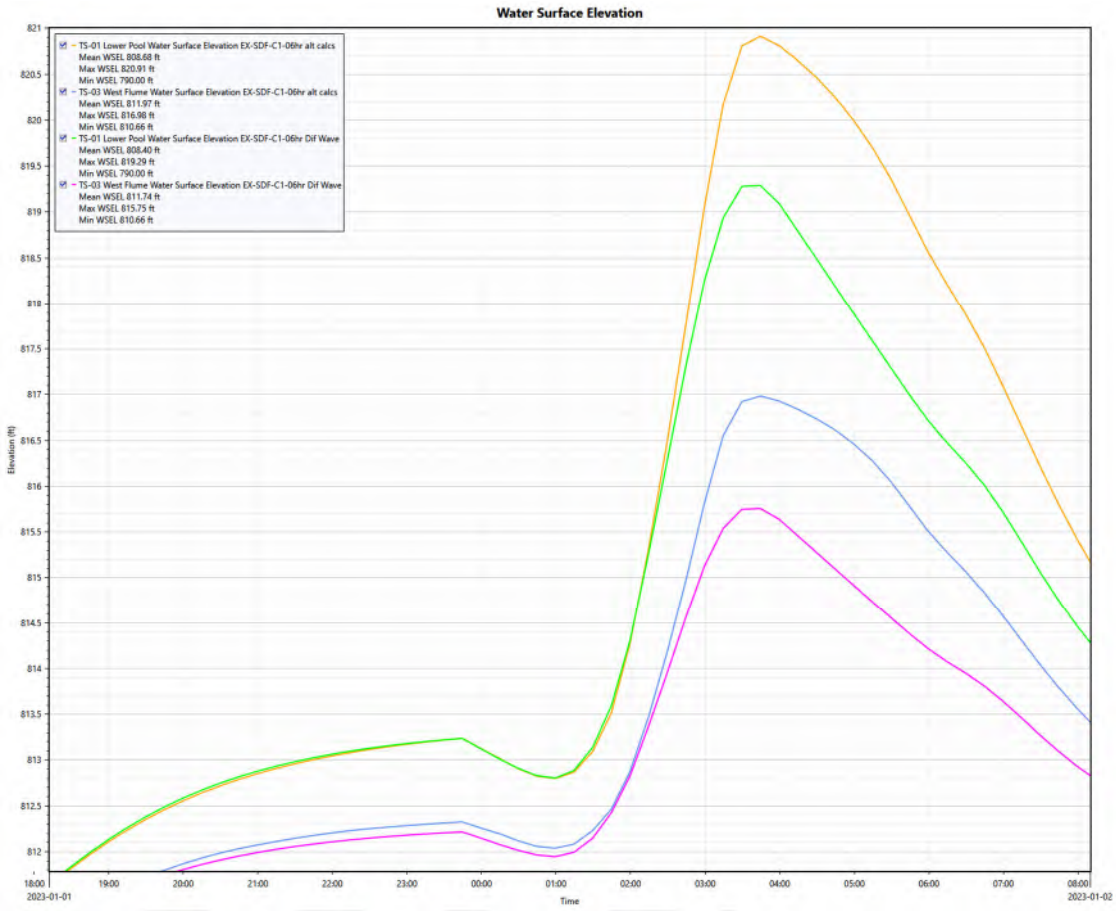


Figure 2.2.1-2, Comparison of Results from Default Diffusion and Full Saint Venant equations.

Because the length of time required to run the model using the Saint Venant equations was in excess of four hours, the 2D model was only used to develop rating curves for the complex flow approaching and through the spillway. These rating curves were then used in GeoHECHMS for final calculations.

The initial GeoHECHMS results were used to develop the inflow boundary conditions for the GeoHECRAS model. The GeoHECRAS model was intended to produce useful information for both the main lower reservoir pool and the mid-upper pool so inflow boundary conditions were used for each pool. The boundary condition for the mid-upper pool was simply the total combined inflow hydrograph calculated in GeoHECHMS for the mid-upper pool. To ensure that the resulting rating curves would include the highest flows, the Hazard Class I, 75% of PMP 6 hour storm GeoHECHMS results were used to set the boundary conditions. The GeoHECHMS calculated outflow from the mid-upper pool was subtracted from the GeoHECHMS total combined inflow into the lower pool and the result was used as the inflow hydrograph boundary condition for the lower pool.

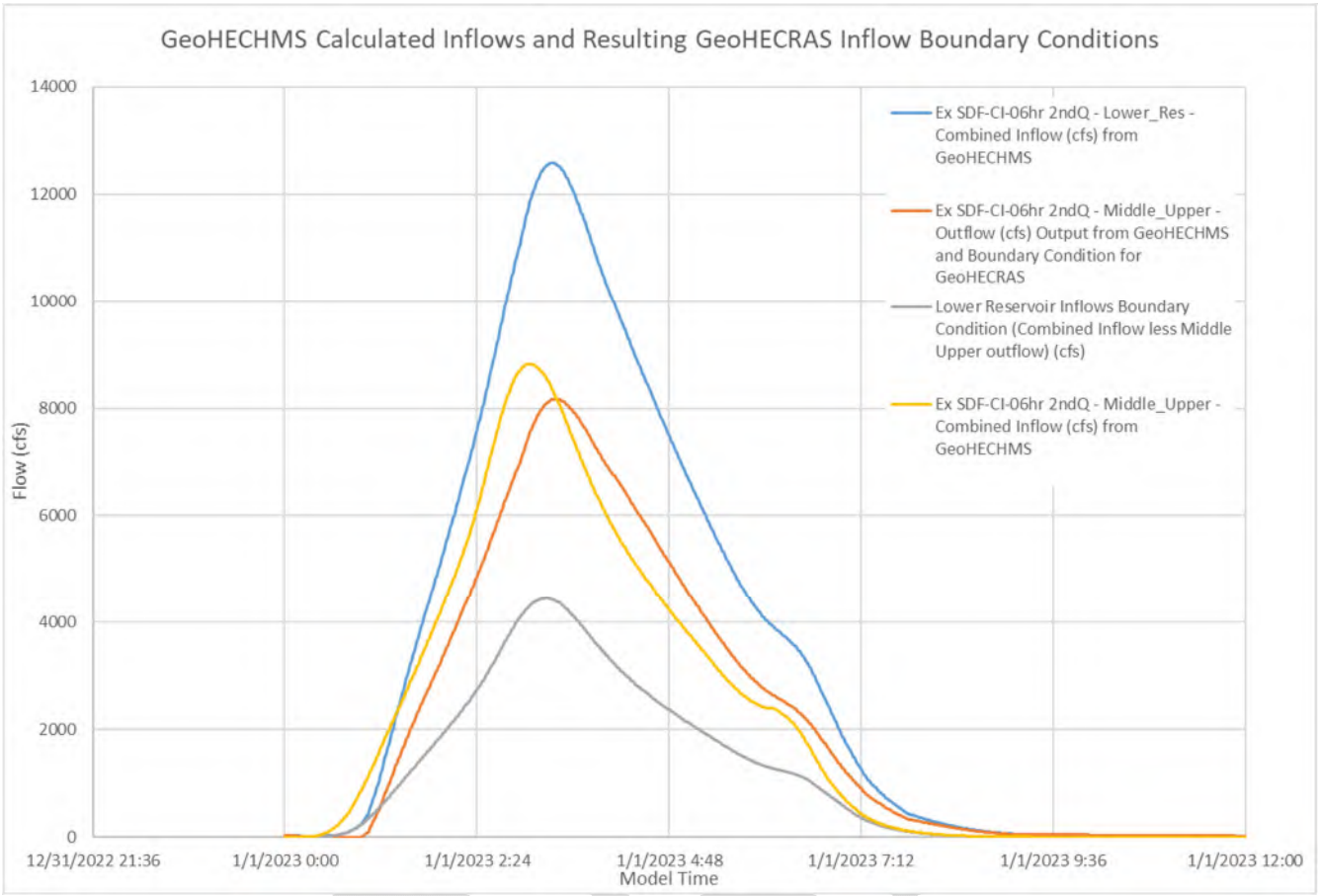


Figure 2.2.1-3, Inflow Boundary Condition

The downstream boundary condition was set to normal depth with a slope of 0.27% based on downstream LiDAR data.

In general roughness values for the GeoHECRAS model were derived from the 2019 NLCD land use data. Manning's roughness coefficients for the channels, reservoirs, etc. were manually defined using engineering judgement. Due to the critical nature of the east (figure 2.2.1-4) and west (figure 2.2.1-5) channels in defining reservoir performance, the methods described in USGS "Water Supply Paper 2339 Manning's n Value Determination for Channels and Floodplains" were applied to develop conservative estimates of n value of 0.03 in those locations.

Manning's n values		
NLCD #	Description	n value
0	NoData	
1	Open Water	0.035
2	Developed, Open Space	0.04
3	Developed, Low Density	0.08
4	Developed, Medium Density	0.1
5	Developed, High Density	0.12
6	Undeveloped, Deciduous Forest	0.1
7	Undeveloped, Mixed Forest	0.12
8	Undeveloped, Grassland	0.035

Manning's n values		
NLCD #	Description	n value
9	Agricultural, Pasture-Hay	0.04
10	Wetlands, Forested	0.12
11	Wetlands, Non-Forested	0.07
	Auxiliary Spillway	0.025
	Auxiliary Spillway Channel	0.045
	Downstream Channel	0.035
	East Channel	0.03
	Reservoir	0.1
	Spillway	0.013
	West Channel	0.03

Figure 2.2.1-4, Photo of East Channel

Figure 2.2.1-5, Photo of West Channel

As shown in figure 2.2.1-5, the GeoHECRAS model predicts significant head loss between the main pool of the reservoir and the west channel, just upstream of the spillway. For existing conditions using the Class I dam, freeboard hydrograph, it estimates almost 4' of head loss upstream of the spillway. Because of this head loss, the auxiliary spillway as currently constructed is not predicted to carry any flow for any events that don't overtop the dam. It would need to be dropped by at least 2' to carry any significant relief flow.

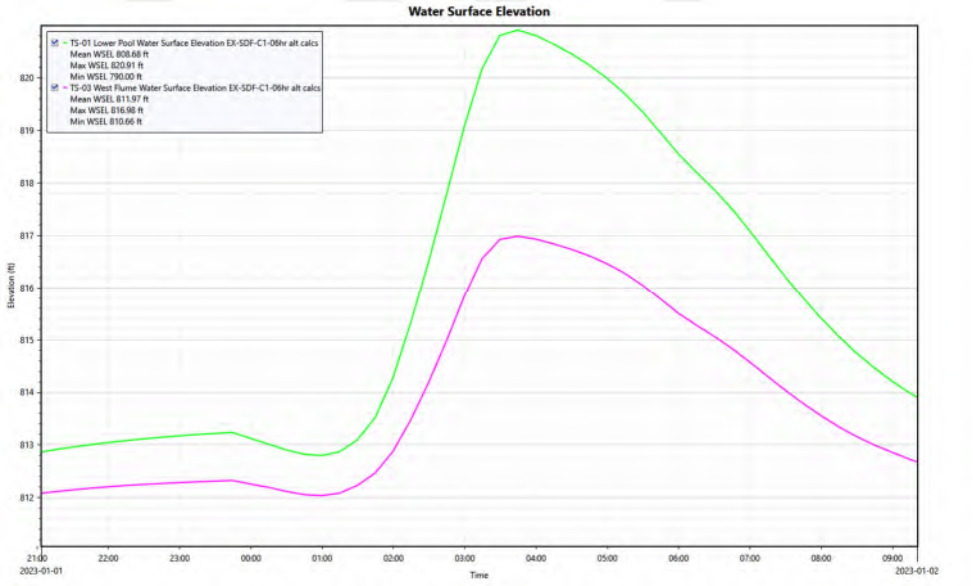


Figure 2.2.1-5, Variation in Water Surface between Reservoir and West Flume

The rating curves for each scenario were developed using water surface elevation in feet (WSEL) as calculated at the time series point "TS-01 Lower Pool" and flow as measured across the profile line "PL-03 East Flume" (Figure 2.2.1-6). The points for each time step were plotted in terms of flow in the East Flume (PL-03) as the x axis and water surface elevation of the lower pool (TS-01) as the y axis and a simplified curve was fit using multiple linear line segments to approximate the rating curve as shown in figure 2.2.1-7. These simplified fitted rating curves were then input back into GeoHECHMS for detention routing.

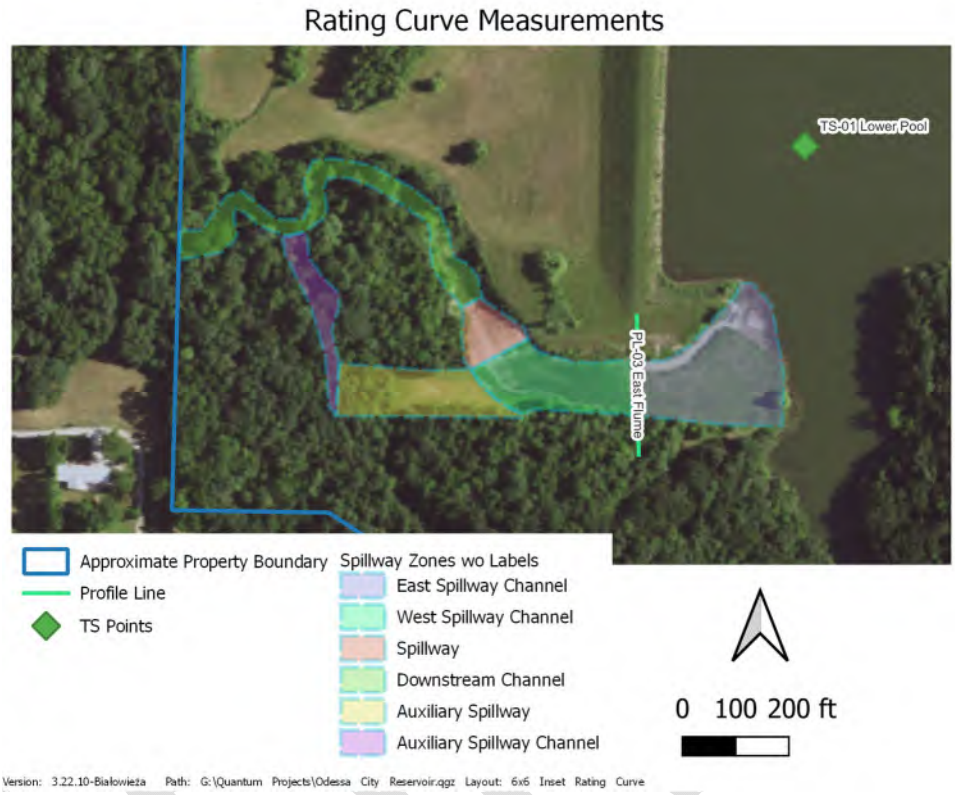


Figure 2.2.1-6, Measurement Locations for Rating Curve Development.

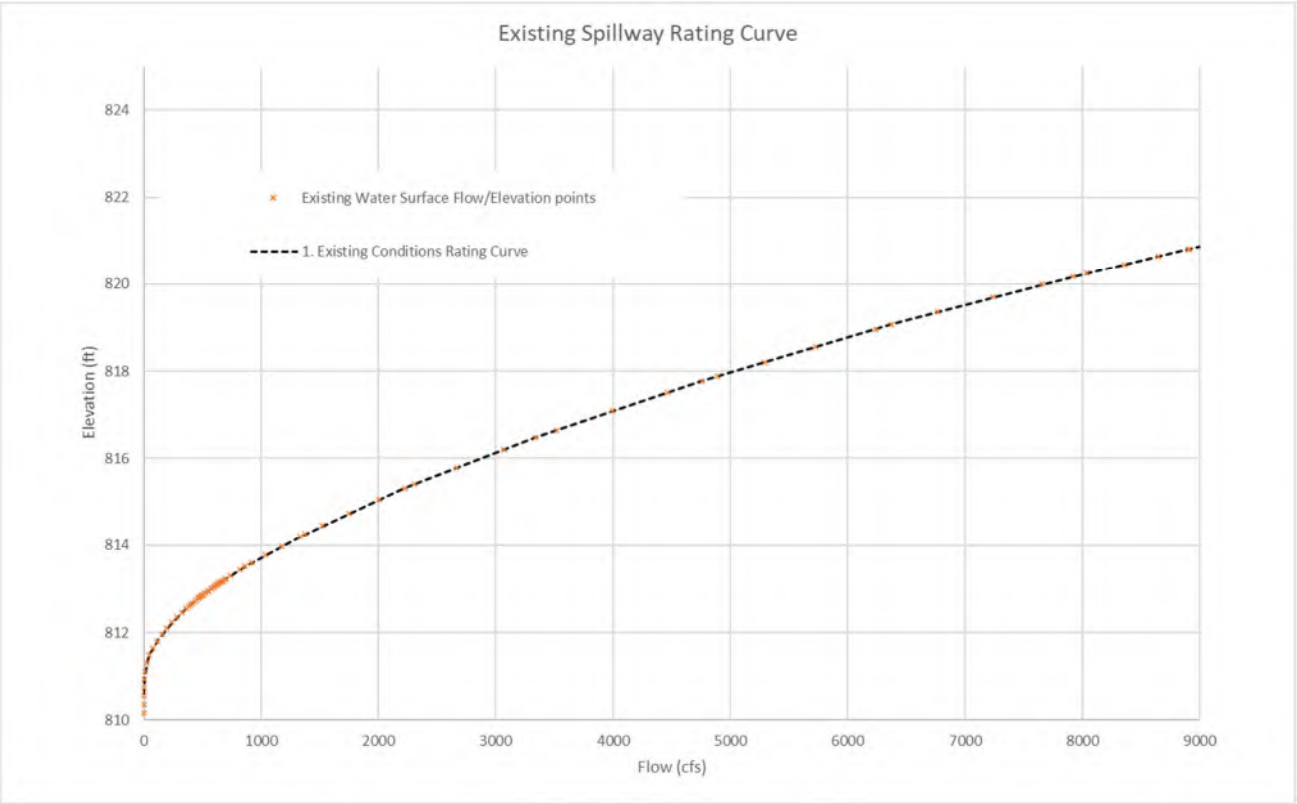


Figure 2.2.1-7, Development of Rating Curve for Existing Conditions

It is important to note that at the peak of the modeled hazard class I event, the model was showing flow over the dam in multiple locations (Figure 2.2.1-8). This is an indication that the dam does not currently meet the hazard class I requirements. However, this method of developing rating curves intentionally only included flow down the spillway because we are only interested in solutions that keep flow in controlled spillways.

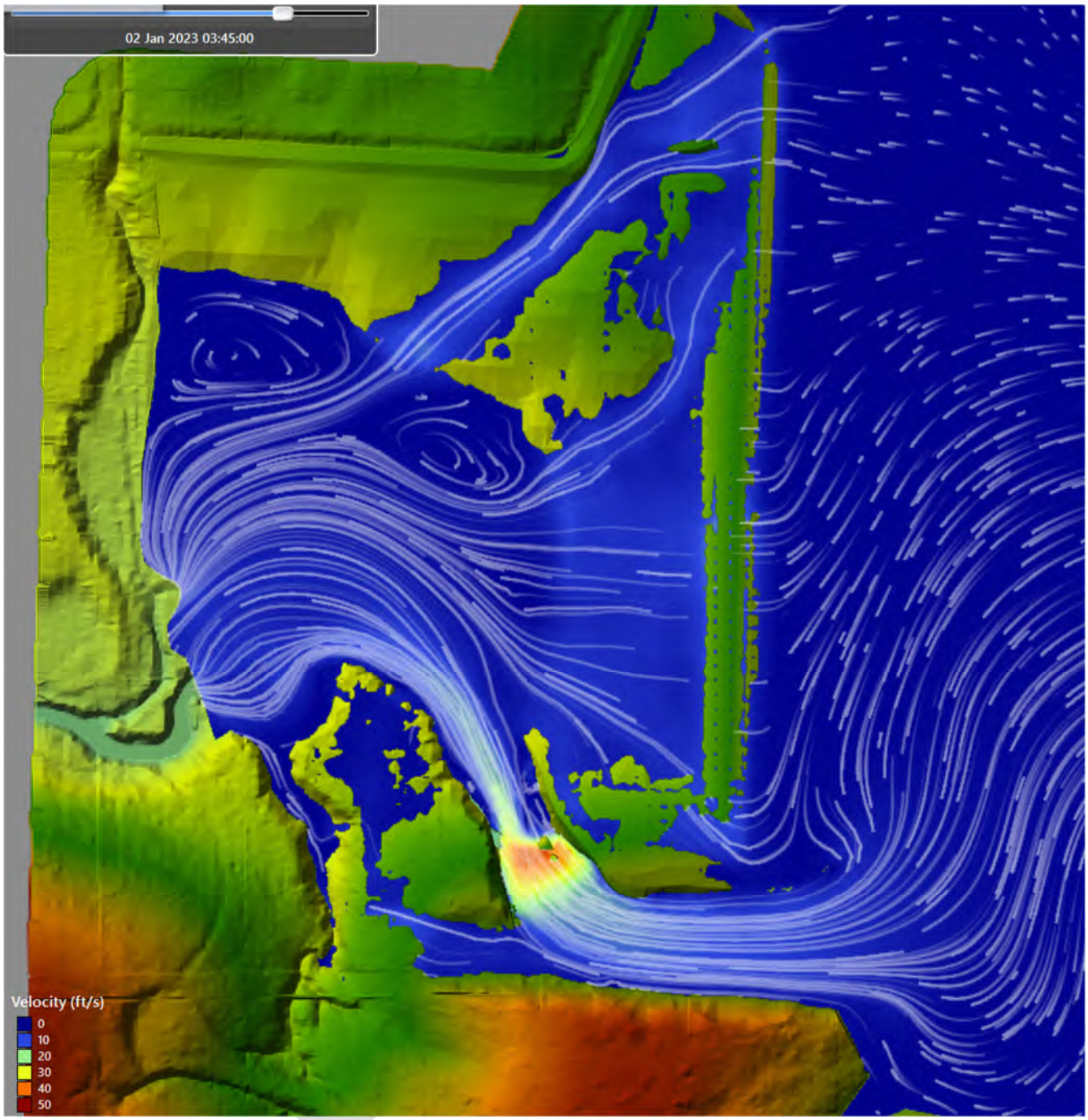


Figure 2.2.1-8, 2D Model Flowpaths for Existing Conditions in the Hazard Class I 0.75PMP event

2.2.2 GeoHECHMS Routing Model

The existing and proposed spillway rating curves developed using GeoHECRAS were substituted into the GeoHECHMS model in place of the ouflow structures for the lower reservoir, along with the

hydrologic inputs described above. The middle upper pool continued to use existing outlet structures for the routing. Because the GeoHECHMS model was not set up to include elevations significantly above the top of dam elevation, it cannot run the hazard class I calculations for existing conditions. Figure 2.2.2-1 compares the results for the GeoHECRAS and GeoHECHMS models representing existing conditions, but with the dam raised so that the class I calculations would run. Because these results reflect very different calculations, they are not expected to match exactly. The GeoHECRAS model starts with a higher starting pool level, but achieves a slightly lower peak. The GeoHECHMS model is set to start at normal pool level and achieves a slightly higher peak. So, the GeoHECHMS model is the more conservative of the two in terms of pool levels.

In situations where a proposed alternative (Section 3.0) was evaluated that utilized other outlets not flowing through the spillway, for example a new auxiliary weir at the north end of the dam, a spreadsheet was used to modify the appropriate rating curve based on simple weir equation calculations. These modified rating curves were then used in GeoHECHMS to model the proposed solutions.

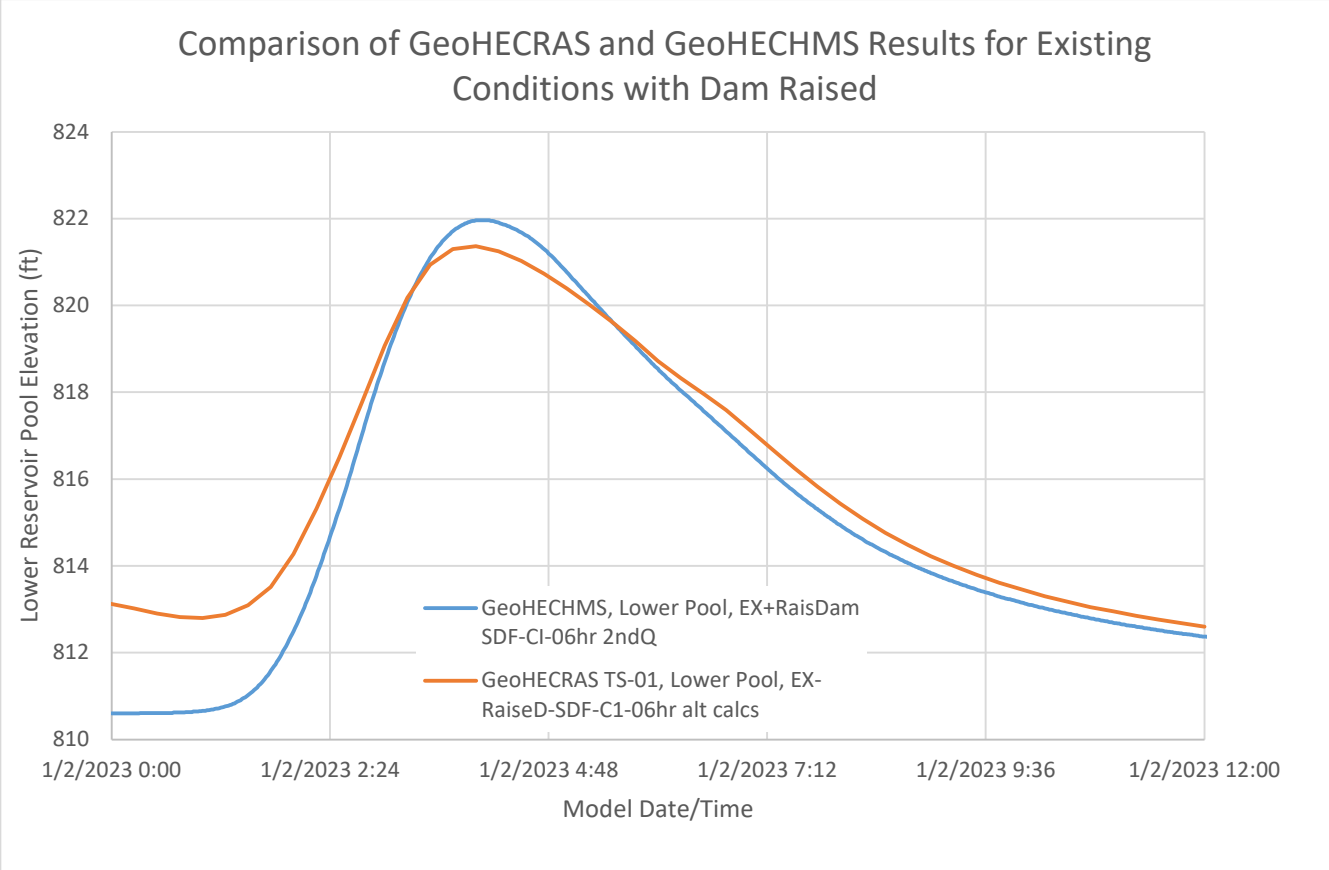


Figure 2.2.2-1, Comparison of Results between GeoHECHMS and GeoHECRAS Models

3.0 Alternative Solutions

Rating curves were developed in GeoHECRAS for 6 different scenarios that needed to be modeled in the 2D model.

1. Existing Conditions
2. Cleanout of the East Channel to remove approximately 2' of accumulated sediment.
3. Reconfiguration of the East Channel to allow a more open approach to the spillway
4. Dropping the auxiliary spillway elevation by approximately 3' to 813.5'
5. Widening the Spillway by 30% (45')
6. Raising the dam top elevation

Additionally, rating curves 7 and 8 were modified in Microsoft Excel for combinations of improvements described in items 1-6 above with additional auxiliary flow structures that wouldn't utilize the main spillway.

7. Existing conditions with an additional auxiliary spillway at the north end of the dam
8. Existing conditions with a riser structure

3.1 No Change

Except for the need for structural repairs to the existing spillway, the reservoir is performing adequately and meeting the requirements as a current hazard class II dam. Figure 3.1-1 shows the GeoHECHMS results for the normal pool, existing conditions in the class II spillway design storm. Ideally, there would be a larger vertical difference between the top of dam elevation and the estimated peak water surface elevation, but there is no specific requirement for such a difference. Should enough development occur downstream to cause the class to be elevated to hazard class I, the existing configuration would not be adequate. GeoHECHMS results are not available for the class I design storm because the pool elevation exceeds the level for which the model will run.

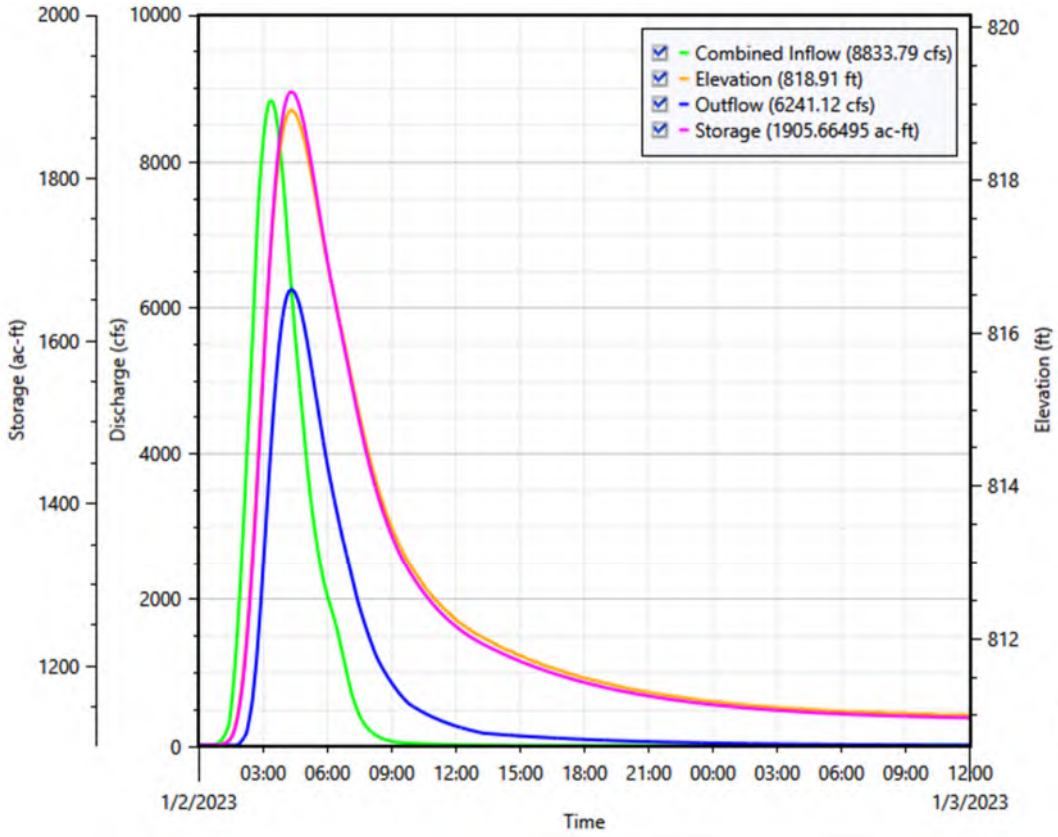


Figure 3.1-1, GeoHECHMS Results for Lower Reservoir, Class II Spillway Design Storm, Existing Conditions

3.2 Cleanout Approach Channel

It appears that over the years the east flume has experienced deposition of some sediment. Our understanding of the original plans indicate that there has been some deposition, but the amount depends on assumptions about the datum differences between current survey and original construction. However, the original plans show the east flume floor being level with the weir between the east and west flumes. Based on this, it appears that 2" to 10" of sediment has accumulated over time in the east flume. Because initial modeling results indicate large hydraulic losses through the east and west flume we opted to model the channel cleanout as taking material out to about 1.5' below the original planned level for the East Flume to smooth the transition (figure 3.2-1).

The results for this analysis show that cleaning the approaches would provide some benefit, but not sufficient to allow the reservoir to handle the class I design storm. Figure 3.2-2 shows the GeoHECRAS generated rating curve for the improvements. The improvements weren't sufficient to prevent overtopping of the dam in the class I storm and the GeoHECHMS model limits were exceeded, so no GeoHECHMS output is available.

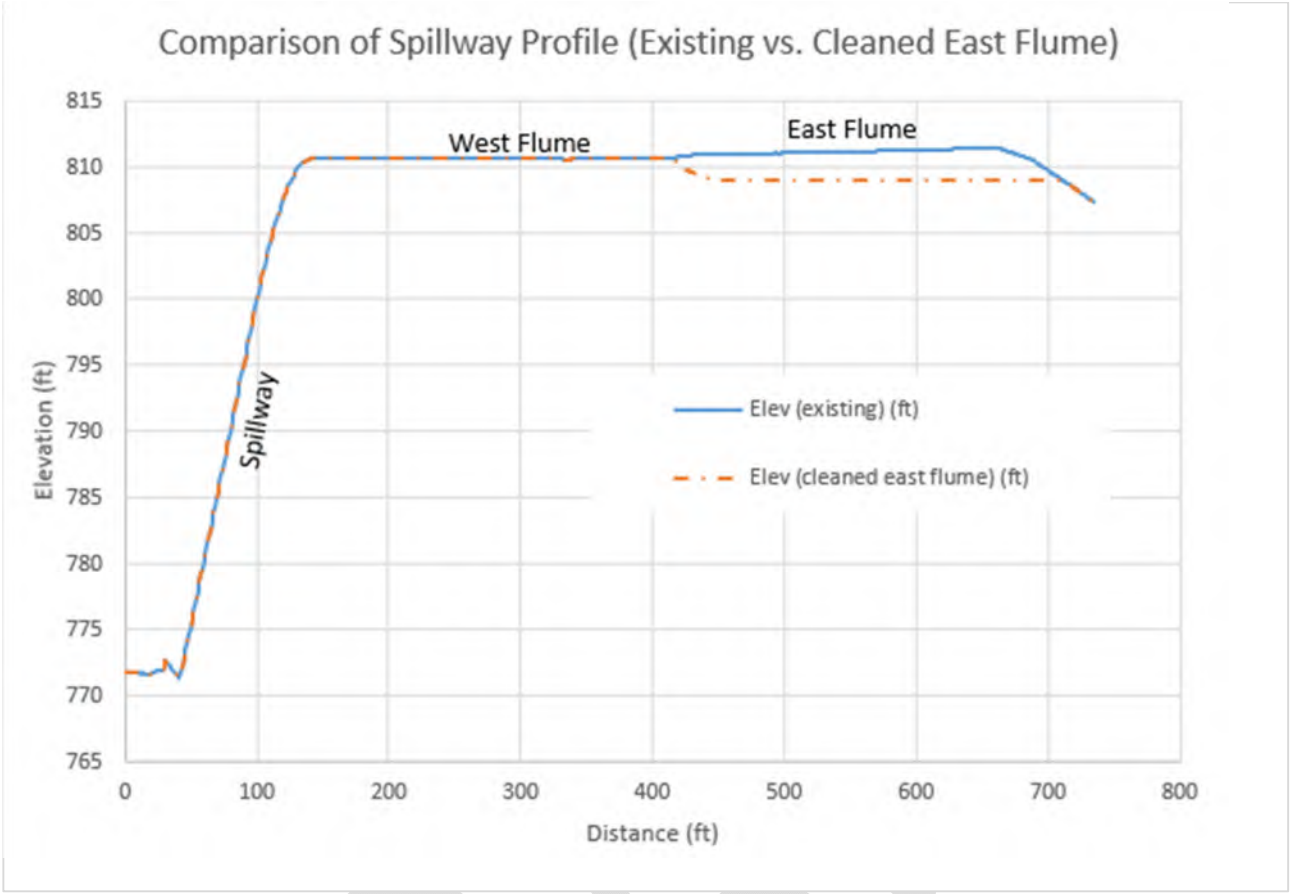


Figure 3.2-1, Profile of Spillway and Chutes for Existing and Cleaned East Flume.

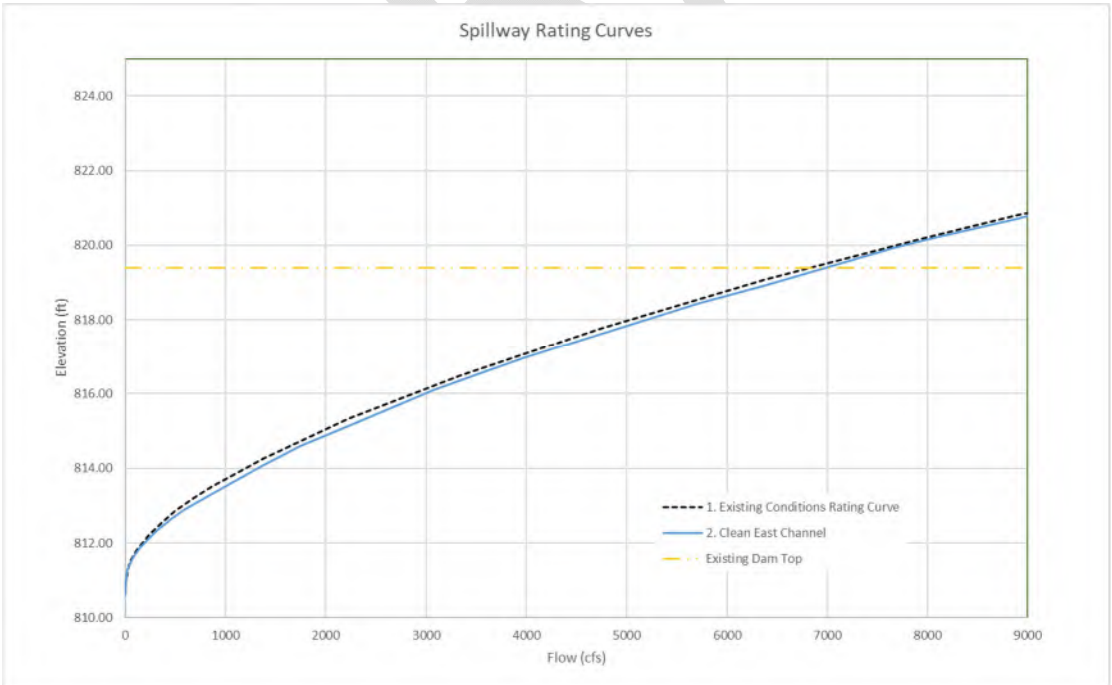


Figure 3.2-2 GeoHECRAS Rating Curve – Cleaned East Channel Compared to Existing Conditions

3.3 Reconfigure East Channel

The original reservoir plans include what we are calling a "flow offset berm" which was presumably included to direct higher velocity flows away from the end of dam. However, it was suspected that this berm also increased hydraulic losses in the flow from the reservoir into the chute. So, a reconfiguration of the east flume was modeled to estimate the benefits of removing the flow offset berm (figure 3.3-1). The obvious disadvantage besides cost is that it would allow higher velocity flows closer to the dam. However, the velocities are manageable and the end of the dam can be adequately protected with riprap.

The results for this analysis show that the reconfigured approach would provide significant benefit, but not sufficient to allow the reservoir to handle the class I design storm. Figure 3.3-2 shows the GeoHECRAS generated rating curve for the improvements. The improvements weren't sufficient to prevent overtopping of the dam in the class I storm and the GeoHECHMS model limits were exceeded, so no GeoHECHMS output is available.

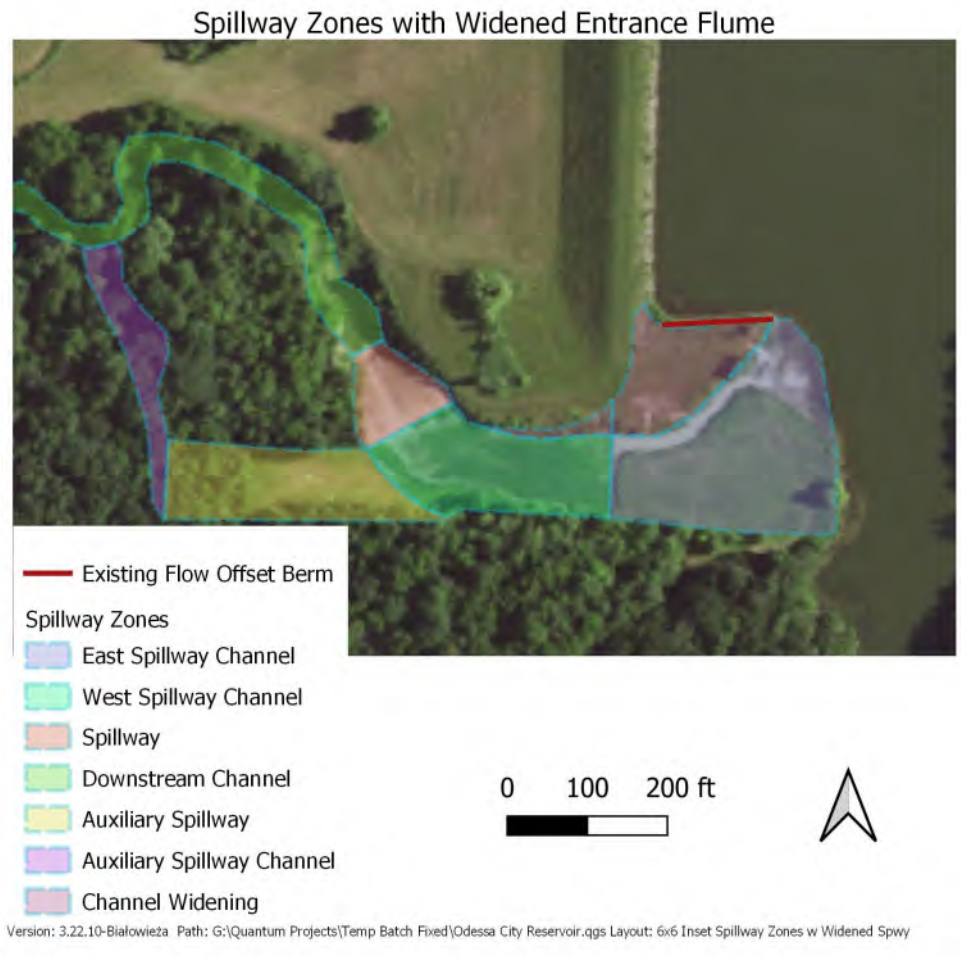


Figure 3.3-1 Proposed East Channel Reconfiguration

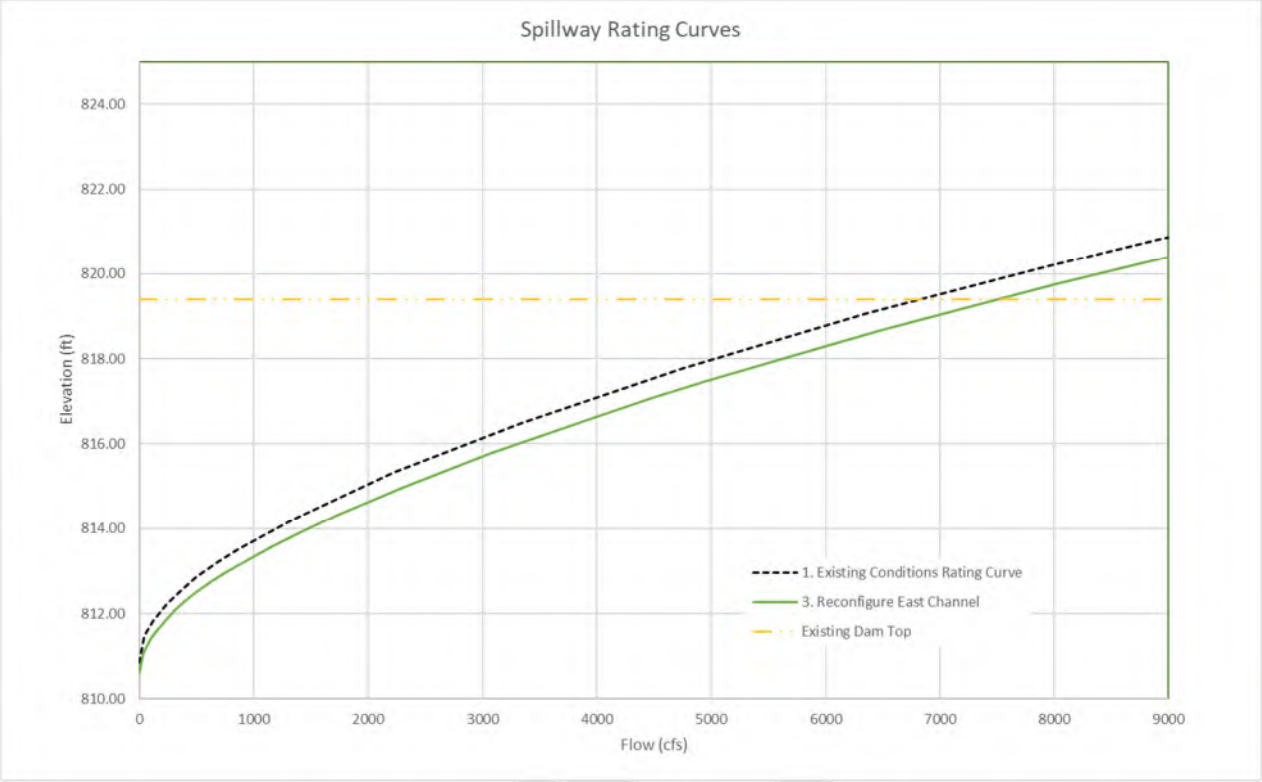


Figure 3.3-2 GeoHECRAS Rating Curve – Reconfigured East Channel Compared to Existing Conditions

3.4 Lower the Existing Auxiliary Spillway

Due to the large hydraulic losses in the east and west chutes, the current auxiliary spillway does not carry significant water before the dam overtopping elevation is reached in the main body of the reservoir. One approach to correcting this would be to lower the auxiliary spillway approximately 2.5' to 3.0' so that it starts carrying relief flow at approximately the 100 year flood level. This would require almost 100% excavation into bedrock.

If this solution were to be implemented, it would be important to monitor conditions downstream of the auxiliary spillway after events large enough to utilize it. The valley between the auxiliary spillway and the main stream channel could suffer from erosion.

The results for this analysis show that the modifications to the auxiliary would provide negligent benefit, and wouldn't improve the reservoir's ability to handle the class I design storm. Figure 3.4-1 shows the GeoHECRAS generated rating curve for the improvements. Although the auxiliary spillway was modeled as being lowered from approximately 816.5' to 813.5' the improvements don't show up in the rating curve until the reservoir main lower pool is at elevation 817' because of the hydraulic losses that occur between the main pool and the auxiliary spillway entrance. The improvements weren't sufficient to prevent overtopping of the dam in the class I storm and the GeoHECHMS model limits were exceeded, so no GeoHECHMS output is available.

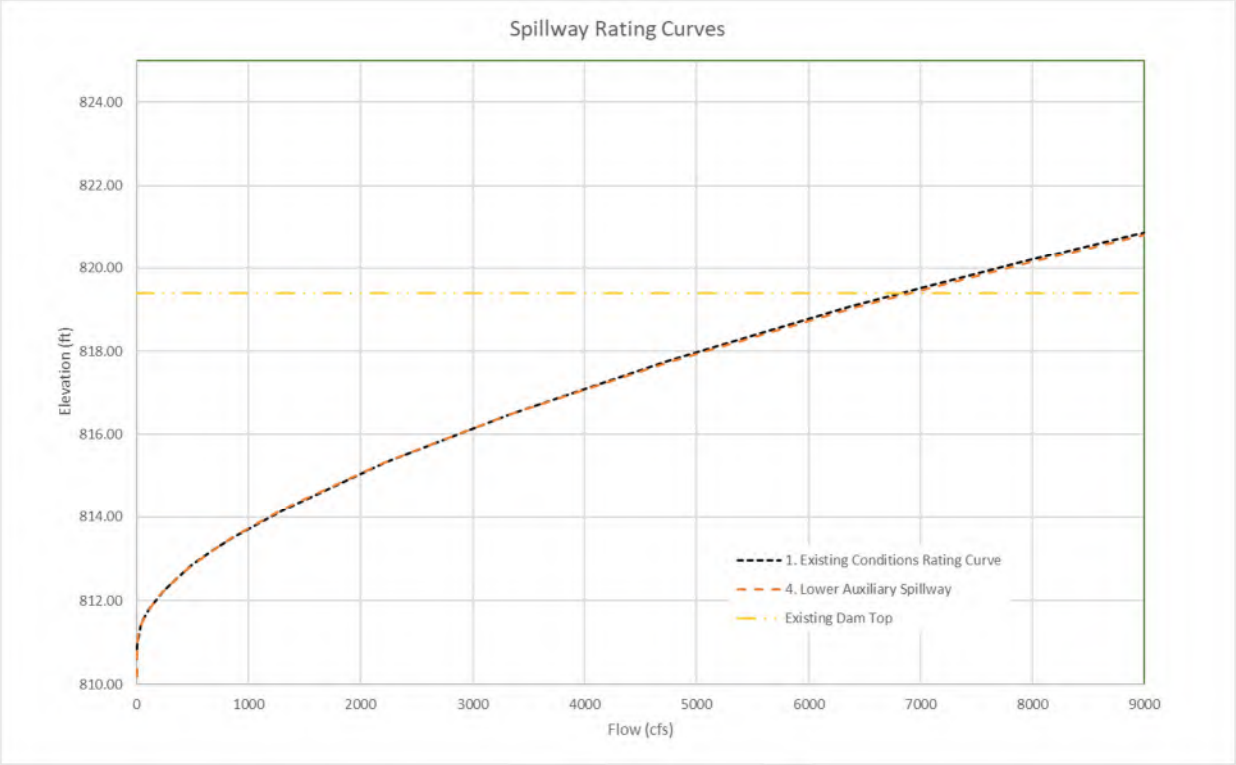


Figure 3.4-1 GeoHECRAS Rating Curve – Lowered Existing Auxiliary Spillway Compared to Existing Conditions

3.5 Widen the Existing Spillway

Preliminary review, in the absence of essential geotechnical information indicates that the spillway could possibly be widened by approximately 30% (or 45' at the top) without having to get into the visible bedrock on the west side of the spillway. The widening would include a significant increase in the amount of structural concrete in the spillway as it is being rebuilt. It would also require that the east flume be reconfigured as described in section 3.3. Figure 3.5-1 shows the proposed modifications. This assumes that there are acceptable materials along the east side of the spillway. To gauge what might be possible, a model was developed to evaluate the benefit of this widening. The widening of the spillway would require that the east flume widening also be completed.

If this option were to be selected, geotechnical investigations would be needed and then a revised hydraulic model would likely be needed to model the actual amount of widening that is feasible given subsurface conditions. The current modeling is just intended to give an estimate of what might be possible.

The results for this analysis show that the widened spillway would provide significant benefit, but not quite sufficient to allow the reservoir to handle the class I design storm without overtopping. Figure 3.5-2 shows the GeoHECRAS generated rating curve for the improvements. The improvements weren't sufficient to prevent overtopping of the dam in the class I storm but they did allow the GeoHECHMS model to run without exceeding model limts. Figure 3.5-3 shows the GeoHECHMS results.

It is unlikely that the spillway could be widened enough at acceptable cost to meet the class I requirements.

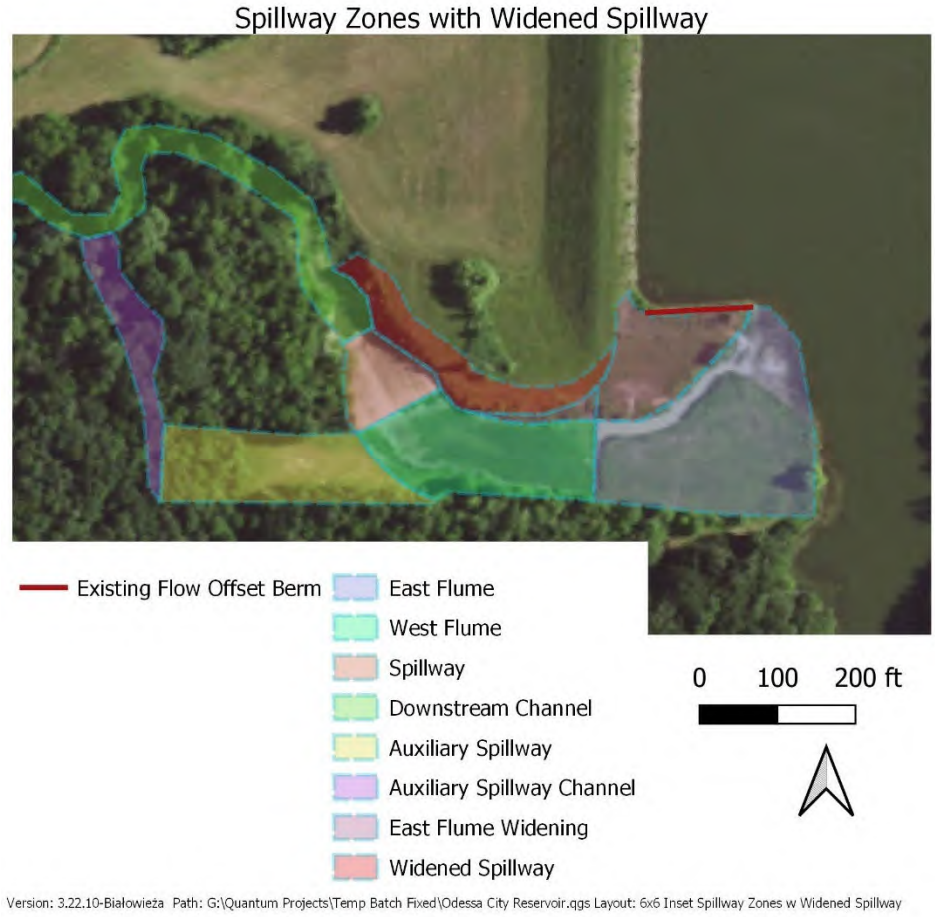


Figure 3.5-1 Proposed Widened Spillway

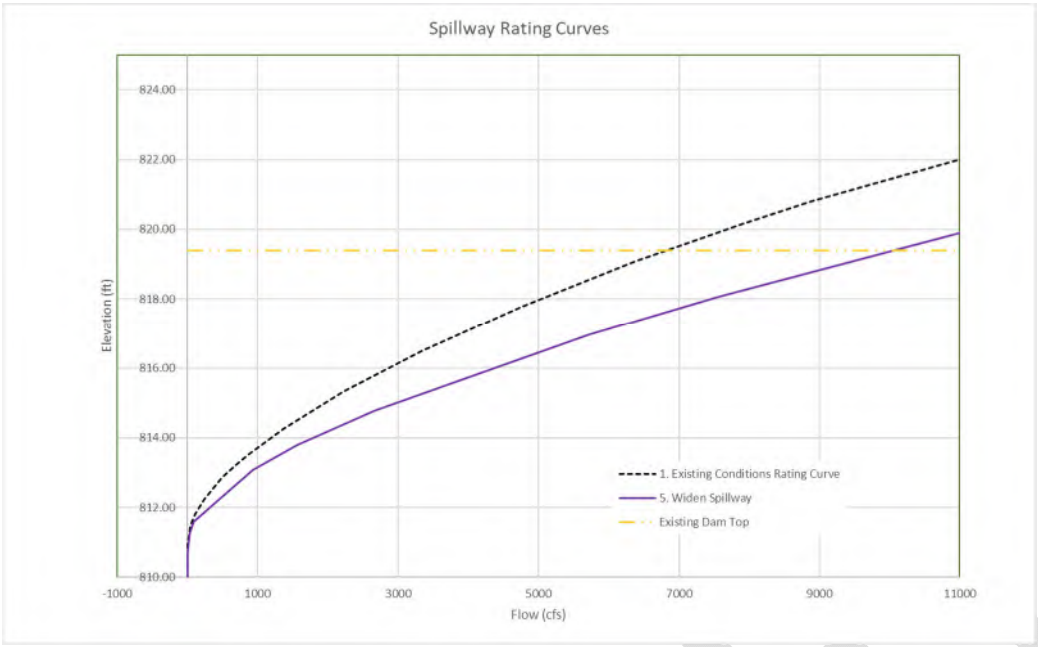


Figure 3.5-2 GeoHECRAS Rating Curve – Widened Spillway Compared to Existing Conditions

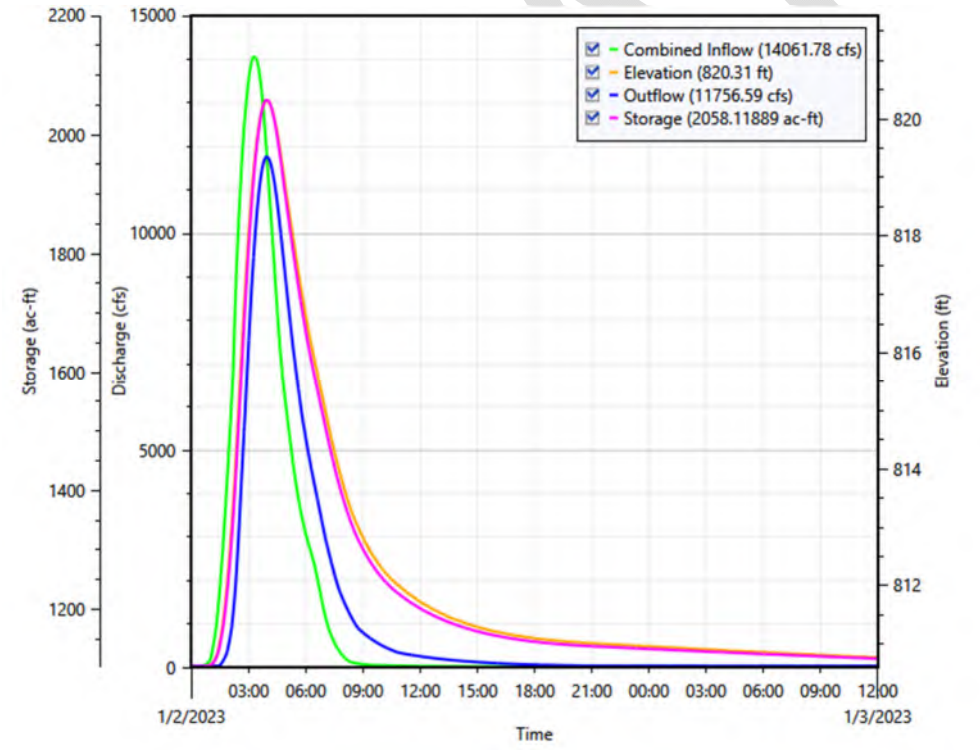


Figure 3.5-3, GeoHECHMS Results for Lower Reservoir, Class I Spillway Design Storm, Widened Spillway Conditions

3.6 Raise the Dam Top Elevation

Based on discussions with DNR Dam Safety staff, it is understood that the top of the dam could be raised by one foot over the current high point of the dam without having to do extensive geotechnical investigation. Doing so would allow us to raise the dam to an elevation of 821.75' (figure 3.6-1). Increasing it further would be possible, but would require additional investigation.

The modeling results show that raising the dam to 821.75' would not quite be sufficient to meet the class II standards. Figure 3.6-2 shows the GeoHECRAS developed rating curve for the dam raised to 825'. A value of 825' was used to make sure the dam wouldn't overtop in the model, so that we could determine what elevation the dam would need to be raised to prevent overtopping. Figure 3.6-3 shows the GeoHECHMS results which indicate that a new dam elevation of 821.75' would be exceeded. However, raising the dam to 822' would be just enough to meet the class I standards. To avoid the need to address settling in the future, it would be advisable to raise the dam to 823' to provide some buffer. A detailed geotechnical investigation would be required.

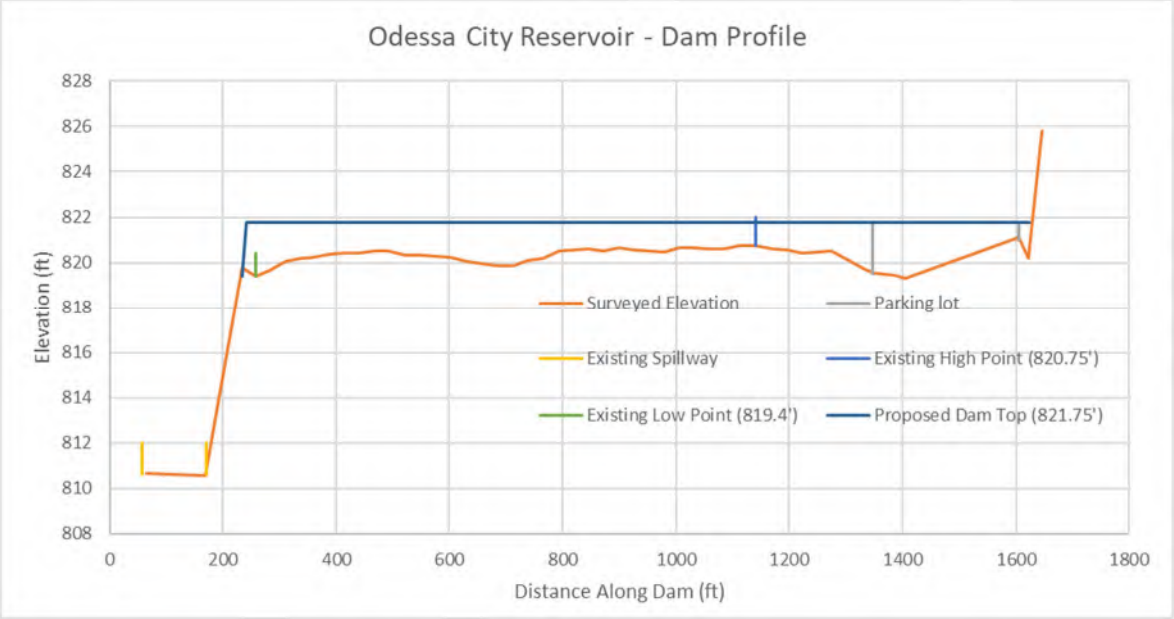


Figure 3.6-1 Dam Profile with Existing and Proposed Profiles

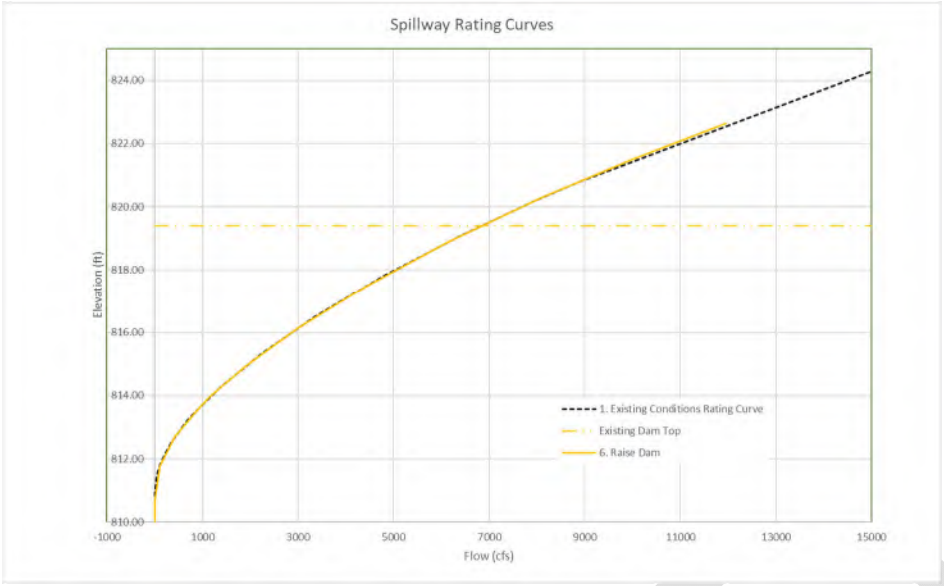


Figure 3.6-2 GeoHECRAS Rating Curve – Raised Dam Compared to Existing Conditions

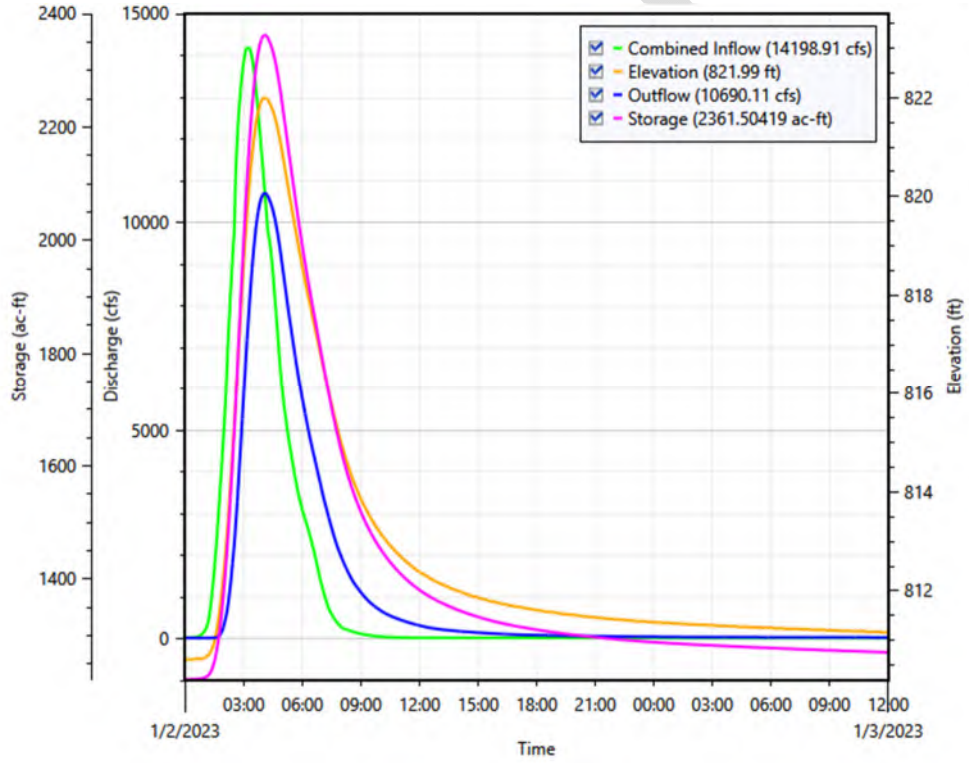


Figure 3.6-3, GeoHECHMS Results for Lower Reservoir, Class I Spillway Design Storm, Dam Elevation Increased to 821.75'.

3.7 Additional Auxiliary Spillway

Another option would be to add a new auxiliary spillway at the north end of the dam. The goal would

be to keep it far enough north that it can be cut into native materials instead of dam fill. This means that it would need to be where the existing public access facilities are to get north of the dam fill. Any further north and the terrain would be too high, and the spillway would still have to either run through the public access area or additional land would need to be purchased. The proposed spillway would require reconstruction of the public access including the parking area, the fishing dock, the boat ramp, adjacent roads, etc. The spillway would take advantage of a natural draw that runs from the parking area to the southwest and joins the main stream, in the area where it runs off the reservoir property.

A 260' auxiliary spillway at elevation 815.0' would be required to meet the Class I requirements. The elevation of 815.0' was selected because it is just at the estimated 100 year flood level, so for any given year it would have an estimated 1% chance of carrying flow. Figure 3.7-1 shows how such a spillway might fit. At 260' wide it is not really possible to avoid cutting into the dam fill or to avoid getting into private property. Also of concern would be possible adverse impacts to the downstream property.

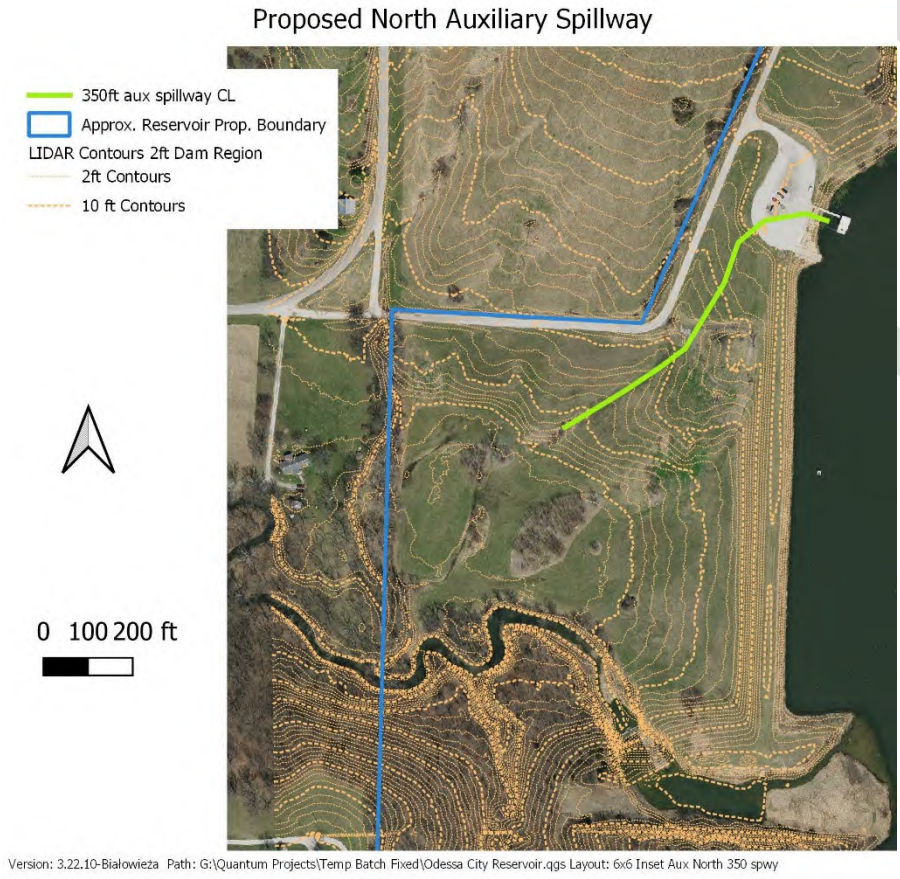


Figure 3.7-1, 350' North Auxiliary Spillway Option

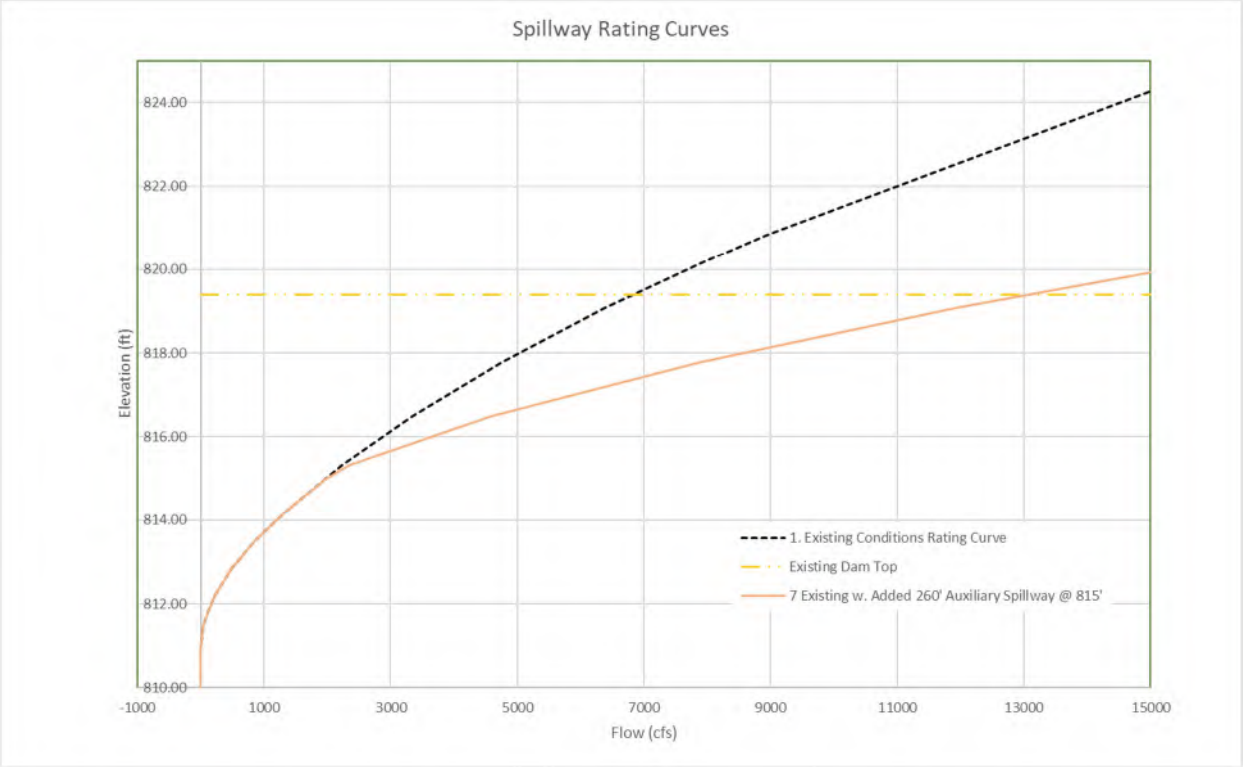


Figure 3.7-1 GeoHECRAS & Weir Equation Rating Curve –Added Auxiliary Spillway Compared to Existing Conditions

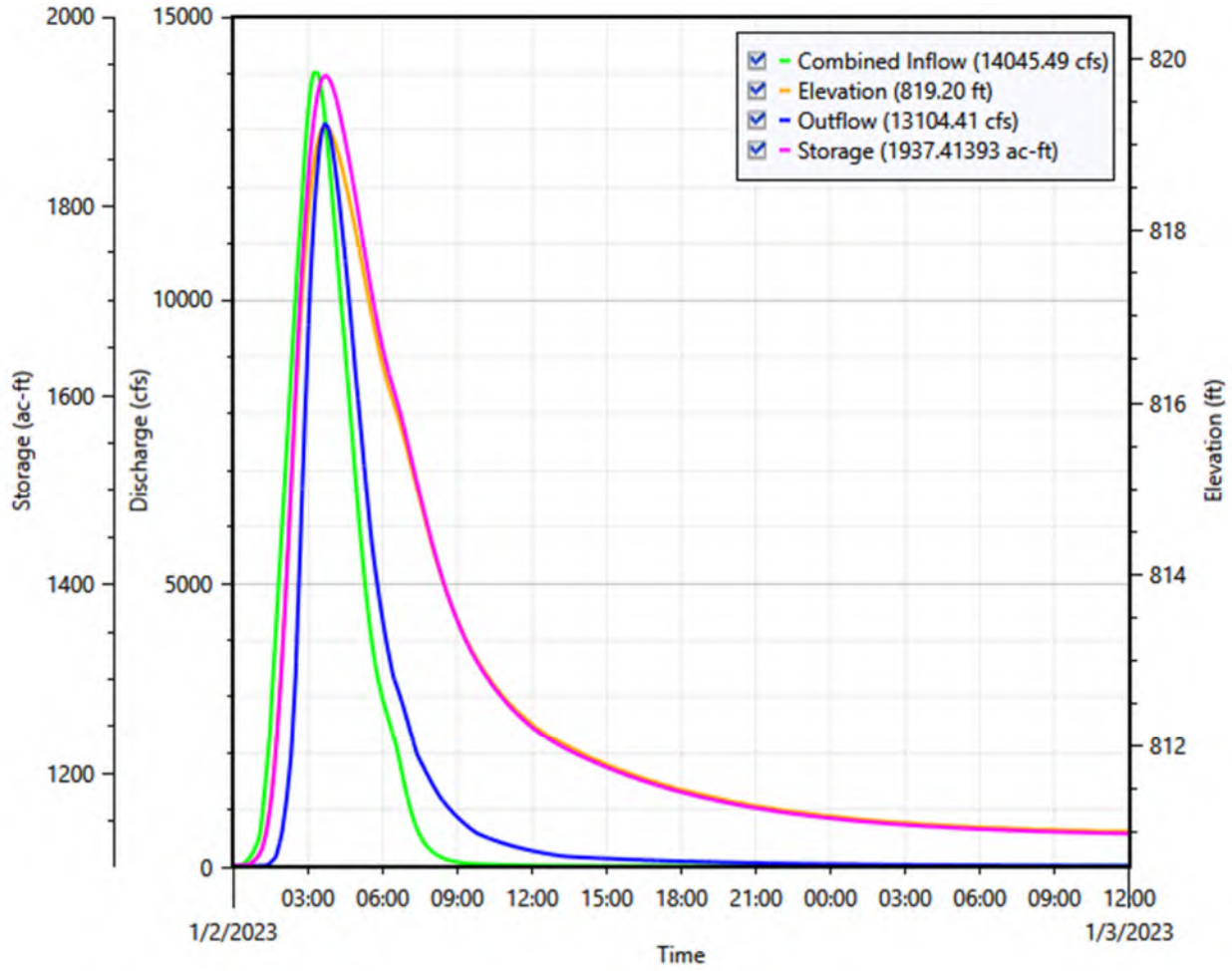


Figure 3.7-2, GeoHECHMS Results for Lower Reservoir, Class I Spillway Design Storm, Additional Auxiliary Spillway

3.8 Raise the Dam and Add an Auxiliary Spillway

Although raising the dam to 821.75' by itself isn't quite enough to meet the Class I requirements, the addition of a 50' wide spillway at elevation 817' with the raising of the dam would meet the Class I requirements (figure 3.8-1).

The constraints mentioned above in section 3.7 also apply to this configuration but with the significantly narrower spillway this configuration is much more achievable. It could be constructed without additional property acquisition and could be kept out of the dam fill.

At 817' this auxiliary spillway is estimated to not carry flow unless there is an event bigger than a 1,000 year event (0.1% chance of occurring in any given year). However, this spillway is still 2.4' below the existing top of dam, so there could be events in which the current dam would contain flow in the spillway, but this proposed alternative would send flow down the new auxiliary spillway.

This alternative would meet the class I requirements. Figures 3.8-2 and 3.8-3 show the GeoHECRAS rating curve, modified to include the proposed spillway and the GeoHECHMS model results for the

class I event.

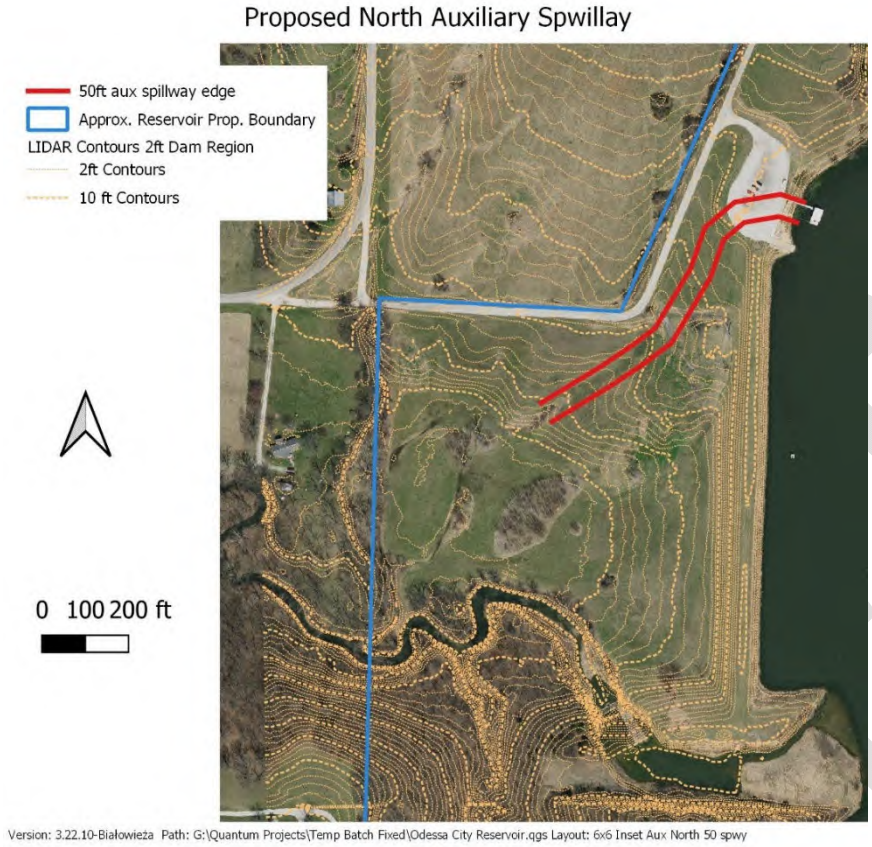


Figure 3.8-1, 50' North Auxiliary Spillway Option, with Dam Raised

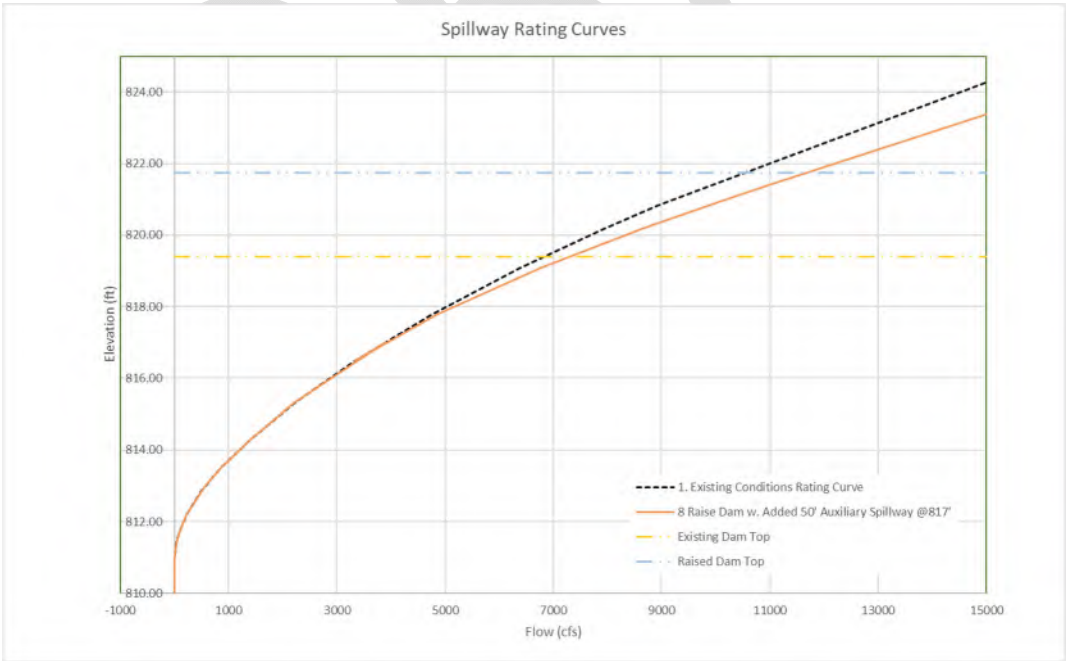


Figure 3.8-2 GeoHECRAS & Weir Equation Rating Curve –Raised Dam and Added Auxiliary Spillway Compared to Existing Conditions

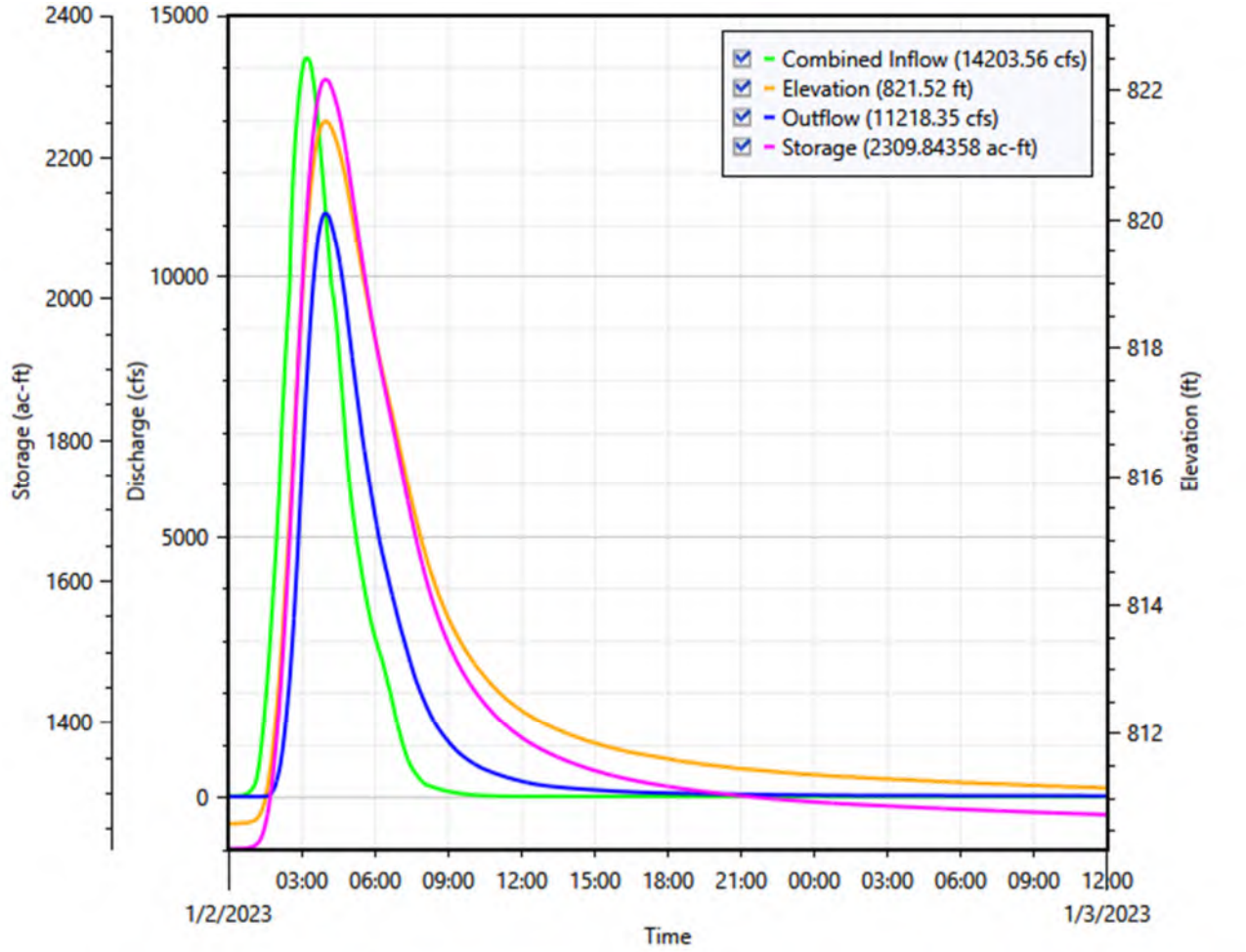


Figure 3.8-3, GeoHECHMS Results for Lower Reservoir, Class I Spillway Design Storm, Raised Dam and Additional Auxiliary Spillway

3.9 Add a Riser at Normal Pool Elevation

Additional capacity could also be provided by adding a riser spillway structure at the current normal pool elevation. Two locations where it might be possible to build a riser spillway in the dry and then excavate to allow the reservoir water to reach the structure were evaluated (figure 3.9-1). Hydraulically, the south option would be more efficient because the pipe could be placed lower which would increase its capacity.

However, even at this location, the pipe from the riser would need to be significantly larger than a 20’x10’ box culvert to convey adequate flow.

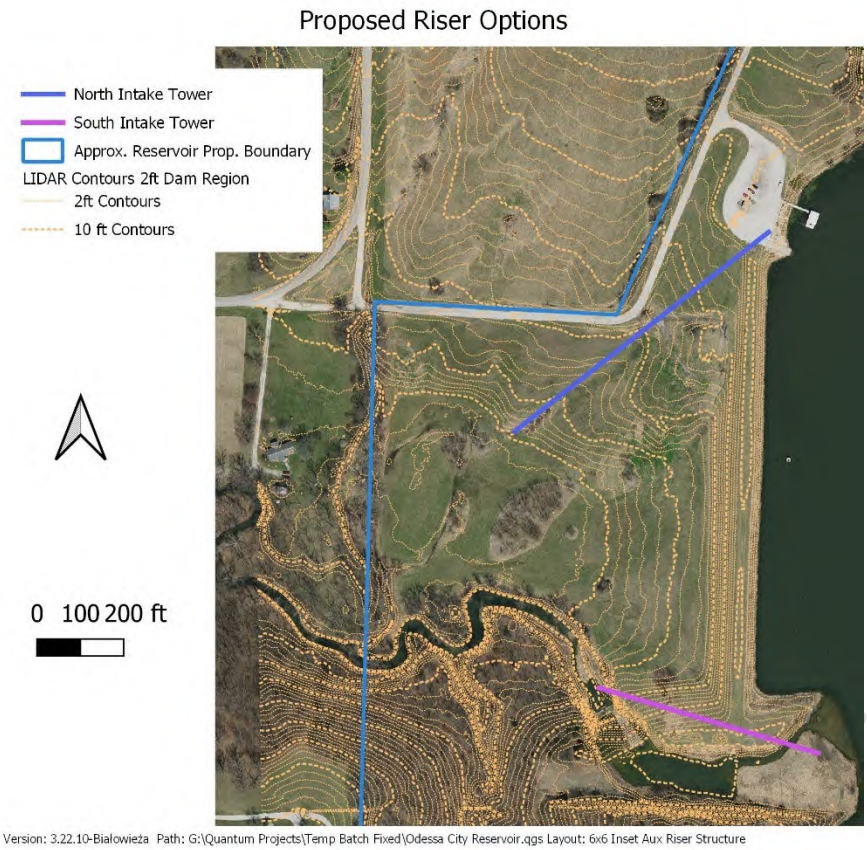


Figure 3.9-1, Riser Spillway Options

In this case, the procedure for developing the rating curve was modified to make sure we considered both the weir capacity and the pipe capacity from the weir to the downstream channel. The spreadsheet model was modified to include pipe capacity calculations done in the Federal Highway Administration's HY8 culvert analysis software to ensure that the full range of flow conditions through the pipe were considered. The output from the HY8 model were exported into the spreadsheet which then selected the flow for each elevation based on the minimum of the pipe capacity vs the weir capacity. Figure 3.9-2 shows the development of the rating curve for the riser structure with a 80' of weir length and a 20x10 box culvert. Figure 3.9-3 shows the combined rating curve for the existing spillway plus the riser structure.

As shown in Figure 3.9-4 even at this extreme size, the riser option still wouldn't quite meet the class I requirements. Because it seems apparent that the riser option is going to be prohibitively expensive to construct, it is being eliminated from consideration. Preliminary estimates indicate it would cost in excess of $4 million.

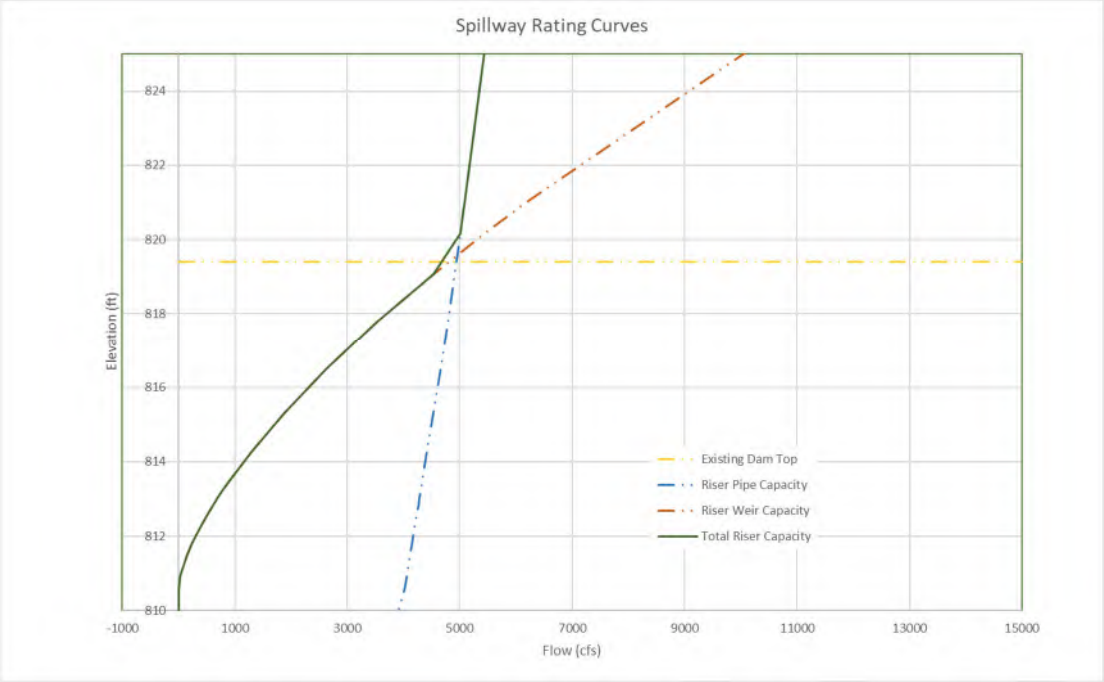


Figure 3.9-2 Rating Curve Development for a Riser Structure

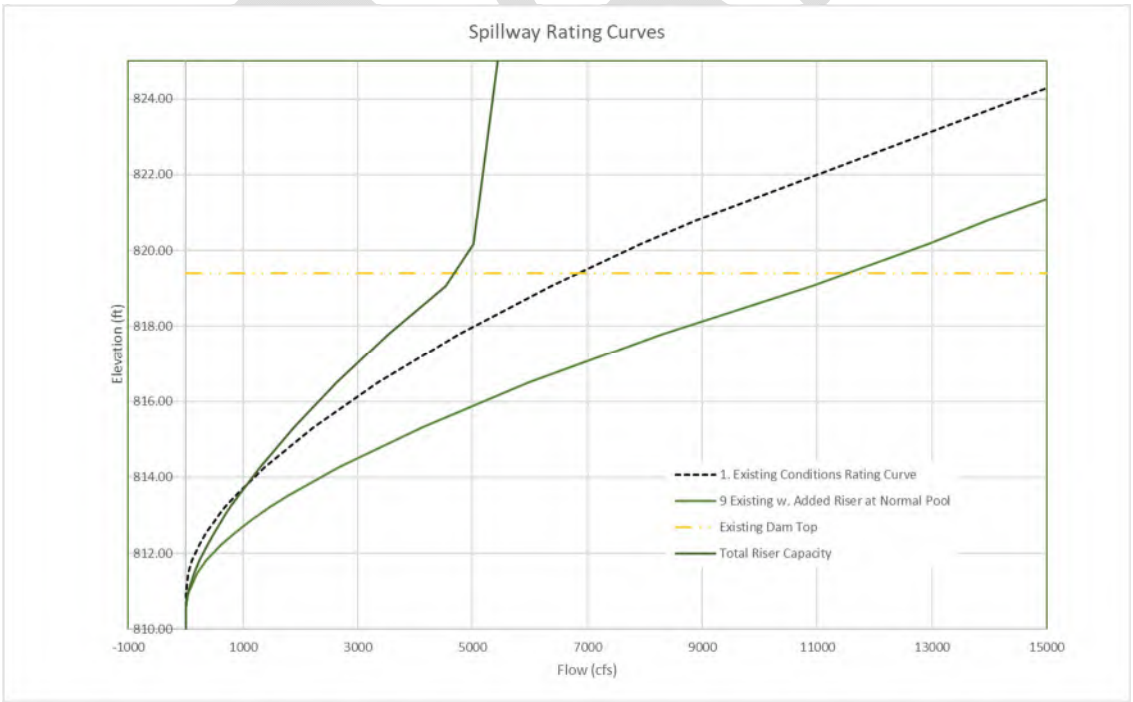


Figure 3.9-3 GeoHECRAS & Weir Equation Rating Curve –Added Riser Spillway Compared to Existing Conditions

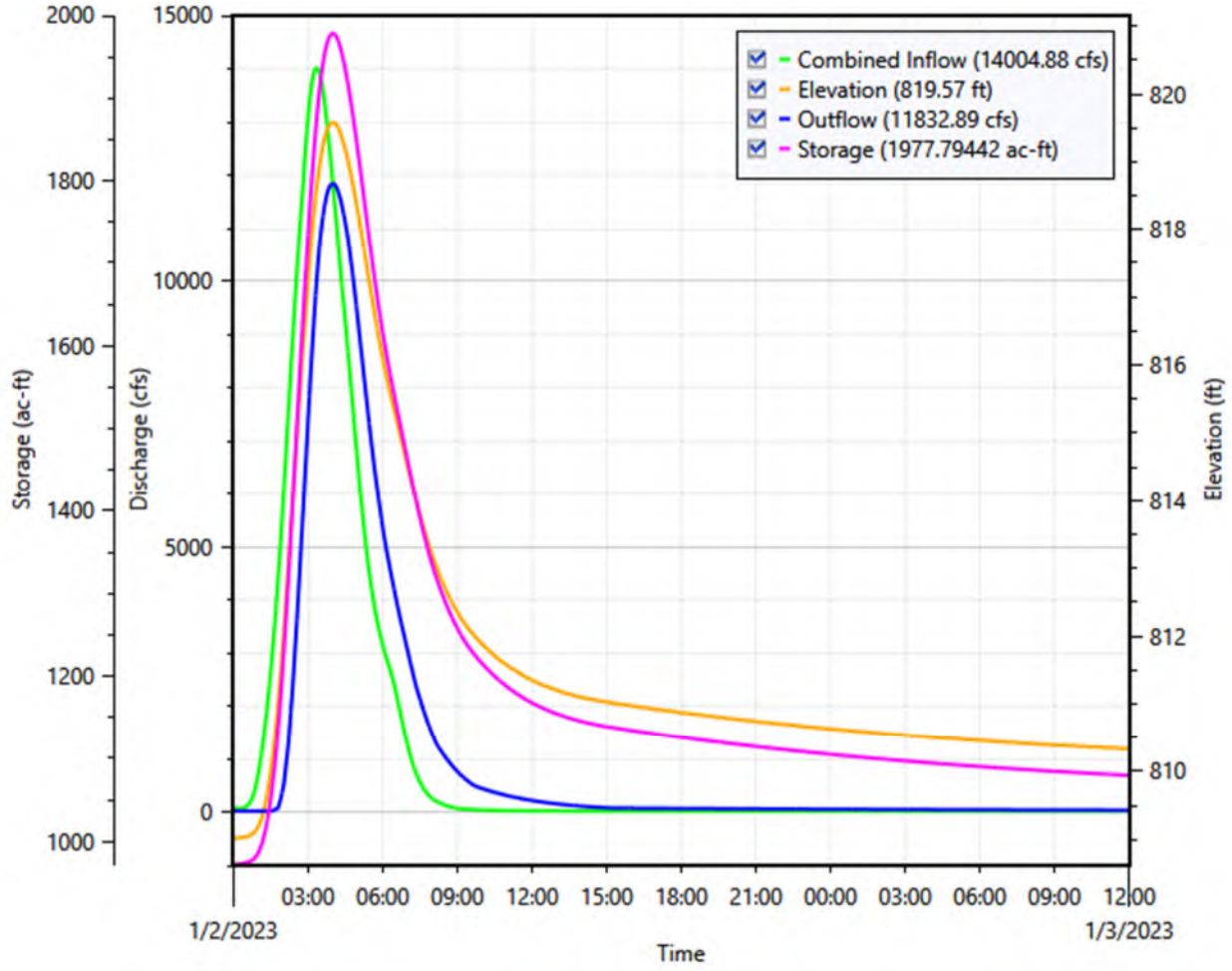


Figure 3.9-4, GeoHECHMS Results for Lower Reservoir, Class I Spillway Design Storm, Added Riser Spillway

4.0 Conclusions and Recommendations

The intent of this study is to evaluate alternative approaches to addressing the potential increase in dam safety permit requirements in the eventuality that the Odessa Reservoir dam increases from hazard class II to hazard class I due to downstream development. The immediate goal is to determine whether the structural repairs to the existing spillway should include any modifications to increase capacity while it is being rebuilt. Table 4.0-1 provides a summary of the alternatives considered.

Table 4.0-1, Summary of Alternatives Considered		
Option	Recommendation	Cost Range
3.1 – No Change	The structural repairs to the spillway are essential and should be completed prior to failure of the spillway slabs to avoid a notice of violation from DNR. Otherwise, there are no other changes necessary unless additional development occurs	No additional cost beyond the spillway repairs.

	downstream.	
3.2 – Cleanout Approach Channel	Not recommended at this time because it wouldn't be sufficient to meet the hazard class I requirements.	
3.3 – Reconfigure East Channel	Not recommended at this time because it wouldn't be sufficient to meet the hazard class I requirements.	
3.4 – Lower the Existing Auxiliary Spillway	Not recommended at this time because it wouldn't be sufficient to meet the hazard class I requirements.	
3.5 – Widen the Existing Spillway	Not recommended at this time because it wouldn't be sufficient to meet the hazard class I requirements.	
3.6 – Raise the Dam Top Elevation	Recommended Option for Implementation as Downstream Development Occurs	Around $800,00 to $1.4 Million
3.7 – Add an Additional Auxiliary Spillway	Not recommended at this time because the impacts to existing infrastructure and risks related to downstream impacts would be excessive.	
3.8 – Raise the Dam and Add an Auxiliary Spillway	Recommended Alternative Option for Implementation as Downstream Development Occurs	Similar costs to 3.6.
3.9 – Add a riser at Normal Pool Elevation	Not practical.	

The recommended solution is to complete the structural repairs to the existing spillway, without any changes to the configuration and as downstream development occurs, plan to raise the dam to an elevation of 823' (approximately 3' above the current elevation) to achieve class I requirements.

The alternative solution is to raise the dam to an elevation of 821.75' and add a small auxiliary spillway at the north end of the dam. The benefit to doing this over the recommended option is that the dam could be raised a little less and the need for a geotechnical investigation could be avoided. Materials excavated for the spillway could be used to raise the dam so the grading costs would be reduced. In either case the public access and parking areas would likely need to be modified. However, this solution would leave no room for settlement of the dam top, and could potentially influence extreme event flooding on downstream neighbors. If the dam were to settle more than 0.25 feet over time, the City could be required to address the settlement to maintain class I compliance

Odessa Reservoir Spillway Reconstruction
Odessa, Missouri

Preliminary Expected Probable Cost
December 23, 2021
Updated January 2025

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1.00	**Startup, Mobilization, Demobilization, Misc.**				
1.01	Bonding / Insurance	1	L.S.	$ 20,000.00	$ 20,000.00
1.02	Mobilization / Demobilization	1	L.S.	$ 50,000.00	$ 50,000.00
				Subtotal 1.00:	**$ 70,000.00**
2.00	**Spillway**				
2.01	Excavation & Backfill	3000	C.Y.	$ 15.00	$ 45,000.00
2.02	Aggregate Backfill & Subdrainage	500	TON	$ 50.00	$ 25,000.00
2.03	Concrete Sidewalls and Slabs, includes demo and disposal of existing	700	C.Y.	$ 1,000.00	$ 700,000.00
2.04	Concrete Panel Anchoring	1	L.S.	$ 150,000.00	$ 150,000.00
2.05	Water Management - Keep Lake Level Low	1	L.S.	$ 25,000.00	25,000.00
				Subtotal 2.00:	**$ 945,000.00**
				Total Preliminary Expected Probable Cost - Items 1.0 and 2.0:	**$ 1,015,000.00**
	Professional Services				
3.00	**Engineering Services**				
3.01	Preliminary Geotechnical				$ 30,000.00
3.02	Engineering - Basic Services				$ 25,000.00
a.	Preliminary Design Phase				$ 15,000.00
b.	Collection of Field Data				$ 15,000.00
c.	Final Design Services				$ 25,000.00
d.	Bidding/Negotiating Services				$ 4,000.00
e.	Project Management During Construction				$ 7,000.00
f.	Post Construction Services				$ 6,000.00
				Subtotal 3.00	**$ 127,000.00**
4.00	**Additional Engineering Services**				
4.01	Permitting, Applications, General Administration				$ 3,000.00
4.02	Topo Survey, Mapping				$ 5,000.00
4.03	Geotechnical Services & Testing				$ 20,000.00
4.04	Construction Engineering				$ 15,000.00
4.05	Resident Project Representative				$ 70,000.00
				Subtotal 4.00	**$ 113,000.00**
5.00	**Other Professional Services**				
5.01	Project Attorney				$ 20,000.00
5.02	Financial Advisor/Bond Council				$ 20,000.00
				Subtotal 5.00	**$ 40,000.00**
				Total Preliminary Expected Probable Professional Services Cost - Item III	**$ 280,000.00**
6.00	**Project Continegencies**				
6.01	**Construction Contingencies @ 5% of Construction Cost Estimate**				**$ 51,000.00**
6.02	**Design and Inflation Contingencies @ 5% of Construction Cost Estimate**				**$ 51,000.00**
				Total Preliminary Expected Probable Cost - Item 6.00:	**$ 102,000.00**
				Total Preliminary Expected Probable Cost - Items 1.00 - 6.00:	**$ 1,397,000.00**

		Low	Estimate	High
Estimate of Probable Cost Range for Reservoir Spillway Reconstruction				
2023 Dollars:	12%	$ 1,200,000.00	$ 1,397,000.00	$ 1,600,000.00
Indexed to Corps of Engineers Projected 2025 Prices	1.05	$ 1,260,000.00	$ 1,466,850.00	$ 1,680,000.00
Indexed to Corps of Engineers Projected 2026 Prices	1.07	$ 1,284,000.00	$ 1,494,790.00	$ 1,712,000.00

Odessa Reservoir - Raise Dam to 823'
Odessa, Missouri

Preliminary Expected Probable Cost
January 28, 2025

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1.00	**Startup, Mobilization, Demobilization, Misc.**				
1.01	Bonding / Insurance	1	L.S.	$ 20,000.00	$ 20,000.00
1.02	Mobilization / Demobilization	1	L.S.	$ 80,000.00	$ 80,000.00
1.03	Contractor Quality Control	1	L.S.	$ 20,000.00	$ 20,000.00
				Subtotal 1.00:	**$ 120,000.00**
2.00	**Spillway**				
2.01	Grading (Embankment in Place)*	20100	C.Y.	$ 20.00	$ 402,000.00
2.02	Raise Spillway Wall 3'	90	LF	$ 190.00	$ 17,100.00
2.03	Gravel for Parking Area	2625	S.Y.	$ 20.00	$ 52,500.00
2.04	Repairs to existing amenities (boat ramp, privy, etc)	1	L.S.	$ 50,000.00	$ 50,000.00
2.05	Riprap (as needed)	200	C.Y.	$ 90.00	$ 18,000.00
2.06	Misc. (seeding, erosion control, fencing, signage, etc)	20%	%	$ 1.00	$ 131,900.00
				Subtotal 2.00:	**$ 671,500.00**
	*This price is based on contractor furnished fill material. It could be modified by a geotech report that locates a specific source of fill near the dam.				
				Total Preliminary Expected Probable Cost - Items 1.0 and 2.0:	**$ 791,500.00**
	Professional Services				
3.00	**Engineering Services**				
3.01	Engineering - Basic Services				$ 100,000.00
3.02	Geotechnical				$ 30,000.00
3.02	Resident Project Representative				$ 75,000.00
3.04	Survey and Staking				$ 15,500.00
				Subtotal 3.00	**$ 220,500.00**
4.00	**Construction and Design Contingency**	10%	%	**1**	**101,200.00**
				Subtotal 4.00	**$ 101,200.00**
5.00	**Other Professional Services**				
5.01	Project Attorney				$ 20,000.00
5.02	Financial Advisor/Bond Council				$ 20,000.00
				Subtotal 5.00	**$ 40,000.00**
				Total Preliminary Expected Probable Cost, 2023 prices - Items 1.00 - 5.00:	**$ 1,153,200.00**

		Low	Estimate	High
Estimate of Probable Cost Range for Reservoir Spillway Reconstruction				
2023 Dollars:	20%	$ 920,000.00	$ 1,153,200.00	$ 1,380,000.00
Indexed to Corps of Engineers Projected 2025 Prices	1.05	$ 966,000.00	$ 1,210,860.00	$ 1,449,000.00
Indexed to Corps of Engineers Projected 2026 Prices	1.07	$ 984,400.00	$ 1,233,924.00	$ 1,476,600.00

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

November 6, 2024

City of Odessa
C/O Ms. Shawna Davis
City Administrator
P.O. Box 128
Odessa, Missouri 64076

shawna.davis@cityofodessamo.com

RE: Odessa City Lake Dam (MO20042) Lafayette County

Dear Ms. Davis:

This letter serves as a summary of our virtual meeting that was held on November 5, 2024. Meeting attendees included staff from Allstate Consultants, MoDNR Dam and Reservoir Safety Program and yourself and Mr. Lamb representing interests of the City of Odessa. The meeting was coordinated by Allstate Consultants with the intention of providing open dialog regarding downstream environmental classification determinations (also known as hazard classification) for regulated dams and how downstream development could affect the classification on the Odessa City Lake Dam.

Under Missouri regulations downstream environment zone is the area downstream from a dam that would be affected by inundation in the event the dam failed.

The three downstream environmental classifications are defined in 10 CSR 22 Chapter 2 as:
Class I: inundation area that contains ten (10) or more permanent dwellings or any public building;
Class II: inundation area that contains one to nine (1–9) permanent dwellings, or one (1) or more campgrounds with permanent water, sewer and electrical services or one (1) or more industrial buildings; and
Class III: everything else.

A dam owner may design, own, and operate a dam under a Class II or Class III designation, however this carries the risk of potential upgrade requirements in the future. This is the case with the Odessa City Lake Dam. The dam was designed to meet the requirements of a Class II downstream environmental zone and to date the development downstream has remained within that threshold.

During each inspection, or if other information triggers a discussion, the downstream environmental classification is re-evaluated. The inspection team travels downstream of the dam and determines what structures could potentially be inundated by water if the dam were to fail. The area is evaluated using various GIS tools, maps, and engineering judgment. If more than 9 permanent occupied dwellings or a public building is found to potentially be affected by the evaluation, the

dam owner is required to upgrade the dam to the Class I design criteria or complete a detailed breach inundation study to prove that the structures identified would not be affected by inundation.

Based on the soon to be expected downstream development, it was discussed that many of the lots could contain dwellings that may be determined to be potentially inundated. If this were to occur the City of Odessa would be required to pursue upgrade of the spillways of the dam to meet Class I or completing a detailed analysis to prove otherwise.

Due to the fact that controlling development downstream is nearly impossible, it is in the best interest of the City to develop a plan to upgrade the dam to meet the Class I design requirements. Once the Class I requirements have been met, any amount of development can occur downstream. Even if the City was successful at proving a house or multiple homes were not within the inundation zone, development will continue and eventually a public building or 10 homes will likely be constructed within the zone requiring upgrade.

Timing of a classification change occurs after dwellings are constructed, inhabited, and evaluated to be in the potential inundation zone. Currently there are approximately 5-6 structures that the Dam and Reservoir Safety Program considers to be within the potential inundation area. Once 10 homes or a public building are identified within the potential inundation area, a Staff Notice Violation (SNOV) would be issued requiring the city to retain the services of a registered professional engineer to design and submit a construction permit detailing the changes needed to bring the dam into compliance. Once approved and construction was complete, the dam would meet the Class I criteria.

In summary, future development in the downstream inundation zone of any dam is normally outside of any control of the owner of the dam. Therefore, although monetary resources could be used by the City to perform a detailed analysis to prove that current structures and the currently proposed subdivision may or may not be out of the inundation zone, I recommend the City of Odessa begin the process of retaining a consulting engineer to pursue options to upgrade the dam to meet the Class I spillway criteria in order to insulate the City from the effects of any future development.

We look forward to any discussions or questions that you may have.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

Ryan P. Stack, P.E.
Chief Engineer
Dam & Reservoir Safety Program

cc: Darrin Lamb, City of Odessa
darrin.lamb@cityofodessamo.com