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Attorney for Petitioner

McDevitt, Annie

IN THE DISTRICT COURT OF THE FOURTH JUDICIAL DISTRICT OF

THE STATE OF IDAHO, IN AND FOR THE COUNTY OF ADA

BOISE RIVER OUTDOOR OPPORTUNITIES, LLC, an Idaho limited liability company, Petitioner, v. THE IDAHO DEPARTMENT OF WATER RESOURCES, Respondent.	CV01-24-04576 Case No. _____ Fee Category: Fee Amount: **PETITION FOR JUDICIAL REVIEW**
IN THE MATTER OF APPLICATION FOR PERMIT NO. S63-21092 IN THE NAME OF BOISE RIVER OUTDOOR OPPORTUNITIES	

COMES NOW the Petitioner, BOISE RIVER OUTDOOR OPPORTUNITIES, LLC, through its agent ADAM BASS ("Adam"), by and through its attorney of record, C. Tom Arkoosh and Jeremy C. Rausch of Arkoosh Law Offices, and hereby petitions this Court for judicial review of the final decision of the Idaho Department of Water Resources ("IDWR") regarding Permit No. S63-21092, pursuant to Idaho Code § 67-5270 and Rule 84 of the Idaho Rules of Civil Procedure.

Petitioner alleges as follows:

INTRODUCTION

1. Petitioner brings this action seeking judicial review pursuant to Idaho Code § 42-3805 and Rule 84, I.R.C.P.

2. Specifically, Petitioners seek judicial review of *Joint Application for Permit No S63-21092 Boise River – WWP Maintenance*, (the "Permit"), entered by the IDWR on January 24th, 2024, a true and correct copy of which is attached hereto as **Exhibit A**. Judicial review is further sought of all proceedings attendant to and preceding entry of the Permit.

3. The permit was entered purportedly pursuant to Idaho Code Section 42-3805 and Idaho Administrative Procedure Act Section 37.03.07.

JURISDICTION AND VENUE

4. This Court has jurisdiction over this petition under Idaho Code § 67-5270. Venue is proper in this Court pursuant to Idaho Code § 67-5272.

5. This petition for judicial review is timely in that it was initiated within the time limits prescribed by Idaho Code §§ 67-5246 and 67-5273.

PARTIES

6. Petitioner, BOISE RIVER OUTDOOR OPPORTUNITIES, LLC ("Petitioner" or "BROO"), is an Idaho limited liability company dedicated to promoting environmental stewardship and providing outdoor recreational activities along the Boise River. The organization focuses on enhancing the community's connection to natural resources through education, conservation efforts, and direct engagement in outdoor activities.

7. ADAM BASS ("Adam") is an agent of Petitioner, BROO.

8. Respondent, IDAHO DEPARTMENT OF WATER RESOURCES ("IDWR"), is

the state agency responsible for the issuance and oversight of water resource permits in Idaho.

STATEMENT OF INITIAL ISSUES

9. Petitioner asserts the following issues on judicial review:

    a. Whether the director erred by relying on the Stream Channel Alteration Rules under IDAPA 37.03.07 Minimum Standards (Rule 55). This approval was premised on the determination that the project complied with all requisite environmental, safety, and regulatory standards as mandated by Idaho law and relevant federal statutes?

    b. Whether the Director erred by relying on Idaho Code § 42-3805 to approve the application, which without further rulemaking, exceeds scope of the Directors authority, and has expanded the scope of Idaho Code § 42-3801?

    c. Whether the Director erred by issuing the permit to an applicant who has operated outside of the scope of their authority and restricted navigation in violation of their easement?

    d. Whether the Director erred by issuing the permit in violation of 33 U.S.C. § 403?

    e. Whether the Director erred by issuing the permit in violation of Idaho Code § 42-3801 *et seq.*?

    f. Whether the Director erred by issuing the permit in violation of Idaho Code § 36-1601?

    g. Whether the Director erred by issuing the permit, thus violating the Public Trust Doctrine?

AGENCY RECORD

10. Judicial review is sought of the Director's January 24, 2024, *Joint Application for Permit No S63-21092 Boise River – WWP Maintenance*.

11. Petitioner requests that the agency record for this action, as required by Idaho Code § 67-5249 and 67-5242, be prepared together with any transcripts.

12. The estimated cost of the preparation of the agency record together with any transcripts is $20.00, according to the agency, which sum has been paid to the Idaho Department of Water Resources.

13. Service of this Notice of Petition for Judicial Review will be made on the Respondent.

I.R.C.P. RULE 84 REQUIREMENTS

14. Name of Agency for Which Judicial Review is Sought: Idaho Department of Water Resources, an executive department existing under the laws of the State of Idaho pursuant to Idaho Code § 42-1701 *et seq*., with its state office located at 322 E Front Street., Boise, Ada County, Idaho 83702.

15. Title of District Court to Which Petition is Taken: In the District Court of the Fourth Judicial District of the State of Idaho, in and for the County of Ada.

16. Case Caption and Action for Which Judicial Review is Sought: In the Matter of *Joint Application for Permit No S63-21092 Boise River – WWP Maintenance* in the name of City of Boise.

17. Hearing Recording: No hearing was held pursuant to this application.

18. Statement of Issues of Judicial Review: Whether the Director committed reversible error in issuing the permit as stated in paragraph 9.

19. Designation of Whether a Transcript is Required: A copy of the record and any transcripts is requested.

20. Attorney Certification: I, Jeremy C. Rausch, counsel for Petitioner, certify the following:

a. Service of this petition will be made upon the department; and

b. That the clerk of the agency has been paid the estimated fee for the preparation of the record to include any transcripts. I contacted Sarah Tschohl, Paralegal to the Deputy Attorney General of the Department, who provided a cost estimate of $20.00, which I then paid by mailing a check for the amount to the Department's state office, located at 322 E Front St., Boise, Idaho 83702.

DATED this 13th day of March 2024.

ARKOOSH LAW OFFICES

Jeremy C. Rausch
Attorney for Petitioner

IDAHO DEPARTMENT OF
WATER RESOURCES

322 E Front Street, Suite 648, Boise ID 83702 • PO Box 83720, Boise ID 83720-0098
Phone: 208-287-4800 • Fax: 208-287-6700 • Email: idwrinfo@idwr.idaho.gov • Website: idwr.idaho.gov

Governor Brad Little Director Mathew Weaver

January 24, 2024

Sara Arkle
City of Boise – Parks and Recreation
1104 Royal Blvd.
Boise, ID 83706

RE: Joint Application for Permit No. S63-21092
Boise River – WWP Maintenance

Dear Ms. Arkle,

The Idaho Department of Water Resources (IDWR) has reviewed your above referenced application for a permit to alter the Boise River. IDWR has prepared a decision as provided for in Section 42-3805, Idaho Code. The conditions set forth in this permit are intended to prevent degradation of water quality, protect fish and wildlife habitat, and protect the long-term stability of the stream channel. If you cannot meet the conditions set forth in the permit, please contact this office for further consideration.

Your project has been determined to meet the Stream Channel Alteration Rules, IDAPA 37.03.07 Minimum Standards (Rule 55). You may consider this letter a permit to construct your project according to your application, received October 23, 2023, the administrative memo dated December 15, 2023, the revised hydraulics analyses submitted on December 29, 2023, and the updated diagrams you provided on January 3, 2024. Project activities include five (5) specific modifications to the Whitewater Park including:

- Modifications to gates five (5) and six (6) of the spillway to increase flexibility of operations through varying flow conditions. Two (2) existing 20-foot wide gates will be replaced with four (4) 10-foot wide gates and a five (5) foot plunge pool will be excavated below the spillway.
- New air lines will be installed along the existing routing path from the control building to the spillway gates. Approximately three (3) cubic yards of grouted riprap will be excavated, and three (3) cubic yards of grout and concrete will be discharged to install the new airlines.
- Repair leaks occurring between a side channel on the left descending bank and the main channel. Approximately 50-cubic yards of grouted riprap will be excavated, and approximately 50-cubic yards of concrete and grout will be discharged to install a membrane.
- Install a new Obermeyer gate downstream of Drop Struture 1. Approximately 40-cubic yards of streambed material will be excavated, and approximately 54-cubic yards of concrete and 21-cubic yards of clean angular rock riprap will be discharged to construct the gate. A temporary log boom will be relocated and placed in a way that allows downriver passage through Drop Structure 1.

EXHIBIT
A

Dewatering will occur between Drop Struture 1 and Drop Structure 3. Approximately 510-feet of the Boise River will be dewatered to allow work to occur in the dry. The applicant will coordinate with Idaho Department of Fish and Game on a fish salvage plan to help reduce stranding.

The project location is within Section 05, Township 03 North, Range 02 East, Ada County, Idaho

Failure to adhere to the conditions as set forth herein can result in legal action as provided for in Section 42-3809, Idaho Code. This project is subject to the following Minimum Standards, Special and General Conditions.

MINIMUM STANDARDS:

These standards are established in the Administrative Rules of the Idaho Water Resources Board; Stream Channel Alteration Rules, IDAPA 37.03.07 dated July 1, 2021, and are enclosed with this permit.

Rule 56 – Construction Procedures

SPECIAL CONDITIONS:

[1] All construction shall be completed in accordance with the descriptions and methods on the application, memo, hydraulic analyses, and diagrams attached herewith. This office must approve any changes prior to construction.

[2] All construction activities shall be conducted in such a manner as to minimize turbidity and comply with Idaho water quality standards. Construction shall take place during low flow and in dewatered areas to minimize turbidity and protect water quality.

[3] Dewatering of the Boise River shall be gradual (over 24 hours) behind coffers or within bypass reaches to promote fish escapement and reduce stranding. Fish salvage should be coordinated with Idaho Department of Fish and Game.

[4] In water work shall be conducted during low flow conditions, if flows are predicted to exceed 800 cfs the permittee shall contact IDWR to prepare and coordinate a shutdown plan of in-water activities.

[5] Log boom shall be placed according to diagram G005, allowing downriver passage through Drop Structure 1 immediately after construction is completed or before the permit expires on March 1, 2025.

[6] Cass Jones, IDWR Stream Protection Program 208-287-4897, shall be contacted within fourteen (14) days of completion of the project to schedule an inspection.

[7] Silt fencing or other erosion/sediment control measures shall be installed between any area of earth disturbance and the water. Erosion and sediment control measures must be installed during construction, according to the manufacturer's specifications, and must be maintained until construction is completed and the disturbed ground is revegetated and stable.

[8] All temporary structures, excess excavated material, and vegetative or construction debris shall be disposed of out of the stream channel where it cannot reenter the channel. All construction debris shall be removed from the site and disposed of properly.

[9] All fuel, oil, and other hazardous materials shall be stored and equipment refueled away from the stream channel to ensure that a spill will not enter the waterway. Equipment must be free of fuel and lubricant leaks. The operator shall have spill control materials available at all times during this project. These spill control materials shall include, but not be limited to, fuel and/or oil absorbent booms and absorbent pads. In the event of a release greater than 25 gallons of fuel or oil to the ground or to surface waters, the Idaho State Communications Center shall be contacted at 1-800-632-8000.

[10] Permittee is responsible for all work done by any contractor or sub-contractor and shall ensure any contractor who performs the work is informed of and follows all the terms and conditions of this authorization.

[11] This permit shall expire March 1, 2025.

GENERAL CONDITIONS:

1. This permit does not constitute any of the following:
   a. An easement or right-of-way to trespass or work upon property belonging to others.
   b. Other approval that may be required by Local, State or Federal Government, unless specifically stated in the special conditions above.
   c. Responsibility of IDWR for damage to any properties due to work done.
   d. Compliance with the Federal Flood Insurance Program, FEMA regulations, or approval of the local Planning and Zoning authority.

2. In accordance with Sections 55-2201 - 55-2210, Idaho Code, the applicant and/or contractors must contact Digline statewide phone number 1-800-342-1585 (Boise area 208-342-1585) not less than three working days prior to the start of any excavation for this project.

3. The permit holder or operator must have a copy of this permit at the alteration site, available for inspection at all times.

4. IDWR may cancel this permit at any time that it determines such action is necessary to minimize adverse impact on the stream channel.

Failure to adhere to conditions as set forth herein can result in legal action as provided for in Section 42-3809, Idaho Code.

If you object to the decision issuing this permit with the above conditions, you have 15 days in which to notify this office in writing that you request a formal hearing on the matter. If an objection has not been received within 15 days, the decision will be final under the provisions of IDAPA 37.03.07 (Rule 70).

Please contact Cass Jones 208-287-4897 or cass.jones@idwr.idaho.gov if you have any questions regarding this matter.

Sincerely,

Cass Jones
Stream Channel Protection
Idaho Department of Water Resources

cc: Josh Wilson, City of Boise
Dean Johnson, Idaho Department of Lands, Boise
Brandon Flack, Idaho Department of Fish & Game, Boise
Chase Cusack and Lance Holloway, Idaho Department of Environmental Quality, Boise
US Army Corps of Engineers, Boise
Aaron Golart and Katie Gibble, Idaho Department of Water Resources, Boise
Adam Bass, Boise River Outdoor Opportunities, Boise

056. CONSTRUCTION PROCEDURES (RULE 56).

01. Conformance to Procedures. Construction shall be done in accordance with the following procedures unless specific approval of other procedures has been given by the Director. When an applicant desires to proceed in a manner different from the following, such procedures should be described on the application. (3-18-22)

02. Operation of Construction Equipment. No construction equipment shall be operated below the existing water surface without specific approval from the Director except as follows: Fording the stream at one (1) location only will be permitted unless otherwise specified; however, vehicles and equipment will not be permitted to push or pull material along the streambed below the existing water level. Work below the water which is essential for preparation of culvert bedding or approved footing installations shall be permitted to the extent that it does not create unnecessary turbidity or stream channel disturbance. Frequent fording will not be permitted in areas where extensive turbidity will be created. (3-18-22)

03. Temporary Structures. Any temporary crossings, bridge supports, cofferdams, or other structures that will be needed during the period of construction shall be designed to handle high flows that could be anticipated during the construction period. All structures shall be completely removed from the stream channel at the conclusion of construction and the area shall be restored to a natural appearance. (3-18-22)

04. Minimizing Disturbance of Area. Care shall be taken to cause only the minimum necessary disturbance to the natural appearance of the area. Streambank vegetation shall be protected except where its removal is absolutely necessary for completion of the work adjacent to the stream channel. (3-18-22)

05. Disposal of Removed Materials. Any vegetation, debris, or other material removed during construction shall be disposed of at some location out of the stream channel where it cannot reenter the channel during high stream flows. (3-18-22)

06. New Cut of Fill Slopes. All new cut or fill slopes that will not be protected with some form of riprap shall be seeded with grass and planted with native vegetation to prevent erosion. (3-18-22)

07. Fill Material. All fill material shall be placed and compacted in horizontal lifts. Areas to be filled shall be cleared of all vegetation, debris and other materials that would be objectionable in the fill. (3-18-22)

08. Limitations on Construction Period. The Director may limit the period of construction as needed to minimize conflicts with fish migration and spawning, recreation use, and other uses. (3-18-22)

October 23, 2023

To: Idaho Department of Water Resources
Stream Channel Protection Program
(submitted electronically to: file@idwr.idaho.gov)

Subject: Boise Whitewater Park Phase II Modifications Project
Re: Joint Application for Permits

On behalf of the City of Boise, please find enclosed the Joint Application for Permits (JAP) for the Boise Whitewater Park Phase II Modifications Project. Work is proposed for winter 2023/2024 in the Boise River during the non-irrigation season when flows are expected to be at their lowest volume.

Included in the application package is:
1. Joint Application for Permits
2. Design Drawings
3. Temporary Dewatering Figures
4. Photographs

Based upon a review of Endangered Species Act and National Historic Preservation Act information, proposed modifications to the Boise Whitewater Park Phase II outlined in this JAP will not impact species or cultural/historical sites greater than the analysis conducted for the original permits (S63-20701).

If you have any questions regarding this application, please feel free to contact me at greg@adaptiveenviro.com / 208-340-5721 (cell) with any questions. I look forward to working with you on this project.

Sincerely,

Greg Allington / Adaptive Environmental Planning, LLC (Senior Biologist)
Authorized Agent

cc: Sara Arkle (Parks Resource Superintendent) – City of Boise Parks and Recreation Department
sarkle@cityofboise.org / 208-608-7637

Mort McMillen, PE (Engineer) – McMillen
mortmcmillen@mcmillen.com / 208-342-4214 (Office) / 208-830-1394 (Cell)

ATTACHMENT 1
JOINT APPLICATION FOR PERMITS

JOINT APPLICATION FOR PERMITS

U.S. ARMY CORPS OF ENGINEERS - IDAHO DEPARTMENT OF WATER RESOURCES - IDAHO DEPARTMENT OF LANDS

Authorities: The Department of Army Corps of Engineers (Corps), Idaho Department of Water Resources (IDWR), and Idaho Department of Lands (IDL) established a joint process for activities impacting jurisdictional waterways that require review and/or approval of both the Corps and State of Idaho. Department of Army permits are required by Section 10 of the Rivers & Harbors Act of 1899 for any structure(s) or work in or affecting navigable waters of the United States and by Section 404 of the Clean Water Act for the discharge of dredged or fill materials into waters of the United States, including adjacent wetlands. State permits are required under the State of Idaho, Stream Protection Act (Title 42, Chapter 38, Idaho Code and Lake Protection Act (Section 58, Chapter 13 et seq., Idaho Code). In addition the information will be used to determine compliance with Section 401 of the Clean Water Act by the appropriate State, Tribal or Federal entity.

Joint Application: Information provided on this application will be used in evaluating the proposed activities. Disclosure of requested information is voluntary. Failure to supply the requested information may delay processing and issuance of the appropriate permit or authorization. Applicant will need to send a completed application, along with one (1) set of legible, black and white (8½"x11"), reproducible drawings that illustrate the location and character of the proposed project / activities to both the Corps and the State of Idaho.

See Instruction Guide for assistance with Application. Accurate submission of requested information can prevent delays in reviewing and permitting your application. Drawings including vicinity maps, plan-view and section-view drawings must be submitted on 8-1/2 x 11 papers.

Do not start work until you have received all required permits from both the Corps and the State of Idaho

FOR AGENCY USE ONLY			
USACE NWW-	Date Received:	☐ Incomplete Application Returned	Date Returned:
Idaho Department of Water Resources No.	Date Received:	☐ Fee Received DATE:	Receipt No.:
Idaho Department of Lands No.	Date Received:	☐ Fee Received DATE:	Receipt No.:

INCOMPLETE APPLICANTS MAY NOT BE PROCESSED

1. CONTACT INFORMATION - APPLICANT Required:			2. CONTACT INFORMATION - AGENT:		
Name: Sara Arkle-Parks Resource Superintendent			Name: Greg Allington		
Company: City of Boise-Parks and Recreation Department			Company: Adaptive Environmental Planning		
Mailing Address: 1104 Royal Blvd			Mailing Address: 2976 East State Street, Ste. 120 #431		
City: Boise	State: ID	Zip Code: 83706	City: Eagle	State: ID	Zip Code: 83616
Phone Number *(include area code)*: 208-608-7637	E-mail: sarkle@cityofboise.org		Phone Number *(include area code)*: 208-340-5721	E-mail: greg@adaptiveenviro.com	

3. PROJECT NAME or TITLE: Boise Whitewater Park Phase II Modifications			4. PROJECT STREET ADDRESS: 3206 W Pleasanton Ave.	
5. PROJECT COUNTY: Ada	6. PROJECT CITY: Boise		7. PROJECT ZIP CODE: 83702	8. NEAREST WATERWAY/WATERBODY: Boise River
9. TAX PARCEL ID#: S1004325655	10. LATITUDE: 43.628478 LONGITUDE: -116.234613	11a. 1/4:	11b. 1/4: / 11c. SECTION: 5	11d. TOWNSHIP: 3N / 11e. RANGE: 2E
12a. ESTIMATED START DATE: Dec 1, 2023	12b. ESTIMATED END DATE: Feb 29, 2024	13a. IS PROJECT LOCATED WITHIN ESTABLISHED TRIBAL RESERVATION BOUNDARIES? ☒ NO ☐ YES Tribe:		
13b. IS PROJECT LOCATED IN LISTED ESA AREA? ☒ NO ☐ YES		13c. IS PROJECT LOCATED ON/NEAR HISTORICAL SITE? ☒ NO ☐ YES		

14. DIRECTIONS TO PROJECT SITE: Include vicinity map with legible crossroads, street numbers, names, landmarks.

From W State Street in Boise travel south on N Whitewater Park Blvd until you reach the Esther Simplot Park main entrance. Follow the drive over the bridge to the western-most parking lot adjoining the Boise River.

15. PURPOSE and NEED: ☐ Commercial ☐ Industrial ☒ Public ☐ Private ☐ Other

Describe the reason or purpose of your project; include a brief description of the overall project. Continue to Block 16 to detail each work activity and overall project.

The purpose of the project is repair/modify components of the existing Whitewater Park Phase II Drop Structure 1 to improve public safety and enhance functionality of the existing facilities.

16. DETAILED DESCRIPTION OF EACH ACTIVITY WITHIN OVERALL PROJECT. Specifically indicate portions that take place within waters of the United States, including wetlands: Include dimensions; equipment, construction, methods; erosion, sediment and turbidity controls; hydrological changes: general stream/surface water flows, estimated winter/summer flows; borrow sources, disposal locations etc.:

Refer to the attached Design Plans for detailed locations of the following PERMANENT features (all impacts are within the OHWM of the Boise River (perennial stream) and there are no wetland impacts):
-Modify Gates 5 & 6 on Drop Structure 1 (Drawing G005 Key Note "A")
Net 0 CY / 0 SF
-New Plunge Pool downstream of Gates 5 & 6 (Drawing G005 Key Note "H")
Excavate 412 CY & Fill 278 CY (riprap and grout) / 1,250 SF
-New Air Pipe Lines to Gates 5 & 6 (Drawing G005 Key Note "B")
Excavate 3 CY (riprap and grout) & Fill 3 CY (concrete, grout, and pipe) / 53 SF
-Repair Leakage on Left Bank (Drawing G005 Key Note "G")
Excavate 50 CY (riprap and grout) & Fill 50 CY (concrete, grout, and membrane) / 660 SF
- New Obermeyer Weir downstream of Wave Shaper (Drawing G005 Key Note "D")
Excavate 40 CY & Fill 54 CY (concrete and gate) & Fill 21 CY (riprap) / 714 SF
Refer to the attached Temporary Dewatering Figures for detailed locations of the following TEMPORARY features (all impacts are within the OHWM of the Boise River (perennial stream) and there are no wetland impacts):
-Boise River Dewatering between Drop Structures 1 and 3 (Dewatering Figures)
Dewater 1.4 acres / 510 linear feet and complete fish salvage (fish will be relocated downstream in the Boise River in coordination with IDFG)
100 cfs will be diverted around the work area and discharge back to the Boise River downstream of Drop Structure 3
All flow above 100 cfs will be diverted into the Farmer's Union Canal which flows back to the Boise River downstream of Veteran's Memorial Parkway

17. DESCRIBE ALTERNATIVES CONSIDERED to AVOID or MEASURES TAKEN to MINIMIZE and/ or COMPENSATE for IMPACTS to WATERS of the UNITED STATES, INCLUDING WETLANDS: See Instruction Guide for specific details.

There were no other alternatives considered to repair/modify the existing structures.

Impacts to the Boise River from the repairs/modifications and the new Obermeyer Weir are all within the previously approved disturbance area for the Whitewater Park Phase II.

18. PROPOSED MITIGATION STATEMENT or PLAN: If you believe a mitigation plan is not needed, provide a statement and your reasoning why a mitigation plan is NOT required. Or, attach a copy of your proposed mitigation plan.

The repairs/modifications are being implemented in the previously approved disturbance area for the Whitewater Park Phase II resulting in 0.045 acres of impacts.

The new Obermeyer Weir is proposed for installation in the previously approved disturbance area resulting in 0.016 acres of impact.

There is no mitigation proposed for this project.

19. TYPE and QUANTITY of MATERIAL(S) to be discharged below the ordinary high water mark and/or wetlands:

Dirt or Topsoil:	_____ cubic yards
Dredged Material:	_____ cubic yards
Clean Sand:	_____ cubic yards
Clay:	_____ cubic yards
Gravel, Rock, or Stone:	_____ cubic yards
Concrete:	_____ cubic yards
Other (describe): _____ :	_____ cubic yards
Other (describe: _____ :	_____ cubic yards

TOTAL:_____ cubic yards

20. TYPE and QUANTITY of impacts to waters of the United States, including wetlands:

Filling:	_____ acres	_____ sq ft.	_____ cubic yards
Backfill & Bedding:	_____ acres	_____ sq ft.	_____ cubic yards
Land Clearing:	_____ acres	_____ sq ft.	_____ cubic yards
Dredging:	_____ acres	_____ sq ft.	_____ cubic yards
Flooding:	_____ acres	_____ sq ft.	_____ cubic yards
Excavation:	_____ acres	_____ sq ft.	_____ cubic yards
Draining:	_____ acres	_____ sq ft.	_____ cubic yards
Other: _____ :	_____ acres	_____ sq ft.	_____ cubic yards

TOTALS: _____ acres _____ sq ft._____ cubic yards

21. HAVE ANY WORK ACTIVITIES STARTED ON THIS PROJECT? ☒ NO ☐ YES If yes, describe ALL work that has occurred including dates.

22. LIST ALL PREVIOUSLY ISSUED PERMIT AUTHORIZATIONS:

USACE & IDEQ: NWW-2009-00090
IDWR: S63-20701

23. ☒ YES, Alteration(s) are located on Public Trust Lands, Administered by Idaho Department of Lands

24. SIZE AND FLOW CAPACITY OF BRIDGE/CULVERT and DRAINAGE AREA SERVED: N/A Square Miles

25. IS PROJECT LOCATED IN A MAPPED FLOODWAY? ☐ NO ☒ YES If yes, contact the floodplain administrator in the local government jsrisdiction in which the project is located. A Floodplain Development permit and a No-rise Certification may be required.

26a WATER QUALITY CERTIFICATION: Pursuant to the Clean Water Act, anyone who wishes to discharge dredge or fill material into the waters of the United States, either on private or public property, must obtain a Section 401 Water Quality Certification (WQC) from the appropriate water quality certifying government entity.
See Instruction Guide for further clarification and all contact information.

The following information is requested by IDEQ and/or EPA concerning the proposed impacts to water quality and anti-degradation:

☐ NO ☒ YES Is applicant willing to assume that the affected waterbody is high quality?
☐ NO ☒ YES Does applicant have water quality data relevant to determining whether the affected waterbody is high quality or not?
☒ NO ☐ YES Is the applicant willing to collect the data needed to determine whether the affected waterbody is high quality or not?

26b. BEST MANAGEMENT PRACTICTES (BMP's): List the Best Management Practices and describe these practices that you will use to minimize impacts on water quality and anti-degradation of water quality. All feasible alternatives should be considered - treatment or otherwise. Select an alternative which will minimize degrading water quality

Water will be diverted out of the active construction area using a combination of temporary cofferdams and raising the existing gates on the wave shaper and sluiceway. The main flood control weirs have infrastructure built into the concrete and stoplogs/plastic sheeting will be used to cofferdam water. The water surface elevation will be lowered upstream of Drop Structure 1 and water will be lower than the entrance elevation into the side channel on the left bank by the fish ladder.

0-100 cfs will be diverted into the existing underground diversion pipe that was used during the initial construction of the Whitewater Park. Any flow above 100 cfs will be diverted into the Farmer's Union Canal intake which returns to the Boise River downstream of Veteran's Memorial Parkway. No flow will enter the Farmer's Union Canal past their intake gate structure.

All construction work will be performed in the dry. Dewatering pumps will be installed on an as-needed basis and the hoses will outlet downstream of the active work area back into the Boise River.

Through the 401 Certification process, water quality certification will stipulate minimum management practices needed to prevent degradation.

27. LIST EACH IMPACT to stream, river, lake, reservoir, including shoreline: Attach site map with each impact location.

Activity	Name of Water Body	Intermittent Perennial	Description of Impact and Dimensions	Impact Length Linear Feet
			TOTAL STREAM IMPACTS (Linear Feet):	

28. LIST EACH WETLAND IMPACT include mechanized clearing, filL excavation, flood, drainage, etc. Attach site map with each impact location.

Activity	Wetland Type: Emergent, Forested, Scrub/Shrub	Distance to Water Body (linear ft)	Description of Impact Purpose: road crossing, compound, culvert, etc.	Impact Length (acres, square ft linear ft
NONE				
			TOTAL WETLAND IMPACTS (Square Feet):	

29. ADJACENT PROPERTY OWNERS NOTIFICATION REQUIREM: Provide contact information of ALL adjacent property owners below.

Name: Waterfront District HOA Inc. Mailing Address: PO Box 45387 City: Boise State: Zip Code: 83711 Phone Number (include area code): NA E-mail: NA	Name: Idaho State Parks & Recreation Mailing Address: 5657 E Warm Springs Ave City: Boise State: ID Zip Code: 83712 Phone Number (include area code): NA E-mail: NA
Name: Farmers Union Ditch Co LTD Mailing Address: Po Box 1474 City: Eagle State: ID Zip Code: 83616 Phone Number (include area code): NA E-mail: NA	Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:
Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:	Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:
Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:	Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:

30. SIGNATURES: STATEMENT OF AUTHORIAZATION / CERTIFICATION OF AGENT / ACCESS

Application is hereby made for permit, or permits, to authorize the work described in this application and all supporting documentation. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein; or am acting as the duly authorized agent of the applicant (Block 2). I hereby grant the agencies to which this application is made, the right to access/come upon the above-described location(s) to inspect the proposed and completed work/activities.

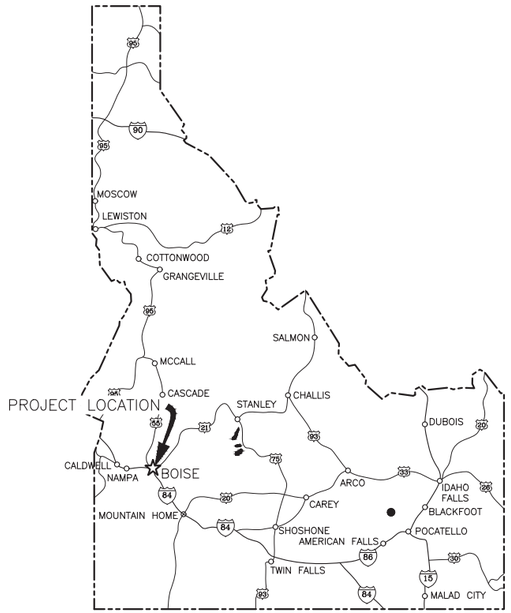
Signature of Applicant: _____ *Date:* 10/23/23

Signature of Agent: Greg Allington *Date:* 10/23/2023

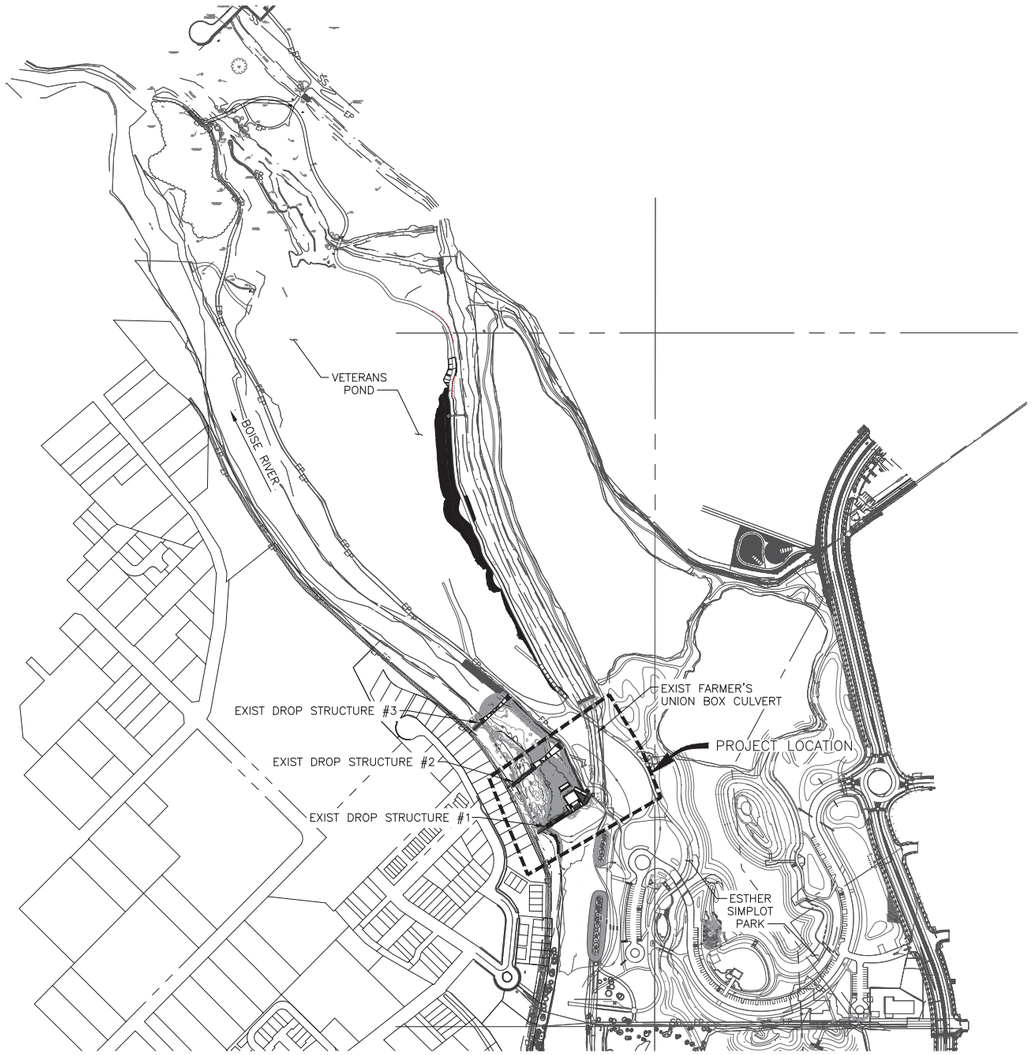
This application must be signed by the person who desires to undertake the proposed activity AND signed by a duly authorized agent (see Block 1, 2, 30). Further, 18 USC Section 1001 provides that: "*Whoever, in any manner within the jurisdiction of any department of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both*".

ATTACHMENT 2
DESIGN DRAWINGS

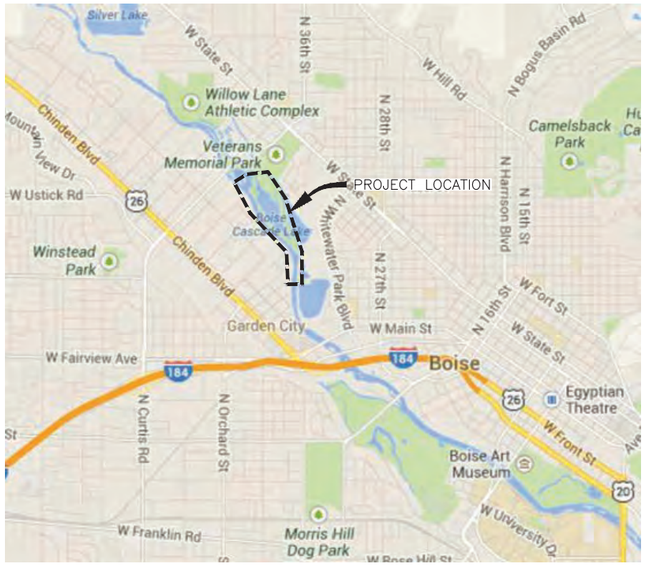
CITY OF BOISE
J.A. AND KATHRYN ALBERTSON FAMILY FOUNDATION
BOISE WHITEWATER PARK
2023 WINTER SPILLWAY MODIFICATIONS



LOCATION MAP
NTS



PROJECT LIMITS
NTS



VICINITY MAP
NTS

REV	DATE	BY	DESCRIPTION
B	08/09/23	MDM	SUBMITTAL DRAWINGS
A	11/18/22	MDM	SUBMITTAL DRAWINGS

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

McMillen

CITY OF BOISE
J.A. AND KATHRYN ALBERTSON FAMILY FOUNDATION
BOISE WHITEWATER PARK

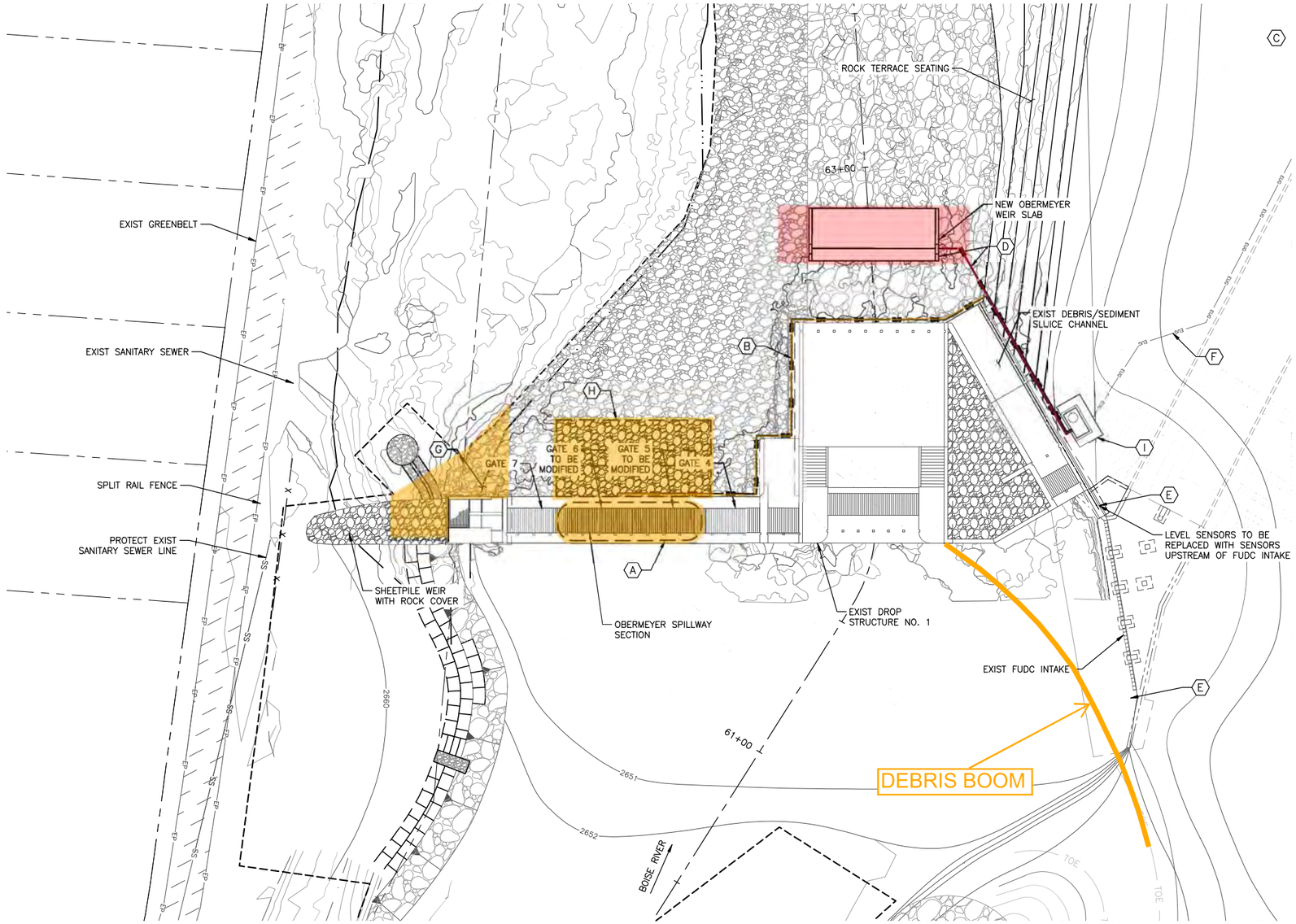
LOCATION MAP, VICINITY MAP, AND PROJECT LIMITS

DESIGNED J. BOAG
DRAWN R. WOOD
CHECKED M. McMILLEN
ISSUED DATE 08/09/23

DRAWING
G001
SHEET 1 OF 19
SCALE: AS NOTED

JOB NO: 13-108

Path: C:\Users\WoodRon\Box\MCM Projects\City of Boise\Boise River Water Park Design-Build\14.0 McLaughlin Modifications\14.11 Internal Design\6.0 Plans and Specs\6.3 CAD_G001.dwg Plot date: Aug 14, 2023 10:02pm



REACH 2 DROP STRUCTURE 1 DESIGN MODIFICATION PLAN

SCALE: 1"= 20'

0" 20' 40'

SHEET KEY NOTES:

A. REMOVE AND MODIFY GATES 5 AND 6 PER OBEMEYER DRAWINGS. MODIFICATIONS INCLUDE SPLITTING WEIR TO TWO (APPROXIMATELY EQUAL 10' SECTIONS) SECTIONS, ADDING SEAL LEAKS, SEAL FACING BARS, NEW SMALLER AIR BAGS, ADDING AN ADDITIONAL INCLINOMETER AND CABLE, REVISING RETAINING STRAPS. SEE OBERMEYER SHOP DRAWINGS FOR GATE MODIFICATION DETAILS.

B. ADD TWO NEW CONTROL ZONES FROM EQUIPMENT BUILDING AND ROUTE ALONG DOWNSTREAM EDGE OF STRUCTURES AS SHOWN ON MECH DRAWINGS. ENCASE LINES IN CONCRETE PER STRUCTURAL DRAWINGS.

C. CONFIGURATION OF AIR PIPING IN EQUIPMENT ROOM AS SHOWN ON MECH AND ELEC DRAWINGS. MCMILLEN TO MODIFY PLC PROGRAMMING FOR THE NEW GATE CONFIGURATION.

D. NEW 40' W X 4' TALL OBERMEYER WEIR TO BE ADDED TO STABILIZE EXISTING WAVESHAPER GATE TO BE ADDED WITH NEW SLAB, END WALLS, AIRLINE(S) AND CONDUIT AS REQUIRED BY OBERMEYER DRAWINGS.

E. ABANDON EXISTING EMBEDDED STILLING WELLS AND ADD NEW STILLING WELL UPSTREAM OF FUDC INTAKE. RUN CONDUIT ON UNDERSIDE OF EXISTING HANDRAIL, PAINT CONDUIT TO MATCH HANDRAIL.

F. ROUTE NEW AIR LINES AND CONDUIT ALONG EXISTING UTILITY ROUTING.

G. MITIGATE LEAKAGE BY INSTALLATION OF MEMBRANE ON LEFT BANK AS SHOWN ON CIVIL DRAWINGS.

H. ADD PLUNGE POOL DIRECTLY DOWNSTREAM OF MODIFIED SPILLWAY GATES PER CIVIL DRAWINGS.

I. REMOVE UNIT HEATER AND WIRING TO PURGE VALVES IN VAULT. REPLACE TERMINALS FOR INSTRUMENTATION WITH WATERPROOF HEAT SHRINK SPLICES.

Existing Structure Modifications In Boise River

New Structure In Boise River

New Structure or Modifications In Upland

REV	DATE	BY	DESCRIPTION
B	08/09/23	MDM	SUBMITTAL DRAWINGS
A	11/18/22	MDM	SUBMITTAL DRAWINGS

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

McMillen

CITY OF BOISE

J.A. AND KATHRYN ALBERTSON FAMILY FOUNDATION
BOISE WHITEWATER PARK

REACH 2 DROP STRUCTURE 1
DESIGN MODIFICATION PLAN

DESIGNED J. BOAG

DRAWN R. WOOD

CHECKED M. McMILLEN

ISSUED DATE 08/09/23

DRAWING

G005

SHEET 5 OF 19

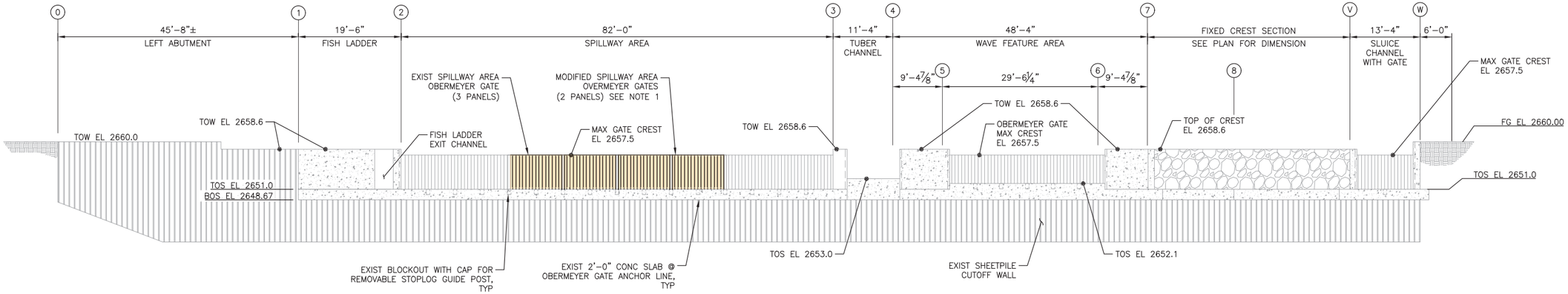
SCALE: AS NOTED

JOB NO: 13-108

Path: C:\Users\WoodRon\Box\MCM Projects\City of Boise\Boise River Water Park Design-Build\14.0 McLoughlin Modifications\14.11 Internal Design\6.0 Plans and Specs\6.3 CAD_G005.dwg Plot date: Aug 14, 2023 10:02pm

SHEET NOTES:

1. EXISTING GATE TO BE SPLIT INTO 2 GATES. LOCATION OF SPLIT, DESIGN OF GATES, AND ANCHORAGE REQUIREMENTS SHALL BE AS SPECIFIED BY GATE MANUFACTURER. ATTACHMENT TO CONCRETE SHALL BE AS SPECIFIED BY GATE MANUFACTURER AND THE DETAILS IN THESE DRAWINGS. NOTIFY ENGINEER OF ANY CHANGED CONDITIONS AND REQUIRED CONCRETE MODIFICATIONS NOT SHOWN IN THESE DRAWINGS.



REACH 2 – DROP STRUCTURE 1 SECTION

SCALE: 3/32"= 1'–0"

A S101

0' 8' 16'

REV	DATE	BY	DESCRIPTION
B	08/09/23	MDM	SUBMITTAL DRAWINGS
A	11/18/22	MDM	SUBMITTAL DRAWINGS

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

McMillen

CITY OF BOISE

J.A. AND KATHRYN ALBERTSON FAMILY FOUNDATION
BOISE WHITEWATER PARK

REACH 2 DROP STRUCTURE 1
SECTION

DESIGNED A. JABIR

DRAWN R. WOOD

CHECKED M. MERKLEIN

ISSUED DATE 08/09/23

DRAWING

S103

SHEET----OF 19

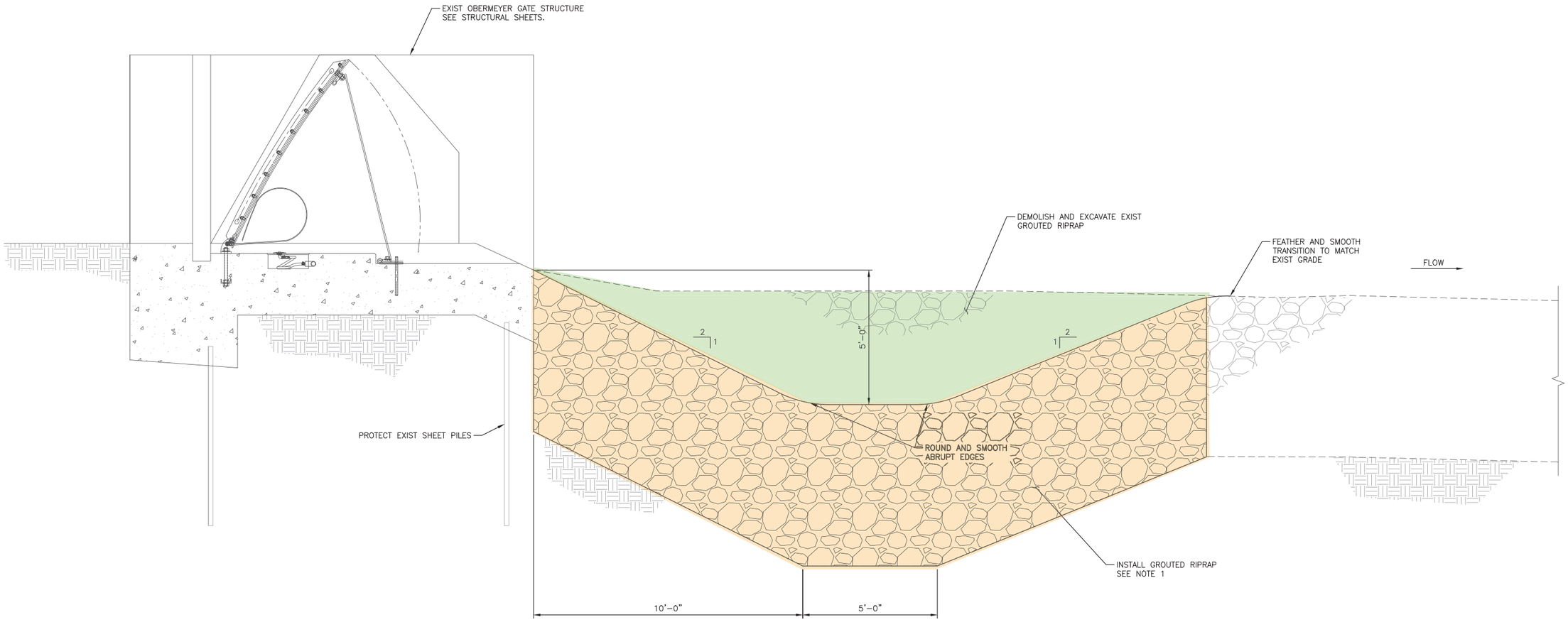
SCALE: AS NOTED

JOB NO: 13-108

Path: C:\Users\WoodRon\Box\MCM Projects\City of Boise\Boise River Water Park Design-Build\14.0 McLaughlin Modifications\14.11 Internal Design\6.0 Plans and Specs\6.3 CAD_S103.dwg Plot date: Aug 14, 2023 10:03pm

SHEET NOTES:

1. PLACE RIPRAP D50 = 3 FT AND GROUT TO MATCH EXIST. SEE SPECS FOR RIPRAP MATERIAL AND GROUTING METHOD. GROUTED RIPRAP SHALL BE GRINDED FOR A SMOOTH FINISH.



PLUNGE POOL SECTION

SCALE: 1/2"= 1'-0"

A C101

0' 2' 4'

REV	DATE	BY	DESCRIPTION
B	08/09/23	MDM	SUBMITTAL DRAWINGS
A	11/18/22	MDM	SUBMITTAL DRAWINGS

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

McMillen

CITY OF BOISE

J.A. AND KATHRYN ALBERTSON FAMILY FOUNDATION
BOISE WHITEWATER PARK

PLUNGE POOL SECTION

DESIGNED K. VO

DRAWN R. WOOD

CHECKED M. McMILLEN

ISSUED DATE 08/09/23

DRAWING

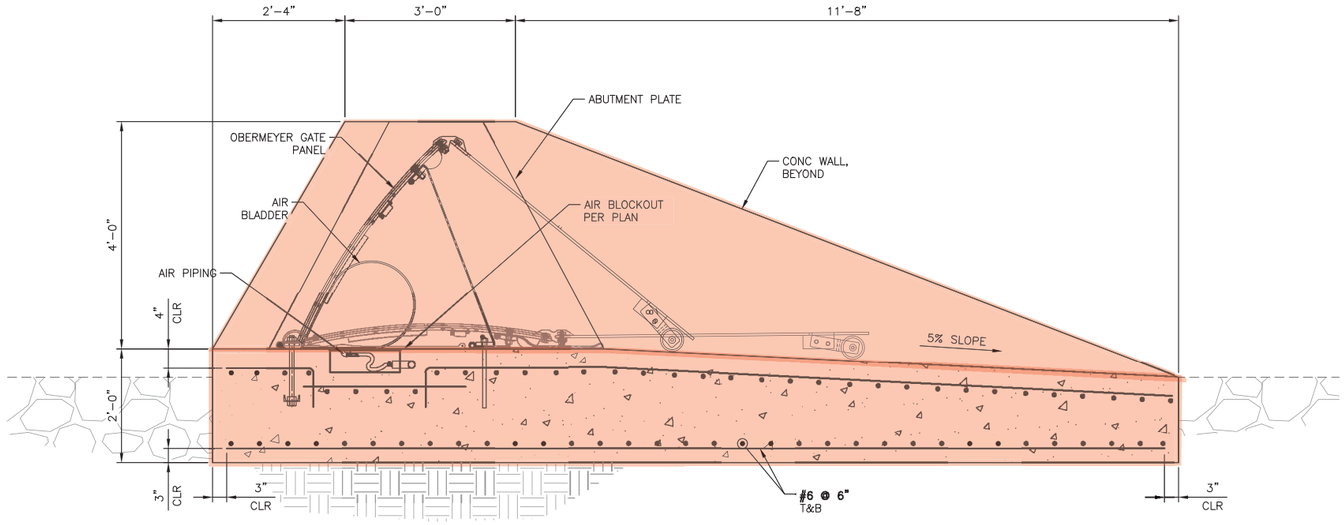
C102

SHEET----OF 19

SCALE: AS NOTED

JOB NO: 13-108

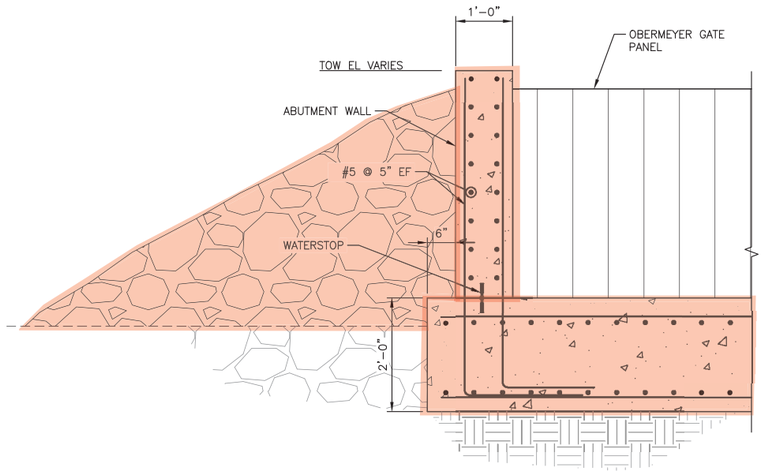
Path: C:\Users\WoodRon\Box\MCM Projects\City of Boise\Boise River Water Park Design-Build\14.0 McLaughlin Modifications\14.11 Internal Design\6.0 Plans and Specs\6.3 CAD_C102.dwg Plot date: Aug 14, 2023 10:03pm



ADJUSTABLE WEIR SLAB FOUNDATION SECTION

SCALE: 3/4"= 1'–0"

A S107



ADJUSTABLE WEIR WALL SECTION

SCALE: 3/4"= 1'–0"

B S107

REV	DATE	BY	DESCRIPTION
B	08/09/23	MDM	SUBMITTAL DRAWINGS
A	11/18/22	MDM	SUBMITTAL DRAWINGS

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

McMillen

CITY OF BOISE

J.A. AND KATHRYN ALBERTSON FAMILY FOUNDATION
BOISE WHITEWATER PARK

ADJUSTABLE WEIR SLAB FOUNDATION SECTION

DESIGNED B. BARRON

DRAWN R. WOOD

CHECKED M. MERKLEIN

ISSUED DATE 08/09/23

DRAWING

S108

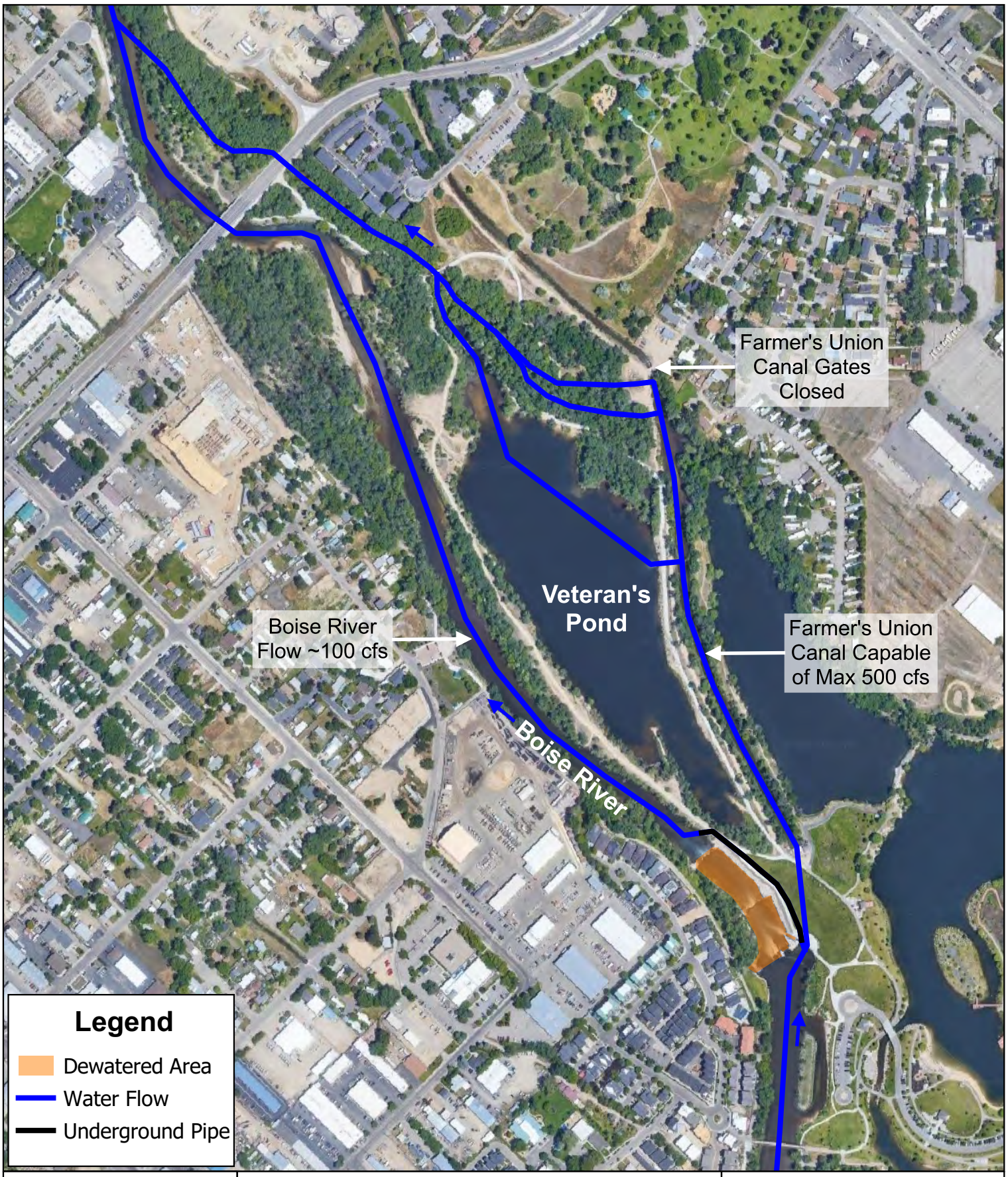
SHEET----OF 19

SCALE: AS NOTED

JOB NO: 13-108

Path: C:\Users\WoodRon\Box\MCM Projects\City of Boise\Boise River Water Park Design-Build\14.0 McLaughlin Modifications\14.11 Internal Design\6.0 Plans and Specs\6.3 CAD_S108.dwg Plot date: Aug 14, 2023 10:04pm

ATTACHMENT 3
TEMPORARY DEWATERING FIGURES



Adaptive Environmental Planning

Boise River Diversion Map

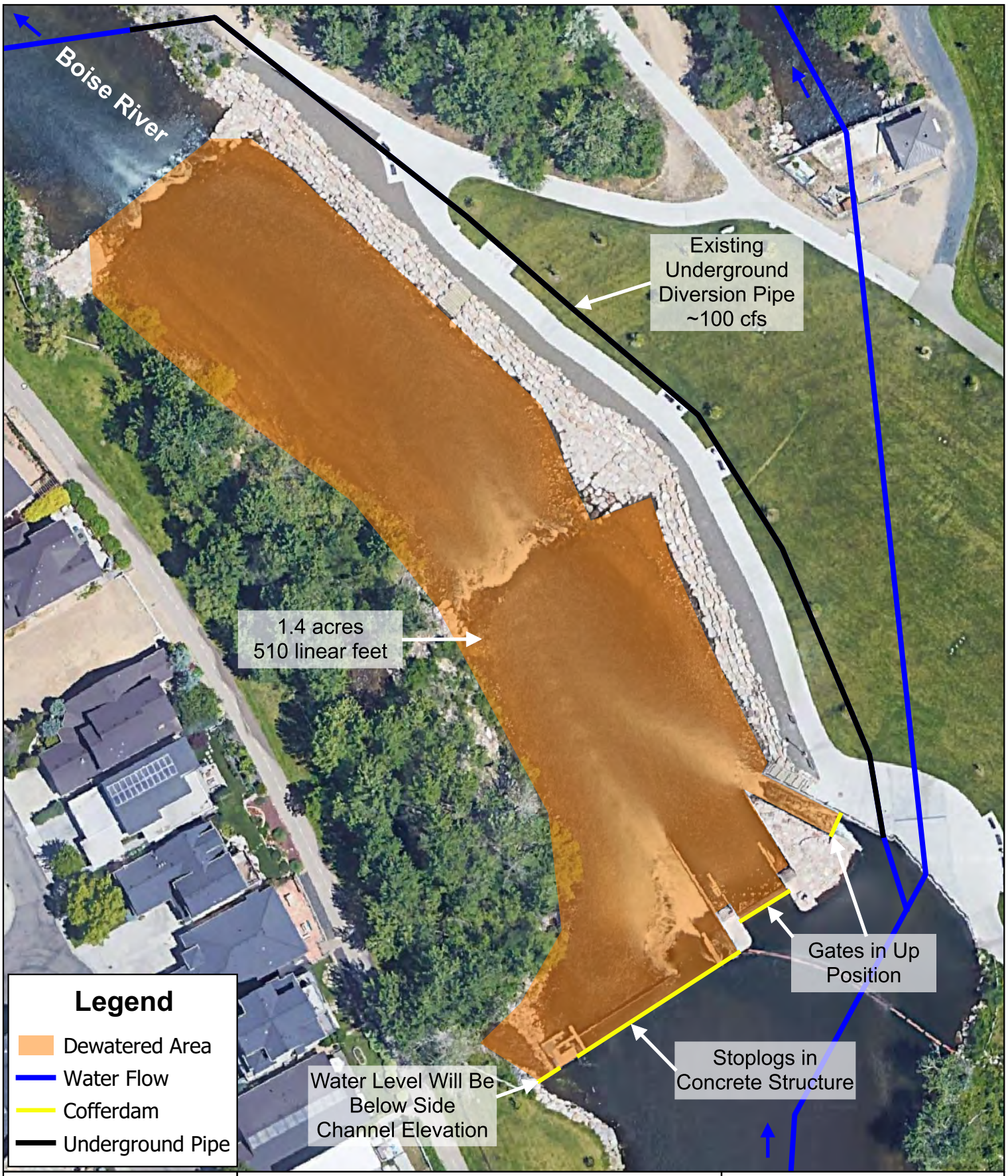
City of Boise Whitewater Park Phase II Mods

Boise, Idaho (Ada County)

Joint Application for Permits

N

0 250 500 ft



Adaptive Environmental Planning

Boise River Dewatering Map

City of Boise Whitewater Park Phase II Mods

Boise, Idaho (Ada County)

Joint Application for Permits

N

0 40 80 ft

ATTACHMENT 4
PHOTOGRAPHS

Photograph 1. Drop Structure 1 Gates 5 & 6 looking Downstream (October 2023).

Photograph 2. Drop Structure 1 Gates 5 & 6 and Plunge Pool Area looking Upstream (October 2023).

Photograph 3. Left Bank Side Channel Entrance and Fish Ladder looking Downstream (October 2023).

Photograph 4. Left Bank Side Channel Leakage Through Riprap and Grout (October 2023).

Photograph 5. Drop Structure 1 Wave Shaper looking Upstream (October 2023).

Photograph 6. Drop Structure 1 Sluiceway looking Upstream (October 2023).

Photograph 7. New Obermeyer Weir Location Downstream of Wave Shaper looking Downstream (October 2023).

Photograph 8. New Obermeyer Weir Location Downstream of Wave Shaper looking Upstream (October 2023).

Photograph 9. Temporary Diversion Pipe Inlet above Drop Structure 1 (October 2023).

Photograph 10. Temporary Diversion Pipe Outlet to Boise River below Drop Structure 3 (October 2023).

MEMO

TO: Cass Jones, Stream Channel Protection Program, Idaho Department of Water Resources

FROM: Sara Arkle, Parks Superintendent

CC: Mort McMillen, McMillen Corporation

Darrel Early, Deputy City Attorney, Boise City Attorney's Office

DATE: 12/15/2023

RE: Boise Whitewater Park Phase II Modifications – IDWR Response

---

The following memo is submitted for your consideration during the processing of the Joint Application for Permits for modifications to the Boise Whitewater Park Phase II which was approved under permit #S63-20701. The information presented in this memo is intended to resolve questions raised during the meeting held on December 5, 2023 regarding future plans for downstream passage by recreational users of the river.

Background

In 2019, an in-river recreational feature was constructed associated with improvements to the Farmer's Union diversion adjacent to Esther Simplot Park. Unfortunately, the waveshaper recreational feature has not performed according to expectations and the City has not issued a certificate of completion for the structure. The City has been working with the engineering firm under contract to address operational challenges with the waveshaper and the team is ready to modify the structures to improve the function of the recreational feature and user experience. These modifications are necessary to create a consistent and reliable in-river wave feature and to address known hazards. In addition, the modifications must be completed during the winter non-irrigation season to ensure water delivery commitments are met to Farmer's Union Irrigation District.

Resolution of concerns regarding downstream passage for the upcoming 2024 floating season is dependent upon timely issuance of a stream channel alteration permit so that construction of the modifications can be completed the 2023-2024 winter non-irrigation season.

Actions Relating to Downstream Passage:

As discussed in the December informational meeting, during the 2020-2023 floating seasons, instability of the recreational wave feature at Drop Structure 1 (DS1) in the

Phase II section of the park required the City of Boise to close the wave feature except for monitored sessions.

During the 2023 floating season, recreational floaters seeking to pass DS1, were instructed by signage upstream of DS1 and information on the Boise City Parks and Recreation Department website to portage around DS1. This determination was made out of an abundance of caution and based on the observations of our wave technicians and the experience of users. In addition, throughout the 2020 and 2023 floating seasons, the tuber bypass channel was largely operational and could serve as an option for through floaters. There were times however, during monitored sessions, when low flows in the river required the tuber bypass to be closed to maintain wave shape and performance while still meeting irrigation demand in the Farmers Union Canal diversion. Thus, for the majority of the 2020-2023 floating seasons, recreational floaters had two options for passage of DS1.

A. The tuber bypass channel
B. Portage

Commercial recreational operators on the river were advised to use their judgment on which of these options to select.

To protect against possible injury or loss of life due to a potentially unstable wave, the DS1 wave feature was closed to all users other than during monitored sessions and the log boom was deployed in a manner different than originally permitted to discourage any downstream passage of recreational users of the river through the wave feature.

As discussed during the December 5, 2023 meeting, through the current Joint Application for Permits submittal, the engineering firm under contract is working with the City to resolve the wave stability issues with the DS1, wave feature. And, presuming the modifications to the wave feature perform as designed, it is the intention of the City to complete the construction and move the log boom back to its originally permitted position. There, it will serve its intended purpose to deflect debris away from the Farmer's Union Canal Diversion Trash Rack and leave an unobstructed pathway through the wave feature, in addition to the adjacent tuber bypass.

In other words, if the modifications are successful, recreational river users will have three options for downstream passage of the DS1 wave feature during the 2024 floating season and beyond.

A. The tuber bypass channel
B. Transiting through the wave feature
C. Portage

Utilization of these alternatives will be left to the judgment of the recreational user of the river as governed by U.S. Coast Guard Rules and proper boating etiquette.

Signage associated with the Boise Whitewater Park will be modified to conform to the new passage configuration and inform boaters approaching the whitewater park of their options.

Should issuance of the permit be delayed so that construction is not possible during the 2023/2024 winter season, or should the modifications proposed in the permit application do not adequately resolve safety concerns and monitored sessions are still required, the City will have little choice but to continue with the strategies deployed in the 2020-2023 seasons for safety reasons. In that case the City will seek emergency approval from IDWR pursuant to IDAPA 37.03.07.050 for the continued deployment of the log boom to discourage downstream passage through the wave feature while still allowing for downstream passage by either the tuber bypass or portage.

Technical Memorandum			
To:	Sara Arkle, City of Boise Jim Purdy, City of Boise	Project:	City of Boise Phase II Water Park – Drop Structure No. 1 Modifications
From:	Morton D. McMillen, P.E. McMillen Inc. 1471 Shoreline Dr STE 100 Boise, ID 83702	cc:	File
Prepared by:	Steven Klawitter	Job No.:	21-106
Date:	December 15, 2023		
Subject:	Drop Structure No. 1 - Hydraulic Analysis		

Revision Log

Revision No.	Date	Revision Description
0	September 27, 2023	75% Design
1	December 15, 2023	Revised based on City review

1.0 Introduction

This Technical Memorandum (TM) presents the results of hydraulic analyses related to proposed structure modifications for the new J.A. and Kathryn Albertson Family Foundation Boise Whitewater Park Phase II (Project).

1.1 Purpose

The purpose of this TM is to present results of hydraulic analyses based on the proposed scope of modification to the Project which includes enhancements of the main spillway, modifications to the existing waveshaper to improve tailwater control and hydraulic jump stability, modifications to the controls vault, relocation of stilling wells, and miscellaneous updates to project features that address current challenges associated with the operation of the Project. Most relevant to the hydraulic analyses are the enhancements of the main spillway and modifications to the existing waveshaper.

2.0 Summary of Proposed Modifications

The proposed modifications to the Project include the following elements which have direct impact on the hydraulic design and performance of the structure. These modifications were developed based on the operational challenges identified and summarized under the previous TM Drop 1 Structure Modifications Scope of Work dated June 6, 2023 (McMillen 2023).

2.1 Spillway Modifications

McMillen proposes to split the current 20-foot-wide Gate 5 and Gate 6 to create four 10-foot-wide gates. A sketch of this concept is shown in Figure 1. This will provide increased flexibility for operations of the main spillway and provide flexibility in a variety of flow management situations as well as the following benefits:

- The majority of low flow scenarios flow could be managed with only one or two 10-foot-wide spillway gates particularly when the waveshaper is not in operation.
- Boaters who miss the bypass channel could pass down the main channel and be passed through the Drop 1 spillway with high velocity.
- Ability to shape flow to the center of the river channel using four smaller gates by having one or two center gates (Gate 6 and Gate 7) down and Gate 5 or Gate 8 partially down.

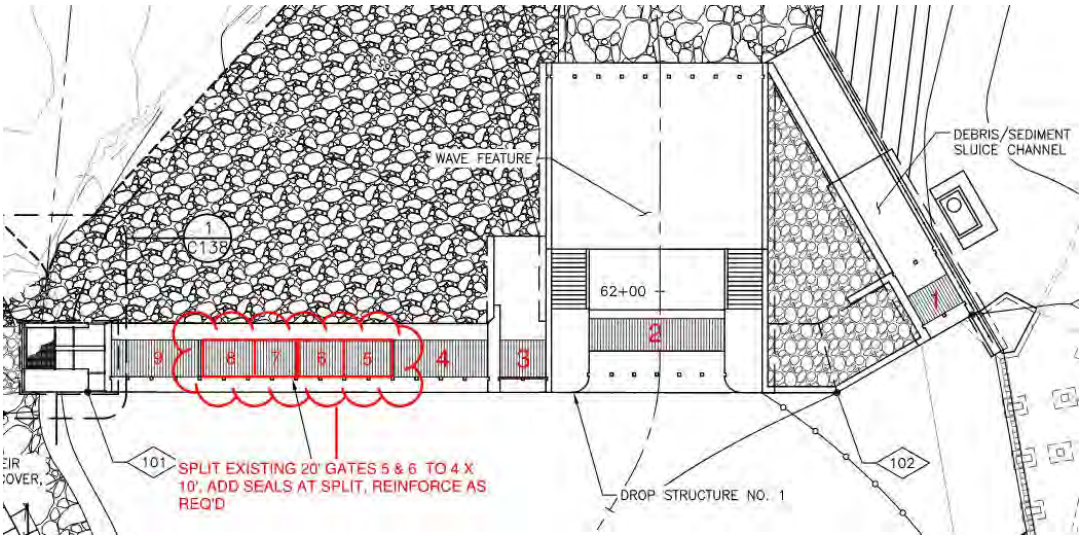


Figure 1 – Proposed Spillway Modifications

The work required to complete the modifications to this feature will include:

- Physical modification of the existing Obermeyer gates. McMillen has confirmed with Obermeyer that it is feasible and the best approach to modify the existing gates.
- Add new piping and electrical cable in the existing routing path from the control building to the new gates.

- Add additional inclinometers to the new gates to allow independent control of all gates.
- Add two gate control zones to the existing Obermeyer controls gates including new valving, piping and PLC programming.
- Dewatering of the drop structure to support construction.

In addition to the structural modifications of the spillway, a 5-feet-deep plunge pool will be excavated downstream of the new 10-feet-wide gates to provide better hydraulic conditions for rafters or tubers that may pass over the modified spillway gate section.

2.2 Waveshaper Modifications

Waveshaper modifications will be focused on downstream control and making the waveshaper less sensitive to changes in the overall river flowrate.

Through an alternatives analysis process, McMillen proposes constructing an adjustable “flip-lip” type feature on a new concrete slab downstream of the waveshaper gate for fine tuning of the tailwater. This feature would be adjustable from the riverbank without dewatering. This structure would consist of a new fully submerged Obermeyer gate downstream of the existing waveshaper structure. In the raised position, the gate would provide additional tailwater depth within the waveshaper feature to improve the operational range. During high river flows, the gate will be lowered to maximize the hydraulic capacity of the main river channel. The new gate would be 4-feet-high when fully raised and 40-feet-wide. The crest of the new Obermeyer gate when fully raised would be approximately 20 feet downstream of the end of the existing concrete waveshaper slab. Additional details related to the design of the new Obermeyer structure are provided under separate cover in the detailed design drawings.

3.0 Summary of Hydraulic Analyses

The following sections discuss the hydraulic analyses performed to assess the modifications proposed to the spillway and waveshaper gates. In general, the proposed modifications are intended to provide increased operational flexibility to adjust drop structure gate positions. Optimal gate positions for all gates should be selected during startup and testing after the modifications have been completed.

3.1 Spillway Gate Empirical Analysis

To assess the changes to the spillway hydraulics following the modification of the two central 20-feet-wide gates into four 10-feet-wide gates, McMillen performed an empirical analysis using a traditional weir equation. A critical assumption included in this analysis is the weir discharge coefficient. The weir coefficient selected for this analysis was based on a relationship of depth over the gate and discharge rate developed for the waveshaper gate. This relationship was estimated based on measurements manually collected at the site in 2019. The developed weir coefficients generally vary between 3.2 and 3.5 for the flow rates and depths evaluated. It is assumed that weir coefficient relationship developed for the waveshaper gate would be similar to that of the spillway gates. The rating curves developed for a 10-foot gate and 20-foot gate are shown in Figure 2.

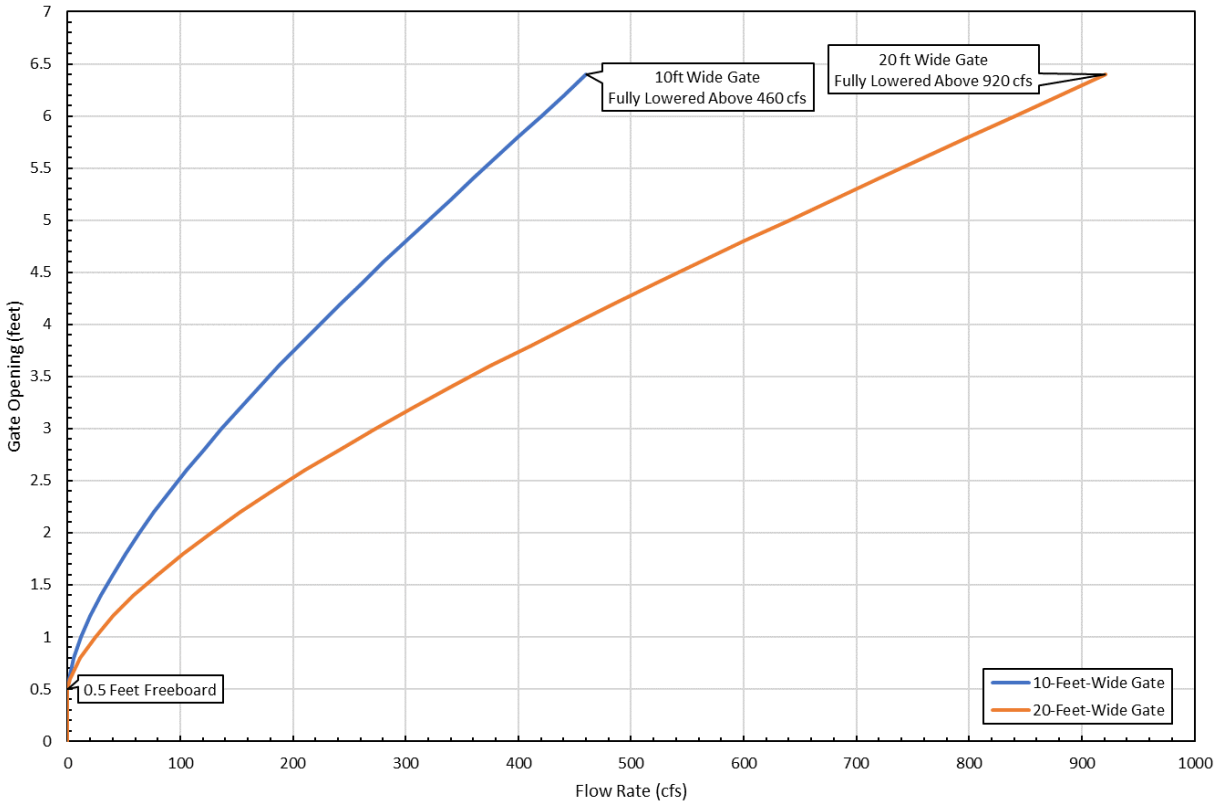


Figure 2 – Comparison of Rating Curves for Singular 10-feet-wide vs 20-feet-wide Gate

As can be seen in this figure, the capacity of a singular 10-feet-wide gate is half that of a 20-feet-wide gate. This leads to a capacity of approximately 460 cfs when a 10-feet-wide gate is fully opened as compared to 920 cfs for a 20-feet-wide gate. Based on these developed rating curves, a full operational curve for all of the spillway gates can be estimated as shown in Figure 3.

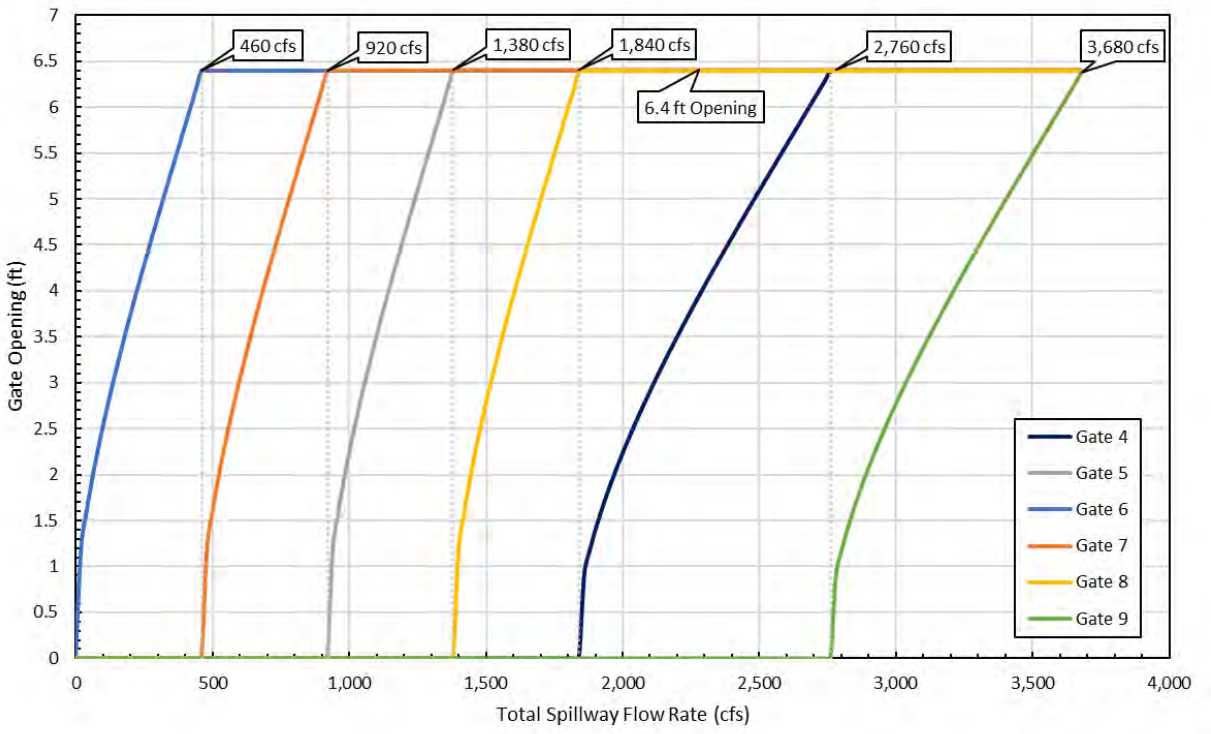


Figure 3 – Overall Spillway Operational Rating Curve

It can be seen in this figure that the modification of two of the 20-feet-wide gates into 10-feet-wide gates provides significantly more operational flexibility.

3.2 Hydraulic Model Setup

To further assess the hydraulics of the drop structure and the proposed modifications, McMillen used computational fluid dynamics (CFD) modeling. The use of a CFD model was instrumental in assessing the hydraulics of the structure due to the dynamic wave hydraulics and complex gate structures. CFD simulations were performed using FLOW3D software (version 22.2.0.17). The CFD model was developed to include a portion of the river upstream of the drop structure, the sluice, waveshaper, bypass gate, spillway, non-overflow sections, and a portion of the river downstream past drop structure 3. The model geometry at drop structure 1 for existing conditions is shown in Figure 4.

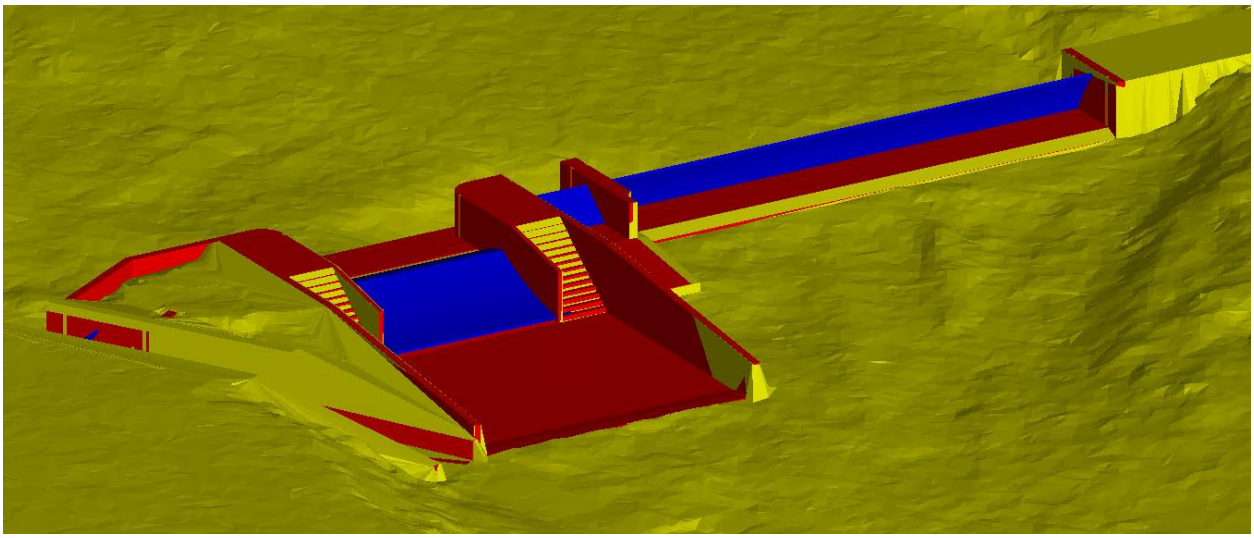


Figure 4 – CFD Model Geometry

Some additional modifications were made to the geometry to remove irregularities from the surveyed surface that did not appropriately represent the as-built conditions of the riverbed. The model domain extended from approximately 60 feet upstream of drop structure 1 to approximately 50 feet downstream of drop structure 3. These extents were selected to place the boundary conditions far enough away from drop structure 1 to not influence the results while also trying to maintain a small and computationally efficient model domain. The model domain was developed using mesh spacings from 0.25 to 1 foot. The smaller mesh spacings were used near the drop structure features to better capture the shallow flow depths as water passes over the gates. The model geometries and mesh were used to develop the mesh-generated Fractional Area Volume Obstacle Representation (FAVOR) geometry in the CFD model. The FAVOR method is used by FLOW3D to represent geometry by smoothly blocking out fractional portions of the grid cells filled with the solid geometry. A comparison of the original CAD geometry and the FAVOR generated geometry at the left side of the spillway approach is shown in Figure 5.

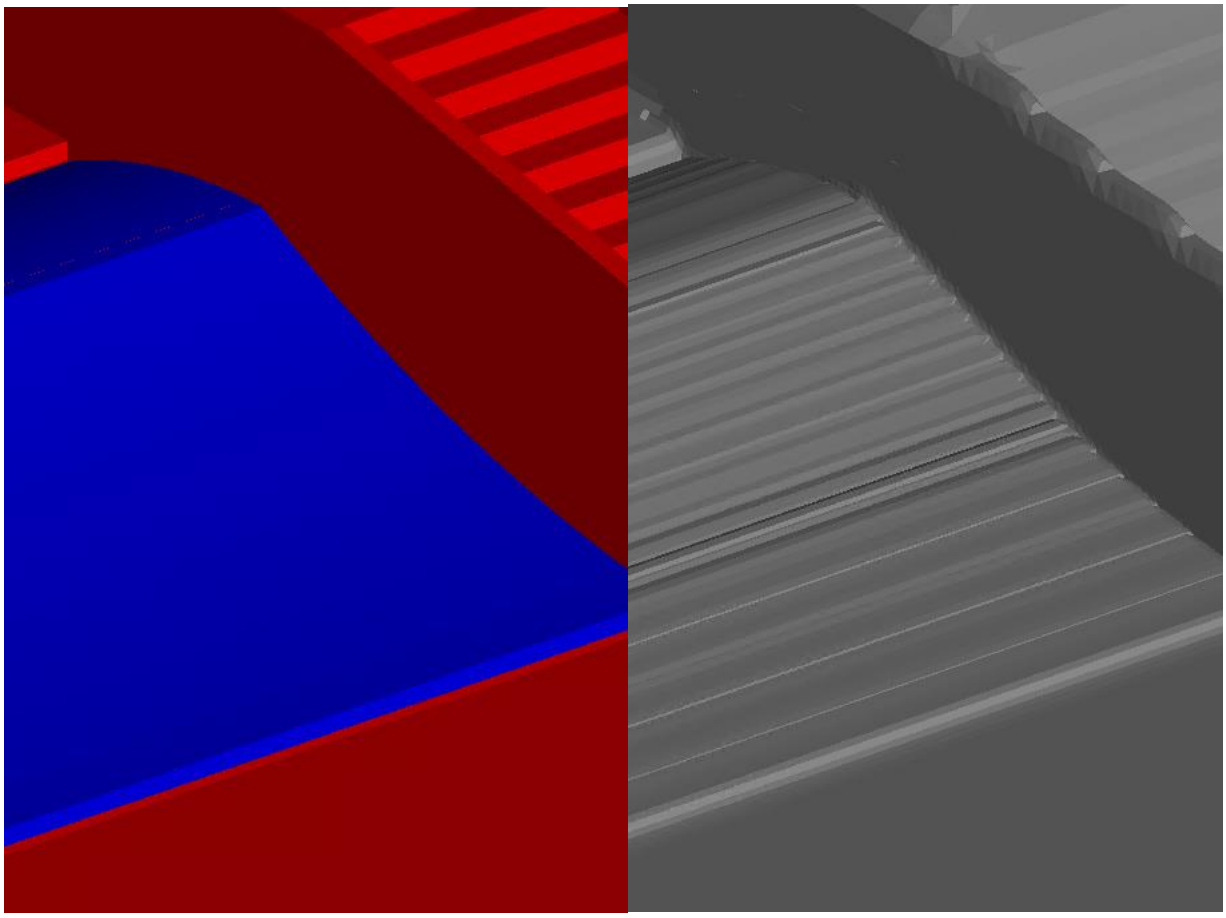


Figure 5 – Comparison of CAD and FAVOR Geometries

Within the FLOW3D model, parameters were selected to appropriately model the proposed waveshaper conditions. The FLOW3D model offers six different options for modeling turbulence. For this study, the k-ε Renormalization Group (RNG) model was used. Flow Science (the developers of FLOW3D) explains that this model is "known to describe low intensity turbulence flows and flows having strong shear regions more accurately". Additionally, the Immersed Boundary Method (IBM) option was selected. This option is beneficial for evaluating force predictions near walls. Downstream of the proposed Obermeyer structure the shallow water modeling option within FLOW3d was used. This allows the model domain to expand significantly but utilizes simplified depth-averaged calculations to improve computation efficiency where high resolution results are non-critical. The CFD model utilizes a variable timestep that is dynamically computed based on convergence criteria set within the program. This allows the timestep to vary depending on the flow regime within the model domain allowing for a stable run without sacrificing runtime.

At the downstream boundary condition a tailwater rating curve was used. This curve was based on measurements taken in 2019 downstream of drop structure 3. The measurements extended up to a flowrate of 6,560 cfs, above which the curve was linearly extrapolated. At smaller river flowrate of less than about 1,800 cfs the tailwater rating curve was modified to account for diversions through the FUDC bypass. At large flow rates there are significant impacts from

submergence at each drop structure and backwatering through the full river reach. The tailwater rating curve used for these analyses is shown in Figure 6.

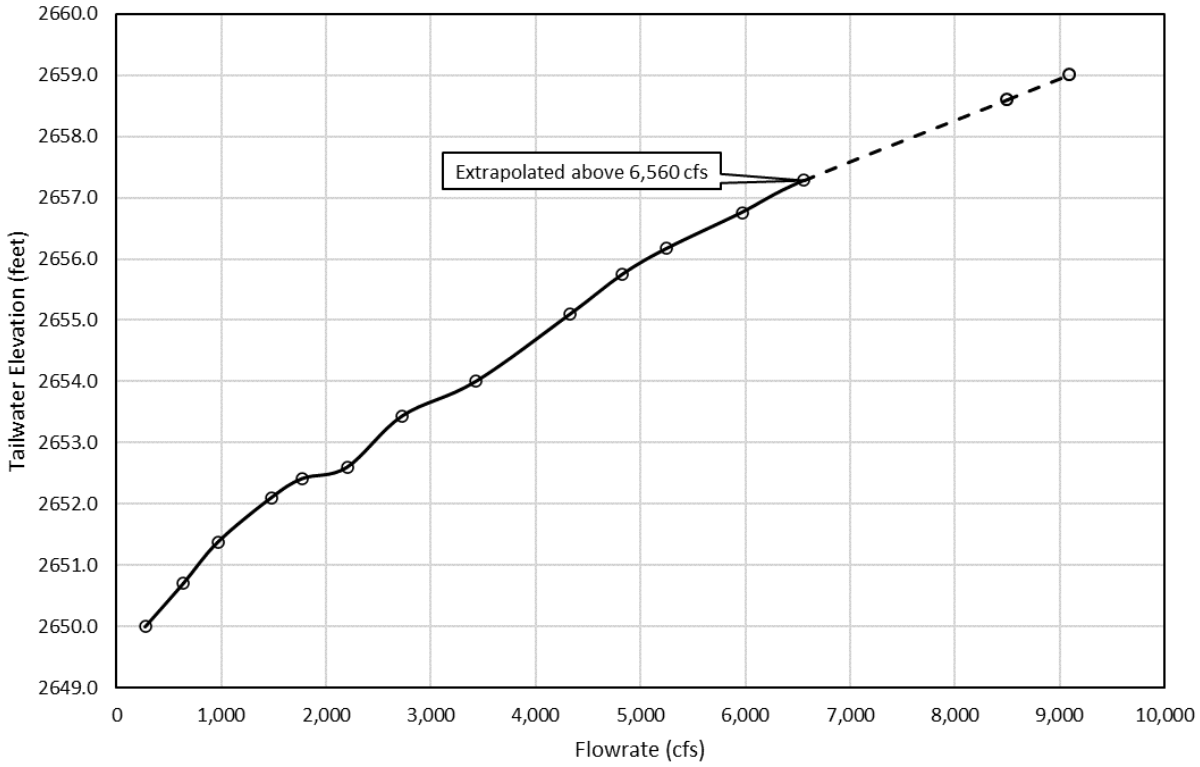


Figure 6 – Tailwater Rating Curve

3.3 Hydraulic Model Results

3.3.1 Waveshaper Gate

Within the FLOW3D model multiple hydraulic scenarios were prepared to evaluate the existing and proposed hydraulics of drop structure 1. These scenarios are summarized in Table 1.

Table 1 – Model Scenario Summary

Scenario No.	Configuration	Drop Structure Flow Rate[1] and Open Gates	Objectives
1	Existing Conditions	500 cfs @ Waveshaper and Bypass	• Confirm undesirable hydraulics at low flow rates • Establish baseline for comparison to proposed conditions
2	Existing Conditions	1,400 cfs @ Spillway, Waveshaper, and Bypass	• Establish baseline for comparison to proposed conditions at an intermediate flow rate
3	Existing Conditions	8,000 cfs @ All Gates, Bankfull	• Establish baseline for comparison to proposed conditions at a high flow rate
4	Proposed Conditions	500 cfs @ Waveshaper and Bypass	• Evaluate wave hydraulics at low end of operational range • Confirm improved hydraulic jump conditions
5	Proposed Conditions	1,400 cfs @ Spillway, Waveshaper, and Bypass	• Evaluate operations of new Obermeyer gate at an intermediate flow rate
6	Proposed Conditions	830 cfs @ Waveshaper and Bypass	• Evaluate wave hydraulics at upper end of operational range
7	Proposed Conditions	7,950 cfs @ All Gates, Bankfull	• Evaluate impacts on overall river water surface and flow regime at a high flow rate

1. Flow rates indicated are over drop structure 1 and do not account for potential diversions through the FUDC bypass or additional flows from Esther Simplot Park which includes Sand Creek.

Except for scenarios 3 and 7, all scenarios were performed with the forebay at El. 2657.0 which has previously been established as beyond the upper bound of the original waveshaper design[1]. Within these scenarios, gate openings were modified to match the targeted flowrates and a discharge of approximately 40 cfs is included at the bypass gate. For scenarios 3 and 7, the

[1] Previous design iterations by McLaughlin Whitewater included flows down to 300 cfs with a forebay of EL 2657.0 which is a challenging set of criteria for a wide gate for which the original waveshaper gate was not designed for. Per TM006 paragraph 2.3.2 the waveshaper design is designed for 700-1200 cfs. In practice the actual usable range with modification will likely allow for 500-1200 cfs over the waveshaper with a higher than original forebay of EL. 2657.0.

forebay elevation model boundary condition was held at the bankfull capacity (approximately El. 2660.0) with all gates fully lowered and the resulting river flow rates were measured.

3.3.1.1 Scenario 1 – Existing Conditions 500 cfs at Waveshaper

Through discussions with the City, it was established that the waveshaper does not produce desirable hydraulic conditions at low flows. This was exhibited by the CFD model which showed similarly unstable wave operations at low flows. The depth-averaged velocity regime for this scenario is shown in Figure 7.

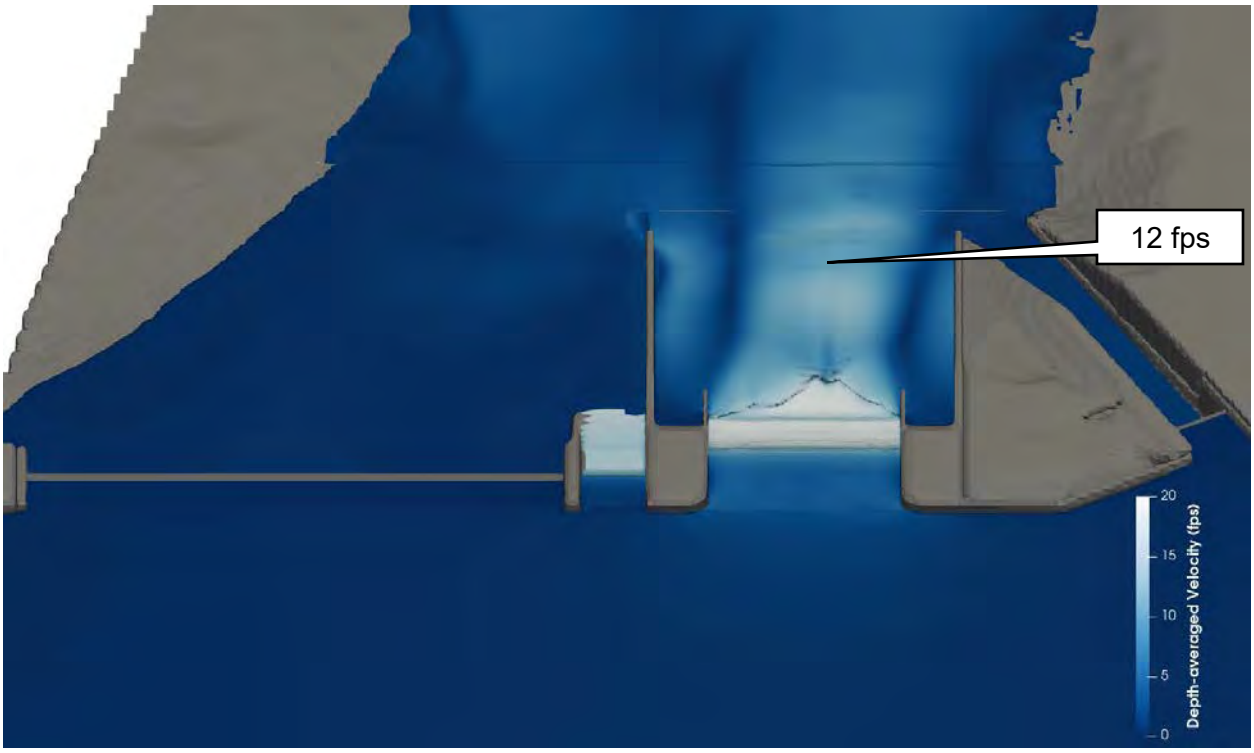


Figure 7 – Depth Averaged Velocities for Scenario 1 (Existing Conditions, 500 cfs)

As can be seen in this figure, a hydraulic jump is not well formed over the toe of the waveshaper gate. This agrees with general observations at the structure. Further, it can be seen that the majority of flows pass uniformly downstream towards drop structure 2 after exiting the waveshaper structure. This is expected as the existing conditions generally have no obstructions in the channel immediately downstream of the waveshaper.

3.3.1.2 Scenario 2 – Existing Conditions 1,400 cfs at Waveshaper and Spillway

Under existing operations for drop structure 1, flows beyond the capacity of the waveshaper gate and bypass channel are passed through the spillway gates starting from the right (looking downstream, Gate 4). McMillen evaluated a scenario where flows are passed through the waveshaper gate, bypass channel, and spillway. In this scenario, the crest of Gate 4 was lowered to El. 2651.85. which is approximately 5.15 feet below the forebay elevation which resulted in a flow rate of approximately 750 cfs through the spillway. Additionally, the

waveshaper gate crest was lowered to El. 2653.2. The hydraulic capacity estimated by the CFD model for both the waveshaper and existing spillway gates is consistent with analyses performed during the initial drop structure design. An isometric of the depth-averaged velocities for scenario 2 is presented in Figure 8.

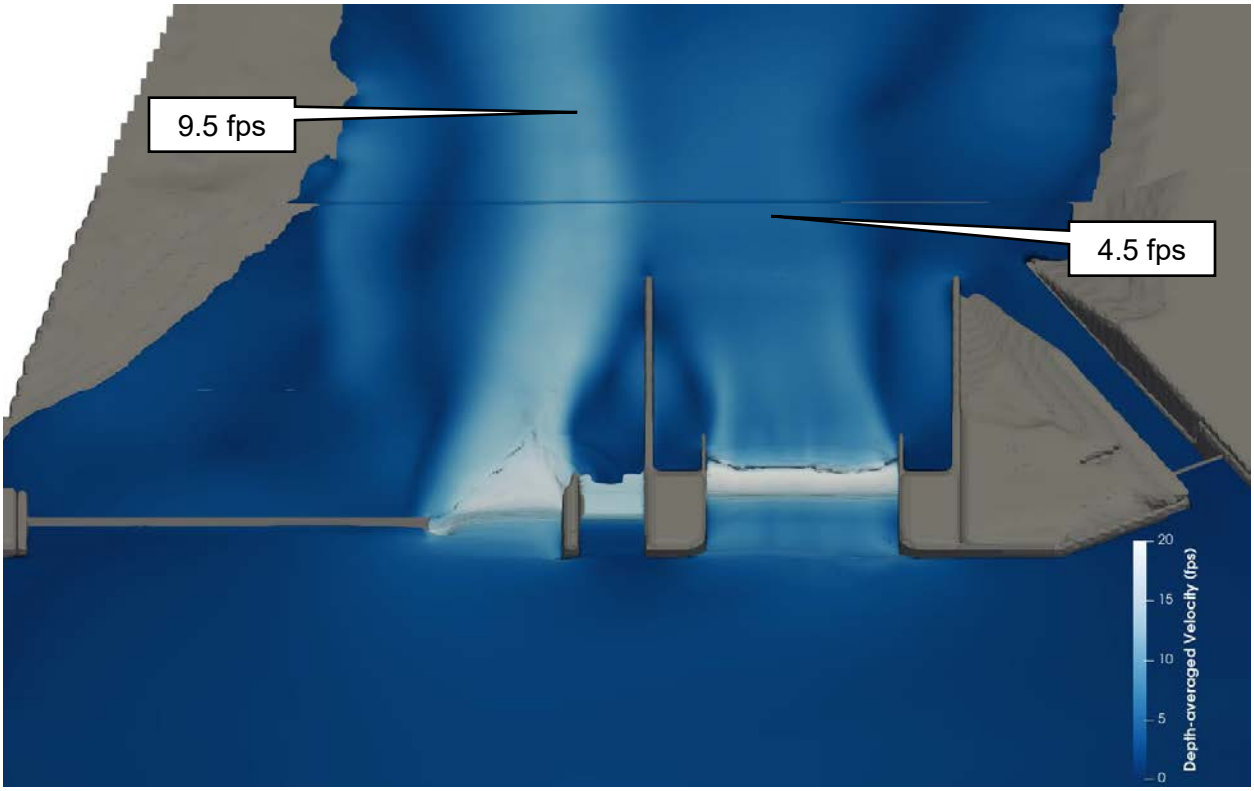


Figure 8 – Depth Averaged Velocities for Scenario 2 (Existing Conditions, 1,400 cfs)

As can be seen in this figure, the velocities downstream of Gate 4 are higher than at the waveshaper as a similar amount of flow to the waveshaper is passed through a narrower gate opening (20 ft vs 30 ft). At the waveshaper, a jump does form but exhibits some instability at the edges near the training walls.

3.3.1.3 Scenario 3 – Existing Conditions Bankfull Capacity

In the bankfull capacity scenario, all gates are fully lowered to pass their maximum capacity. Under existing conditions this bankfull capacity is estimated to be approximately 8,000 cfs. This capacity is significantly impacted by backwatering from the downstream structures and riverine hydraulics. This flowrate represents approximately 48% of the 100-year discharge (16,600 cfs). An isometric of the depth averaged velocities at drop structure 1 under a bankfull flow scenario is presented in Figure 9.

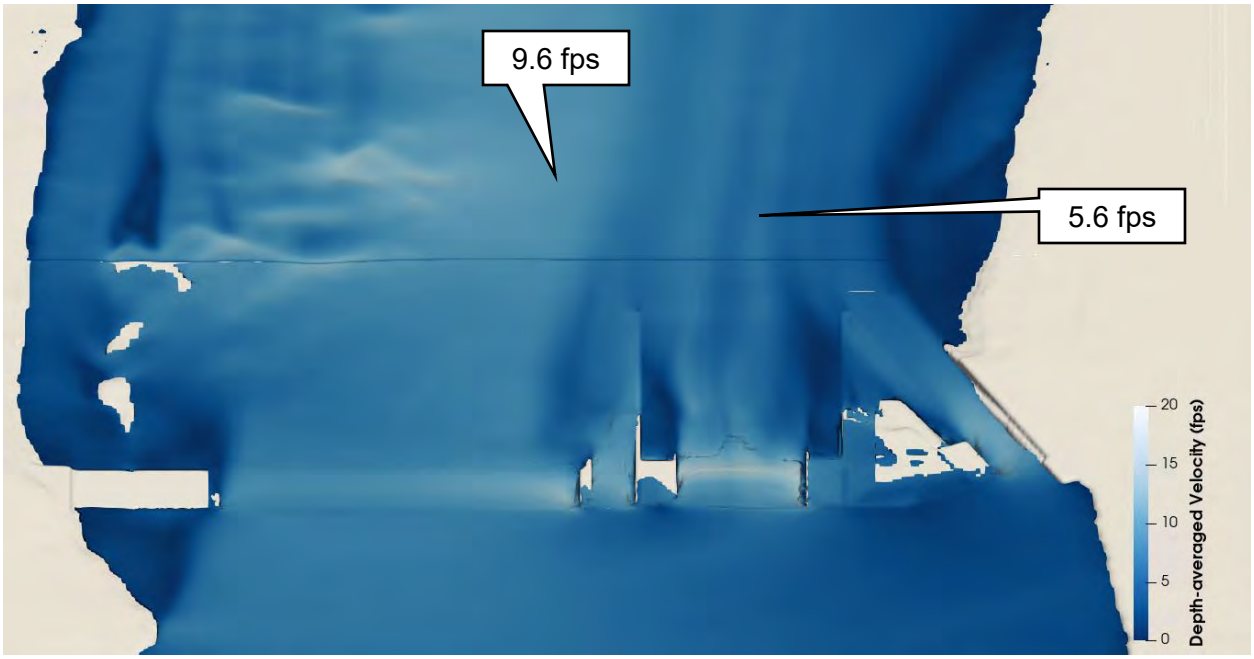


Figure 9 – Depth Averaged Velocities for Scenario 3 (Existing Conditions, Bankfull Capacity)

As can be seen in this figure there is significant overtopping of the portions of the drop structure between gates 1 and 2 (sluice and waveshaper). Velocities at the left side of the river downstream of the spillway are slightly higher than those at the right. This is similar to scenario 2 where more significant flows are passed through the spillway than the other gates. A submerged jump develops at the waveshaper gate but is well beyond the surfable range the structure is designed for.

This scenario was also developed to evaluate water surface elevations downstream of drop structure 1. A plan view of the water surface elevations in the reach between drop structure 1 and 2 is shown in Figure 10.

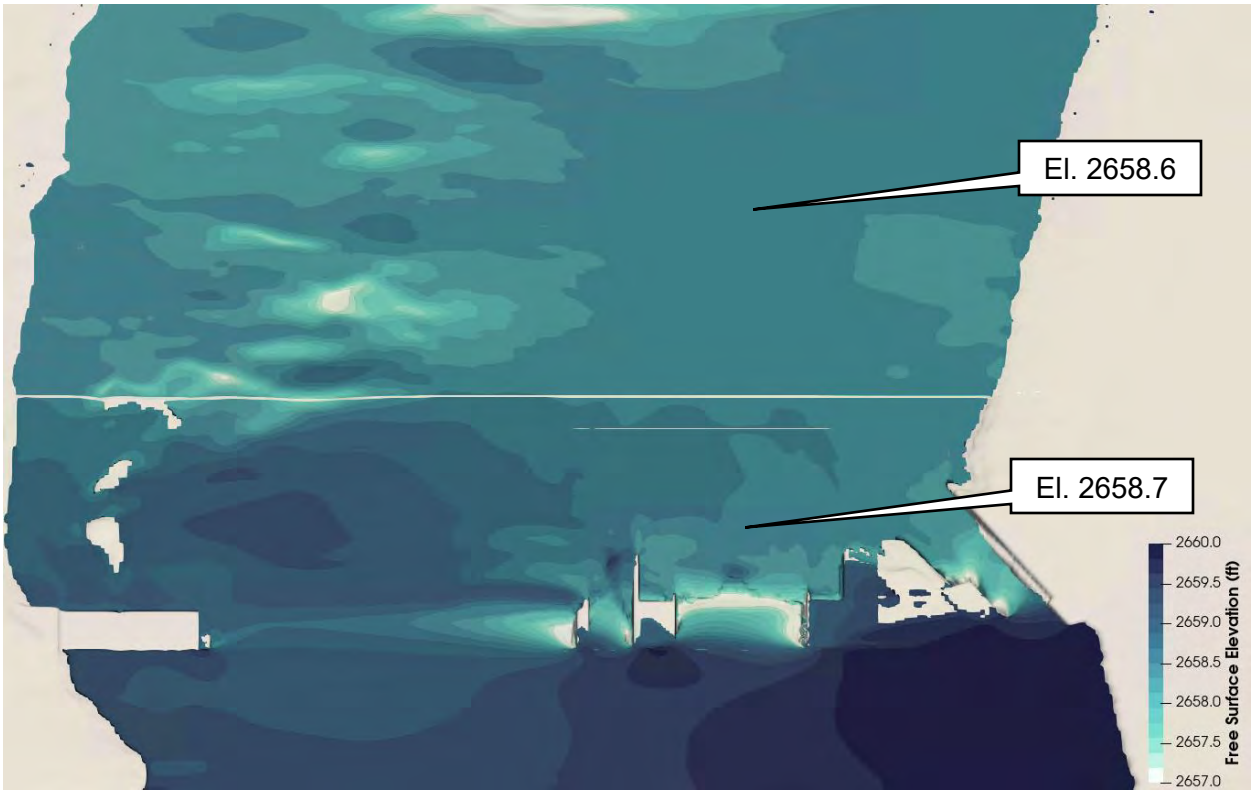


Figure 10 – Water Surface Elevations for Scenario 3 (Existing Conditions, Bankfull Capacity)

As can be seen in this figure the water surface elevations in this area are variable but within the main channel generally range from approximately El. 2658.7 to El. 2658.6. Some instability in the water surface elevations occurs at the left bank where flows would overtop the small island and enter the relatively undeveloped side channel.

3.3.1.4 Scenario 4 – Proposed Conditions 500 cfs at Waveshaper

Under proposed conditions at drop structure 1 the new Obermeyer gate downstream of the waveshaper would be fully raised during low flow conditions of 500 cfs represented by scenario 4. An isometric of the depth-averaged velocities at the waveshaper gate, bypass channel, and new Obermeyer is shown in Figure 11.

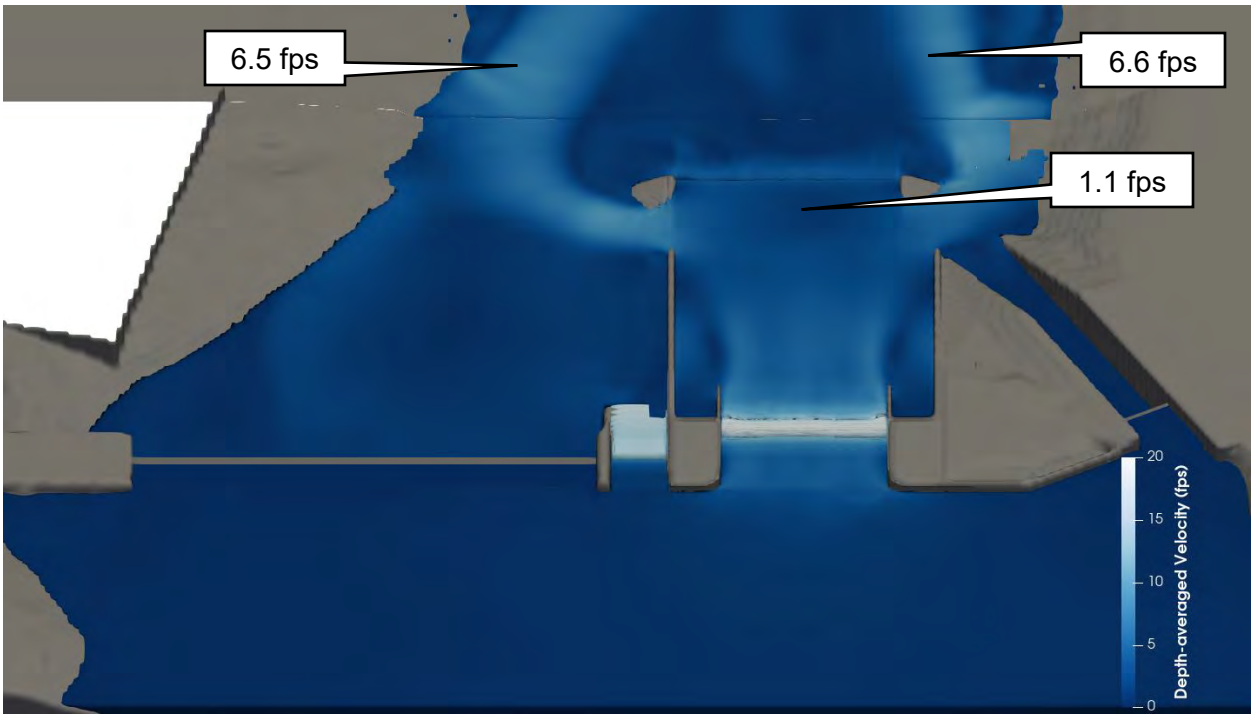


Figure 11 – Depth Averaged Velocities for Scenario 4 (Proposed Conditions, 500 cfs)

As can be seen in this figure, the CFD model indicates that the new Obermeyer is effective at producing a stable tailwater and hydraulic jump on the waveshaper gate. Velocities approaching the raised gate are approximately 1 fps and flow depths decrease to less than 6 inches over the crest of the new Obermeyer gate. The majority of flows are passed laterally towards the left and right banks around the Obermeyer structure. This can be seen in Figure 12 which shows the same depth-averaged velocities with flowpath streamlines overlaid. The streamlines exhibit how flows would split and pass over both the waveshaper and bypass gates.

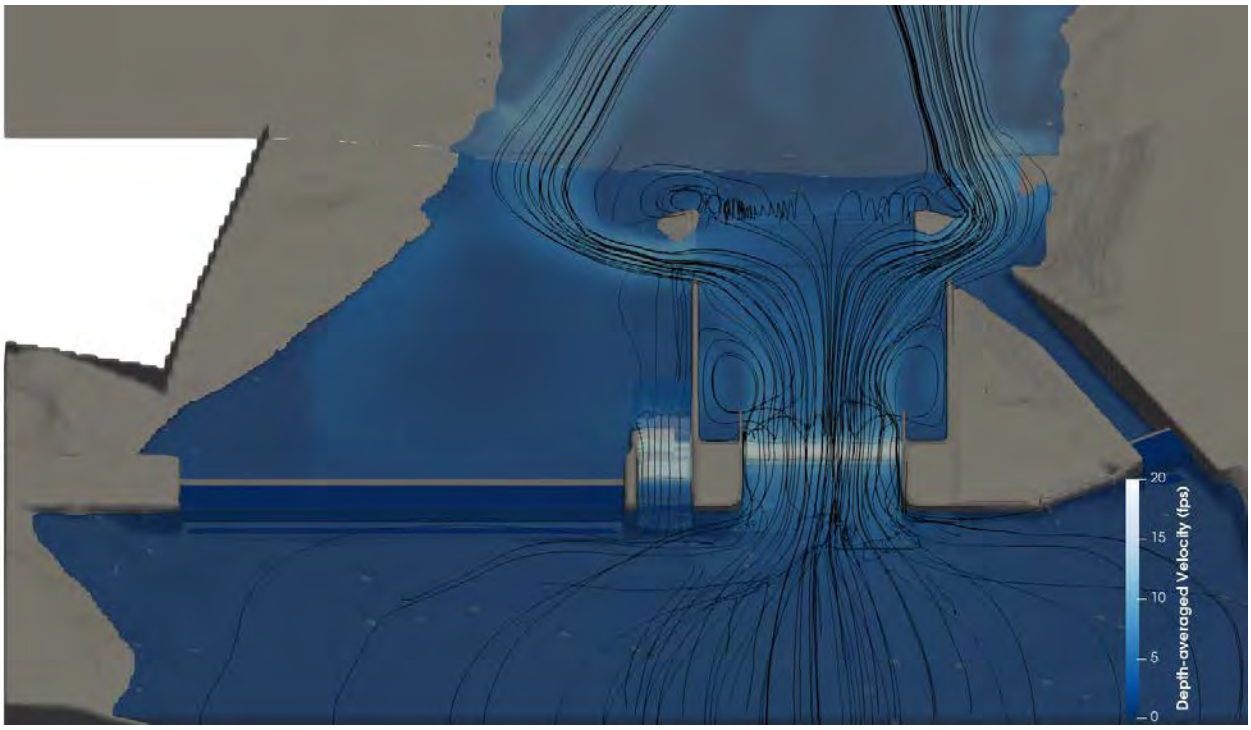


Figure 12 – Flowpath Streamlines for Scenario 4 (Proposed Conditions, 500 cfs)

The results shown in this figure also indicate that a small roller would form downstream of the new Obermeyer gate. However, this does not significantly draw from the flows that pass around the ends of the structure which represent the majority of the flows passing downstream. Detailed isometric views of the depth-averaged velocities and depths near the proposed Obermeyer structure are shown in Figure 13.

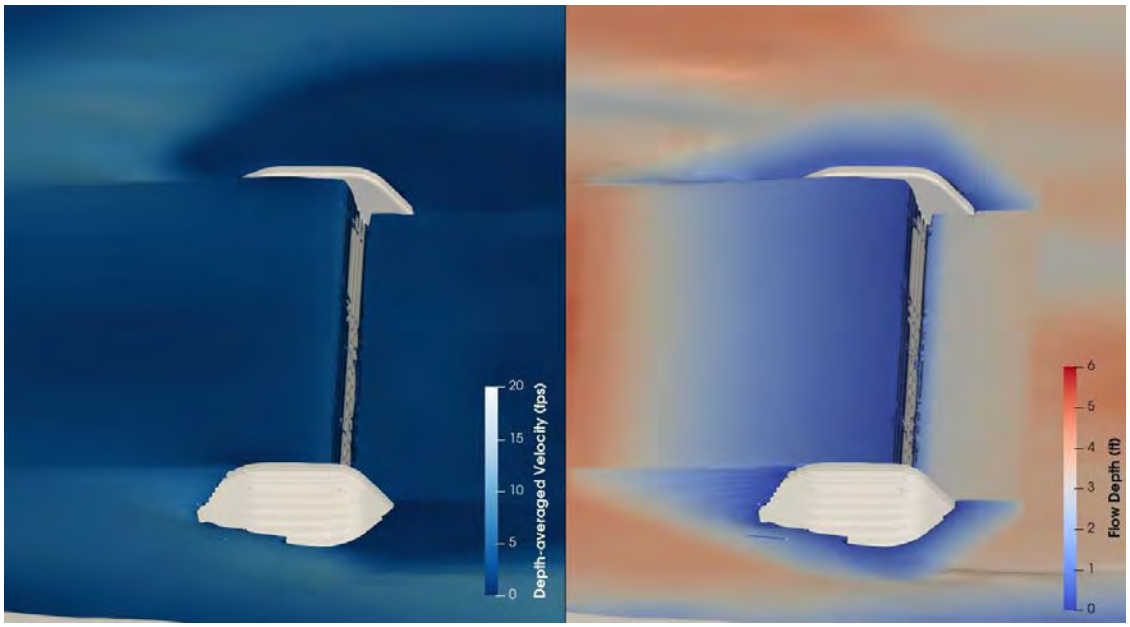


Figure 13 – Isometric Views of Proposed Obermeyer Structure (500 cfs)

3.3.1.5 Scenario 5 – Proposed Conditions 1,400 cfs at Waveshaper and Spillway

McMillen evaluated a scenario where flows are passed through the waveshaper gate, bypass channel, and spillway. In this scenario the new spillway gate numbers 6 and 7 could be lowered to pass approximately 750 cfs downstream. Similar to scenario 2, the waveshaper gate crest would be lowered to El. 2653.2 to pass approximately 650 cfs. The new Obermeyer gate was assumed to be in a fully raised position for this model scenario. An isometric view of the depth-averaged velocities at drop structure 1 for this scenario is shown in Figure 14.

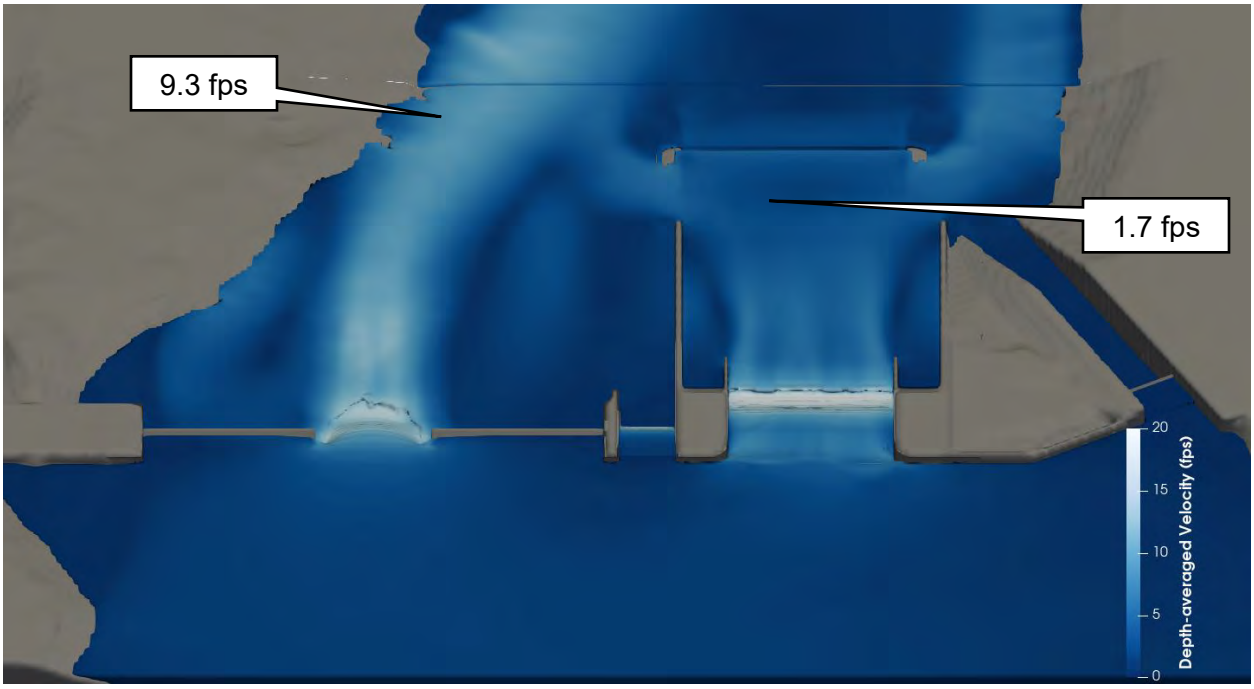


Figure 14 – Depth Averaged Velocities for Scenario 5 (Proposed Conditions, 1,400 cfs)

As can be seen in this figure, the flow regimes downstream of drop structure 1 are relatively similar to that of scenario 2. The most significant difference is that the spillway flows are shifted from the right end of the spillway structure to be more centrally located within the spillway. This leads to a reduction in mixing between flows from the waveshaper and the spillway portions. However, flows passing the new Obermeyer are still directed laterally around the new structure towards the left and right banks. A well developed jump forms at the waveshaper under these flow conditions. Velocities approaching the Obermeyer are approximately 1.7 fps, which is slightly higher than those of scenario 4. A similar flowpath streamline analysis was developed for this scenario and is shown in Figure 15.

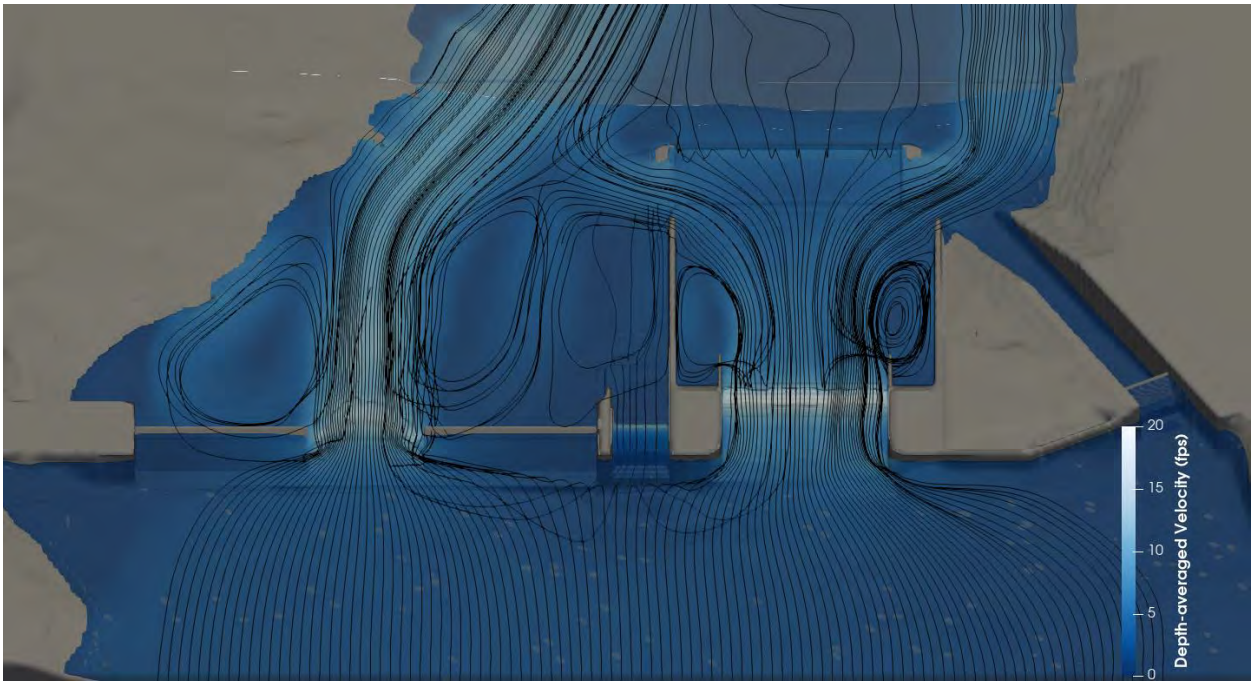


Figure 15 – Flowpath Streamlines for Scenario 5 (Proposed Conditions, 1,400 cfs)

Similar to the streamlines shown in Figure 12 for scenario 4, a small roller forms downstream of the new Obermeyer gate. However, this is largely limited to flows passing directly over the new gate structure. These flows passing over the new gate represent a larger portion of the flows than in scenario 4, however, they are still considerably less than the flows which pass around the structure abutments. To further evaluate the ability of the new Obermeyer gate to regulate tailwater elevations downstream of the waveshaper gate a cross section through the flow in this area is shown in Figure 16.

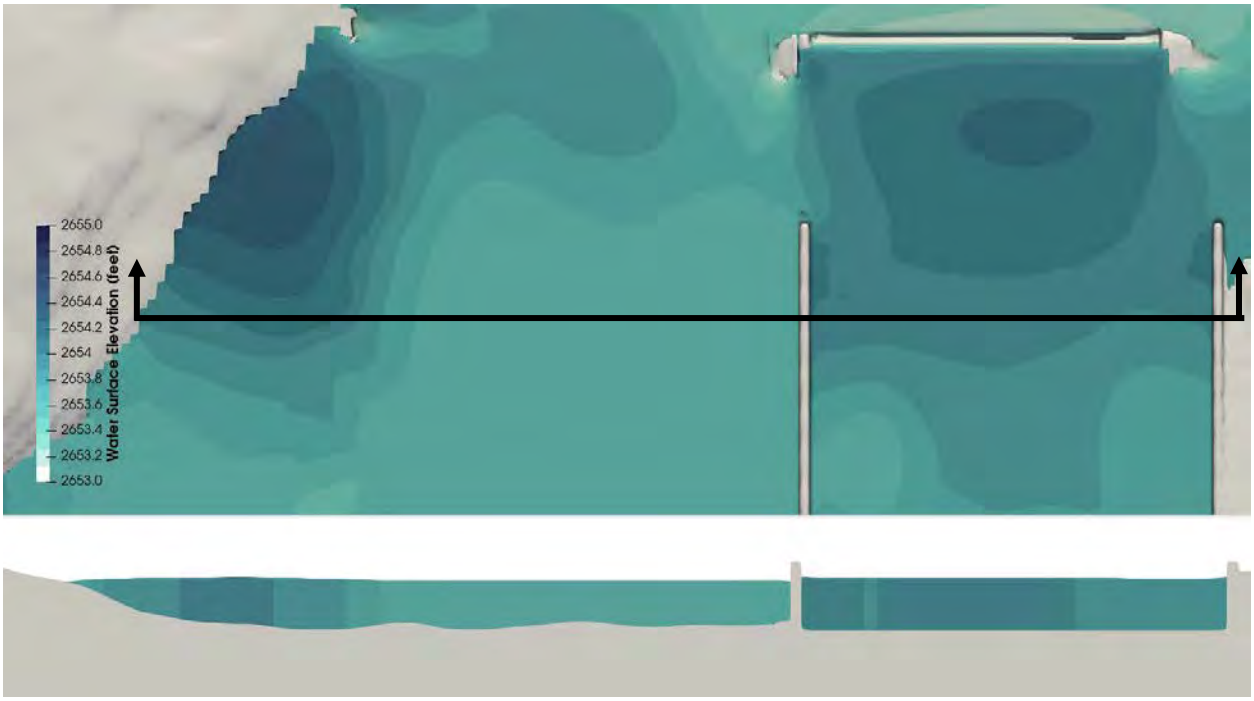


Figure 16 – Cross Section of Results of Scenario 5 (Proposed Conditions, 1,400 cfs)

As can be seen in this figure the new Obermeyer gate increases the tailwater elevation downstream of the waveshaper gate by approximately 0.5 feet when compared to the tailwater elevations downstream of the spillway. Additional increases in the tailwater elevation differential are observed when comparing points directly in front of the new Obermeyer to points downstream of the spillway gates.

3.3.1.6 Scenario 6 – Proposed Conditions 830 cfs at Waveshaper

McMillen evaluated a scenario where the waveshaper gate crest is fully lowered (El. 2652.1) and flows are passed only through the waveshaper gate and bypass channel. The resulting flow rate at the waveshaper in this scenario is approximately 830 cfs. With the waveshaper gate fully lowered the crest loses some discharge efficiency and begins to act more as a broad crested weir than sharp crested. The resulting back-calculated weir coefficient for the fully lowered waveshaper gate is approximately 2.6. This significantly reduced discharge coefficient is typical of shallow flow over weirs that are relatively long in the direction of flow. The new Obermeyer gate downstream of the waveshaper was assumed to be in a fully raised position for this model scenario. An isometric view of the depth-averaged velocities at drop structure 1 for this scenario is shown in Figure 17.

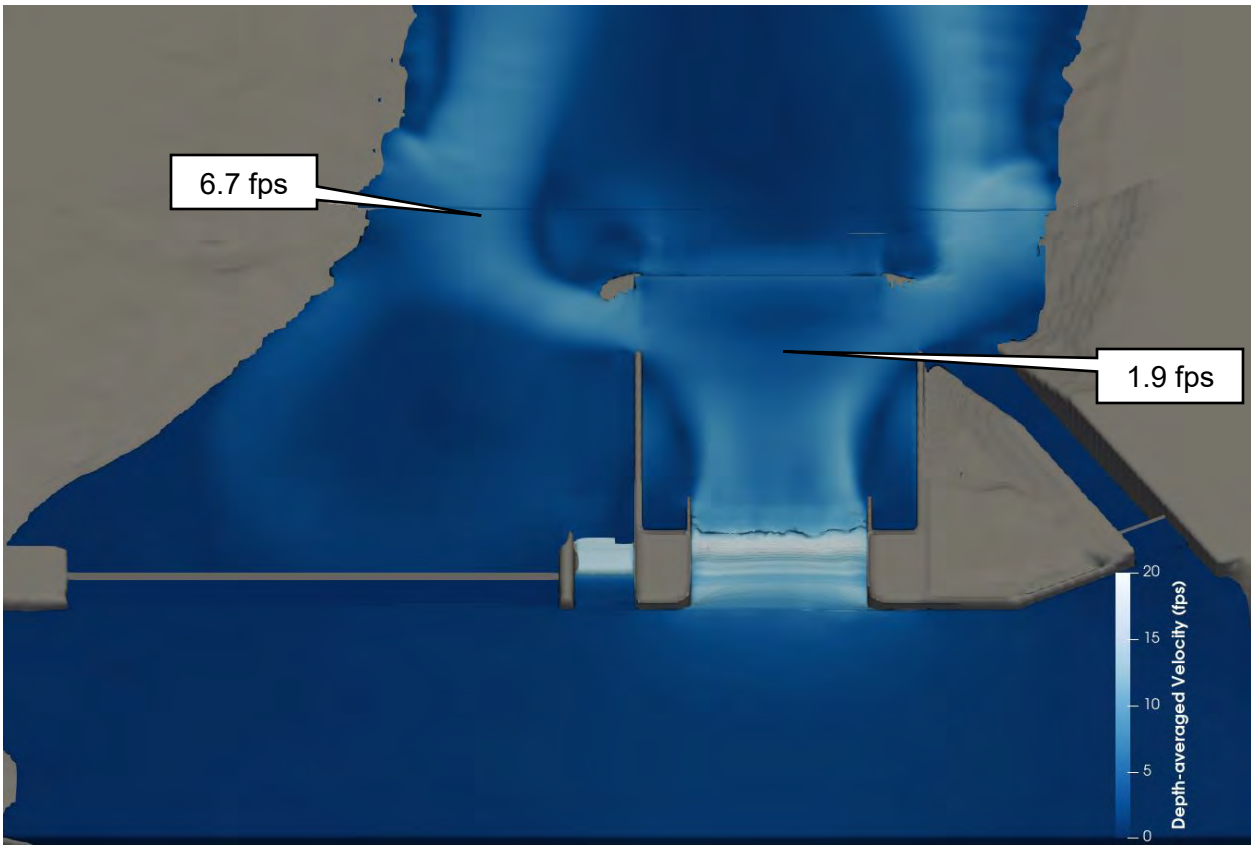


Figure 17 – Depth Averaged Velocities for Scenario 6 (Proposed Conditions, 830 cfs)

As can be seen in this figure, the flow regimes downstream of drop structure 1 are relatively similar to that of scenario 4. As anticipated, based on the larger flow rate, the depth-averaged velocities are slightly higher through the downstream reach. Velocities approaching the Obermeyer are approximately 1.9 fps, which is slightly higher than those of scenario 4. A similar flowpath streamline analysis was developed for this scenario and is shown in Figure 18.

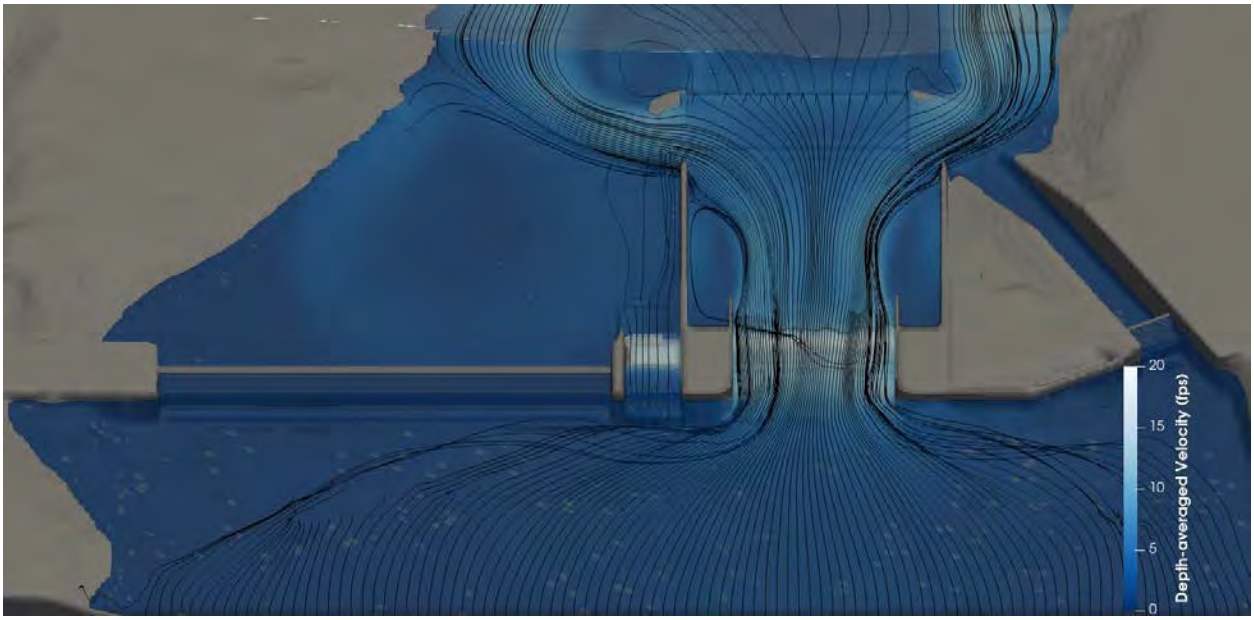


Figure 18 – Flowpath Streamlines for Scenario 6 (Proposed Conditions, 830 cfs)

Similar to the streamlines shown in Figure 12 for scenario 4, a small roller forms downstream of the new Obermeyer gate and a majority of flow passing over the waveshaper is diverted left of the new Obermeyer structure. To further evaluate the ability of the new Obermeyer gate to regulate tailwater elevations downstream of the waveshaper gate a cross section through the flow in this area is shown in Figure 19.

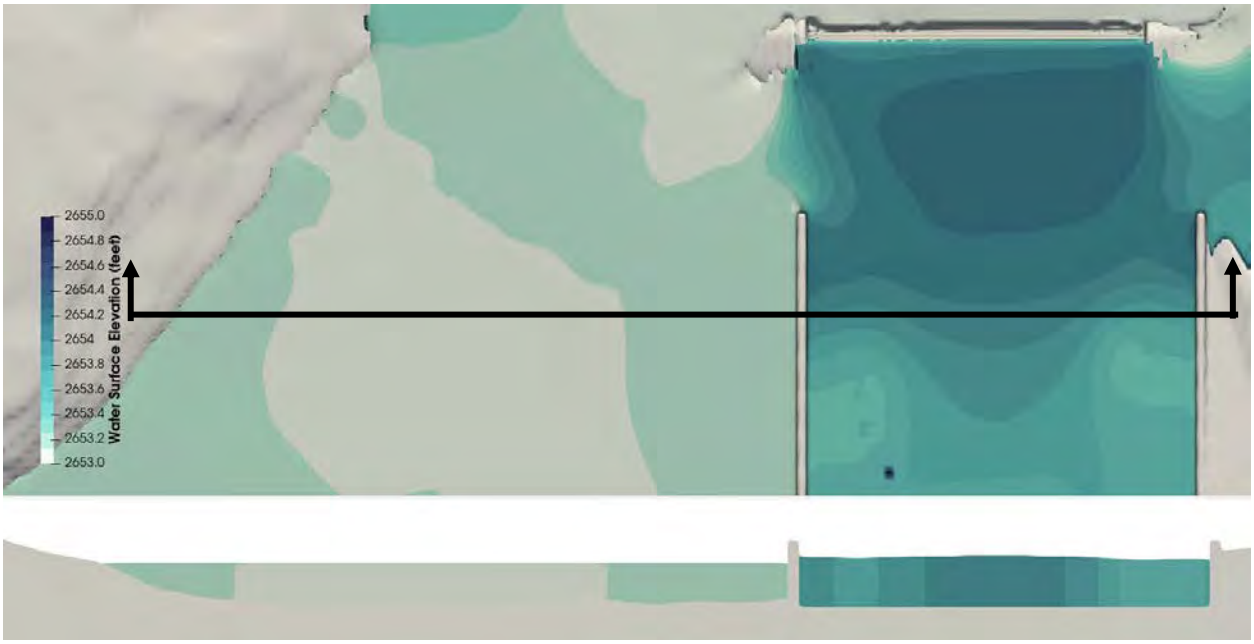


Figure 19 – Cross Section of Results of Scenario 6 (Proposed Conditions, 830 cfs)

As can be seen in this figure, the Obermeyer gate increases the tailwater elevation downstream of the waveshaper gate by approximately 1 foot when compared to the tailwater elevations downstream of the spillway. Additional increases in the tailwater elevation differential are observed when comparing points directly in front of the new Obermeyer to points downstream of the spillway gates.

3.3.1.7 Scenario 7 – Proposed Conditions Bankfull Capacity

In the bankfull capacity scenario, all gates are fully lowered to pass their maximum capacity in addition to the new Obermeyer proposed downstream. Under proposed conditions the bankfull capacity is estimated to be approximately 8,000 cfs which is equal to that of the existing conditions. An isometric of the depth-averaged velocities is shown in Figure 20.

Figure 20 – Depth Averaged Velocities for Scenario 7 (Proposed Conditions, Bankfull Capacity)

Similar to the existing conditions there is significant overtopping of the portions of drop structure 1 between gates 1 and 2 (sluice and waveshaper). In general, the estimated velocity regime for the proposed conditions is only slightly different in localized areas when compared to that of the existing conditions.

It is also important to evaluate the water surface elevations under this scenario to compare to the existing conditions to understand the implications of the new Obermeyer structure on the no-net-rise requirement. A plan view of the water surface elevations within the reach between drop structure 1 and drop structure 2 is shown in Figure 21.

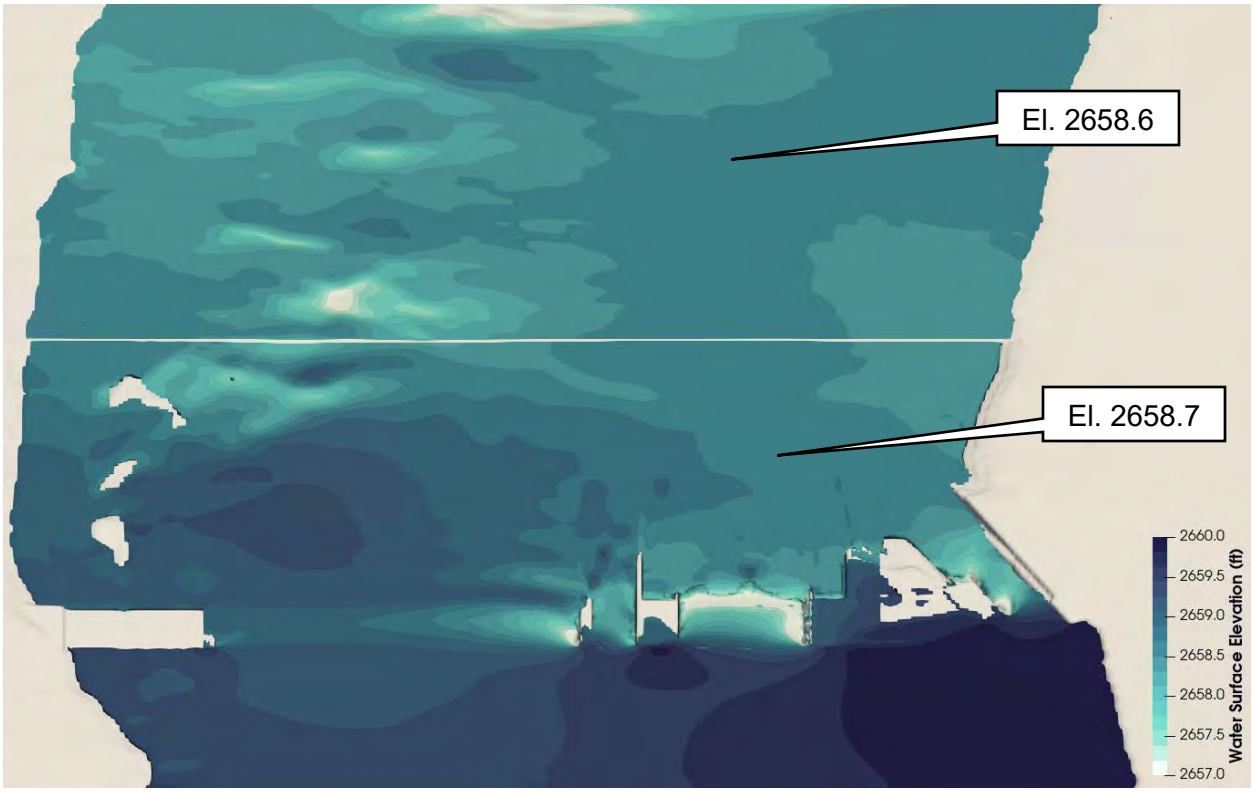


Figure 21 – Water Surface Elevations for Scenario 7 (Proposed Conditions, Bankfull Capacity)

As can be seen in this figure the water surface elevations in this area are variable but within the main channel generally range from approximately El. 2658.7 to El. 2658.6. Figure 22 shows a side-by-side comparison of the water surface elevations estimated for the existing conditions and proposed scenarios under bankfull conditions.

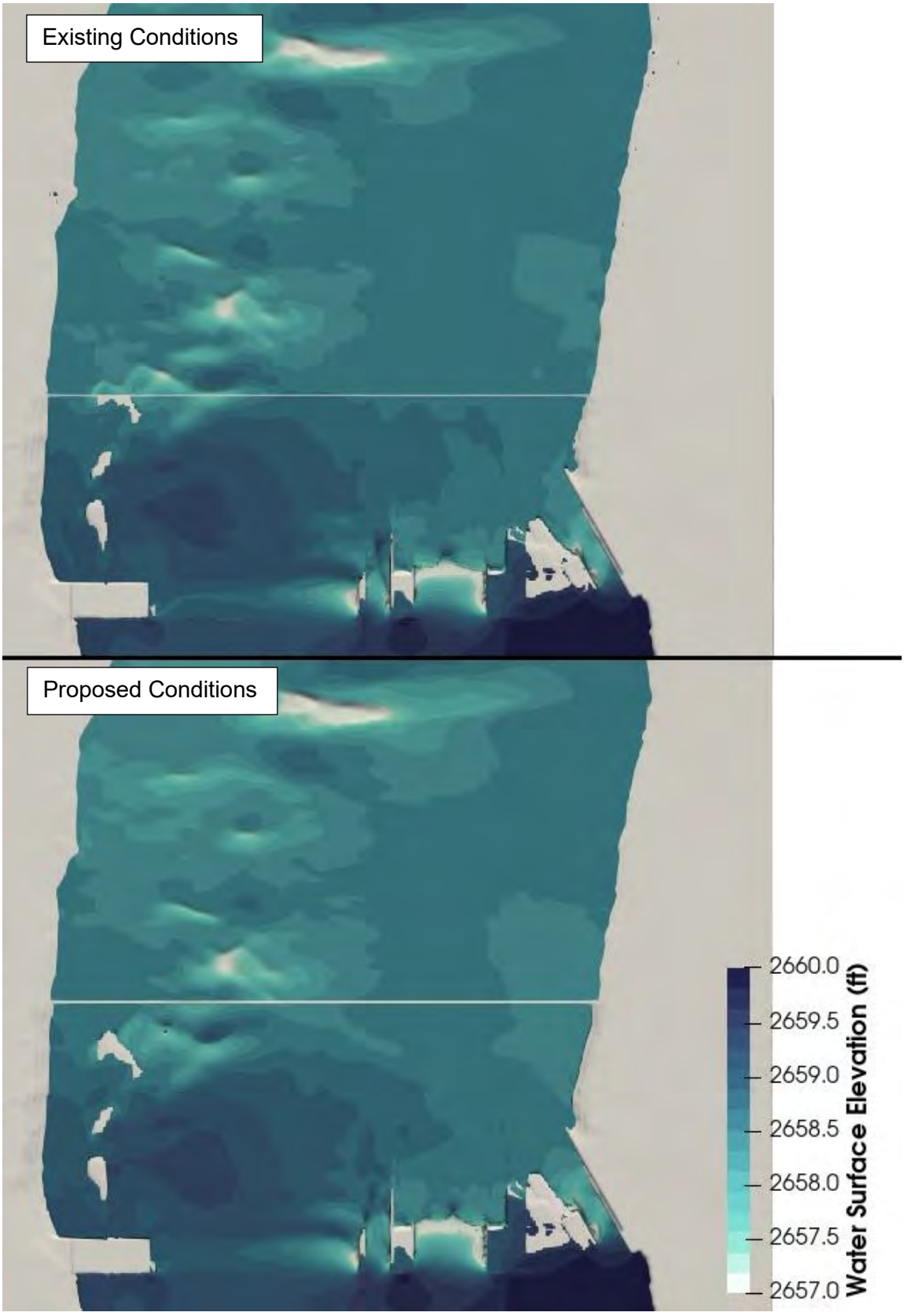


Figure 22 – Water Surface Elevations at Bankfull Capacity for Existing and Proposed Conditions

As can be seen in this figure, the water surface elevations downstream of drop structure 1 vary by less than 0.1 feet within the majority of the area of interest. Some slight variations are observed in localized areas which could be contributed to minor model instabilities which are inherent to the dynamic nature of CFD modeling.

3.3.2 Spillway Gates

The CFD model was also used to assess the hydraulic conditions of the modified spillway gates and new plunge pool. Two scenarios were specifically evaluated for the spillway gates: 1) New Gate 6 half lowered, and 2) Gate 6 fully lowered and Gates 5 and 7 half lowered. The results of these hydraulic analyses are discussed in the following sections.

3.3.2.1 Spillway Scenario 1 – Gate 6 Half Lowered

The first spillway scenario includes the crest of Gate 6 lowered to approximately El. 2654.3 which is equivalent to approximately half lowered. The results indicate that this gate would pass approximately 260 cfs in this configuration with the forebay at El. 2657.0. This is approximately 75 percent more than the empirically developed rating curve which indicates a discharge of approximately 150 cfs for this configuration. This can likely be attributed to the flows that pass over the left and right edges of the gate which are lower than the crest and are not accounted for in the empirical calculation. An isometric of the results of this scenario is shown in Figure 23.

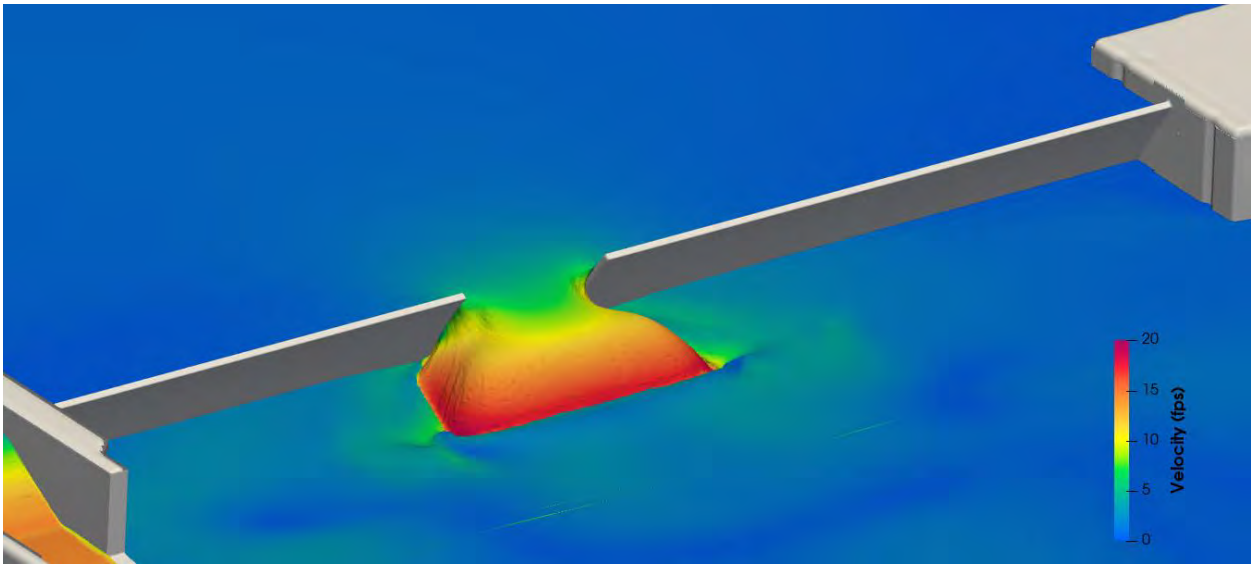


Figure 23 – Spillway Scenario 1 Isometric

As flows pass over the gate, the plunging nappe would impinge at the downstream end of the spillway slab into relatively shallow water. Velocities over the tip of the gate would reach approximately 18 fps. A cross section of the results is provided in Figure 24.

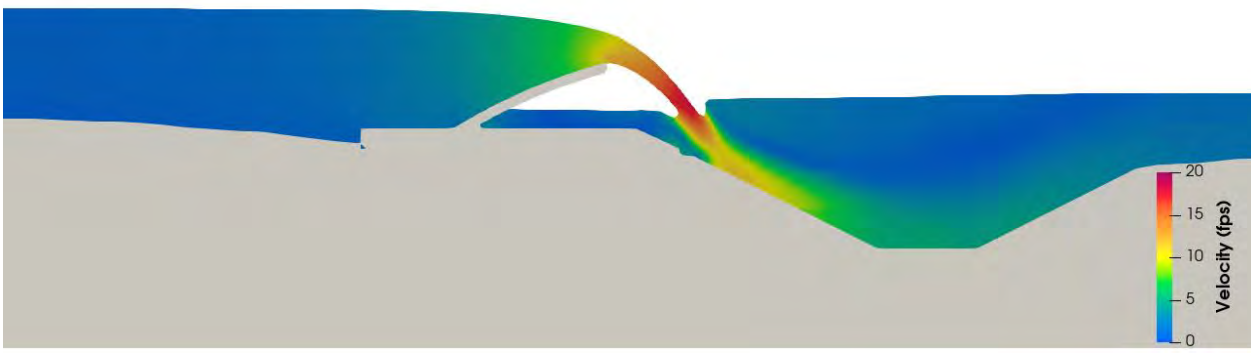


Figure 24 – Spillway Scenario 1 Cross Section

As can be seen in this figure, the velocities of the jet would be dissipated quickly but would generally be concentrated along the bottom of the plunge pool before rising to exit at the downstream end. Some slight backwards flow towards the gate would develop within the pool however velocities would be relatively low compared to the main flows directed downstream.

3.3.2.2 Spillway Scenario 2 – Gate 6 Fully and Gates 5 and 7 Half Lowered

The second spillway scenario includes Gate 5 fully lowered and the crest of Gates 6 and 7 lowered to approximately El. 2654.3 which is equivalent to approximately half lowered. The results indicate that the gates would pass a cumulative flow rate of approximately 870 cfs in this configuration with the forebay at El. 2657.0. Similar to the first scenario, this is more than estimated by the empirical analysis which indicates a capacity of approximately 770 cfs for this gate operation. This is approximately a 13 percent difference. This is closer to the empirical analysis then spillway scenario 1 as the internal edges of each gate are significantly submerged by the neighboring gates. An isometric of the results of this scenario is shown in Figure 25.

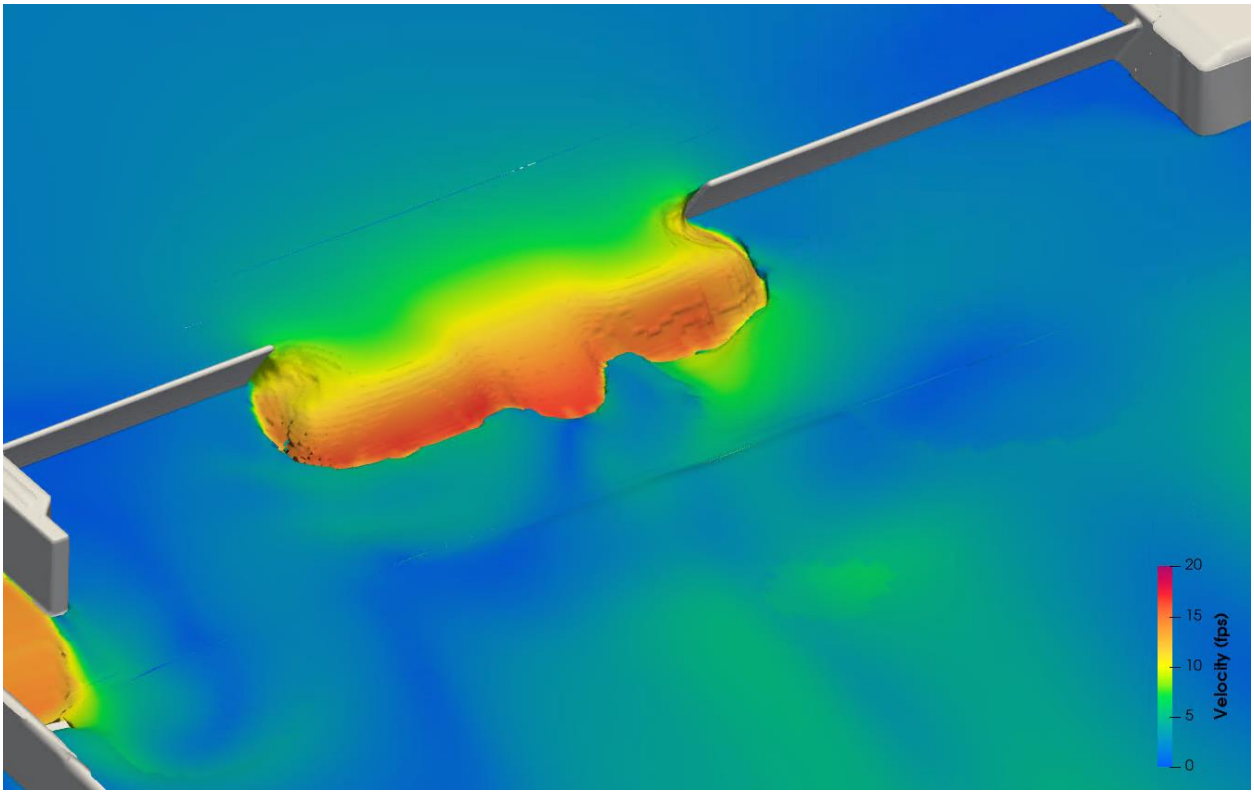


Figure 25 – Spillway Scenario 2 Isometric

As can be seen in this figure, velocities over the lowered gates reach approximately 17 fps with higher velocities concentrated near the center of the fully lowered Gate 6. Further, the same isometric with flow streamlines added is shown in Figure 26.

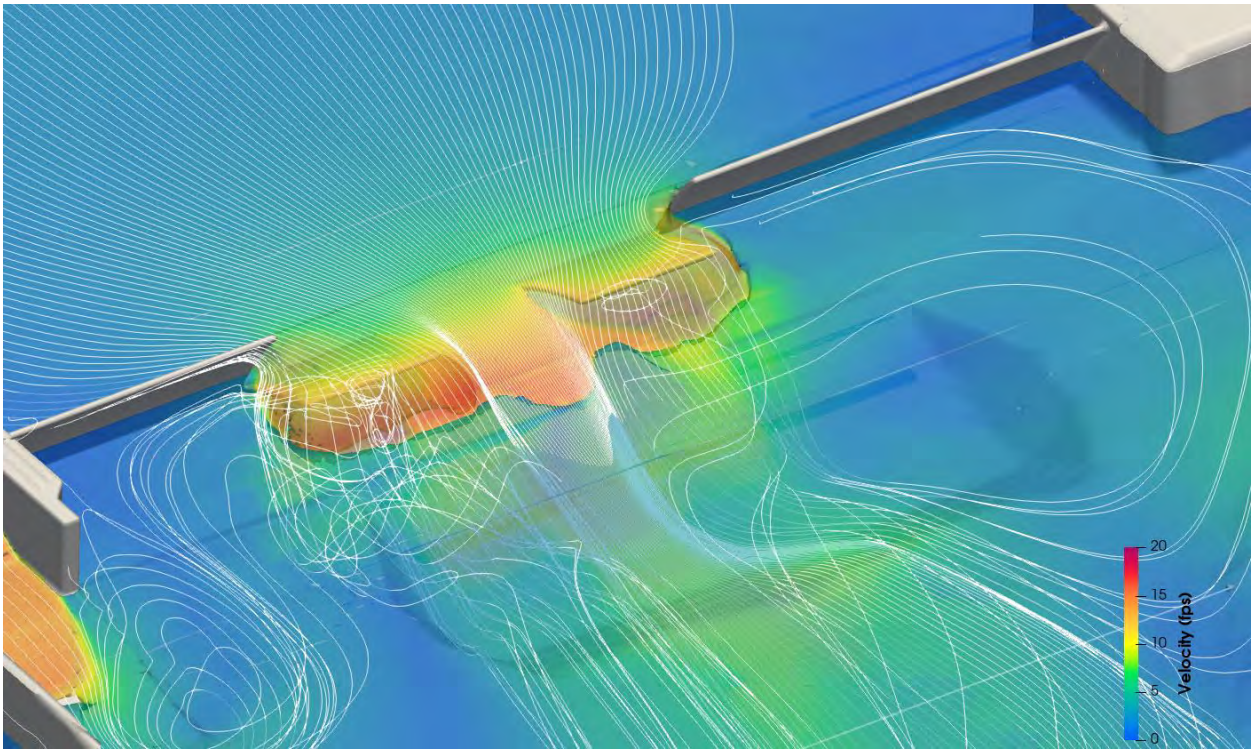


Figure 26 – Spillway Scenario 2 Isometric with Flow Streamlines

As can be seen in this figure, the majority of the streamlines from upstream of the gate are concentrated towards the central fully lowered gate. Some eddying is observed to the left and right of the gates though this is mainly due to flows deflecting off the river bank and the outside of waveshaper structure wall. Some flows are shown being pushed between the upper face of the center gate and lower faces of the side gates. These flows would likely be reduced by the Obermeyer gate bladders which are not included in the CFD model. Figure 27 shows cross sections through each spillway gate.

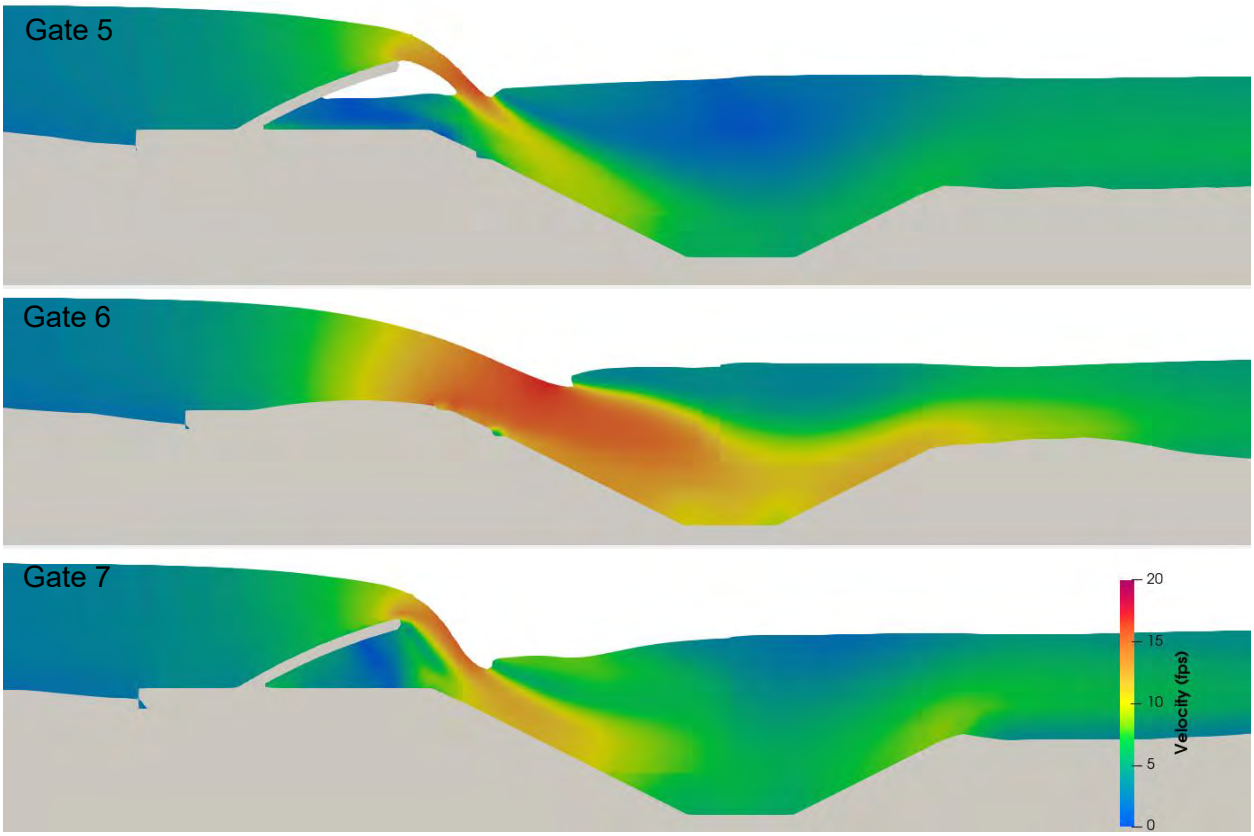


Figure 27 – Spillway Scenario 2 Cross Sections

As can be seen in this figure the hydraulics are variable at each gate but generally indicate a similar flow pattern of high velocities over the gate and entering the basin which dissipate in the plunge pool and are passed downstream. At gate 7 the nappe flow is depressed which is likely due to the dynamic CFD simulation and short time periods modeled. Over long term flows it is likely that the hydraulics would be more similar to those observed at Gate 5. Similar to the first spillway scenario, some slow recirculating velocities are observed within the new plunge pool but are generally minimal compared to the velocities passing downstream through the plunge pool.

4.0 Conclusions

McMillen has prepared a series of hydraulic analyses in support of the modification designs being developed for the J.A. and Kathryn Albertson Family Foundation Boise Whitewater Park Phase II. The results of the analyses presented in this TM show that the new Obermeyer gate proposed for downstream of the existing waveshaper gate could help to expand the operational range of the structure. Further, the proposed Obermeyer gate could be operated to limit impacts to the hydraulic regime within the Boise River during high flow events. The modifications to the spillway will help to improve the operational flexibility and the new plunge pool could allow for improved boater passage if they were to inadvertently pass over the spillway structure.

5.0 References

McMillen, Inc. (2023). *Technical Memorandum – Drop 1 Structure Modifications Scope of Work*. Boise, ID.