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blackBEAR Hydro Partners

9 July 2013

VIA E-FILING

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: Compliance Filings for Milford Hydroelectric Project (FERC No. 2534)

Dear Secretary Bose:

Pursuant to the Commission's October 9, 2012 Order Approving Fish Passage Design Drawings Under Articles 407 and 408 for the above-referenced Milford (FERC No. 2534) Hydroelectric Project, Black Bear Hydro Partners, LLC (BBHP) hereby submits the Operation and Flow Compliance Monitoring Plan in compliance with Ordering Paragraph I to replace the existing Plan for the Project.

Please do not hesitate to let me know if you have further questions or concerns.

Sincerely,

Scott D. Hall
Vice President, Environmental & Business Services

Enclosures

Operation and Flow Compliance Monitoring Plan for the Milford Project

MILFORD HYDROELECTRIC PROJECT
FERC NO. 2534

OPERATIONS AND FLOW MONITORING PLAN

Prepared for:

Black Bear Hydro Partners, LLC
Milford, Maine

Prepared by:

Kleinschmidt

www.KleinschmidtUSA.com

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OPERATION AND FLOW MONITORING PLAN

MILFORD HYDROELECTRIC PROJECT
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TABLE OF CONTENTS

LIST OF APPENDICES

BLACK BEAR HYDRO PARTNERS, LLC

OPERATION AND FLOW MONITORING PLAN

MILFORD HYDROELECTRIC PROJECT
FERC NO. 2534

1.0 BACKGROUND

The existing 7.8 MW Milford Hydroelectric Project (FERC No. 2534) (Project), owned and operated by Black Bear Hydro Partners, LLC (BBHP), is located on the Penobscot River and Stillwater Branch in the towns of Milford and Old Town, in Penobscot County, Maine. The Project encompasses two dams. The Milford Development is located at river mile 12.3 on the main stem of the Penobscot River, approximately 1.6 miles upstream from the former location of the Great Works Project; the Gilman Falls Dam is located approximately 3 miles upstream of the Stillwater Project on the Stillwater Branch of the Penobscot River. The project impoundment extends upstream from the Milford and Gilman Falls Dams a distance of approximately 3 miles and comprises approximately 235 acres.

By order dated October 9, 2012, the Federal Energy Regulatory Commission (FERC or Commission) issued an Order Approving Fish Passage Design Drawings Under Articles 407 and 408 for the Project. Ordering Paragraph I of the Order requires the filing of an Operation and Flow Monitoring Plan (Plan) for the Project which outlines the operating parameters of the Project including run-of-river operations, impoundment elevations and minimum and fish passage flows, as discussed below.

1.1 LICENSE REQUIREMENTS

Ordering Paragraph I of the October 9, 2012 Order requires BBHP to file for Commission approval, a plan for providing and monitoring run-of-river operation, water levels, and minimum flows. Ordering Paragraph I requires the Plan to include:

1. a detailed description of how the impoundment level, minimum flows, generation flows, fish passage flows, and inflows will be measured or calculated in order to comply with the requirements of the license;
2. a maintenance plan to ensure that the methods remain accurate over time;
3. a provision to make flow and impoundment elevation data publicly available;
4. a description of how minimum flows will be maintained at all times and at all impoundment elevations;
5. a description of how fish passage flows will be provided during the passage seasons and at all impoundment elevations;
6. a list and description of maintenance activities which may result in the temporary modification of run-of-river operation, including estimates for the timing, frequency and duration that these activities occur;
7. a provision to notify the Commission, resource agencies, and Penobscot Indian Nation (PIN) when deviations from license requirements occur; and
8. a provision to provide reports and data to the resource agencies and the PIN, the level of detail and timing/frequency of reporting to be determined in consultation with these entities.

Agency consultation requirements of Ordering Paragraph I are discussed in Section 5.0.

1.2 PERMIT REQUIREMENTS

Condition D of the March 11, 2005 Section 401 WQC (#L-16011-35-B-N) issued by the Maine Department of Environmental Protection (MDEP) likewise requires operational plans for all upstream and downstream fish passage facilities and/or operational measures to be submitted to the MDEP for its approval.

2.0 PROJECT OPERATIONS

2.1 RUN-OF-RIVER OPERATIONS AND HEADPOND ELEVATION

2.1.1 NORMAL OPERATIONS

Under normal operating conditions (i.e., conditions other than sudden changes in precipitation or temperature, repairs to the project, floods, ice jams, emergencies and special requests), the Milford Project powerhouse is operated by automated equipment and BBHP operations staff simultaneously to generate the most power possible while maintaining compliance with license conditions. To that end, the various turbine-generator units of the powerhouse are turned on or off over the wide range of flows from the minimum hydraulic capacity of 500 cfs to the maximum hydraulic capacity of the Project (6,730 cfs).

BBHP will operate the Milford Project in the same manner as is done at other lower Penobscot River facilities utilizing BBHP roving operator staff to monitor and record headpond elevations and adjust generating units and gates to ensure run of river operation. BBHP's roving operators provide 24-hour, 365-day coverage for the lower Penobscot River hydroelectric projects. Milford is part of the rotation for the BBHP roving operator who has the responsibility of visiting each plant several times per day.

Adjustments made by plant automation equipment that controls the two new units, or roving operators allow the headpond levels to be maintained within the license allowances (1-foot +/- of 101.7 ft NGVD). As river flow increases, the plant automation systems, or the roving operator will open generating unit gates to allow more water to pass through. This will maintain the level of the water upstream of the dam thereby approximating inflow. Conversely, if the river flow into the project area reduces, the gates will be closed to restrict water flow through the units which will also keep the headpond level stable. Headpond elevations are noted and recorded using headpond transducers and a staff gage immediately adjacent to the trashrack structure at the dam, as discussed in Section 3.0.

BBHP's roving operators also control the operations at projects upstream of the Milford Project. Coordination of river flows from more distant upstream projects (including the West Enfield Project, in particular) offers advanced warning of potential changes in river flows that could affect operations, and therefore headpond elevations, at the Milford Project. The travel time for

changes to river flow between West Enfield and Milford is approximately 12 hours, thereby affording ample time to make any necessary adjustments to maintain required impoundment elevations and minimum flows. This is particularly true since the roving operator typically visits each site several times each day.

2.1.2 HIGH FLOW OPERATIONS

The dam is fitted with 4.5-foot high steel hinged flashboards on the western spillway and 4.5-foot high Obermeyer inflatable flashboards on the eastern spillway. During flows exceeding the hydraulic capacity of the Project (6,730 cfs), the log sluice gate will be opened to pass up to an additional 1,500 cfs. At flows exceeding 8,230 cfs, the inflatable flashboards will deflate to pass an additional 8,100 cfs. At flows exceeding 16,330 cfs, water will spill over the western spillway flashboards which are designed to fail at elevation 103.7 ft NGVD with approximately 2 ft of overtopping. During the fish passage season, flows mentioned above are in addition to 490 cfs passed through the fishways.

During times of high flows and flashboard failures, the required minimum flows will be exceeded. During flashboard replacement, there is typically at least several inches of water passing over the entire dam spillway. As a result, in addition to the water that will pass through the fish passage facility and flashboards, as appropriate, additional water will be passed over the dam while the remaining flashboards are raised, again thereby maintaining minimum flows.

2.2 MINIMUM FLOWS

Article 403 requires BBHP to release a minimum flow of 3,800 cfs or inflow, whichever is less, from the Milford Project with the following distribution: 3,468 cfs from the Milford powerhouse, 60 cfs from the Gilman Falls dam and 472 cfs into the West Channel.

Because the Project is operated in run-of-river mode, inflows are passed downstream with the headpond elevation being maintained within ± 1 foot. Minimum flows from the Milford Powerhouse are passed through the units or over the dam, through the gate, and through the fish passage facilities. If the station is off-line, then minimum flows are passed as spill over the dam or through a gate, and/or through the fish passage facilities.

At Gilman Falls Dam, the "breach" section of the dam is uncontrolled (except while doing allowable maintenance activities such as flashboards, etc.). Maintenance of headpond elevations assures that at least minimum flows are passed downstream as required.

2.3 FISH PASSAGE FLOWS

The downstream migration period is defined by the agencies (within the Species Protection Plan for the lower Penobscot Projects including the Milford Project) as:

- April 1 to June 30 and November 1 to December 15 for Atlantic salmon,
- July 1 to December 31 for American shad and alewife,
- August to December 31 for blueback herring, and
- August 15 to November 15 (or other time periods determined when adequate information is available, and during spring runs that may occur) for American eel.

The upstream fish passage season is generally defined as from April 1 through November 30. The majority of upstream anadromous fish passage would be expected to occur from April 15 to November 15 (Atlantic salmon), May 1 to June 30 (American shad, alewife), and June 1 to July 31 (blueback herring), and April 1 to November 30 (American eel). August and September is generally a period of reduced upstream anadromous migration, as it is after the spawning period for alosid species, and warm water temperatures reduce the migratory behavior of salmon. During October and November, there may be a latent upstream movement period for Atlantic salmon just prior to spawning.

During BBHP's roving operator's regular rounds, gate settings shall be checked as follows:

- Downstream Passage Entrances: The downstream passage entrances will pass up to a combined 280 cfs at all times during the passage season. BBHP roving operator will adjust the weir positions according to headpond elevation (and attraction flow distribution identified by effectiveness studies) as indicated in the graphs in Appendix B. Until the distribution of flow between the three entrances is identified by effectiveness studies, the graphs in Appendix B show possible ranges of flows.
- Upstream Passage Entrance Gate: The upstream passage entrance gate is designed to maintain an approximate hydraulic drop of 9 inches across the entrance. BBHP roving operator will adjust the flap gate position according to tail water elevation and total attraction flow as indicated by the graphs in Appendix B.
- Upstream Attraction Flow Control Gates: The flow control gates maintain a specific velocity in the hopper pool and define total attraction flow depending on head pond and tail water elevations. BBHP roving operator will adjust the gate positions as indicated by the graphs in Appendix B.

3.0 MONITORING

BBHP maintains headpond transducers to monitor the elevation of the head pond and a staff gauge immediately adjacent to the trashrack structure located at the dam that is tied to the licensed normal full pool elevation of 101.7 ft NGVD. Therefore, by checking the headpond transducers and staff gauge at each visit, the roving operator is able to monitor and document the elevation of the headpond and adjust the units and fish passage gates accordingly.

When BBHP's roving operator visits each plant, they are responsible for recording various operation and other information on a daily log sheet. Information that is recorded on the daily log sheet includes headpond levels, as well as unit gate settings, generating output, etc. These log sheets are maintained on-site.

4.0 MAINTENANCE

BBHP will periodically calibrate flow estimation methods with desktop and field initiated monitoring efforts to ensure flow estimation methods remain accurate over time.

In accordance with the Section 401 WQC and the Maine Waterway Development and Conservation Act, the maintenance activities which may result in the temporary modification of run-of-river operation and or minimum flows, include but are not limited to:

- The resurfacing or repair of the dam, powerhouses, retaining walls, or other structures;
- The repair, removal, replacement or sealing of flashboards, stop logs, or gates;
- Repair, removal or replacement of intake trash racks;
- Repair or maintenance of fish passage facilities;
- Removal of materials collected on trash racks and removal of dri-ki and other accumulated materials;
- Installing or removing booms;
- Placement and removal of non-earthen cofferdams or bulkheads temporarily installed immediately adjacent to an existing structure for the purpose of inspecting or repairing the structure; and
- Removal of sediment and debris from dewatered gated canals, tunnels and penstocks.

The timing, frequency and duration that these activities occur depend on factors such as debris, inflow, weather, and unforeseen circumstances, among others. However, for reference purposes, routine and recurring activities such as flashboard repair/replacement typically take only parts of 1 to 2 days and occurs 2 to 3 times annually.

5.0 CONSULTATION AND NOTIFICATION

5.1 AGENCY PLAN REVIEW AND COMMENT

Ordering Paragraph I of the amended Project license requires that the Plan be developed in consultation with the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), Penobscot Indian Nation (PIN), Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Department of Marine Resources (MDMR), and Maine Department of Environmental Protection (MDEP) and allow a minimum of 30 days to review and comment on the plan.

While BBHP has consulted extensively with the state and federal agencies and PIN regarding operations and provisions of minimum and fish passage flows through the license compliance process under Articles 407 and 408, this Plan was also recently provided to the state and federal agencies for review and comment, and no additional comments were received on the Plan. Agency consultation documentation is provided as Appendix A to this Plan.

5.2 AGENCY NOTIFICATION

Consistent with practices elsewhere and as required by license amendment Article 401, BBHP will notify FERC, the above-referenced agencies and the PIN of any maintenance activity not provided for within the license and/or WQC (i.e., flashboard replacement) that involves:

- a lowering of the water level below the 1-foot less than normal pond level allowed under normal operating conditions;
- the temporary modification of run-of-river operation; or
- the temporary modification of minimum and/or fish passage flows at the Project.

5.3 REPORTING

As discussed in Section 3.0 and has been the practice of BBHP over the course of the project license, BBHP monitors and records operation information in a daily log book in order to confirm that the headpond, and therefore minimum flow and run-of-river operation requirements are being complied with. BBHP will make copies of the daily log sheets for the Milford Project available for inspection by the Commission and/or the state and federal resources agencies and PIN. In addition, BBHP is in the process of developing what will be a publically available website where it will provide a daily flow report for the Project.

APPENDIX A

AGENCY CONSULTATION

Kelly Maloney

From: Kelly Maloney
Sent: Tuesday, June 04, 2013 3:02 PM
To: 'Steven_Shepard@fws.gov'; 'Kramer, Gordon'; 'Gail Wipplehauser'; 'Dan McCaw'; 'Sean McDermott'; 'kathy.howatt@maine.gov'
Cc: Scott Hall; Keith Martin
Subject: Milford Operation and Flow Monitoring Plan

Good afternoon,

Pursuant to Ordering Paragraph I of the Order Approving Fish Passage Design Drawings Under Articles 407 and 408 for the Project, Black Bear Hydro Partners, LLC (BBHP) is providing the Operation and Flow Compliance Monitoring Plan (O&M Plan) for the Milford Hydroelectric Project (FERC No. 2534). Ordering Paragraph I of the approval order requires that the O&M Plan be submitted for agency review and filed with the FERC no later than July 9, 2013.

The Operation and Flow Compliance Monitoring Plan provided herein replaces and revises the existing Plan for the Milford Project and provides for compliance with minimum flows, impoundment elevations, fish passage flows, monitoring and reporting. Please provide any comments on the enclosed plan no later than July 3, 2013.

Feel free to contact me or Scott Hall with any questions.

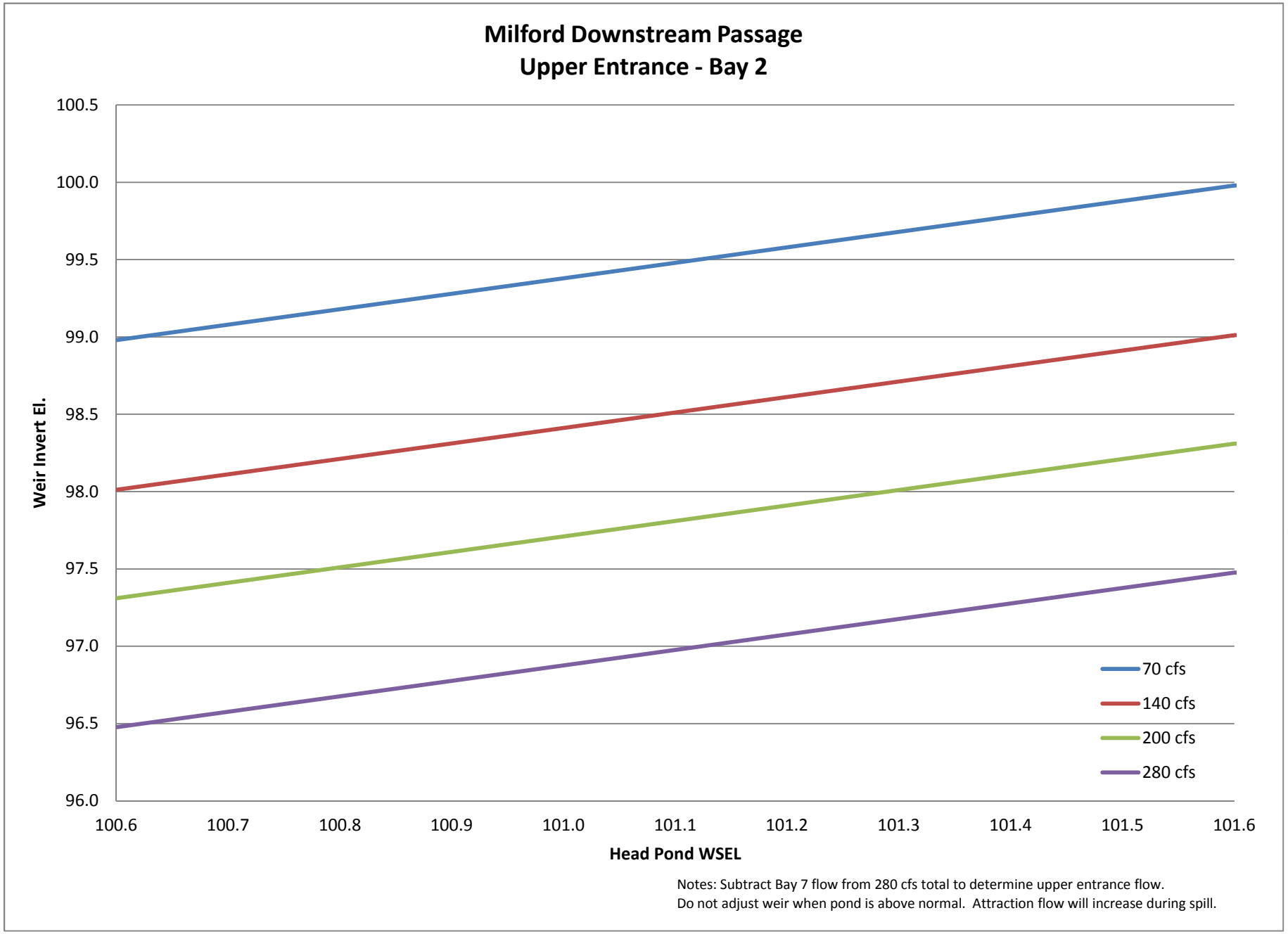
Thank you,
Kelly Maloney
Project Licensing Coordinator
Kleinschmidt
141 Main Street, P.O. Box 650
Pittsfield, Maine 04967
Office: (207) 416-1271
Kelly.Maloney@KleinschmidtUSA.com

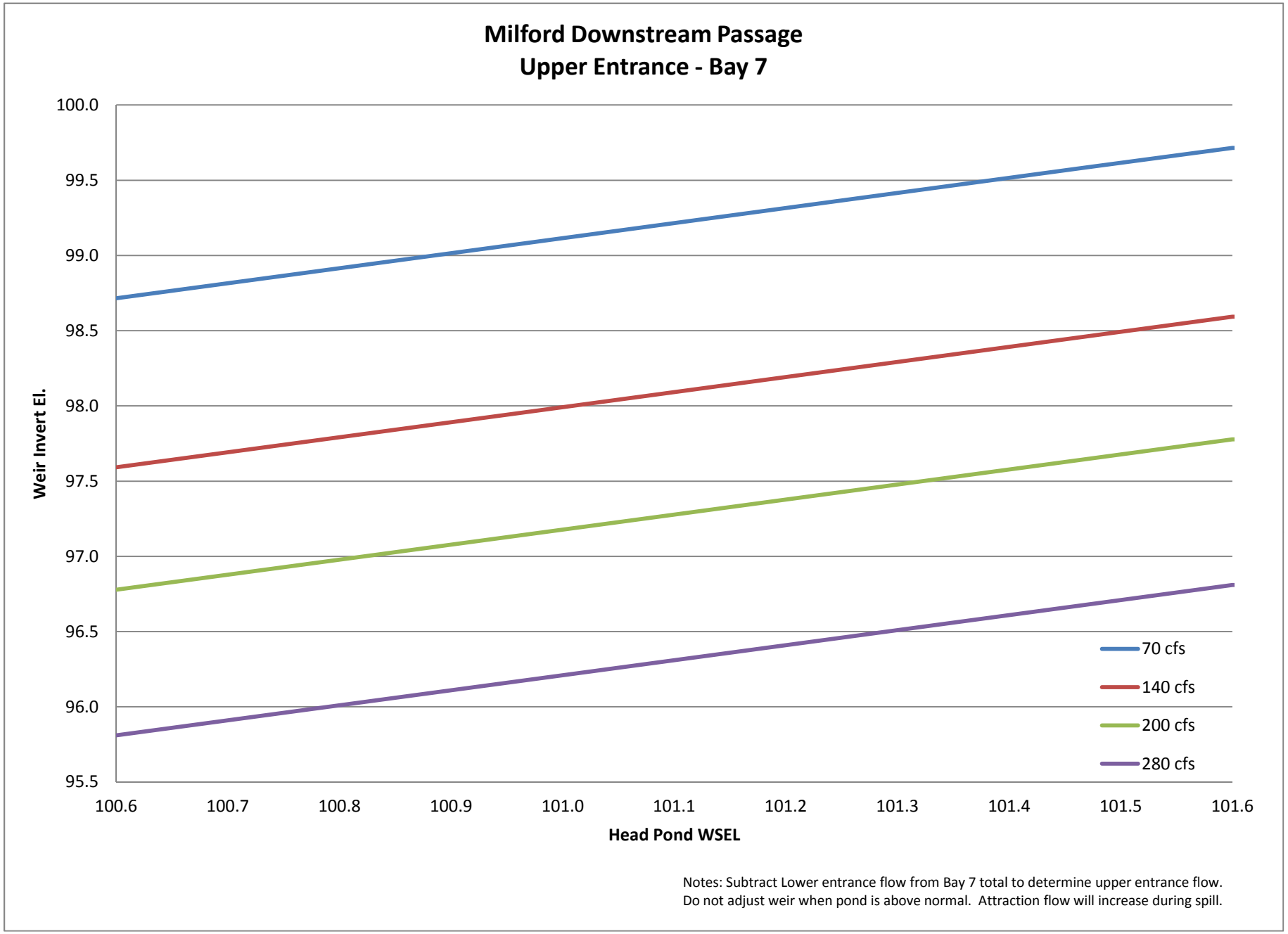

Milford Operation and Flow Mon...

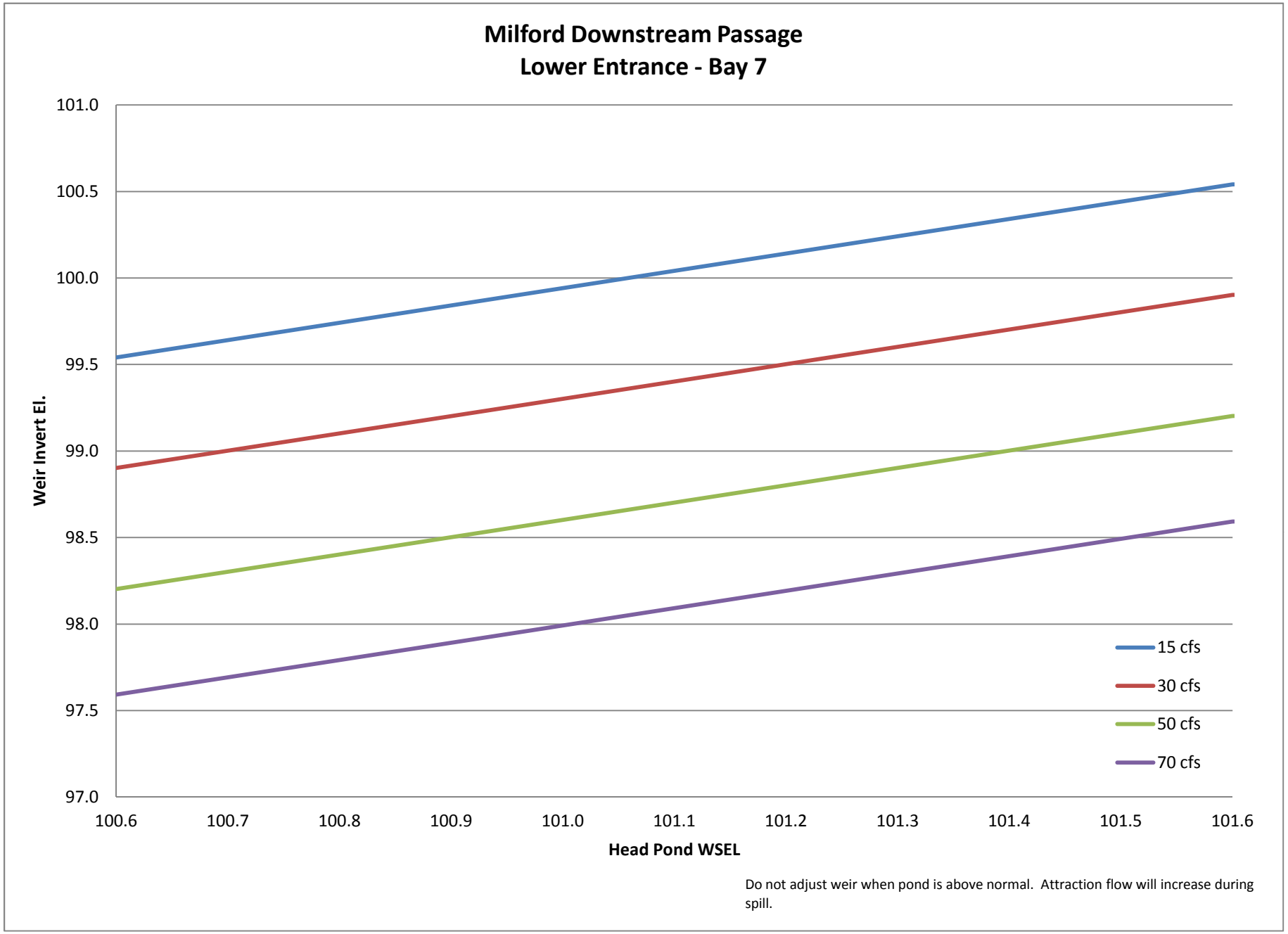
MF OMP - Appendix B.pdf

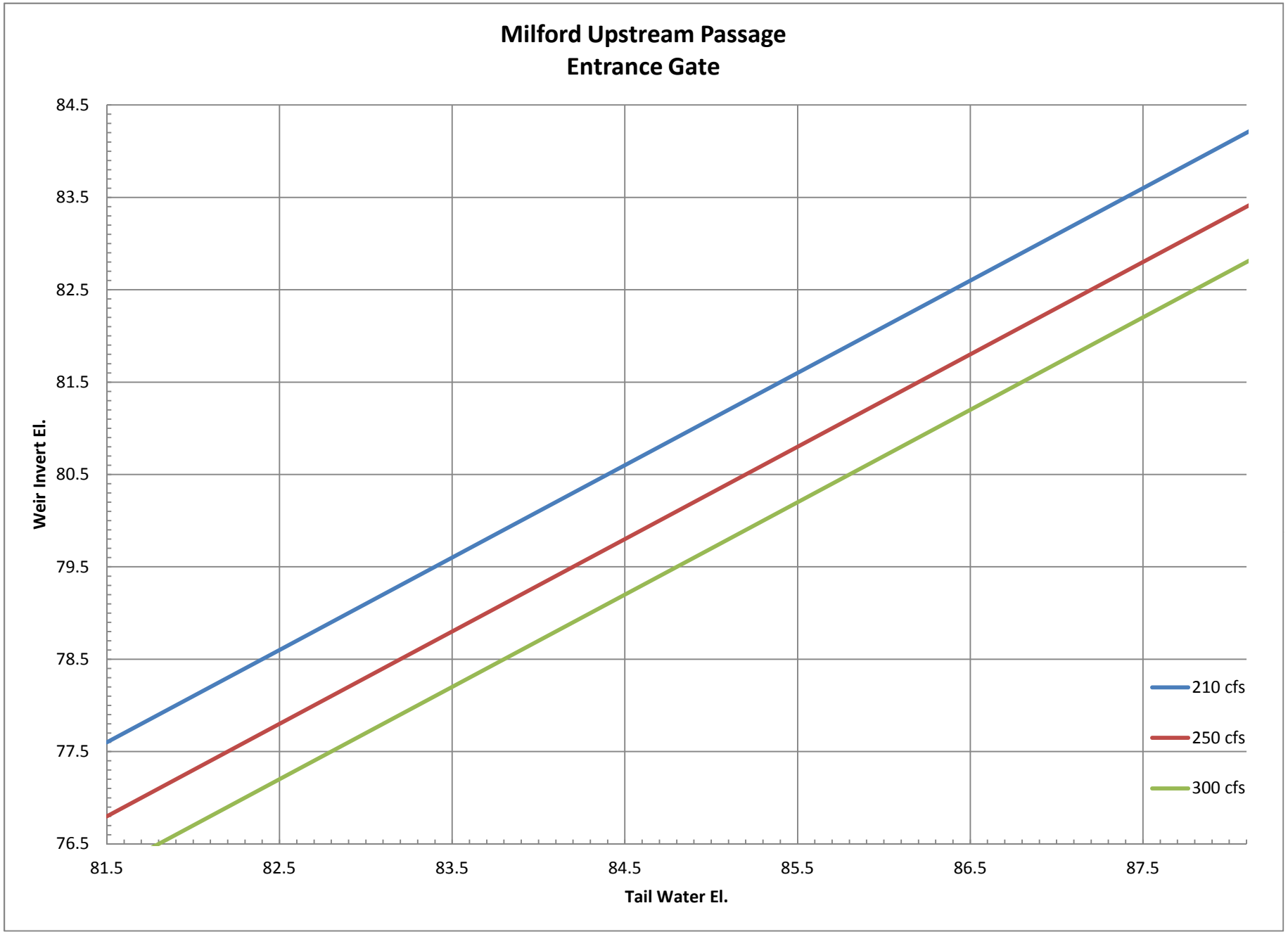
APPENDIX B

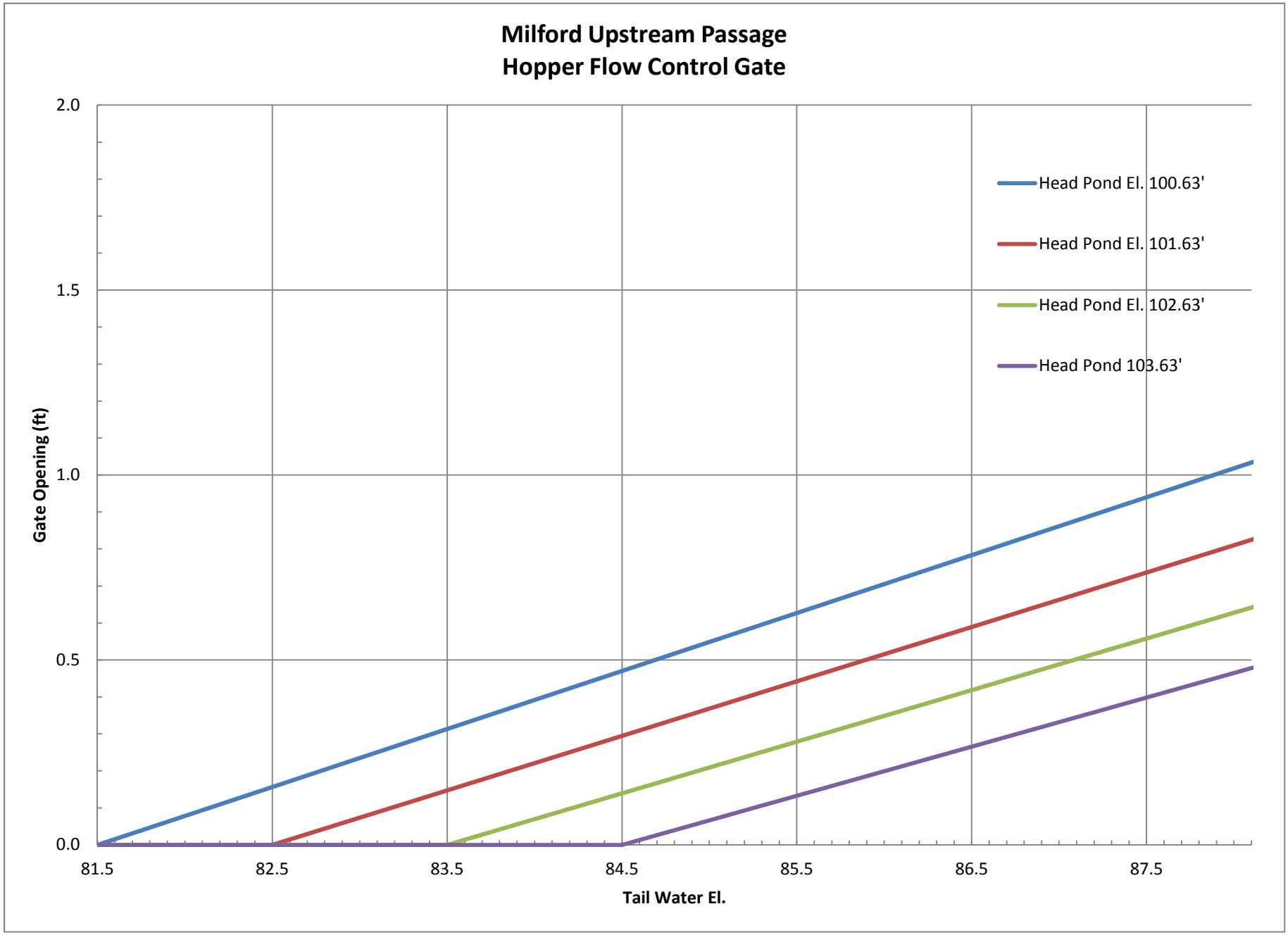
HEADPOND ELEVATION AND DISCHARGE CALCULATIONS

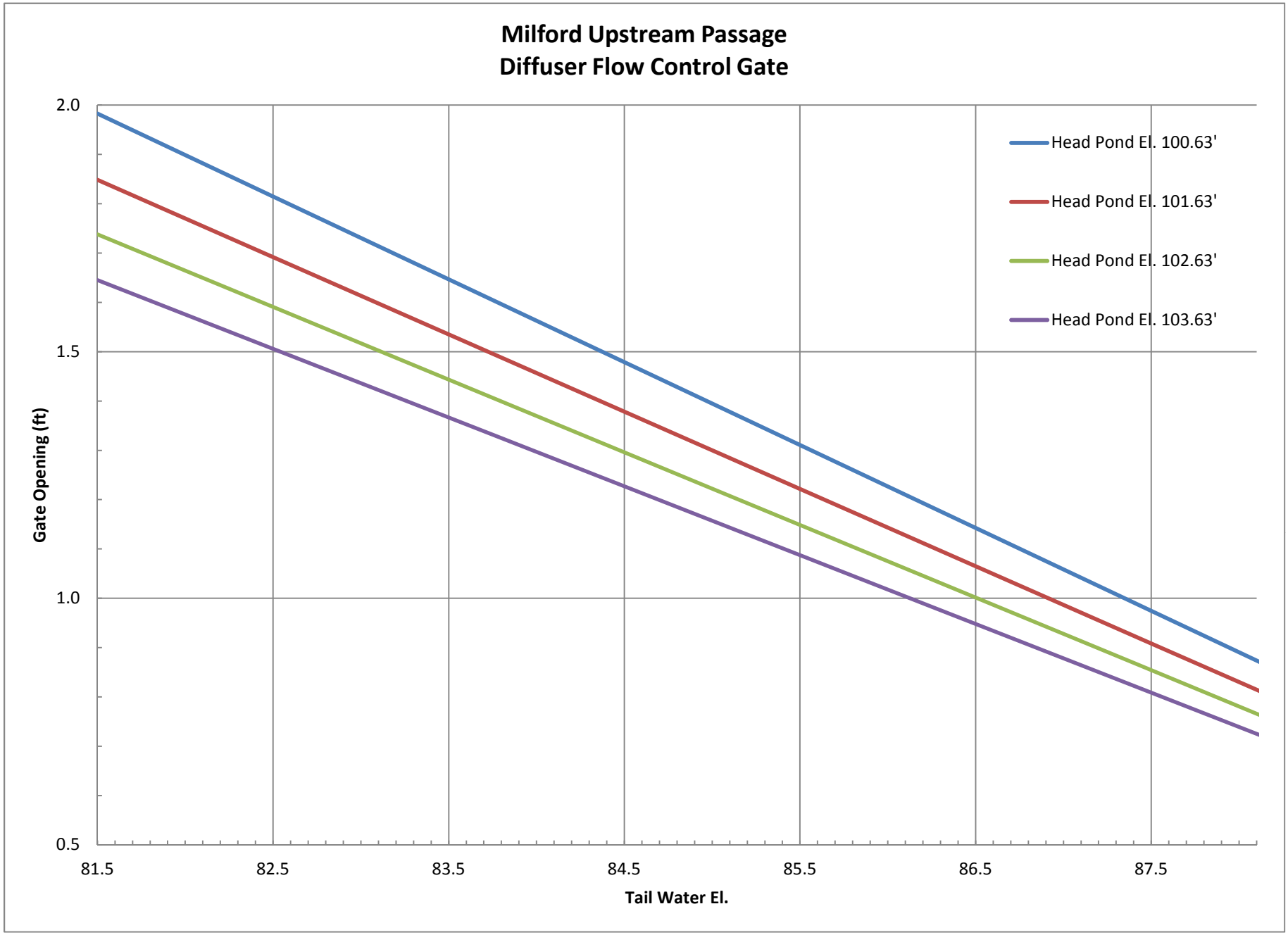


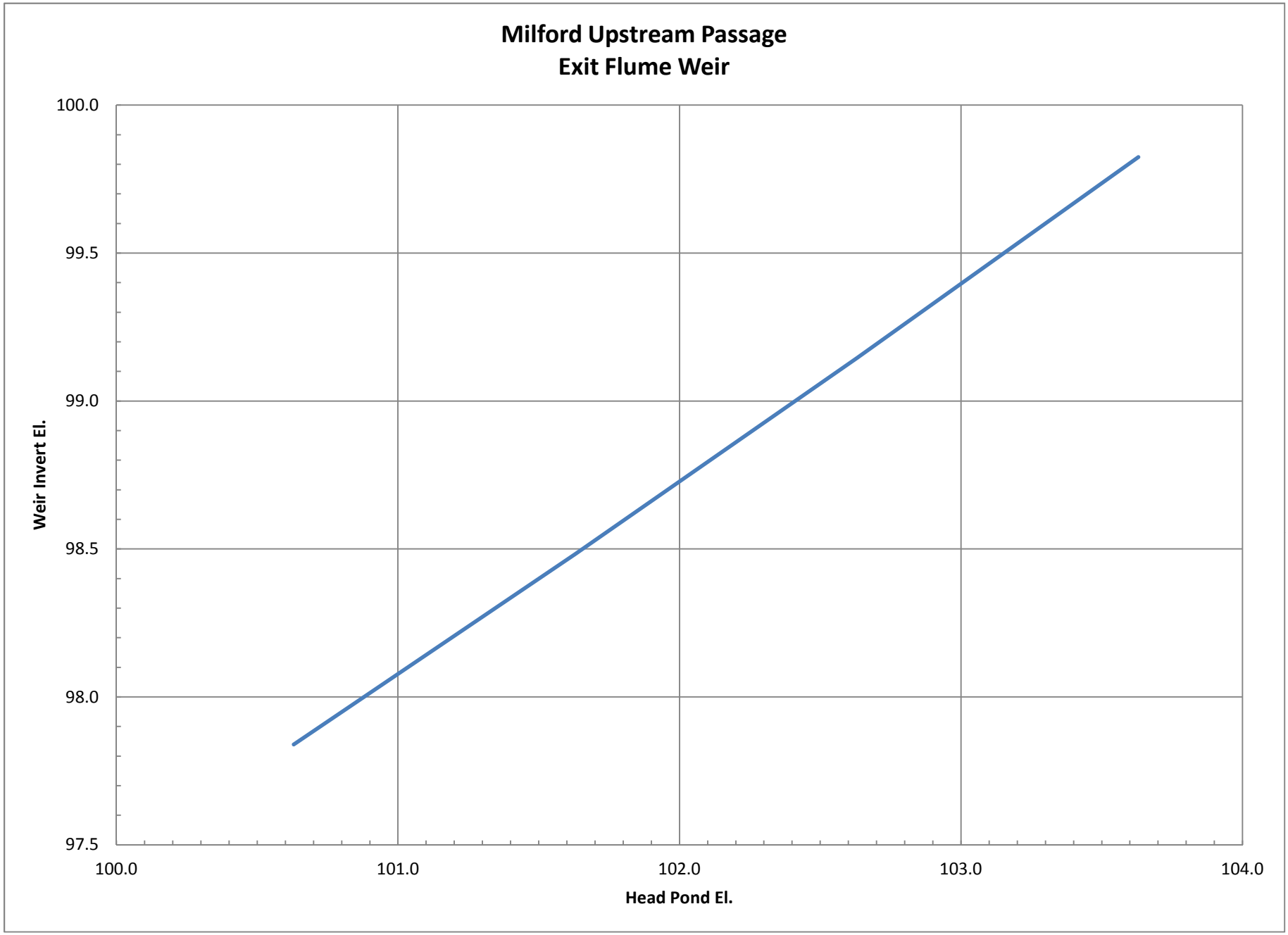












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