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RECLAMATION

Willamette Basin Mercury TMDL Water Quality Implementation Plan Annual Report Amendment

**Tualatin Project, Oregon
Columbia-Pacific Northwest Region**



Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, Native Hawaiians, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Willamette Basin Mercury TMDL Water Quality Implementation Plan Annual Report

**Tualatin Project, Oregon
Columbia-Pacific Northwest Region**

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Cover Photo: Scoggins Dam and Henry Hagg Lake, Oregon (Reclamation photo)

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Acronyms

Acronym or Abbreviation	Definition
C	Celsius
Ca	Dissolved Calcium
cfs	Cubic Feet per Second
Cl	Dissolved Chloride
DMA	Designated Management Agency
dNH ₃	Dissolved Ammonia
DO	Dissolved Oxygen
DO Profile	Dissolved Oxygen Profile
DOC	Dissolved Organic Carbon
EC	Electrical Conductivity
EC Profile	Electrical Conductivity Profile
fasl	Feet Above Sea Level
Fl	Dissolved Fluoride
FMHg	Filtered Methylmercury
FTHg	Filtered Total Mercury
FY	Fiscal Year
IAA	Interagency Acquisition Agreement
JWC	Hillsboro Joint Water Commission
K	Dissolved Potassium
L	Liter
MeHg	Methylmercury
Mg	Dissolved Magnesium
mg	Milligram
Na	Dissolved Sodium
ng	Nanogram
NO ₃ +NO ₂	Dissolved Nitrate + Nitrite
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
OP	Dissolved Ortho-phosphorus
PEM1Ch	Palustrine, Emergent, Persistent, Seasonally Flooded, Diked/Impounded wetlands

Acronym or Abbreviation	Definition
pH Profile	pH Profile
PSSAh	Palustrine Scrub-Shrub, Temporarily Flooded, Diked/Impounded wetlands
PSSCh	Palustrine, Scrub-Shrub, Seasonally Flooded, Diked/Impounded wetlands
RA	Elks and Eagle Point Recreation Areas
Reclamation	Bureau of Reclamation
Reservoir	Scoggins Valley Park/Henry Hagg Lake Reservoir
SIO ₂	Dissolved Silica
SO ₄	Dissolved Sulfate
TDS	Total Dissolved Solids
Temp	Temperature
Temp Profile	Temperature Profile
THg	Total Mercury
TKN	Total Kjeldahl Nitrogen
TMDL	Total Daily Maximum Load
TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Sediment
UMHg	Unfiltered Methylmercury
ug	Microgram
USGS	United States Geological Survey
UTHg	Unfiltered Total Mercury
WQIP	Water Quality Implementation Plan

Executive Summary

The Willamette River Basin and its numerous tributaries do not currently meet Oregon's Water Quality Standards for mercury. These standards protect designated beneficial uses such as human health, recreation, fish and aquatic life, wildlife, hunting, and fishing (fish consumption and rearing). When water quality standards are not met, the federal Clean Water Act requires a Total Maximum Daily Load (TMDL) to be established. A TMDL determines how much of a single pollutant can be added to a water body without exceeding water quality standards.

The Bureau of Reclamation received a letter from the Oregon Department of Environmental Quality (ODEQ) on February 17, 2022, designating Reclamation as a reservoir operator designated management agency (DMA). Scoggins Dam is a transferred work, which means Reclamation owns the dam, and the operations and maintenance is transferred to Tualatin Valley Irrigation District. The reservoir behind Scoggins dam is Henry Hagg Lake.

Baseline water quality monitoring at Henry Hagg Lake is proposed through the first 5 years of TMDL implementation. Henry Hagg Lake is a feature of the Tualatin Project and is operated to provide irrigation water, recreation, and flood and water quality control under existing environmental compliance commitments. Accordingly, operations are tightly regulated and any changes to operations will require extensive study; water contract review, and compliance with applicable laws including the National Environmental Policy Act, the Endangered Species Act, and Section 106 of the National Historic Preservation Act. Such efforts likely would exceed the 5-year reporting cycle for this Water Quality Implementation Plan (WQIP) and are outside the scope and budget of this WQIP.

Reclamation submitted a WQIP in August of 2023, to the ODEQ, who approved the updated version of the plan in January 2024 (2024 WQIP). In 2024, the first annual report was submitted for the WQIP; however, there were no analytical results to provide in the report due to the short turnaround time for submission. The second annual report per the approved WQIP schedule was submitted prior to April 1, 2025, on March 31, 2025, without any analytical results, they had not been completed prior to the submission of the report.

Reclamation completed a second-year review, for any significant changes, of the adjacent reservoir wetlands based on the National Wetlands Inventory (NWI). The analytical results for the mercury and methylmercury received from the U.S. Geological Services (USGS) came through e-mail in 2025 and 2026. Cavan Gerrish received the 2025 data results, sometime post annual report submittal and pre reservoir sampling. I do not have an exact date for this transaction, due to the e-mail account for Cavan Gerrish being terminated after he left employment with Reclamation. Gina Hoff received data by e-mail from Tylor Rosera with USGS, on March 19, 2026, pertaining to the 2025 sample results for mercury and methylmercury, the results can be referenced in Table 9.

The second monitoring season for the WQIP was completed in 2025; however, not all samples were acquired during the 2025 monitoring season, due to the federal government shutdown and employee furloughs. Reclamation teamed up with the Hillsboro Joint Water Commission (JWC) and USGS to assist with the August, September, and October sampling. USGS prepares the supplies, materials, and equipment each month for sampling, and sends it to JWC to acquire the needed samples and send them to the Regional Reclamation Laboratory, in Boise, Idaho. Although, Reclamation employees were still working during the government shutdown, in October 2025, Reclamation at the time and even now does not have the staff to go and sample due to the number of employees lost to the government reorganization.

Reclamation has identified several areas of the Henry Hagg Lake Reservoir shoreline that need to be stabilized due to safety concerns for the patrons of the park, and it will assist with the mercury loading to the reservoir.

Background

The Willamette Basin Mercury TMDL was established due to widespread exceedances of Oregon's water quality standards for mercury. These standards protect beneficial uses including fish and aquatic life, recreation, and human health (fish consumption). Oregon implements TMDLs via rule OAR 340-042-0080, and the ODEQ named Reclamation a DMA for Henry Hagg Lake. Reclamation did not dispute this designation, which places binding implementation and reporting requirements on the agency.

Tualatin Project Authority:

Tualatin Project (80 Stat. 822, Public Law 89-596); Federal Water Project Recreation Act of 1965, July 9, 1965, as amended by Reclamation Recreation Management Act, Title XXVIII of P.L. 102-575, October 30, 1992; Reclamation Safety of Dams Act: Public Law 95-578; Reclamation Act of 1902, July 17, 1902; P.L. 260, Reclamation Project Act of 1939, August 12, 1940.

Water Quality Implementation Plan

Reclamation's *Willamette Basin Mercury TMDL Water Quality Implementation Plan* was developed by Reclamation and approved by ODEQ in January 2024. It outlines ongoing water quality monitoring and requires submission of an annual report beginning in 2024. The first report was submitted in March 2024, the second in March 2025, and a third report is required to be submitted prior to April 1, 2026.

In 2024, Reclamation published a webpage for the TMDL documents, which ODEQ requires for the Willamette Basin Henry Hagg Lake Reservoir Mercury TMDL documentation. As the DMA for Henry Hagg Lake Reservoir information generated is to be posted online to the designated

website. The website can be found at <https://www.usbr.gov/pn/cao/willamettebasin/>. Both the *2024 and 2025 Willamette Basin Mercury TMDL Annual Reports and Water Quality Implementation Plan* have been published to the project webpage. This report will be available on the webpage after it is submitted to ODEQ.

As described in the 2024 WQIP¹, Reclamation will submit annual reports to Oregon Department of Environmental Quality (ODEQ) that will include the information in the performance measures table of the 2024 WQIP (Table 1) provided below.

Table 1. 2024 WQIP Performance Measures and Reclamation Mercury TMDL Implementation Tracking Matrix

Source	Strategy	How	Fiscal Analysis	Measure	Timeline	Milestone	Status
Shoreline Erosion	Monitor reservoir level fluctuations	Via Hydromet monitoring	N/A	Daily max water elevation change	April 2024 - August 2028	Annual report for the previous calendar year's monitoring (April 1)	April 2026
Reservoir Chemistry	Maintain reservoir-adjacent wetlands	Existing surveys/delineations	N/A	Acreage of wetlands	April 2024 - August 2028	Annual report for the previous calendar year's monitoring (April 1)	April 2026
Reservoir Chemistry	Monitor	Dissolved oxygen profiles	\$90,621 for August 2024 - August 2028	Percent of reservoir volume < 0.5 mg DO	August 2024 – August 2028	Annual report for the previous calendar year's monitoring (April 1)	April 2026
Reservoir Chemistry	Monitor	DO, 2 m interval, pH, EC, temperature	\$90,621 for August 2024 - August 2028	Percent saturation	August 2024 – August 2028	Annual report for the previous calendar year's monitoring (April 1)	April 2026
Reservoir Chemistry	Monitor	Nutrient status: nutrients, ions, organic carbon, 3 times annually	\$90,621 for August 2024 - August 2028	Nutrient concentrations, increase/decrease in sulfate or carbon	August 2024 – August 2028	Annual report for the previous calendar year's monitoring (April 1)	April 2026
Reservoir Chemistry	Monitor	Water column Hg 3 times annually	\$90,621 for August 2024 - August 2028	THg concentrations	August 2024 – August 2028	Annual report for the previous calendar year's monitoring (April 1)	April 2026
Reservoir Chemistry	Monitor	Water column dissolved MeHg 3 times annually	\$90,621 for August 2024 - August 2028	Dissolved MeHg concentrations	August 2025 - August 2028	Annual report for the previous calendar year's monitoring (April 1)	April 2026

¹ Willamette Basin Mercury TMDL Water Quality Implementation Plan, February 2024. U.S. Department of the Interior, Bureau of Reclamation. [Willamette Basin Mercury TMDL, CPN Region](#)

Reservoir Chemistry	Continuing existing protective reservoir operations	Refill is targeted for May 1; minimum storage occurs November – January.	N/A	Refill date, percent fill relative to previous year, date of minimum storage	N/A	Annual report for the previous calendar year's monitoring (April 1)	N/A
Reservoir Chemistry	Assess opportunities to reduce sediment runoff	Coordination with upstream land managers and Bend Field Office Personnel	N/A	Upstream land managers WQIP progress land use improvements (shoreline stabilization) at the park	April 2024 - August 2028, establish data sharing	Annual report for the previous calendar year's monitoring (April 1)	April 2026

Shoreline Erosion

It has been determined that the major contributor of mercury in Scoggins Valley Park at Henry Hagg Lake is from air deposition. The Scoggins Valley Park is owned by Reclamation and operated by Washington County Parks. In 2025, through project management coordination, the Henry Hagg Water Quality Implementation Team Lead learned that Reclamation’s Bend Field Office is in the process of providing improvements at select recreation sites in Scoggins Valley Park. The project goals are to mitigate and prevent ongoing erosion to reduce ecological impacts such as sediment delivery, water quality, and significant vegetation loss in and adjacent to the reservoir. Additionally, the goal is to allow public recreation on Reclamation lands in a healthy and safe manor.

The project will stabilize ongoing shoreline erosion occurring at Elks and Eagle Point Recreation Areas (RA) at Scoggins Valley Park. At these locations, erosion has impacted sections of the popular Hagg Lake Trail that goes through both Elks and Eagle Point RAs and has undercut asphalt parking spaces at Eagle Point Boat Ramp. Due to wind and wave action, the instability of the soils and the ongoing sloughing and natural landslides are causing natural vegetation and large diameter trees to slide into the reservoir.

All these actions are causing public health and safety concerns, as well as risks to the dam spillway with debris floating into the intake facilities. The erosion has progressively gotten worse over the last 5 years. Reclamation's non-federal recreation managing partner, Washington County Parks, has tried various mitigation actions at Eagle Point RA; and all have failed as a permanent solution.

Henry Hagg Lake Reservoir forebay elevation changes day to day, and the monthly fluctuations are summarized in Figure 1. Maximum day-to-day fluctuations are approximately 3 to 4 feet per day, per year, from January 2024 through December 2025. In 2024, the reservoir reached full volume capacity of 53,300 acre-feet at 303.48 feet above sea level (fasl) on June 8, 2024, and a minimum capacity of 17,512 acre-feet at 264.85 fasl was observed on November 10, 2024. In 2025, full volume capacity of the reservoir was achieved on April 29, 2025, at an elevation of 303.44 feet above sea level and 53,256 acre-feet, and a minimum capacity of 11,029 acre-feet at elevation 255.53 fasl was observed on November 23, 2025.

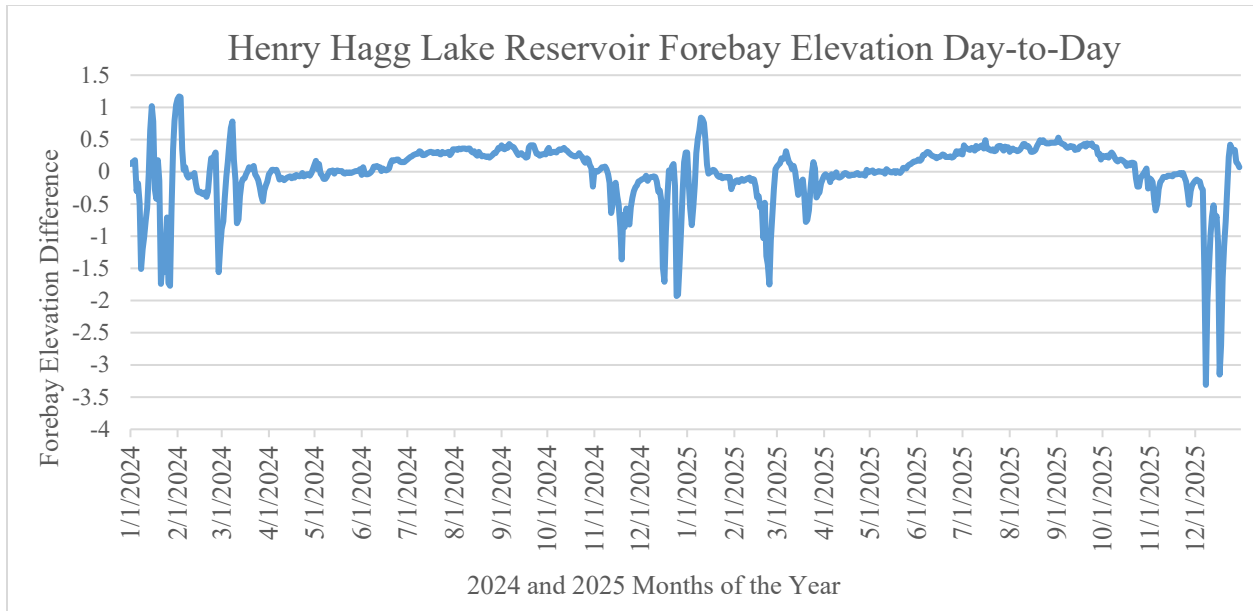


Figure 1. Henry Hagg forebay elevation change day-to-day measured in feet by Hydromet forebay elevation sensor for 2024 and 2025.

Henry Hagg Reservoir-Adjacent Wetlands

The wetlands adjacent to the Reservoir surveyed via the U.S. Fish and Wildlife Service National Wetlands Inventory, appear to be approximately 6.58 acres of reservoir-adjacent wetlands (Table 2). There does not appear to be any significant change in the total area or volume of the adjacent wetlands from 2024 to and through 2025.

Table 2. Reservoir-adjacent wetlands per the NWI

Wetland Classification	Approximate Location	Area (acres)	Latitude	Longitude
PEM1Ch	Tanner Creek inflow	2.77	45.501	-123.209
PEM1Ch	Tanner Creek inflow	0.91	45.502	-123.209
PSSCh	Wall Creek inflow	0.68	45.502	-123.231
PSSAh	Scoggins Creek inflow	1.74	45.499	-123.227
PSSCh	West Shore near Lee Road	0.48	45.479	-123.222

Reservoir Chemistry

2024 Monitoring Season

To efficiently use resources and promote cooperation between local agencies, Reclamation partnered with the Hillsboro Joint Water Commission (JWC) to utilize existing JWC water quality data and monitoring visits to collect water quality samples and submit them to the Reclamation Water Lab in Boise, ID. Once received, the Boise Water Lab splits each of the

water samples. Analysis is conducted for the water quality constituents listed in Table 3. The remaining samples are shipped to the USGS, Upper Midwest Water Science Center, in Madison, Wisconsin, for mercury and methylmercury analysis results for 2024 and 2025 are provided in Table 9 below.

Although samples were collected for mercury and methylmercury in 2024, the first year of implementation there were no sample results to share in the first annual report provided in 2024. This is due to the early spring submission of the report and the late summer schedule for acquiring the water samples, August through October, the warmest months of the year. These months were chosen because they should provide the optimal conditions in the reservoir for mercury to methylate if present.

In 2025, the second year of implementation water samples were collected for all water quality parameters to be used to assist in the construction of a mercury translator, for modeling mercury and methylmercury, in Henry Hagg Lake. This is the tool that will be used to assist ODEQ in setting a future load allocation for the reservoir. The monitoring plan for the TMDL was developed in 2023 and approved in January 2024 and included in the plan is training that will be provided by the USGS.

As this is a cooperative study, Reclamation is collaborating with the USGS, for sample analysis and assessment. This means the methods and procedures used, by USGS, to collect and analyze water samples for the presence of mercury and methylmercury will be used by JWC and Reclamation, when acquiring samples for the Henry Hagg Lake TMDL study. For this to occur, a USGS staff member on this project would need to travel to Henry Hagg Lake for field training with JWC and Reclamation to provide the necessary training in monitoring techniques, test logistics for monitoring. Although, due to budget constraints lack of resources and staff, since 2025, the training needed has not occurred and may not occur in 2026 either.

Table 3. 2024 Water Quality Monitoring at Henry Hagg Lake Reservoir

Date	Depths (meters)	Quality Control	Analytes
8/6/2024 8/19/2024	1,5,10,15,21,25	Equipment Blank, Field Replicate, Laboratory Blank	THg, MHg, Ca, K, Mg, SiO ₂ , Cl, F, SO ₄ , OP, TDS, dNH ₃ , NO ₃ +NO ₂ , TKN, TP, TSS, Na, TOC, DOC, and pH/Temp/DO profiles
9/18/2024	1,5,11,15,21	Field Replicate, Laboratory Blank	THg, MHg, Ca, K, Mg, SiO ₂ , Cl, F, SO ₄ , OP, TDS, dNH ₃ , NO ₃ +NO ₂ , TKN, TP, TSS, Na, TOC, DOC, and pH/Temp/DO profiles
10/16/2024	1,5,11,15,19	Field Replicate, Laboratory Blank	THg, MHg, Ca, K, Mg, SiO ₂ , Cl, F, SO ₄ , OP, TDS, dNH ₃ , NO ₃ +NO ₂ , TKN, TP, TSS, Na, TOC, DOC, and pH/Temp/DO profiles

Table 4. 2024 Reclamation Water Quality Monitoring at Henry Hagg Lake

Sample Name	Date Sampled	Sample Type and Depth	Analysis	Result	Units
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Calcium, Dissolved	6.08	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Chloride	2.07	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Dissolved Ammonia	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Fluoride	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Magnesium, Dissolved	2.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Nitrate Nitrite	0.01	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Ortho Phosphorus	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Potassium, Dissolved	0.43	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	SiO ₂ , Dissolved	13.50	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Sodium, Dissolved	3.41	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Sulfate	2.03	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Total Kjeldahl Nitrogen	0.13	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Total Organic Carbon	1.13	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Total Phosphorus	0.01	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	TSS	3.13	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Field Rep Surface-1	Turbidity	2.44	NTU
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Calcium, Dissolved	6.07	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Chloride	2.11	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Dissolved Ammonia	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Fluoride	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Magnesium, Dissolved	2.09	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Nitrate Nitrite	0.01	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Ortho Phosphorus	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Potassium, Dissolved	0.41	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	SiO ₂ , Dissolved	13.65	mg/L

Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Sodium, Dissolved	3.43	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Sulfate	2.04	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Total Kjeldahl Nitrogen	0.10	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Total Organic Carbon	1.14	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Total Phosphorus	0.01	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	TSS	3.38	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Surface-1	Turbidity	2.13	NTU
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Calcium, Dissolved	6.42	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Chloride	1.99	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Dissolved Ammonia	0.01	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Fluoride	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Magnesium, Dissolved	2.10	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Nitrate Nitrite	0.09	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Ortho Phosphorus	0.00	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Potassium, Dissolved	0.40	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	SiO ₂ , Dissolved	16.56	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Sodium, Dissolved	3.13	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Sulfate	1.94	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Total Kjeldahl Nitrogen	0.11	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Total Organic Carbon	1.06	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Total Phosphorus	0.02	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	TSS	4.28	mg/L
Henry Hagg Lake 100m above Dam	8/6/2024	Grab, Bottom-25	Turbidity	6.94	NTU

Reclamation monitoring results for 2024 are available and present in Table 4 of the 2026 annual report, while Table 3 describes the monitoring completed in 2024, by Reclamation and JWC. During data gathering of the 2025 data, it was determined that although the data JWC was collected and sent to Reclamation as requested, the staff member who received the data departed from Reclamation and the data was never actually received. A new request was made, by Team

Lead, in March 2025, for all data that can be shared and used for this project to include 2024 and 2025 data. There was not sufficient time to do the appropriate analysis on the data received, so Reclamation intends to follow this report with a subsequent amendment that includes the 2024 and 2025 water quality constituents.

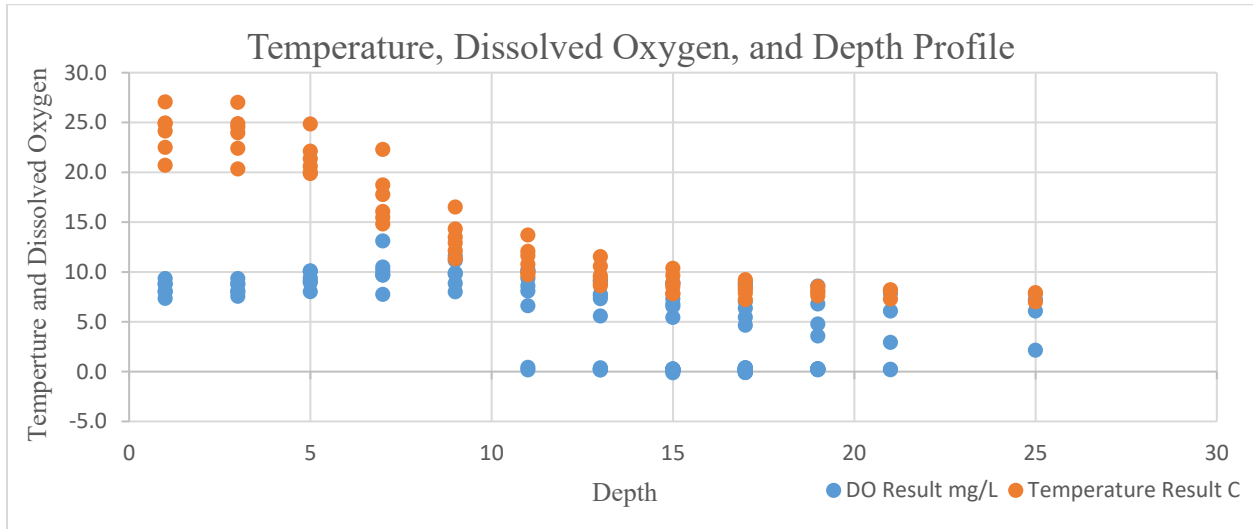


Figure 2. Correlation of Temperature, Dissolved Oxygen, and Depth

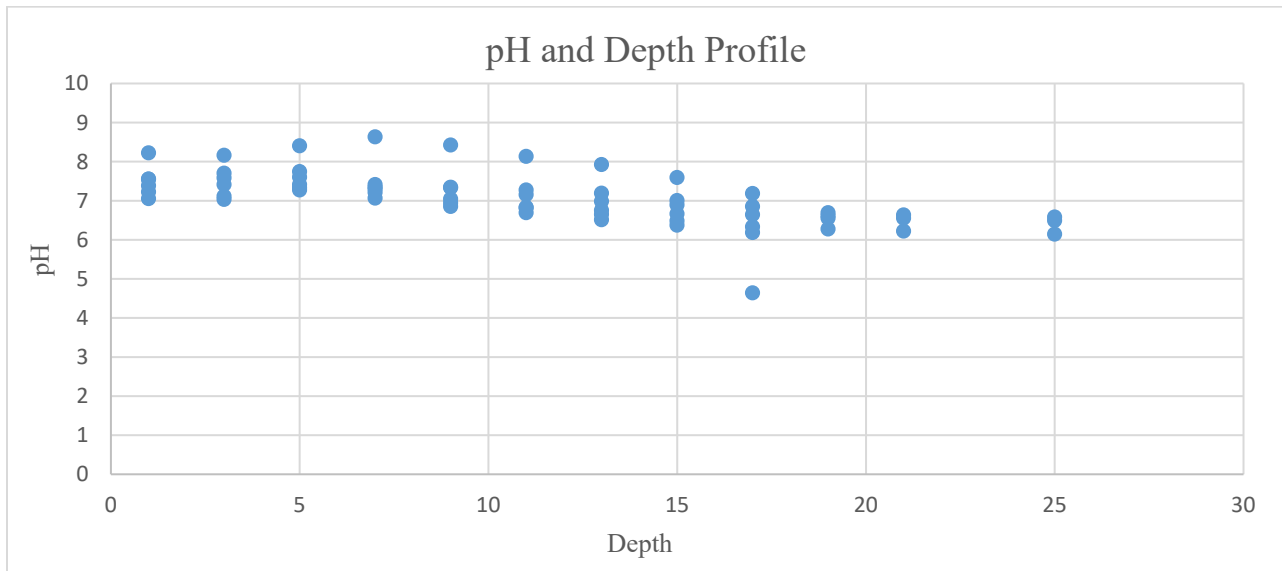


Figure 3. pH and Depth Profile

Reclamation included in the WQIP depth profiles for temperature, dissolved oxygen, pH, and EC due to the correlation of these parameters with one another at the various depths. The correlations between these parameters can be an indication of how mercury and dissolved mercury react at various depths. The depth profiles for temperature, dissolved oxygen, pH, and EC are presented in Figures 2, 3, and 4.

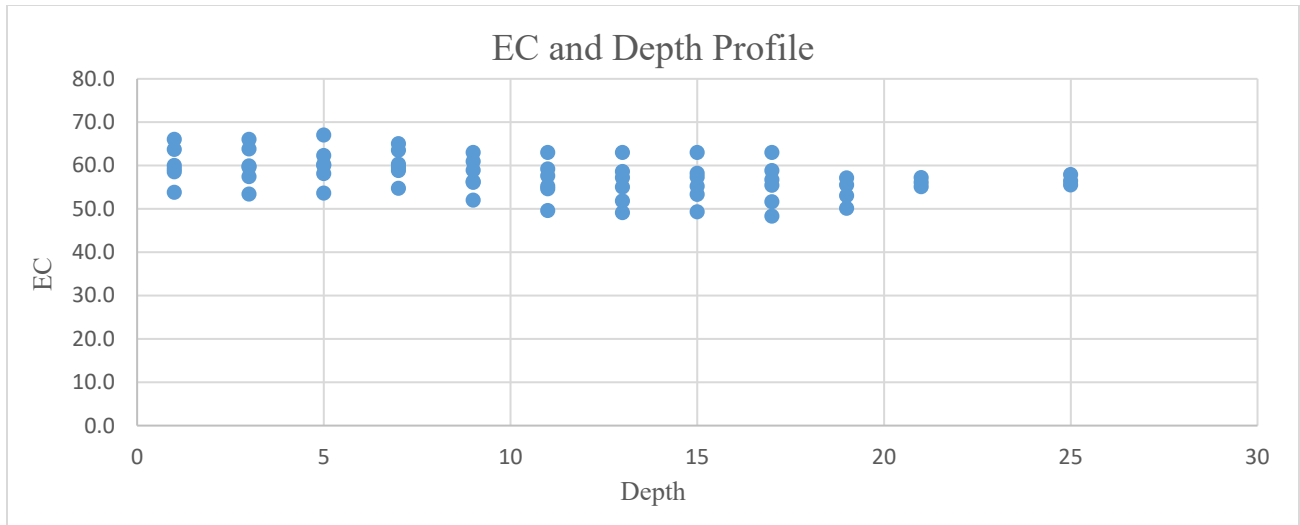


Figure 4. EC and Depth Profile

Continuation of Existing Protective Reservoir Operations

Below are the maximum and minimum forebay elevations for Henry Hagg Lake for 2024 and 2025. In 2024, refill to forebay elevation 303.48’ was accomplished on June 18, 2024, while the minimum elevation 264.85’ was observed on November 10, 2024. In 2025, refill was completed on April 29, 2025, to an elevation of 303.44’ and the minimum reservoir level was measured at 255.53’ on October 23, 2025, and can be observed in the following table and figure. In 2024, the minimum storage capacity in Henry Hagg Lake Reservoir occurred on November 10, 2024, with a capacity of 17,512 acre-feet. The reservoir began its refill and obtained full capacity of 53,256 acre-feet on April 29, 2025, and by October 23, 2025, a minimum capacity. The information discussed above is presented in Tables 5, 6, and 7, as well as Figures 5, 6, and 7. Once the JWC data is assessed it can be included in the report with additional discussion of the parameters and their correlations with one another.

Table 5. Henry Hagg Lake Reservoir Minimum and Maximum Feet Above Sea-level Hydromet

Left blank	2024	2025
Max	303.48	303.44
Min	264.85	255.53
Ave	289.166	283.737

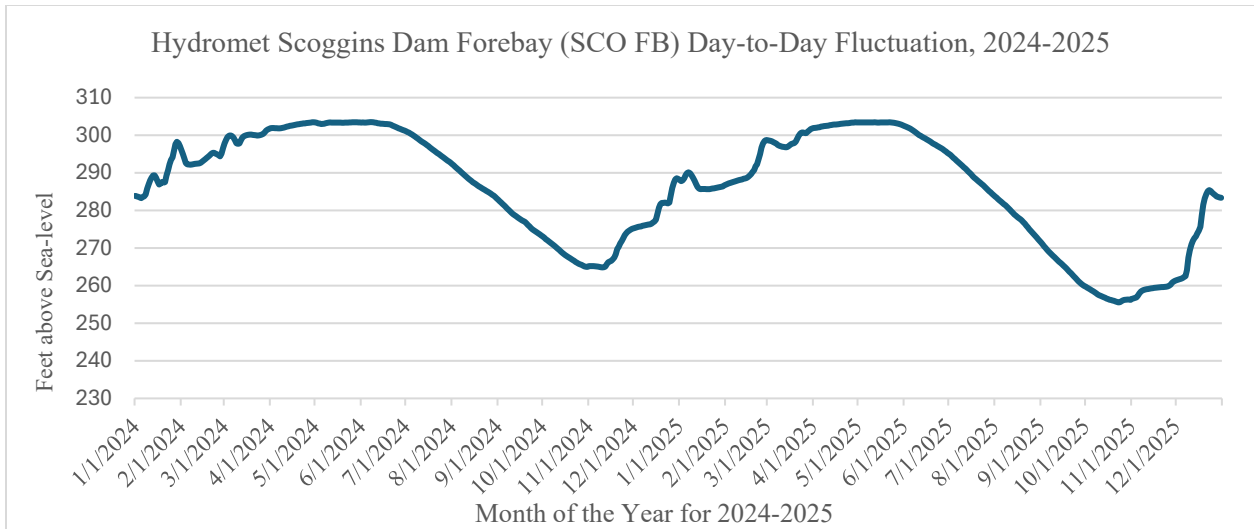


Figure 5. Henry Hagg forebay elevation measured in feet by Hydromet forebay elevation sensor for 2024 and 2025.

Table 6. Scoggins Creek Stream Discharge into Henry Hagg Lake Reservoir, measured in cubic feet per second (cfs) by Hydromet

Left blank	2023	2024	2025
Min	2	2.2	1.6
Max	442	536	835
Ave	62.70	68.41	56.62

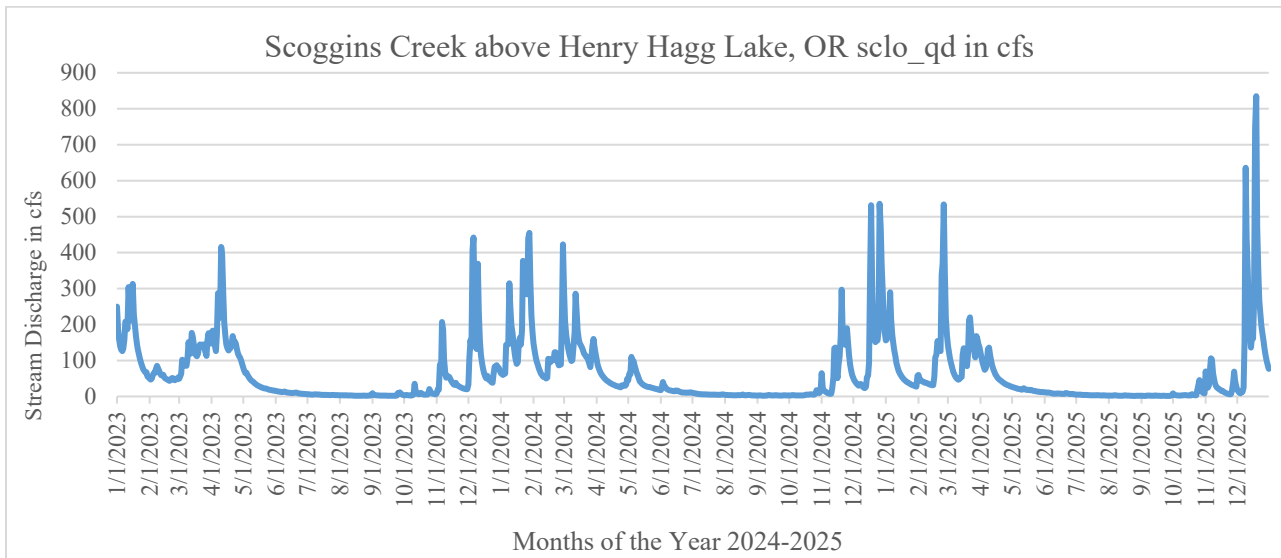


Figure 6. Scoggins Creek Stream Discharge above Henry Hagg Lake Reservoir, measured in cubic feet per second (cfs) by Hydromet

Table 7. Scoggins Creek Stream Discharge below Henry Hagg Lake Reservoir, measured in cubic feet per second (cfs) by Hydromet

Left blank	2023	2024	2025
Min	18.5	17.2	13.8
Max	637	832	581
Ave	125.18	137.29	116.15

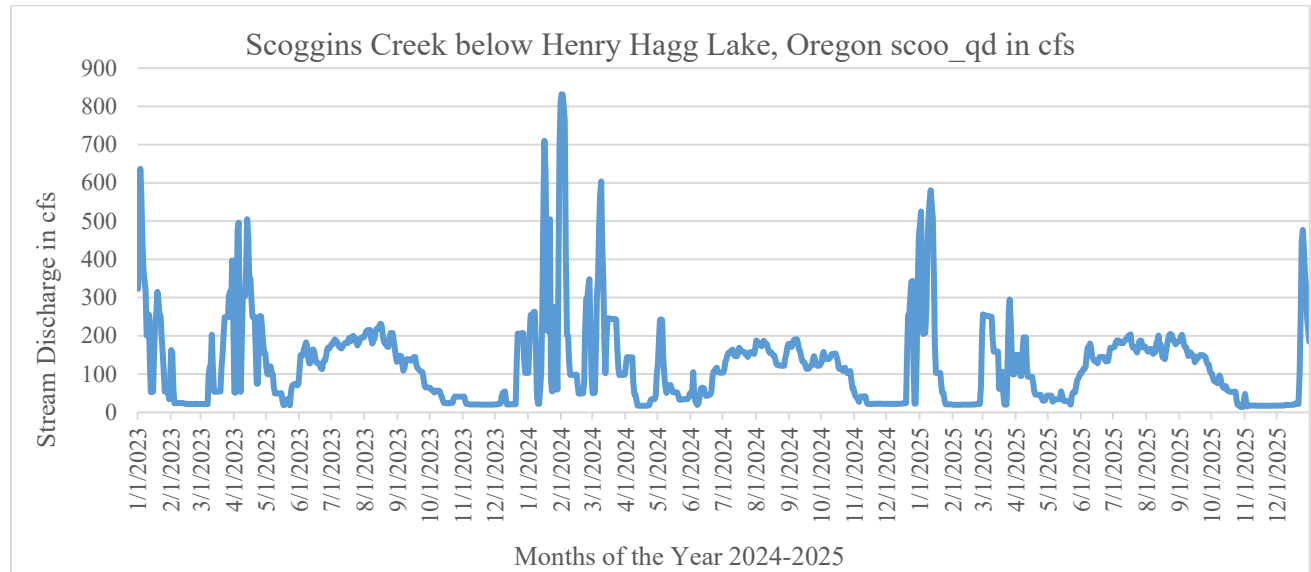


Figure 7. Scoggins Creek Stream Discharge below Henry Hagg Lake Reservoir, measured in cubic feet per second (cfs) by Hydromet

Table 8. Mercury risk factors and reservoir operations

Mercury Risk Factor	2024/2025 Henry Hagg Lake Operations
Reservoirs can be sites where the rate of methylation of Hg is enhanced by conditions of low DO and elevated organic carbon and sulfate in bottom waters and sediment (ODEQ 2019a).	2024 mercury lab results are included in this report in Table 8
Water management was particularly important in influencing fish THg concentrations, which were up to 11-times higher in reservoirs with minimum water storage occurring in May, June, or July (Willacker et al. 2016). For northwestern forested mountain reservoirs, minimum water storage occurring in January was associated with the lowest fish THg levels.	Minimum water storage occurred in the period from November through January in 2024 and 2025
Between-year changes in maximum water storage strongly influenced fish THg concentrations, but within-year fluctuations in water levels did not influence fish THg concentrations (Willacker et al. 2016).	The reservoir filled to forebay elevation 303.48' (full pool) in 2024 and 303.44' in 2025

Reclamation continued and will continue with existing reservoir operations which are protective versus mercury risk factors described in Table 8.

Assess opportunities to reduce sediment runoff

The proposed improvements at Henry Hagg Lake Reservoir aim to identify sustainable, long-term solutions to stabilize shoreline embankments at Eagle Point and Elks Recreation Areas (RAs). These areas are currently experiencing erosion due to natural landslides and the impact of wind- and wave-driven water along the shoreline. The project is intended to enhance long-term bank stabilization, support the overall health of the reservoir, and preserve recreational amenities that are currently being diminished.

No opportunities were identified in 2025 to reduce upstream sediment runoff; however, upstream land management agencies are expected to maintain and implement their own water quality management plans.

Reclamation partnered with the Joint Water Commission (JWC) to utilize existing JWC water quality monitoring visits to collect water quality samples and submit them to the Reclamation water lab in Boise, ID. Once received, the Boise Water Lab splits the samples for analysis; water quality constituents will be analyzed locally and the remaining samples will be submitted to the USGS, Upper Midwest Water Science Center, in Madison, Wisconsin for mercury analysis. In 2025, the Reclamation Water Lab will filter samples when they arrive, as per USGS sampling procedures, and provided the USGS equipment arrives prior to shipping samples.

Water quality monitoring was scheduled to occur per the approved WQIP beginning in August 2025, including September and October. During each sampling event in August, September, and October, samplers will fill a 2L bottle at 5x reservoir depths (surface, mid epilimnion (about 5 m), just below the thermocline (about 15 m) and then mid hypolimnion and deep hypolimnion samples) along with 1x field blank per sampling event, 1x field duplicate every other sampling event, and 2x deionized water blanks (laboratory), and 2x equipment rinse blanks per monitoring season (calendar year).

In 2025 and beyond, these samples are analyzed for unfiltered total mercury (UTHg), unfiltered methyl-mercury (UMHg), filtered total mercury (FTHg), and filtered methyl-mercury (FMHg) along with the other analytes, which include dissolved ammonia, dissolved nitrate + nitrite, g dissolved ortho-phosphorus, total Kjeldahl nitrogen, total phosphorus, total organic carbon, dissolved organic carbon, total suspended sediment, dissolved chloride, dissolved fluoride, dissolved sulfate, dissolved calcium, dissolved magnesium, dissolved potassium, dissolved silica, and dissolved sodium, along with a pH/temperature/and dissolved oxygen profile.

Reclamation completed a second-year review, for any significant changes, of the adjacent reservoir wetlands based on the National Wetlands Inventory (NWI). The analytical results for the mercury and methylmercury received from the U.S. Geological Services (USGS) came through e-mail in 2025 and 2026. Cavan Gerrish received the 2025 data results, sometime post

annual report submittal and pre reservoir sampling. I do not have an exact date for this transaction, due to the e-mail account for Cavan Gerrish being terminated after he left employment with Reclamation. Gina Hoff received data by e-mail from Tylor Rosera with USGS, on March 19, 2026, pertaining to the 2025 sample results for mercury and methylmercury, the results can be referenced in Table 9.

On October 1, 2025, the federal government went into shutdown, and most of the federal government employees were put on furlough. Due to these circumstances, the USGS was unable to prepare and process the materials, supplies, and equipment needed to ship to JWC, for acquiring the October 2025 samples from Henry Hagg Lake Reservoir; unfortunately, the October samples were not acquired.

- **Sampling Status:**

- The Hillsboro Joint Water Commission collects the field samples and sends them to the Boise Water Lab. The Boise Water Lab analyzes the water quality constituents listed above and sends a subsample to the USGS Wisconsin lab for mercury analysis (total and methylmercury).
- Planned field training was not completed in FY25 and is not planned to occur in FY26 due to budget constraints. As a result, dissolved mercury sampling has not occurred. Dissolved and total mercury values are needed to develop a mercury translator to avoid additional IAA/USGS costs.
- USGS Wisconsin lab intends to send a technician to Henry Hagg to validate JWC field sampling techniques and to train Boise Water Lab staff on their preferred field filtering method for the collection of dissolved mercury samples. Additional funds beyond the IAA amount must be allocated to cover travel costs.
- In 2025, August and September supplies (Van Dorn sampler and bottles) were coordinated with USGS, for shipment to JWC and Boise Water Lab. October supplies were not shipped by USGS due to the government shutdown, thus samples for the scheduled sampling event were not collected by JWC or Reclamation.

- **2026 Objectives**

- Supplies for the August, September, and October sampling of Henry Hagg Lake Reservoir must be coordinated in advance with USGS Wisconsin lab, so the supplies, materials, and equipment needed to achieve the sampling arrive in time for the sampling event.
- Manage incoming data from USGS Wisconsin lab, JWC, and BOR Water Lab for inclusion into 2027 Annual Report.
- Plan and schedule methods and procedures training with USGS.
- Research more ways to protect shorelines around the reservoir.
- Continue collaborative measures with up-stream DMAs and team partners.
- Collect and analyze the entire FY26 list of water quality constituents listed in the WQIP.

Table 9. 2024 Henry Hagg Lake Reservoir Mercury Monitoring Results

Project	Sample Date	Sample Time	Depth	Constituent	Isotope	Result Value	Detection Flag	DDL
HENRY HAGG	8/19/2024	917	1	UMHG	NA	0.01 ng/L	<	0.010275
HENRY HAGG	8/19/2024	917	1	UTHG	NA	0.35 ng/L	NONE	0.006673
HENRY HAGG	8/19/2024	935	5	UMHG	NA	0.01 ng/L	NONE	0.010125
HENRY HAGG	8/19/2024	935	5	UTHG	NA	0.49 ng/L	NONE	0.010227
HENRY HAGG	8/19/2024	1046	10	UMHG	NA	0.01 ng/L	<	0.010149
HENRY HAGG	8/19/2024	1046	10	UTHG	NA	0.07 ng/L	NONE	0.010227
HENRY HAGG	8/19/2024	941	15	UMHG	NA	0.01 ng/L	NONE	0.010225
HENRY HAGG	8/19/2024	941	15	UTHG	NA	0.57 ng/L	NONE	0.006673
HENRY HAGG	8/19/2024	1008	21	UMHG	NA	0.02 ng/L	NONE	0.01025
HENRY HAGG	8/19/2024	1008	21	UTHG	NA	0.56 ng/L	NONE	0.006673
HENRY HAGG	8/19/2024	1023	25	UTHG	NA	0.73 ng/L	NONE	0.010227
HENRY HAGG	8/19/2024	1024	25	UTHG	NA	0.53 ng/L	NONE	0.006673
HENRY HAGG	8/20/2024	1015	0	UTHG	NA	0.2 ng/L	NONE	0.006673
HENRY HAGG	9/18/2024	842	1	UMHG	NA	0.02 ng/L	NONE	0.010174
HENRY HAGG	9/18/2024	842	1	UTHG	NA	0.32 ng/L	NONE	0.006673
HENRY HAGG	9/18/2024	853	5	UMHG	NA	0.01 ng/L	<	0.0101
HENRY HAGG	9/18/2024	853	5	UTHG	NA	0.29 ng/L	NONE	0.006673
HENRY HAGG	9/18/2024	905	11	UMHG	NA	0.01 ng/L	NONE	0.010225
HENRY HAGG	9/18/2024	905	11	UTHG	NA	0.32 ng/L	NONE	0.006673
HENRY HAGG	9/18/2024	914	15	UTHG	NA	0.38 ng/L	NONE	0.006673
HENRY HAGG	9/18/2024	933	21	UMHG	NA	0.05 ng/L	NONE	0.010275
HENRY HAGG	9/18/2024	933	21	UTHG	NA	0.43 ng/L	NONE	0.006673
HENRY HAGG	9/18/2024	924	21	UMHG	NA	0.04 ng/L	NONE	0.010125
HENRY HAGG	9/18/2024	924	21	UTHG	NA	0.43 ng/L	NONE	0.006673
HENRY HAGG	9/19/2024	1415	0	UMHG	NA	0.01 ng/L	<	0.010125
HENRY HAGG	9/19/2024	1415	0	UTHG	NA	0.15 ng/L	NONE	0.006673
HENRY HAGG	10/16/2024	839	1	UMHG	NA	0.02 ng/L	NONE	0.010225
HENRY HAGG	10/16/2024	839	1	UTHG	NA	0.27 ng/L	NONE	0.006673
HENRY HAGG	10/16/2024	849	5	UMHG	NA	0.01 ng/L	<	0.010301
HENRY HAGG	10/16/2024	849	5	UTHG	NA	0.25 ng/L	NONE	0.006673
HENRY HAGG	10/16/2024	900	11	UMHG	NA	0.01 ng/L	<	0.01025
HENRY HAGG	10/16/2024	900	11	UTHG	NA	0.25 ng/L	NONE	0.006673
HENRY HAGG	10/16/2024	909	15	UMHG	NA	0.03 ng/L	NONE	0.01025
HENRY HAGG	10/16/2024	909	15	UTHG	NA	0.42 ng/L	NONE	0.006673
HENRY HAGG	10/16/2024	920	19	UMHG	NA	0.25 ng/L	NONE	0.010125
HENRY HAGG	10/16/2024	920	19	UTHG	NA	1.01 ng/L	NONE	0.010227
HENRY HAGG	10/16/2024	929	19	UMHG	NA	0.22 ng/L	NONE	0.010199
HENRY HAGG	10/16/2024	929	19	UTHG	NA	0.99 ng/L	NONE	0.006673
HENRY HAGG	8/13/2025	837	1	UTHG	NA	0.67 ng/L	NONE	0.019816
HENRY HAGG	8/13/2025	846	5	UTHG	NA	0.4 ng/L	NONE	0.019816
HENRY HAGG	8/13/2025	859	11	UTHG	NA	0.49 ng/L	NONE	0.019816

HENRY HAGG	8/13/2025	910	17	UTHG	NA	0.65 ng/L	NONE	0.019816
HENRY HAGG	8/13/2025	919	23	UTHG	NA	0.81 ng/L	NONE	0.019816
HENRY HAGG	8/13/2025	924	23	UTHG	NA	0.8 ng/L	NONE	0.019816
HENRY HAGG	8/13/2025	943	23	UTHG	NA	0.27 ng/L	NONE	0.012749
HENRY HAGG	9/15/2025	958	1	UTHG	NA	0.29 ng/L	NONE	0.012749
HENRY HAGG	9/15/2025	1010	5	UTHG	NA	0.27 ng/L	NONE	0.019816
HENRY HAGG	9/15/2025	1026	11	UTHG	NA	0.23 ng/L	NONE	0.019816
HENRY HAGG	9/15/2025	1044	15	UTHG	NA	0.49 ng/L	NONE	0.012749
HENRY HAGG	9/15/2025	1107	19	UTHG	NA	0.57 ng/L	NONE	0.019816
HENRY HAGG	9/15/2025	1112	19	UTHG	NA	0.63 ng/L	NONE	0.019816
HENRY HAGG	9/15/2025	1124	19	UTHG	NA	0.08 ng/L	NONE	0.019816

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