

Sanders County Aquatic Invasive Plants Task Force Annual Treatment Summary



This document provides a summary of treatment and monitoring results as well as supporting information and conclusions, as appropriate. It is intended to be a living document that incorporates new information each year to provide a chronology of actions taken, results achieved, and challenges encountered in the management of aquatic invasive plants. The first part of the document provides an annual summary of treatments and results, with additional supporting information. The second part of the document provides a plot-specific annual summary of treatment acreage, pre-treatment canopy cover, date treated, products used, and observations of injury rank six weeks after treatment (6WAT).



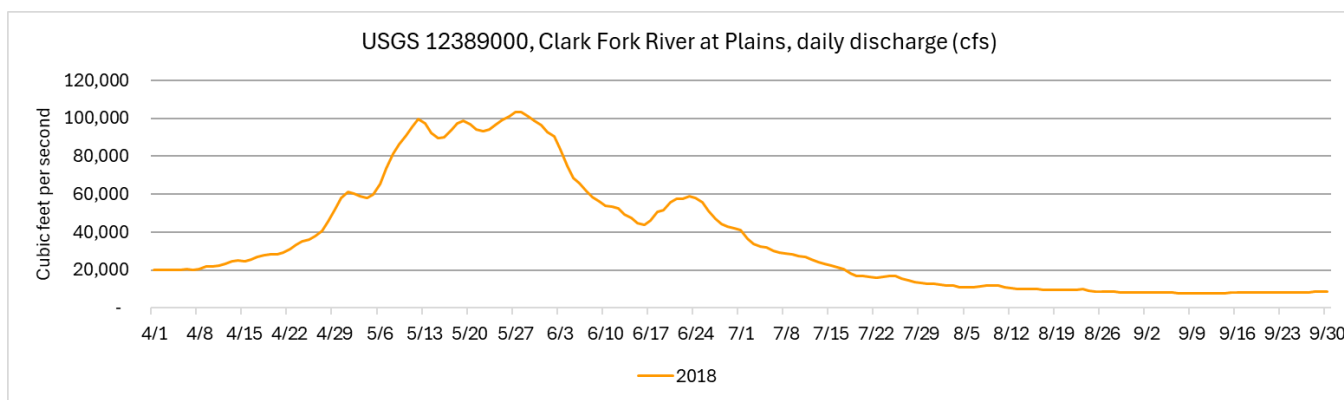
Mixed stands of curlyleaf pondweed, invasive watermilfoil, and other aquatic vegetation.

2018 Annual Summary

25.1 acres in 8 plots on Noxon and 5.8 acres in 4 plots on Cabinet Gorge were treated on August 16, for a total of 30.9 acres treated in 12 plots. Diquat was used alone to treat 3 plots and the remaining 9 plots were treated with endothall + diquat in combination. Injury rank at 6WAT ranged from 85% to 95% in 8 plots, 60% to 70% in 2 plots, and 50% in 2 plots. All priority 1 areas recommended for treatment by FWP following pre-treatment surveys were treated.

These treatments occurred following a year of no treatments (in 2017) while the Analysis of Treatment Alternatives was conducted.

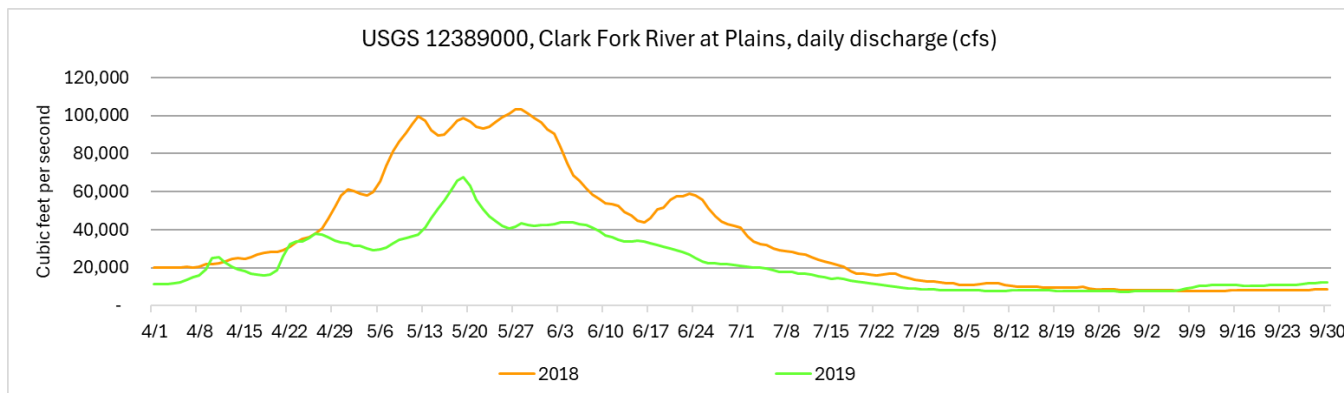
Spring runoff was higher than normal, with flows exceeding 80,000 cfs for nearly a month (May 8 – June 3) and exceeding 100,000 cfs for 4 days.



2019 Annual Summary

95.1 acres in 12 plots on Noxon and 22.1 acres in 5 plots on Cabinet Gorge were treated on August 19 and 20, for a total of 117.2 acres treated in 17 plots. Two plots on Noxon, Nox-08 at the North Shore Homes and Nox-01 at Rock Island, were treated using procellacor at the highest application rate (5PDU) as a trial. Procellacor is a contact herbicide that had recently been providing excellent control for invasive watermilfoil, especially hybrid strains. The trial was conducted to determine if longer control can be achieved with the product. Due to the higher cost of procellacor, more infrequent treatments would have to be conducted to make it fiscally possible to utilize on a regular basis. The remaining plots were treated with endothall + diquat. Injury rank at 6WAT ranged from 90% to 100% for all but 3 plots, which ranged from 75% to 85%. Injury rank in the procellacor plots was 95% and 98%. All priority 1 and 2 plots recommended for treatment by FWP following pre-treatment surveys were included in 2019 treatments.

Spring runoff was normal, averaging about 33,000 cfs for April through June compared to the 2018 average of about 58,000 cfs for the same timeframe.

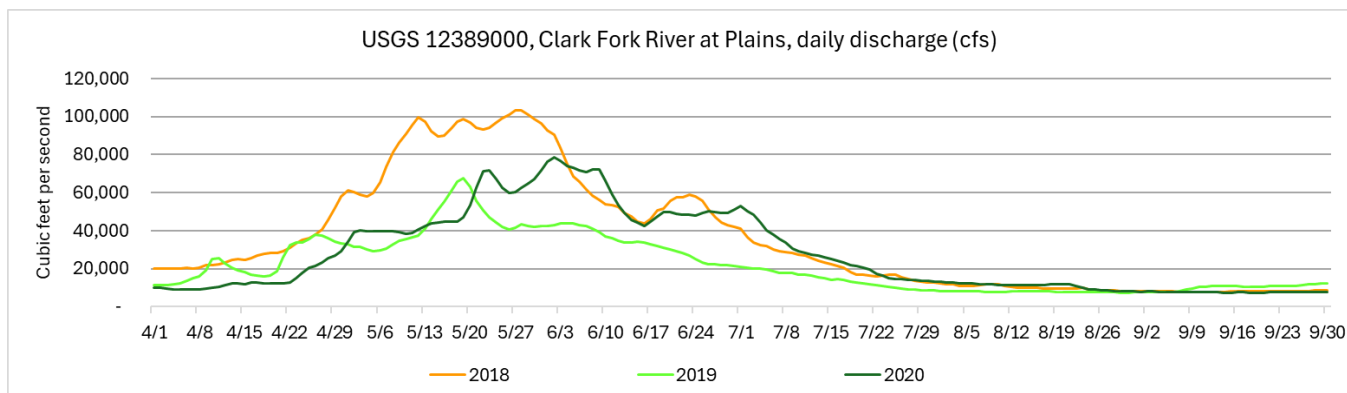


2020 Annual Summary

12.5 acres in 3 plots on Noxon and 6.9 acres in 3 plots on Cabinet Gorge were treated on August 10 and 11, for a total of 19.4 acres treated in 6 plots. One plot (Nox-04) was treated with procellacor as a second trial of that product while remaining plots were treated with endothall + diquat. Injury rank with procellacor was 100% and ranged from 85% to 100% for the remaining plots (one plot was too shallow to assess at 6WAT). All plots recommended by FWP for treatment were included in the 2020 treatments except Cab-29 (Heron Boat Launch).

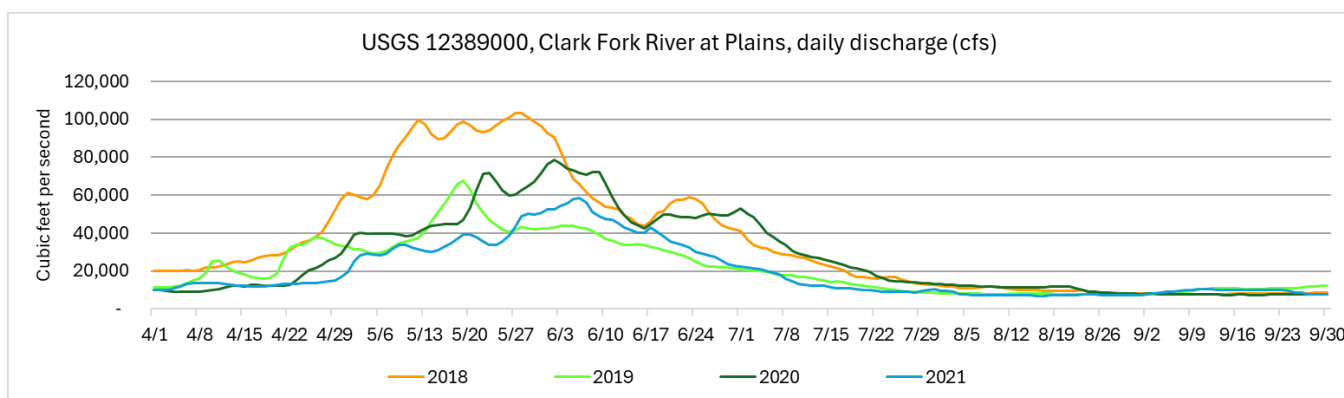
The procellacor trial plots from 2018 (Nox-08 and Nox-01) had 0.1% and 0% canopy cover of EWM in 2019, indicating there may have been some hold-over from those treatments in spite of the product being a contact herbicide and not a systemic herbicide.

Spring runoff was a bit delayed compared to 2018 and 2019 and peak flows ranged between the low flows of 2019 and high flows of 2018. Aquatic vegetation growth was also delayed in 2020.



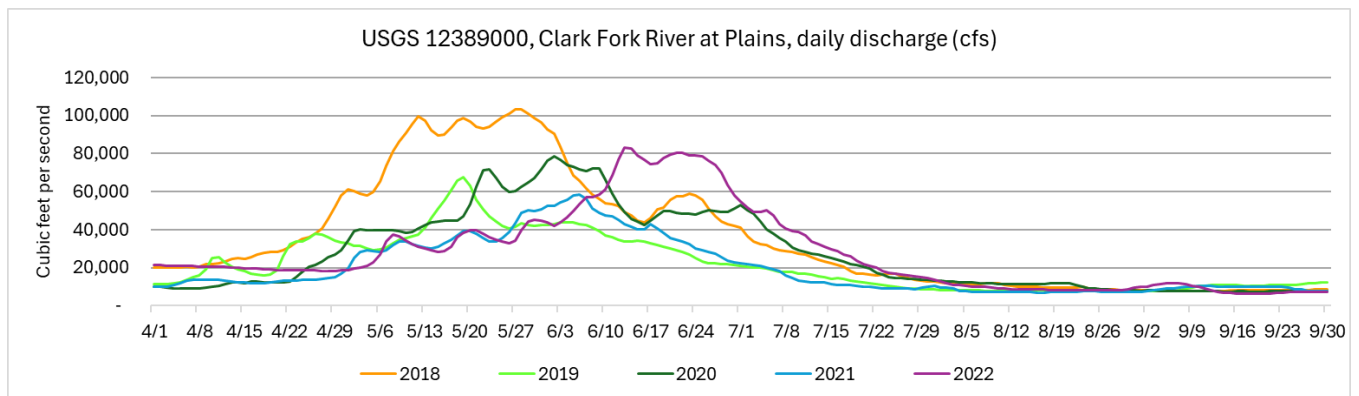
2021 Annual Summary

64 acres in 7 plots on Noxon were treated on August 4 using a combination of endothall + diquat. Injury rank at 6WAT ranged from 80%-100%. The procellacor trial plot from 2020 (Nox-04) had reduced acreage in 2021, down from 5.9 acres in 2020 to 1.3 acres in 2021. Following pre-treatment surveys, FWP recommended 96.5 acres for treatment. To align with project guidelines and available budget, all plots on Cabinet Gorge were removed from the treatment plan (which included 4 acres of mid-lake plots). All priority 1 and 2 plots identified on Noxon were treated except for Nox-11, a priority 2 plots next to the railroad bridge. Spring runoff was lower than the previous 3 years, the timing of which mimicked 2020.



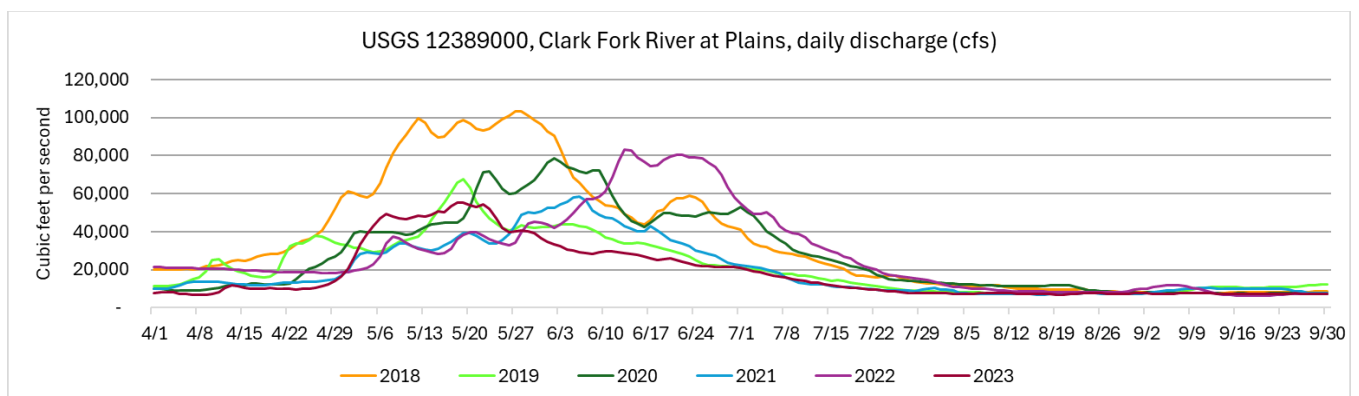
2022 Annual Summary

48.9 acres in 8 plots on Noxon were treated on August 4 using a combination of endothall + diquat. Injury rank ranged from 90% to 100% in all plots except one, which was 60%. Following pre-treatment surveys, FWP recommended 2.3 acres on Cabinet Gorge and 71.3 acres on Noxon for treatment. To fit within the available budget, all of the Cabinet Gorge plots and half of Nox-01 (a mid-lake plot near Rock Island) were removed from the treatment plan. Spring runoff was on par with 2020 levels but occurred later in the season than the previous 4 years.



2023 Annual Summary

92.6 acres in 7 plots on Noxon and 16.4 acres in 3 plots on Cabinet Gorge were treated on August 14 and 21 (due to boat repair needs after the August 14 treatments), for a total of 109 acres treated in 10 plots. All plots were treated with a combination of flumioxazin + diquat. The change in product was to prevent invasive milfoil from developing herbicide resistance to the endothall + diquat combination. Because flumioxazin is less expensive than endothall, available funding was able to treat more acreage. Injury rank ranged from 90% to 98% for all plots (one plot was too shallow to assess at 6WAT). Following pre-treatment surveys, a total of 17.5 acres on Cabinet Gorge and 126.1 acres on Noxon were recommended by FWP for treatment. To align with the available budget, Cab-29 (Heron Boat Launch) and half of Nox-01 (a mid-lake plot near Rock Island) were removed from the treatment plan. Spring runoff was low, peaked earlier than the prior three years, and was on par with 2019 runoff.



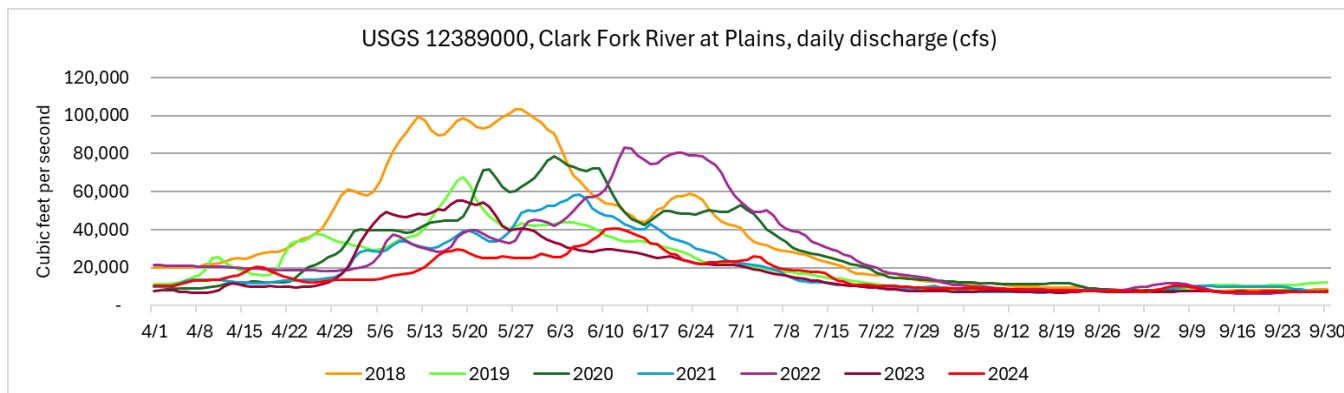
2024 Annual Summary

11.4 acres in 3 plots on Noxon and 2.3 acres in 2 plots on Cabinet Gorge were treated on July 8 and 9, for a total of 13.7 acres treated in 5 plots. Injury rank ranged from 87% to 100% at 6WAT. Following pre-treatment surveys, FWP recommended a total of 34.8 acres in 6 plots for treatment. However, 21.1 acres of that total was contained in one plot, Nox-11, a bay near the railroad bridge that offers no shoreline access. Due to conversations with FWP staff following 2023 treatments, it was decided that mid-lake or shoreline plots that are not aligned with shoreline access points (boat ramps, public or private docks, etc) were not a priority for treatment. As such, this plots was dropped from consideration for treatments.

Treatments occurred about 5 weeks earlier in the 2024 season due to anticipated low runoff (as a result of low snowpack) and procellacor was selected as the herbicide for all plots. The hope was that by treating earlier in the season with a product that had shown promise of hold-over for longer term control, milfoil plants would be impacted before they had a chance to grow into the upper portion of the water column. During the normal treatment timeframe (early- to mid-August), invasive milfoil plants have typically reached the water surface (or very nearly have) so have become problematic before they are treated due to interaction with boats.

Additionally, though it was not anticipated during treatment planning, curlyleaf pondweed was actively growing during the earlier treatment timeframe. Since procellacor is rated to treat invasive milfoil but not curlyleaf pondweed, it was noted that earlier treatments that incorporate a product rated for both invasive milfoil and curlyleaf pondweed could have a larger impact on the overall invasive plant community than a product that only treats milfoil.

Spring runoff in 2024 was the lowest since 2018, which was ideal for conducting the early season treatments.



Plot-Specific Annual Summaries

Nox-03: North Shore Campground Boat Launch

2018	2.3 acres with 13% canopy cover treated 8/16 with endothall + diquat, 90% injury rank at 6WAT.
2019	1.4 acres with 1% canopy cover treated 8/19 with endothall + diquat, 95% injury rank at 6WAT.
2020	2.2 acres with 3% canopy cover treated 8/11 with endothall + diquat, 85% injury rank at 6WAT.
2021	1.3 acres with 15% canopy cover treated 8/4 with endothall + diquat, 98% injury rank at 6WAT.
2022	1.7 acres with 2% canopy cover treated 8/4 with endothall + diquat, 98% injury rank at 6WAT.
2023	4.0 acres with 7% canopy cover treated 8/14 with flumioxazin + diquat, 95% injury rank at 6WAT.
2024	No treatment. <1% canopy cover.

Nox-04: North Shore homes across from Trout Creek Boat Launch (East of Hwy 200 bridge)

2018	6.8 acres with 11% canopy cover treated 8/16 with endothall + diquat, 50% injury rank at 6WAT.
2019	7.7 acres with 5% canopy cover treated 8/19 with endothall + diquat, 85% injury rank at 6WAT.
2020	5.9 acres with 5% canopy cover treated 8/11 with procellacor, 100% injury rank at 6WAT.
2021	1.3 acres with 3% canopy cover treated 8/4 with endothall + diquat, 80% injury rank at 6WAT.
2022	5.9 acres with 18% canopy cover treated 8/4 with endothall + diquat, 90% injury rank at 6WAT.
2023	6.0 acres with 7% canopy cover treated 8/14 with flumioxazin + diquat, 90% injury rank at 6WAT.
2024	6.0 acres with 10% canopy cover treated 7/9 with procellacor, 85%-90% injury rank at 6WAT.

Nox-08: North Shore Homes (West of Hwy 200 bridge)

2018	10.6 acres with 19% canopy cover treated 8/16 with endothall + diquat, 60% injury rank at 6WAT.
2019	7.9 acres with 2% canopy cover treated 8/8 with procellacor, 95% injury rank at 6WAT.
2020	No treatment. 0.1% canopy cover.
2021	8.5 acres with 22% canopy cover treated 8/4 with endothall + diquat, 95% injury rank at 6WAT.
2022	0.9 acres with 0.1% canopy cover treated 8/4 with endothall + diquat, 60% injury rank at 6WAT.
2023	13.3 acres with 24% canopy cover treated 8/14 with flumioxazin + diquat, 95% injury rank at 6WAT.
2024	No treatment. 0% canopy cover.

Nox-31: Marten Creek Bay Campground Boat Launch

2018	2.3 acres with 14% canopy cover treated 8/16 with endothall + diquat, 70% injury rank at 6WAT.
2019	3.7 acres with 4% canopy cover treated 8/19 with endothall + diquat, 80% injury rank at 6WAT.
2020	4.4 acres with 2% canopy cover treated 8/11 with endothall + diquat, 100% injury rank at 6WAT.
2021	No treatment. 2% canopy cover.
2022	2.5 acres with 10% canopy cover treated 8/4 with endothall + diquat, 98% injury rank at 6WAT.
2023	3.3 acres with 8% canopy cover treated 8/14 with flumioxazin + diquat, 95% injury rank at 6WAT.
2024	3.1 acres with 2% canopy cover treated 7/9 with procellacor, 100% injury rank at 6WAT.

Nox-52: South Shore Campground Boat Launch

2018	1.9 acres with 13% canopy cover treated 8/16 with endothall + diquat, 90% injury rank at 6WAT.
2019	0.8 acres with 1% canopy cover treated 8/19 with endothall + diquat, 98% injury rank at 6WAT.
2020	No treatment. 0% canopy cover.
2021	No treatment. 2% canopy cover.
2022	2.8 acres with 10% canopy cover treated 8/4 with endothall + diquat, 100% injury rank at 6WAT.
2023	No treatment. 1% canopy cover.
2024	2.3 acres with 2% canopy cover treated 7/9 with procellacor, 100% injury rank at 6WAT.

Nox-73: Vermilion Bay Boat Launch

2018	No treatment. 6% canopy cover.
2019	0.6 acres with 26% canopy cover treated 8/19 with endothall + diquat, 95% injury rank at 6WAT.
2020	No treatment. 0.1% canopy cover.
2021	0.5 acres with 7% canopy cover treated 8/4 with endothall + diquat, 100% injury rank at 6WAT.
2022	No treatment. 0.1% canopy cover.
2023	01.4 acres with 9% canopy cover treated 8/11 with flumioxazin + diquat, 98% injury rank at 6WAT.
2024	No treatment. <1% canopy cover.

Nox-77: Trout Creek Boat Launch

2018	0.5 acres with 7% canopy cover treated 8/16 with diquat, 95% injury rank at 6WAT.
2019	0.4 acres with 3% canopy cover treated 8/19 with endothall + diquat, 90% injury rank at 6WAT.
2020	No treatment. 3% canopy cover.
2021	No treatment. 3% canopy cover.
2022	0.4 acres with 19% canopy cover treated 8/4 with endothall + diquat, 90% injury rank at 6WAT.
2023	No treatment. 2% canopy cover.
2024	No treatment. <1% canopy cover.

Nox-78: Kirby Gulch Boat Launch

2018	0.2 acres with 7% canopy cover treated 8/16 with diquat, 50% injury rank at 6WAT.
2019	0.1 acres with 6% canopy cover treated 8/19 with endothall + diquat, 98% injury rank at 6WAT.
2020	No treatment. 0% canopy cover.
2021	No treatment. Canopy cover unknown.
2022	No treatment. 0.2% canopy cover.
2023	No treatment. 3% canopy cover.
2024	No treatment. 1% canopy cover.

Nox-79: Finley Flats Campground Boat Launch

2018	1.1 acres with 2% canopy cover treated 8/16 with endothall + diquat, 85% injury rank at 6WAT.
2019	0.7 acres with 0.3% canopy cover treated 8/19 with endothall + diquat, 100% injury rank at 6WAT.
2020	No treatment. 0.1% canopy cover.
2021	1.0 acres with unknown canopy cover treated 8/4 with endothall + diquat, 100% injury rank at 6WAT.
2022	No treatment. 0% canopy cover.
2023	No treatment. 1% canopy cover.
2024	No treatment. 1% canopy cover.

Cab-12: Big Eddy Campground Boat Launch

2018	1.2 acres with 21% canopy cover treated 8/16 with endothall + diquat, 95% injury rank at 6WAT.
2019	1.7 acres with 5% canopy cover treated 8/20 with endothall + diquat, 90% injury rank at 6WAT.
2020	1.1 acres with 1% canopy cover treated 8/10 with endothall + diquat, 100% injury rank at 6WAT.
2021	No treatment. 1% canopy cover.
2022	No treatment. 2% canopy cover.
2023	No treatment. 1% canopy cover.
2024	1.6 acres with 4% canopy cover treated 7/8 with procellacor, 98% injury rank at 6WAT.

Cab-20: Bull River Campground Boat Launch

2018	0.4 acres with 5% canopy cover treated 8/16 with diquat, 95% injury rank at 6WAT.
2019	No treatment. 0% canopy cover.
2020	No treatment. 0% canopy cover.
2021	No treatment. 2% canopy cover.
2022	No treatment. 0.3% canopy cover.
2023	No treatment. 2% canopy cover.
2024	No treatment. <1% canopy cover.

Cab-29: Heron Boat Launch

2018	0.8 acres with 25% canopy cover treated 8/16 with endothall + diquat, 95% injury rank at 6WAT.
2019	0.5 acres with 1% canopy cover treated 8/20 with endothall + diquat, 75% injury rank at 6WAT.
2020	No treatment. 1% canopy cover.
2021	No treatment. 0.2% canopy cover.
2022	No treatment. 2% canopy cover.
2023	No treatment. 12% canopy cover.
2024	0.7 acres with 2% canopy cover treated 7/8 with procellacor, 98% injury rank at 6WAT.

Cab-30: Noxon Community Boat Launch

2018	3.4 acres with 9% canopy cover treated 8/16 with endothall + diquat, 95% injury rank at 6WAT.
2019	2.3 acres with 2% canopy cover treated 8/20 with endothall + diquat, unknown injury rank at 6WAT.
2020	2.1 acres with 1% canopy cover treated 8/10 with endothall + diquat, unknown injury rank at 6WAT.
2021	No treatment. 0.1% canopy cover.
2022	No treatment. 2% canopy cover.
2023	6.3 acres with 7% canopy cover treated 8/21 with flumioxazin + diquat, unknown injury rank at 6WAT.
2024	No treatment. 1% canopy cover.