



# June 10, 2022 Back River Wastewater Treatment Plant Update

## What You Need to Know

The Back River Wastewater Treatment Plant (WWTP) Progress Report  
June 10, 2022

### Treatment Plant Overview

One of the primary concerns is the processing and management of biosolids and the removal of solids from process equipment. Sludge is now being sent to the Quarantine Road Landfill, which has opened up a new source of disposal, and the Maryland Environmental Service (MES) has helped accelerate the timeline of certain projects to clean Primary Settling Tanks (PSTs).

### Primary Treatment PSTs

- The PSTs allow the solid material within the wastewater to be easily separated by settling to the bottom or floating to the surface for removal.
- **Currently, only two of the 11 PSTs are functioning.** MES has cleaned PST #7, and Baltimore City has issued contracts to clean five others. After cleaning, four of the PSTs will require various repairs.

### Secondary Treatment

Biological Treatment Activated Sludge

- **Newly constructed Activated Sludge Plant #4 is now online.** This will allow Baltimore City Department of Public Works (DPW) to take Activated Sludge Plant #3 offline in order to remove sludge and make repairs to non-functioning blowers and mixers. Once completed, this project will improve nitrogen removal and lower solids concentrations in the biological reactors.



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### Secondary Clarifiers

- There are 36 secondary clarifiers. Twelve (12) are associated with Activated Sludge Plant #4, which was just put into service. A third-party engineering assessment determined that the Return Activated Sludge (RAS) pumps and wasting pumps require replacement. RAS pump failure would cause poor performance of the biological reactors and wasting pump failure would prevent the wasting of sludge, which would cause a buildup of solids in the treatment system.
- **The May 19, 2022 daily report from MES stated that some of the RAS and sludge pumps were evaluated and repaired in the Activated Sludge Plant #3, and two other pumps are on order.**

### Tertiary Treatment

#### Denitrification Filters

- The facility has 52 Denitrification filters (DNFs) designed to achieve effluent nitrogen concentrations at or below 3 milligrams per liter (mg/l) total nitrogen.
- **The Back River WWTP is experiencing problems with the DNFs because of the problems with solids.** The solids are clogging the filter media causing many of the filters to either not function properly or not function at all. In addition, there are mechanical and control system problems that have to be repaired.
- DPW has engaged ProStart Inc. to manage and operate the DNF system. **MES has performed an evaluation of malfunctioning level transducers and control units and there are plans for more comprehensive evaluations of the DNF system once equipment needs are confirmed.** Once completed, the filters can be backwashed frequently to remove the solids.



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#### Sand Filters

- **The treatment system has 26 functioning sand filters; 22 are not functioning due to various equipment failures, insufficient sand, and mechanical issues.**
- MES is in the process of evaluating the sand filters and their mechanics are replacing and repairing components. There are 10 pumps for the sand filters on order.

#### Final Effluent

- **The analytical data has shown that there has been some progress made in getting the Back River WWTP into compliance with the discharge permit.**

- The TSS concentration has been a factor in creating high nutrient concentrations. Data from April and May show that the average TSS concentration at discharge point Outfall 001 is 9 mg/L compared to 21 mg/L for January and 17.5 mg/L for February and 14.2 mg/L for March.
- The data indicate progress toward the goal of removing the clogging solids from the treatment system

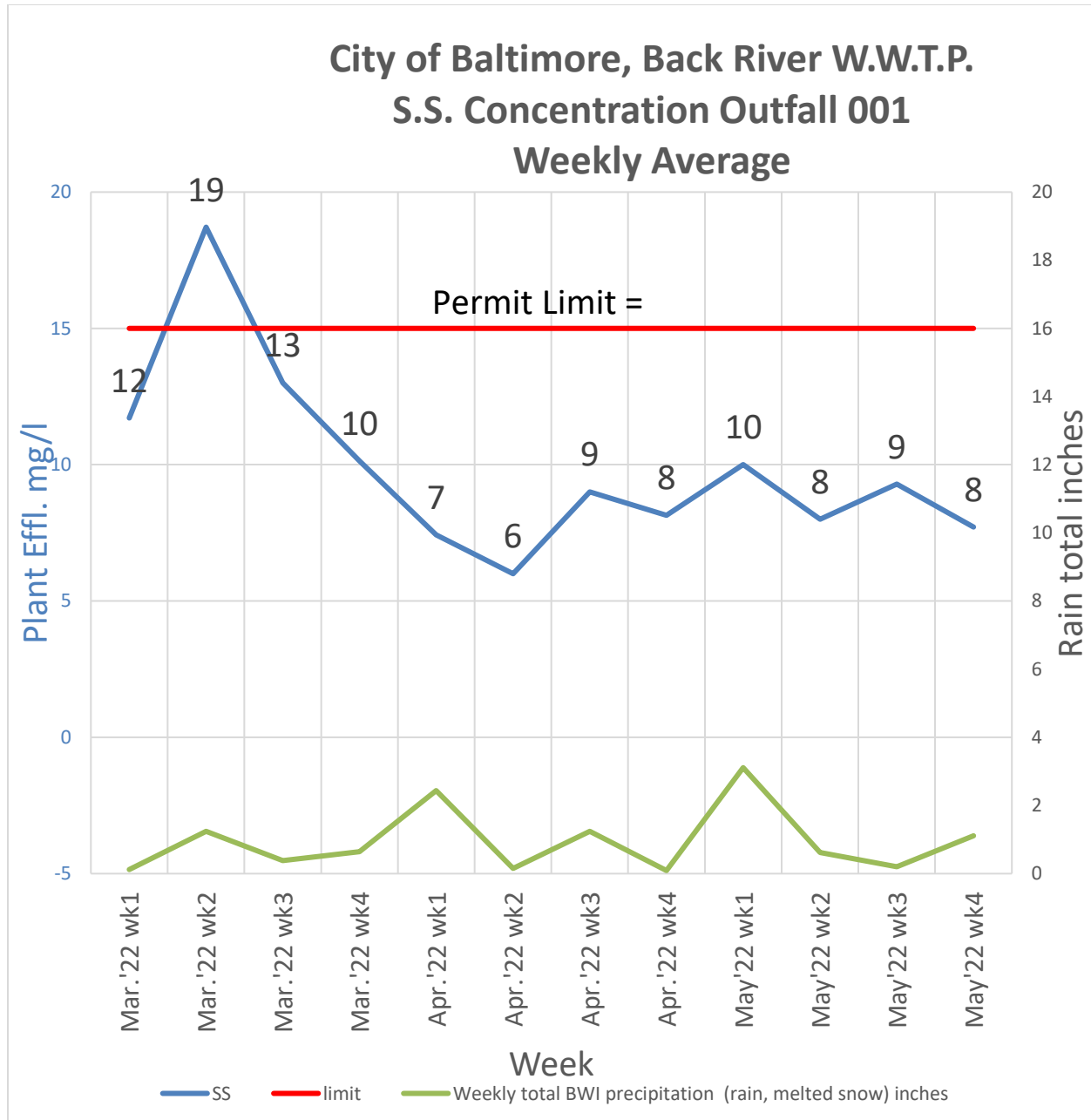
#### Biosolids Management

- Gravity sludge thickener (GST) 2 B is back in service.
- Synagro is contracted to evaluate the three centrifuges owned by Back River WWTP.
- Synagro's pelletizer is back online and processing 36.69 tons/day

Graphs Showing Final Effluent Concentrations and Loading Performance for 2022.

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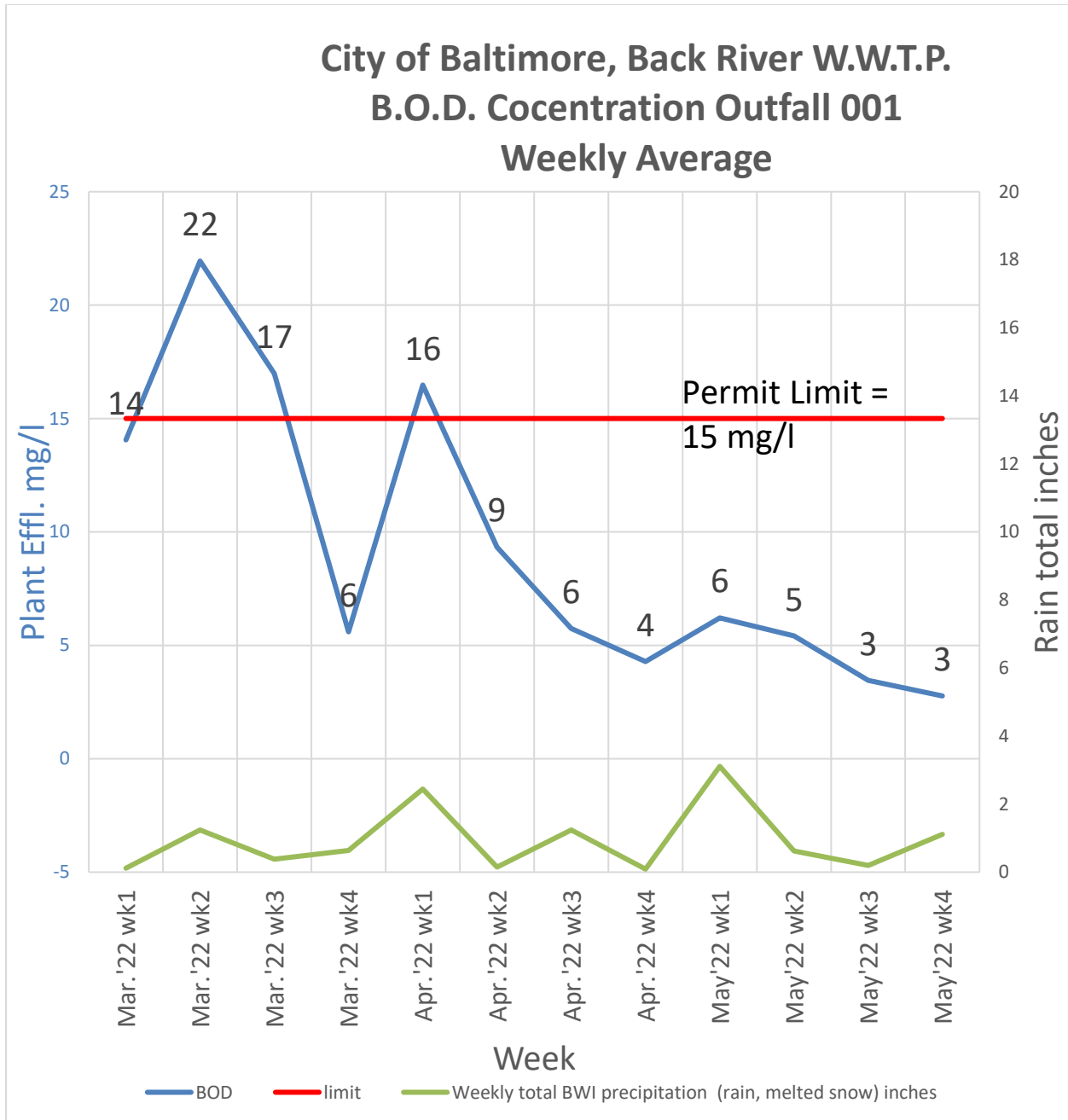
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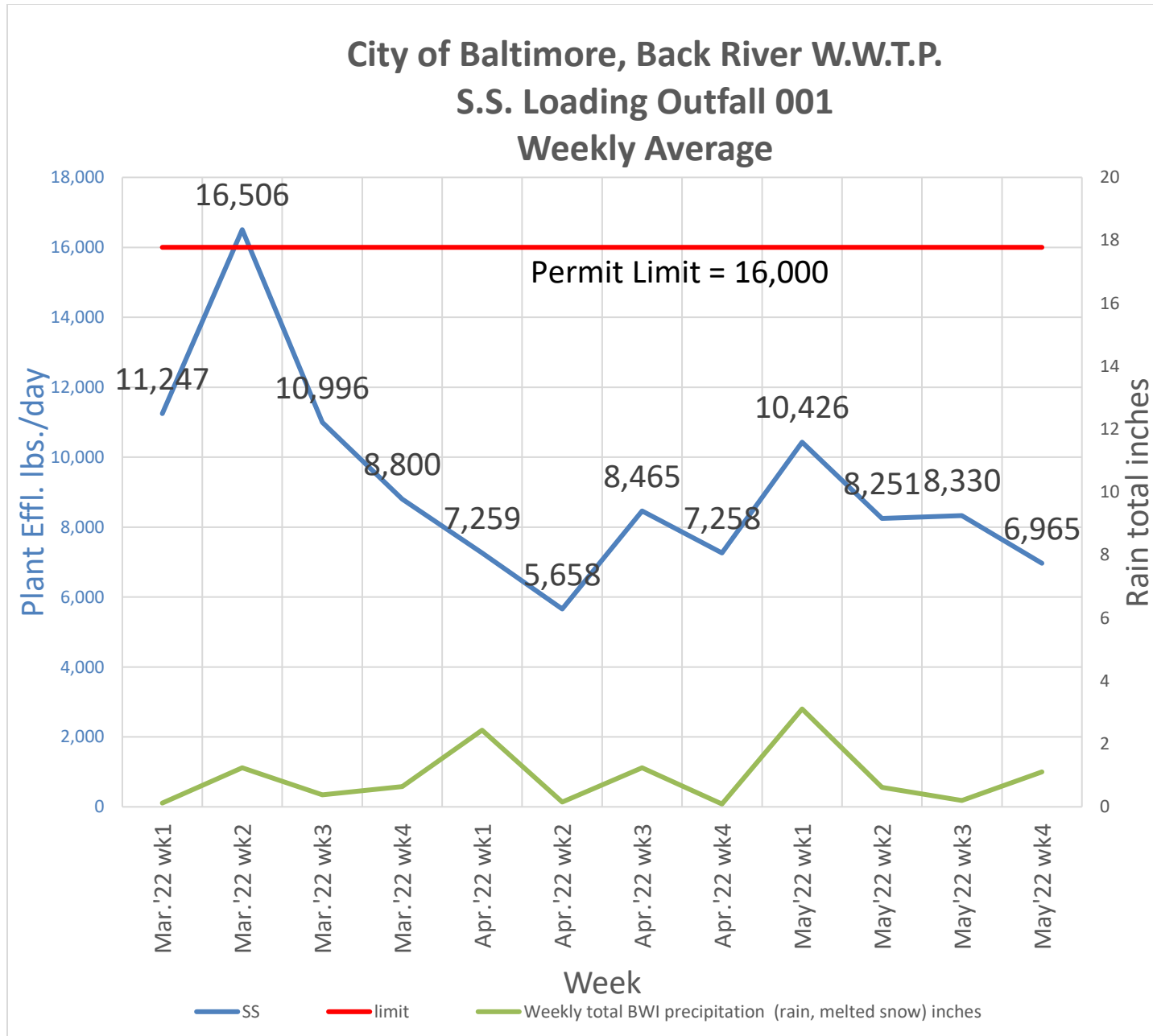
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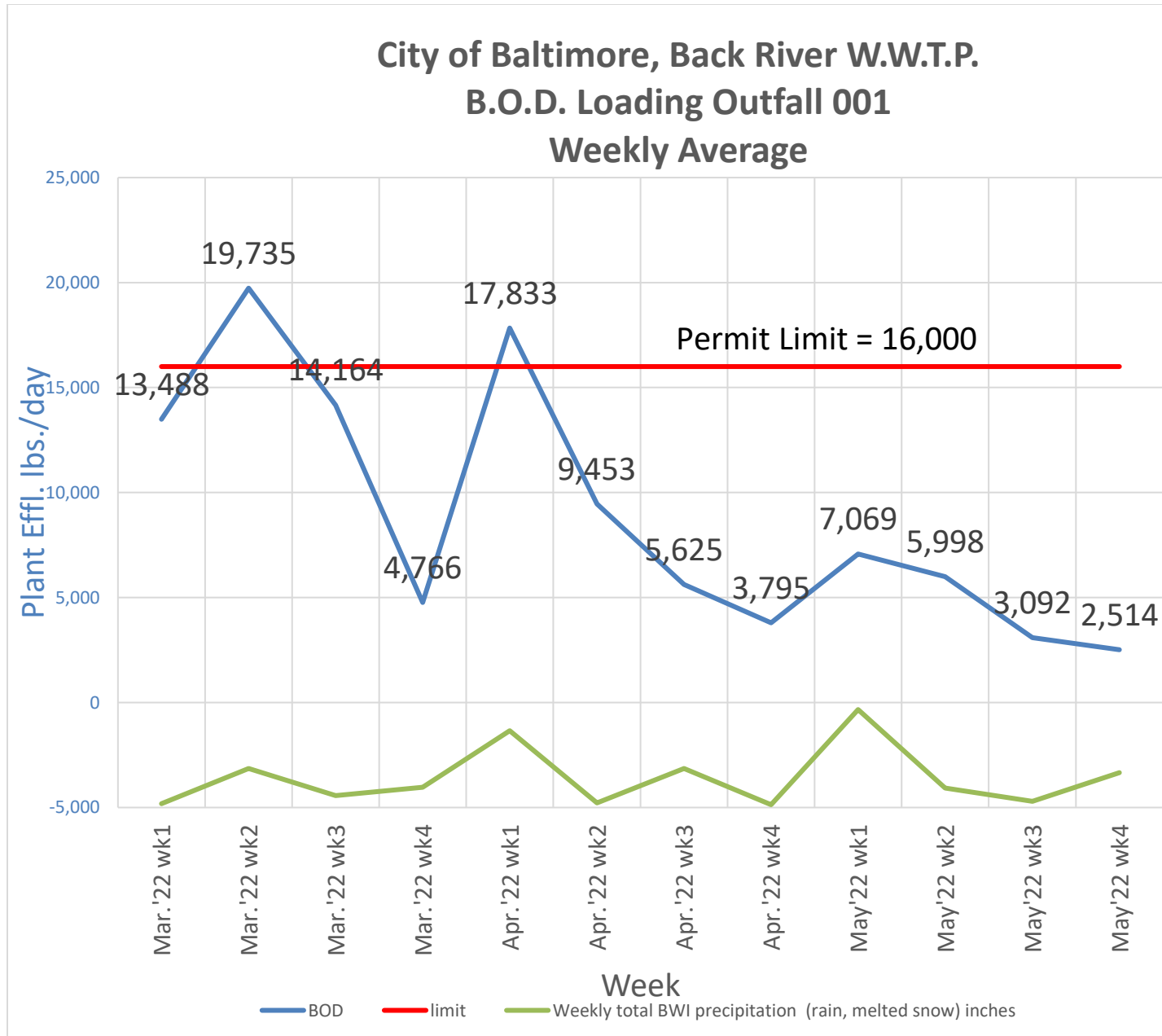
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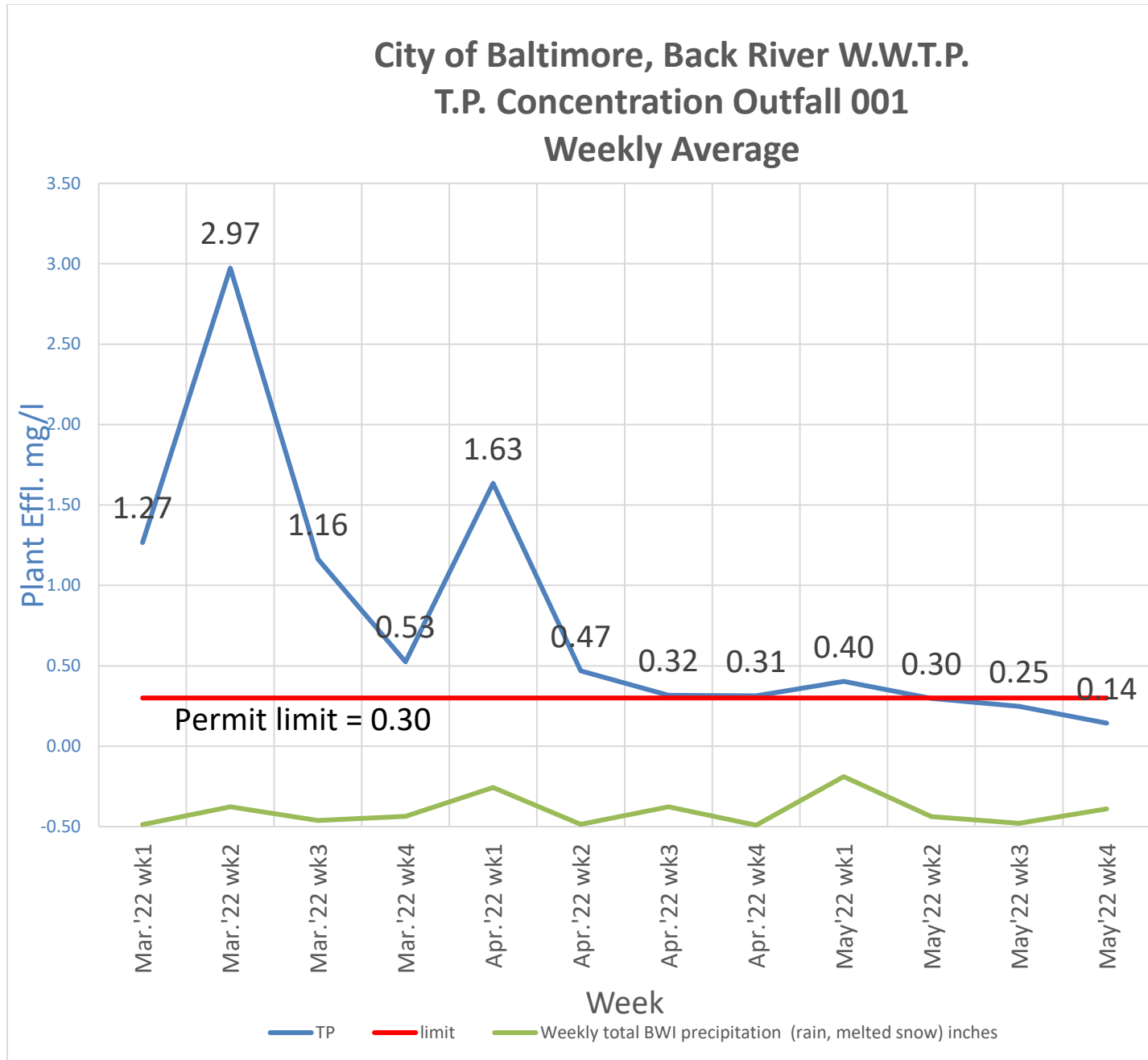
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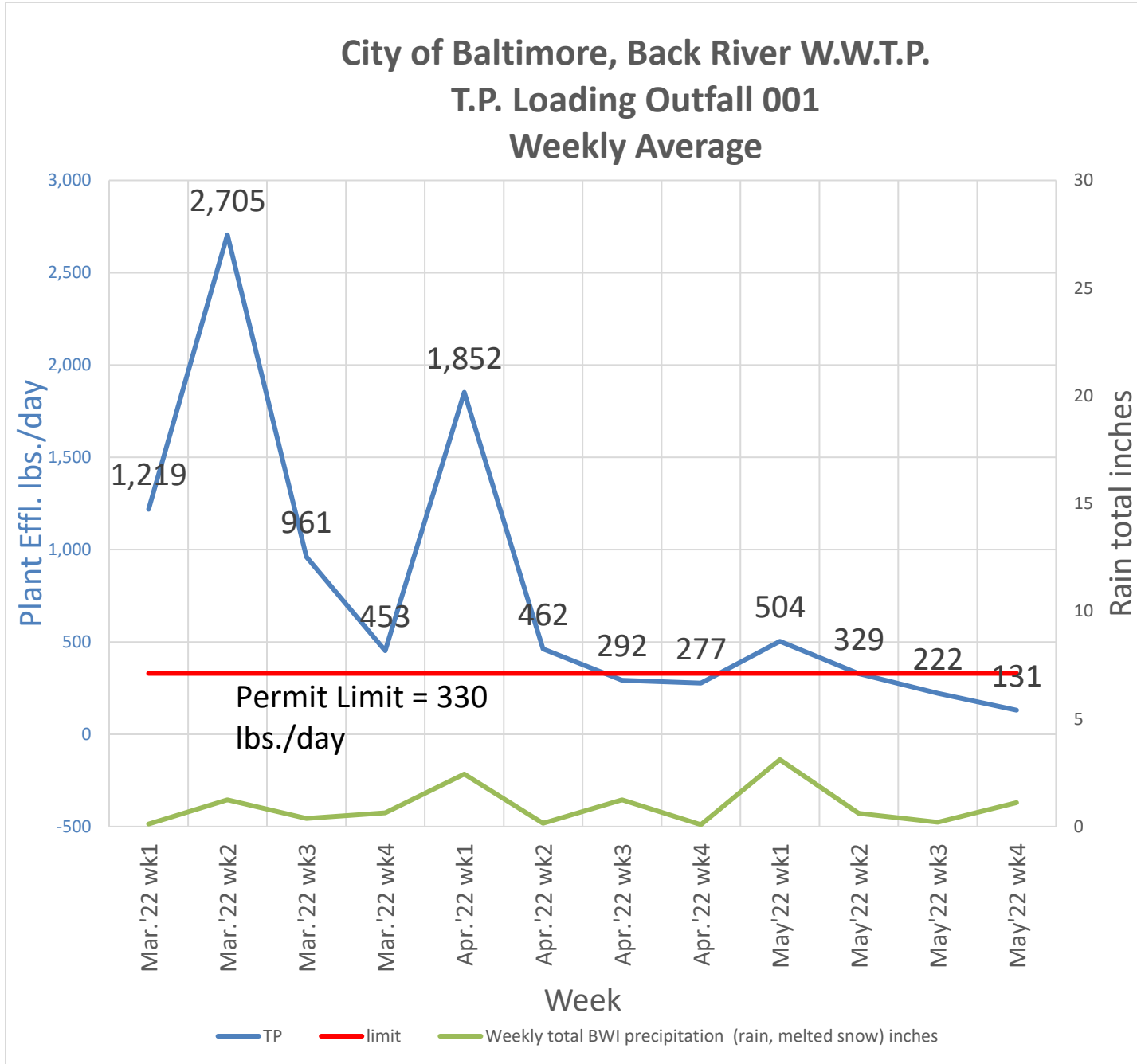






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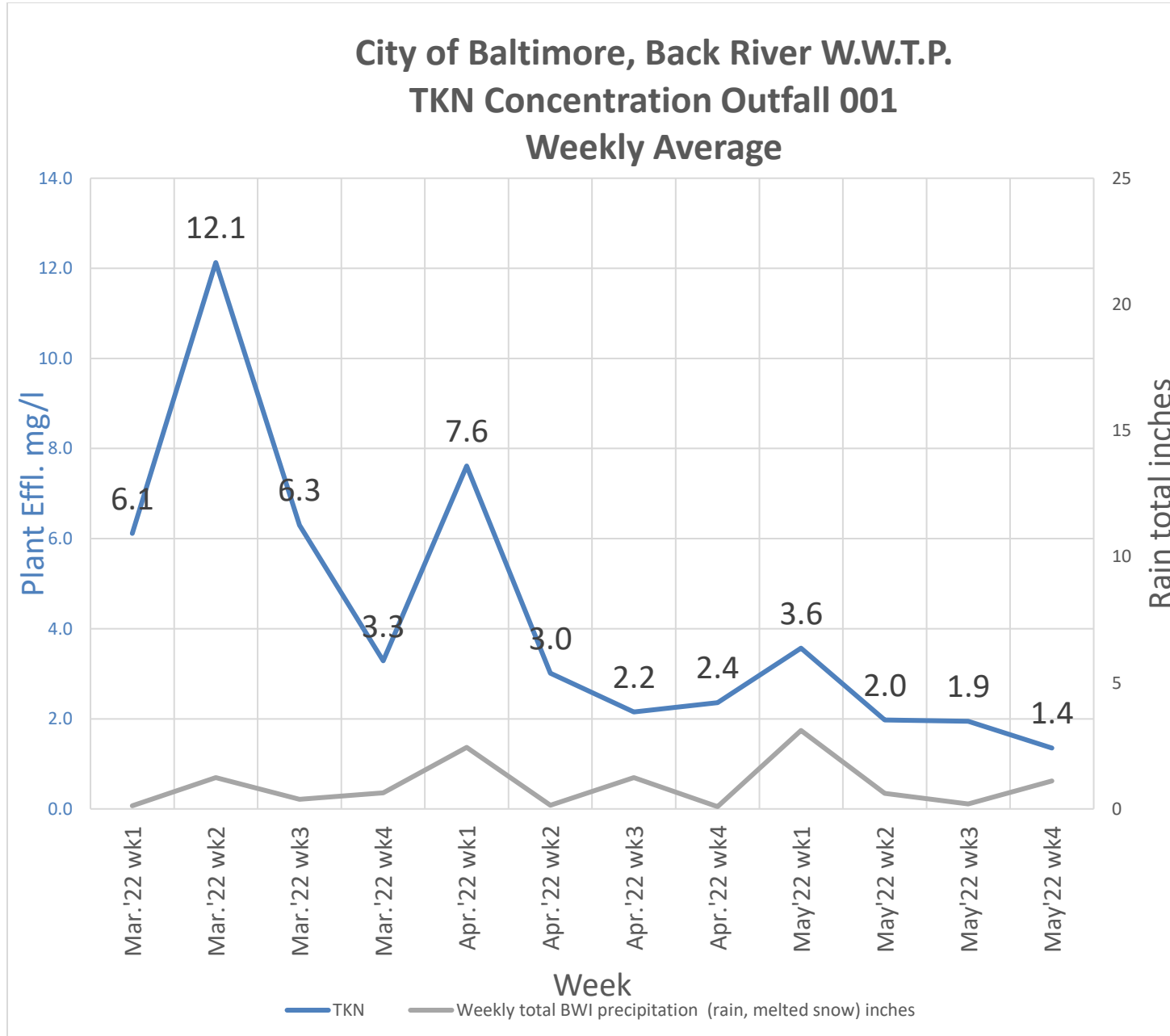
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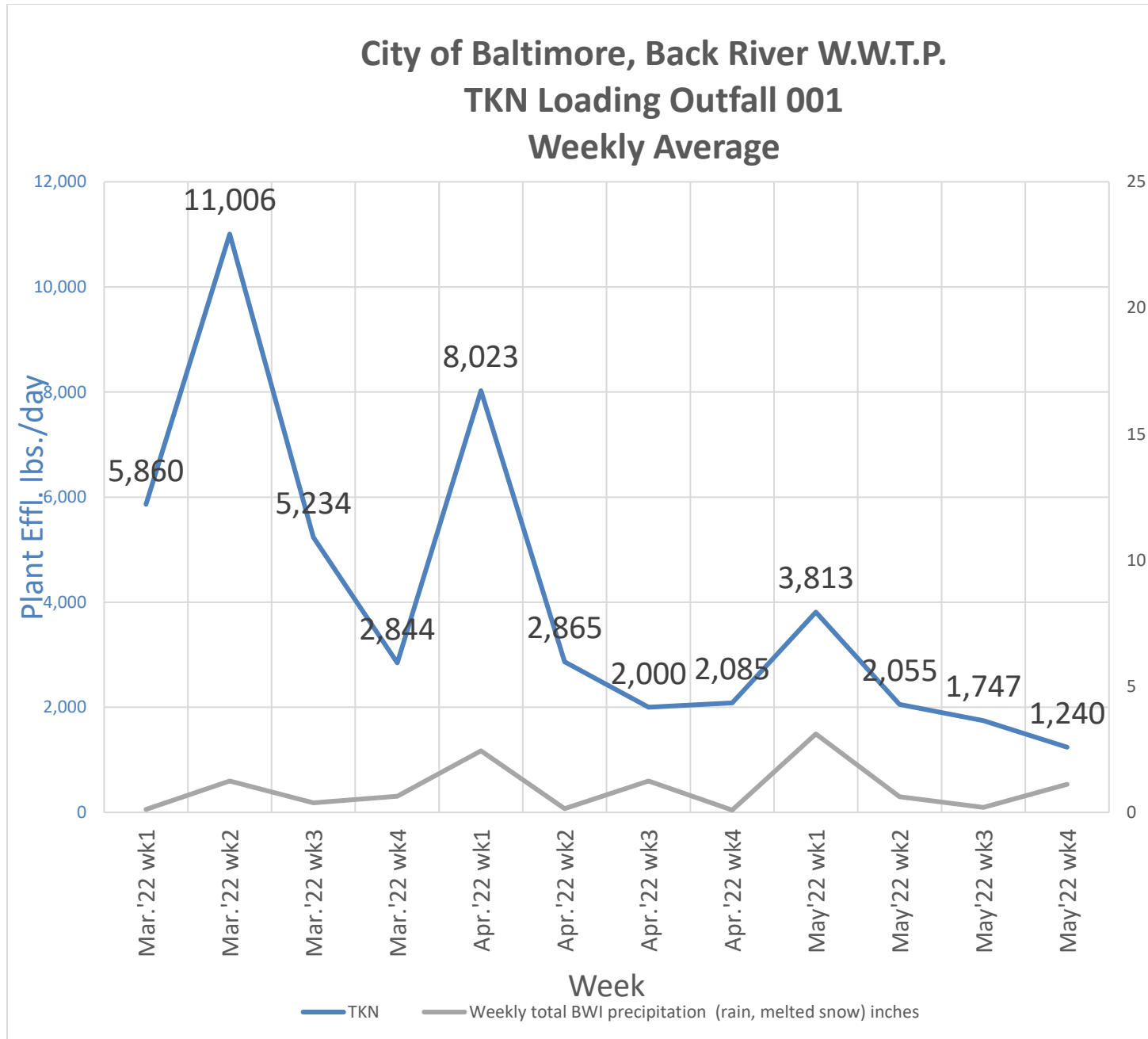
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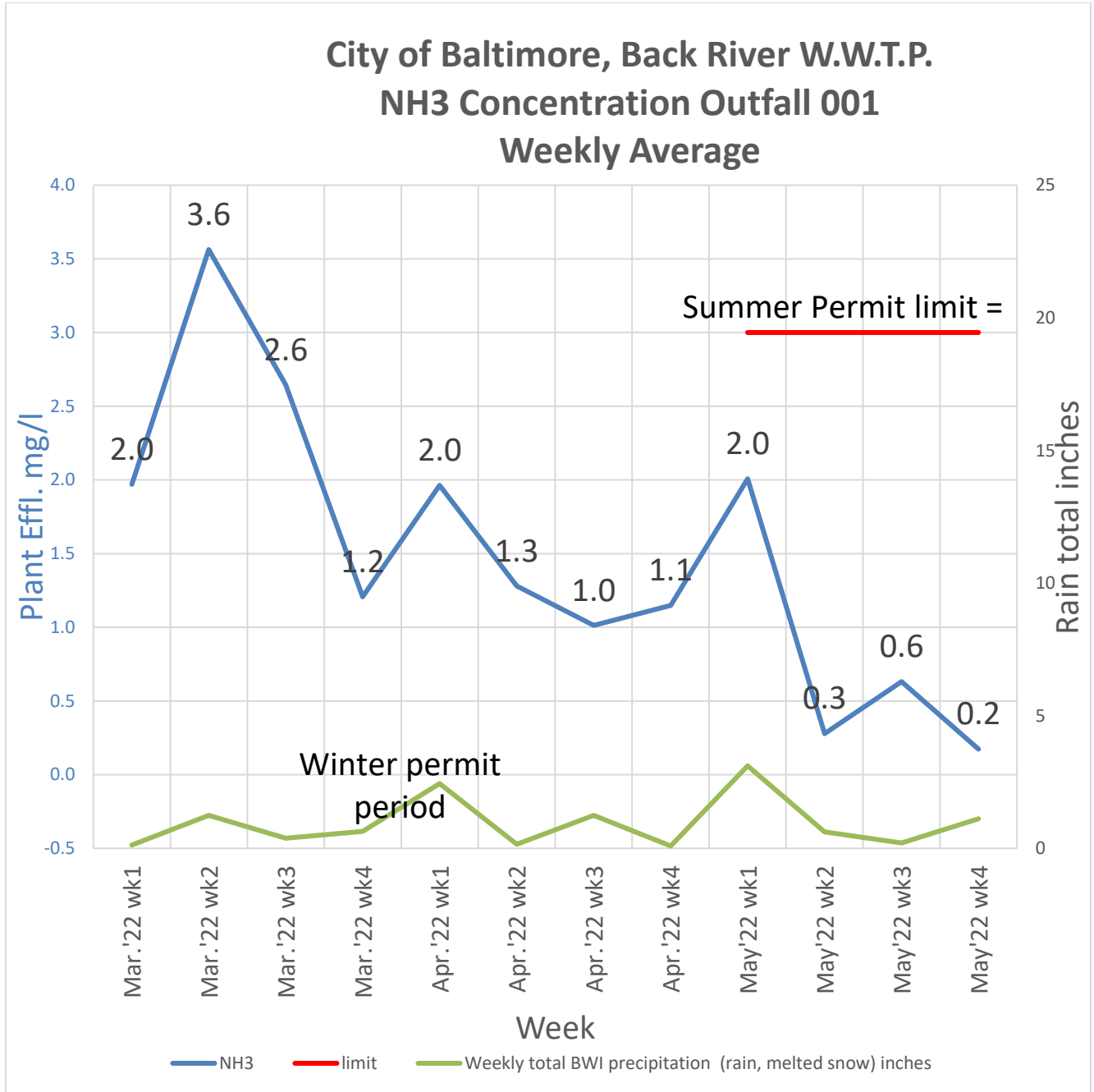
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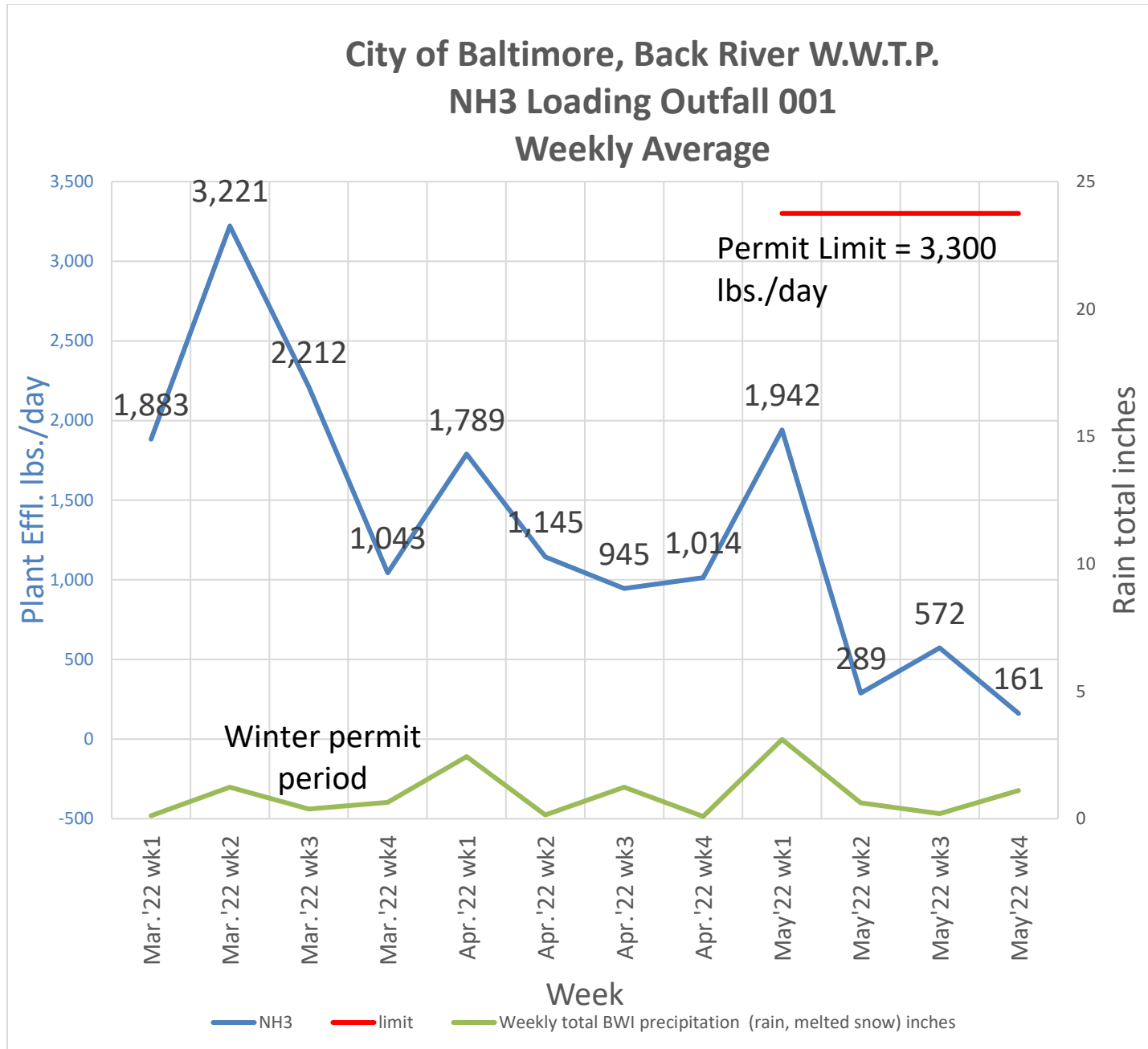
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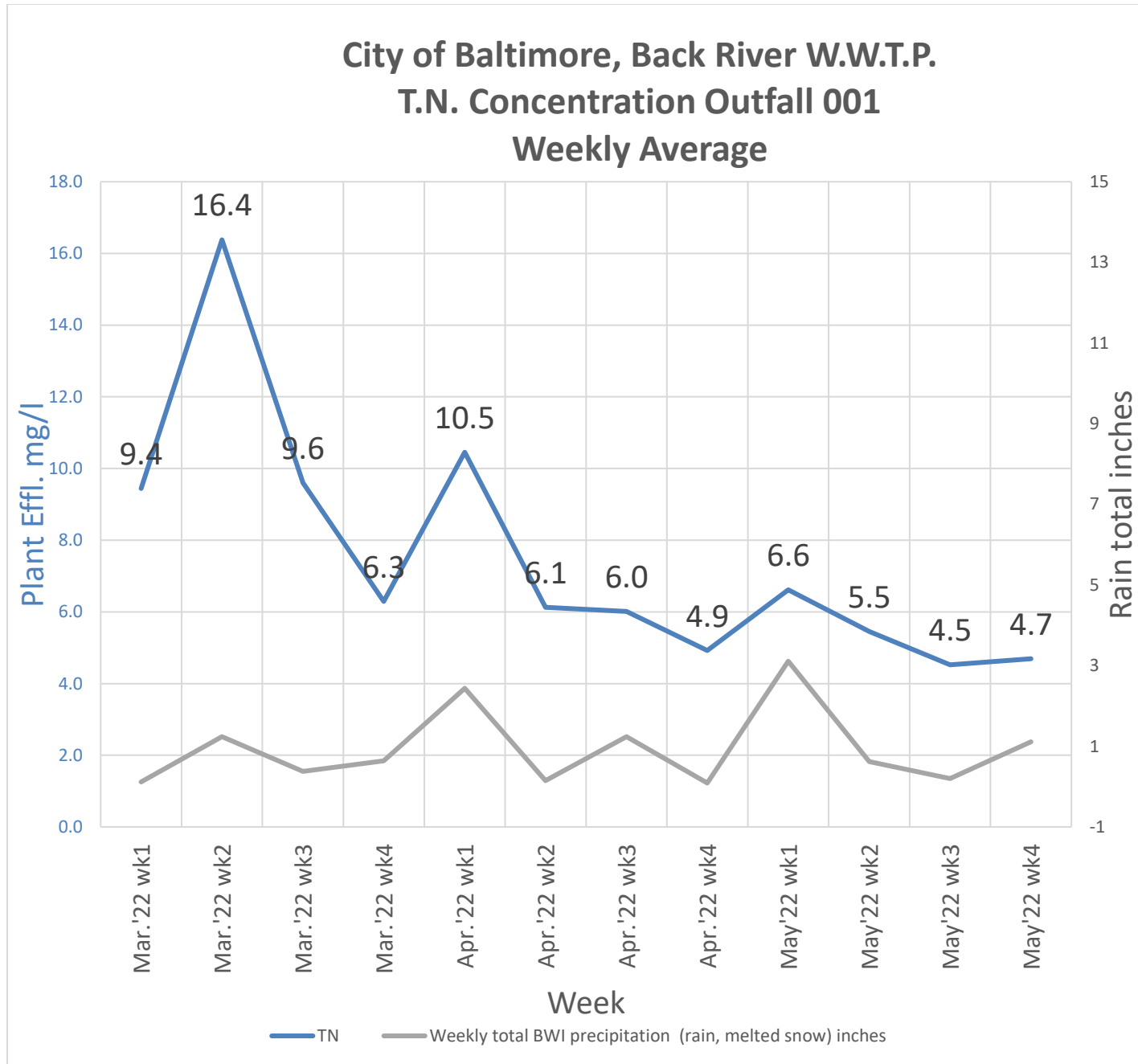
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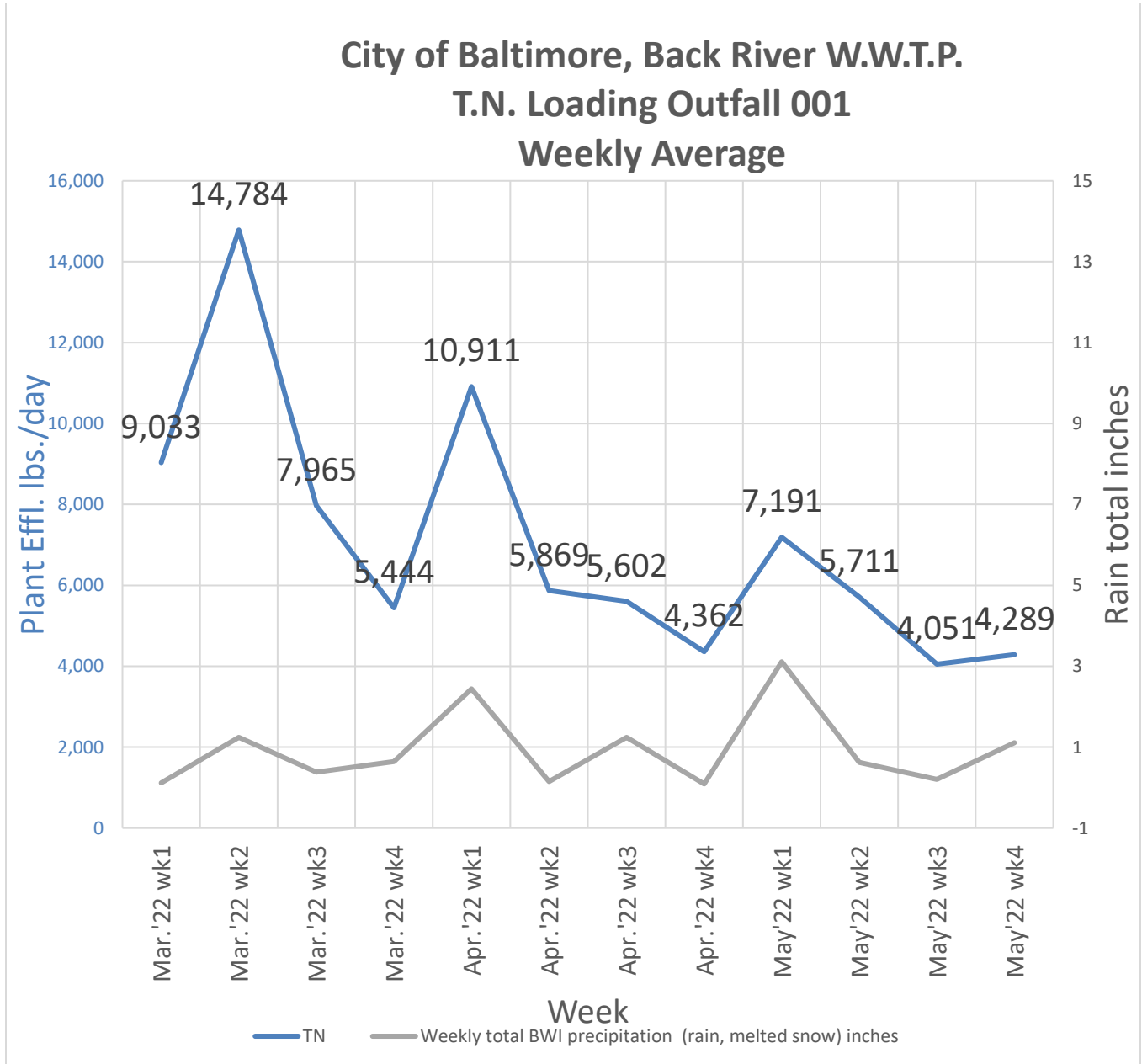
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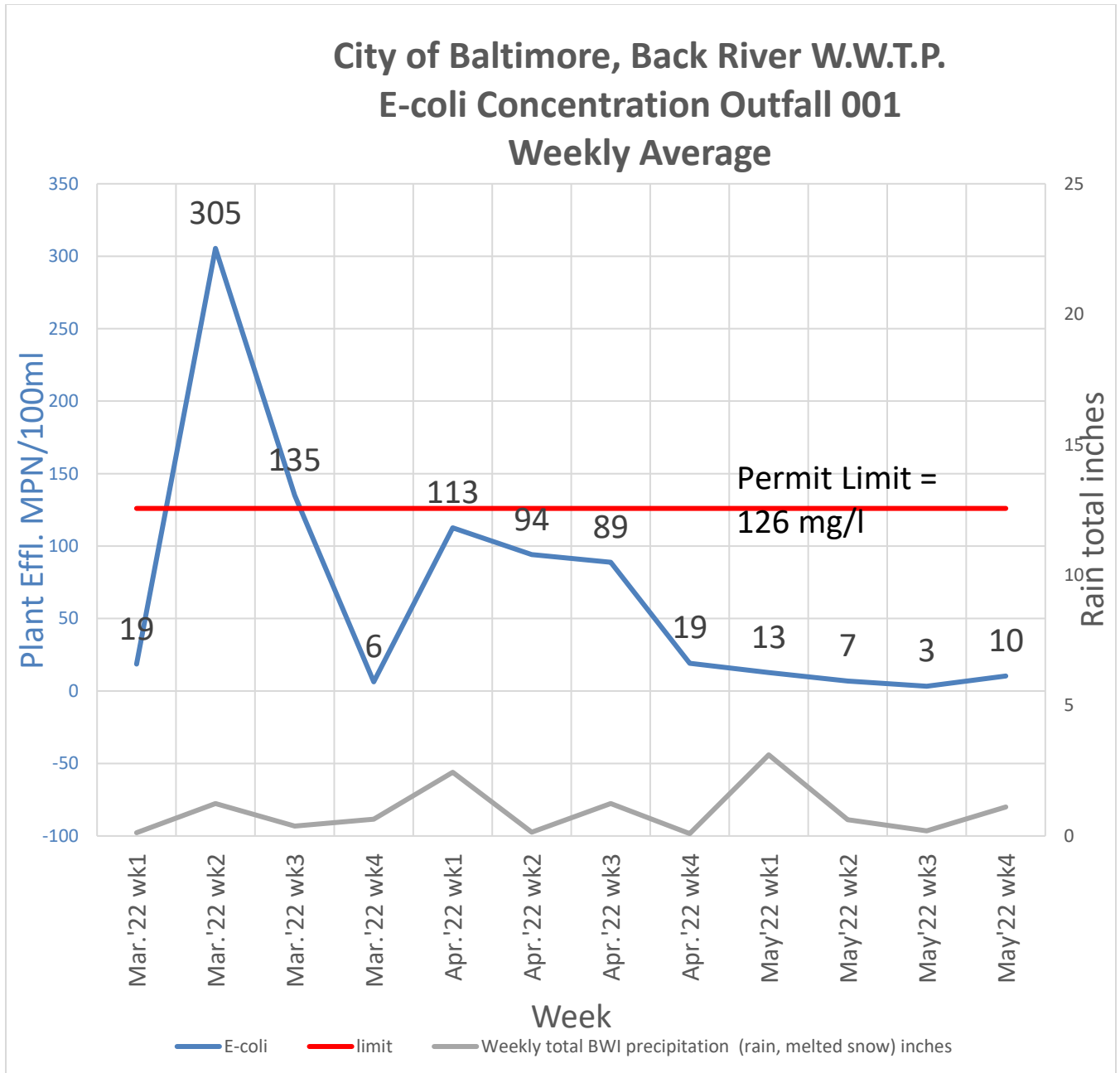
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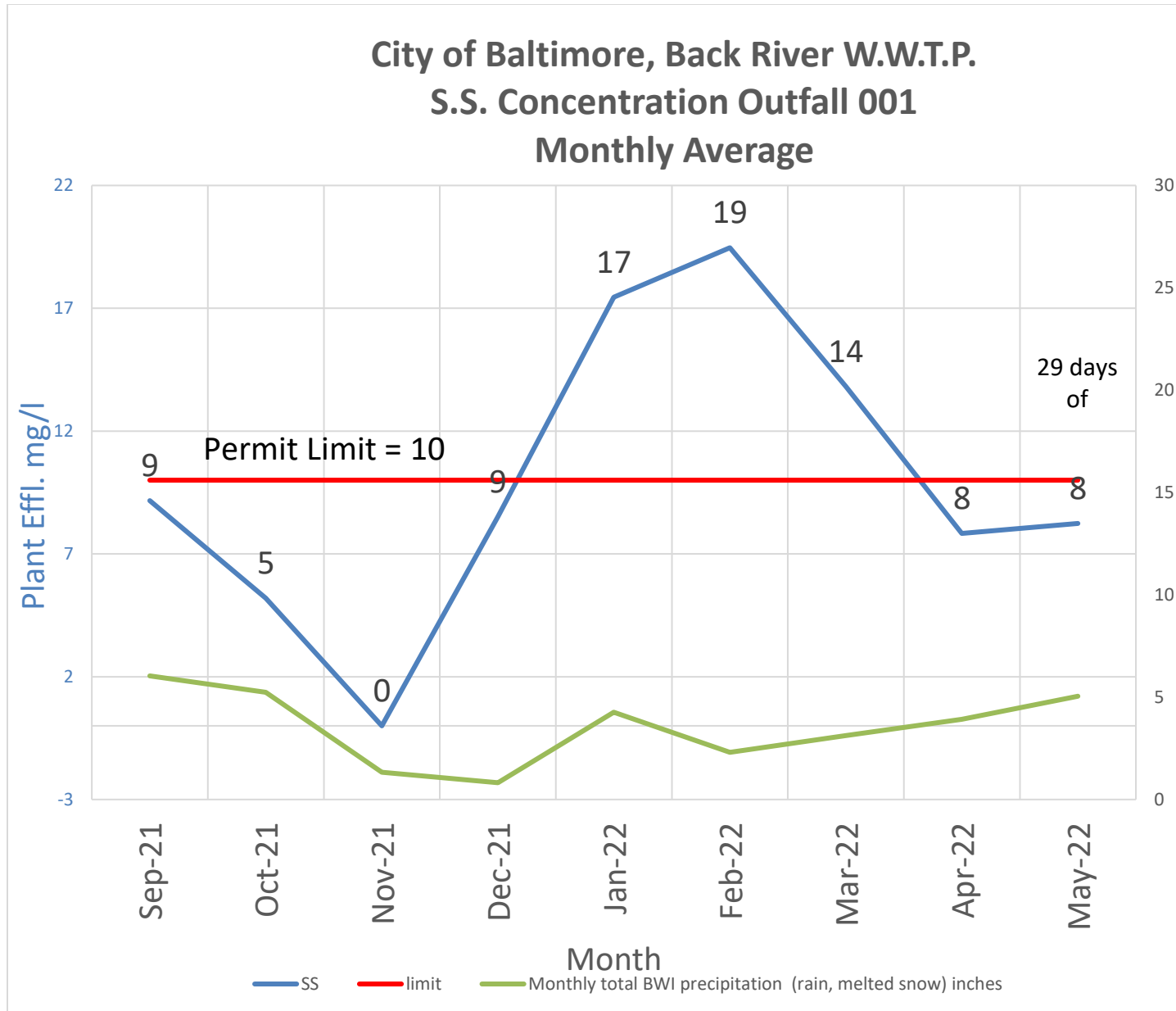
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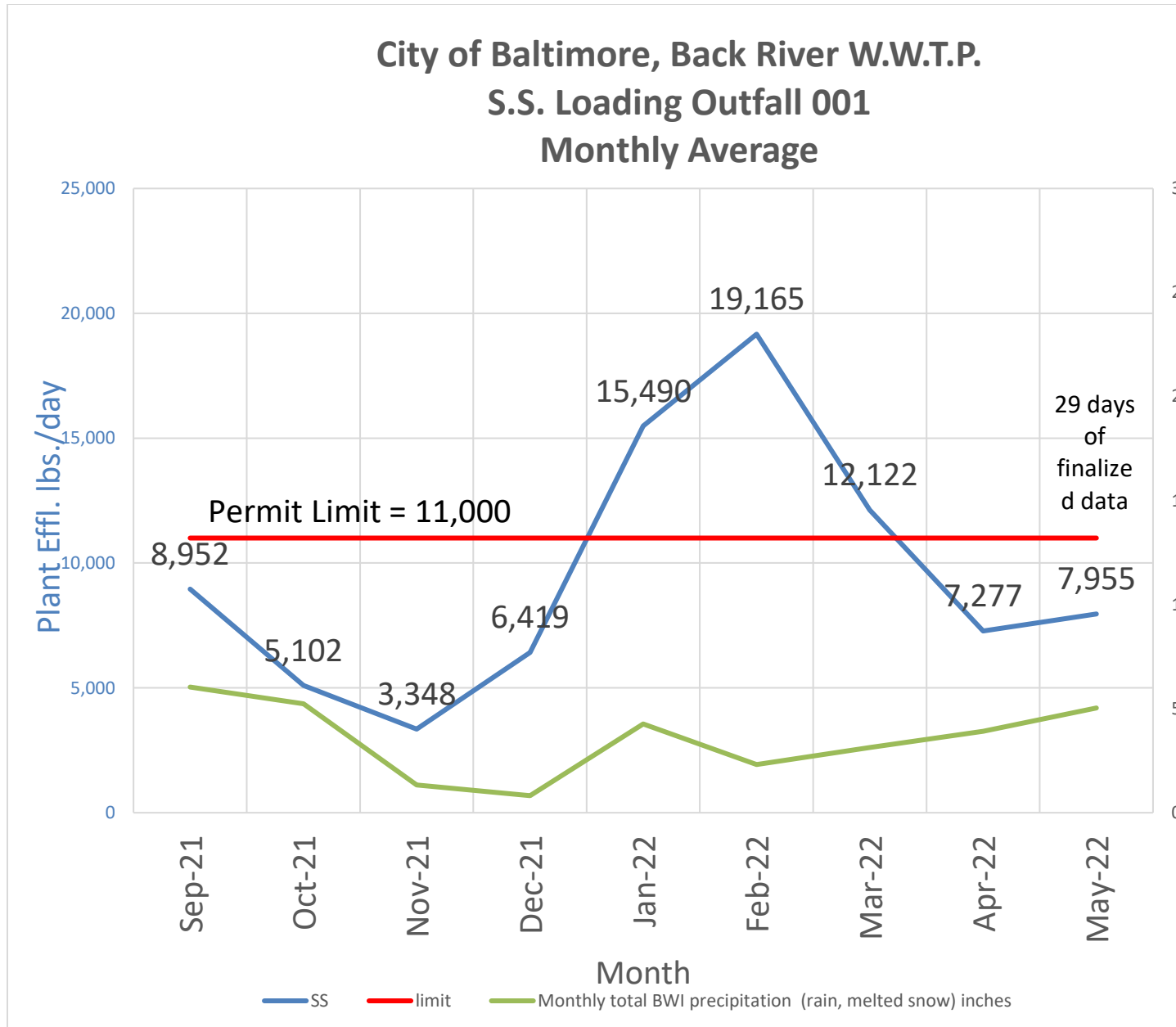
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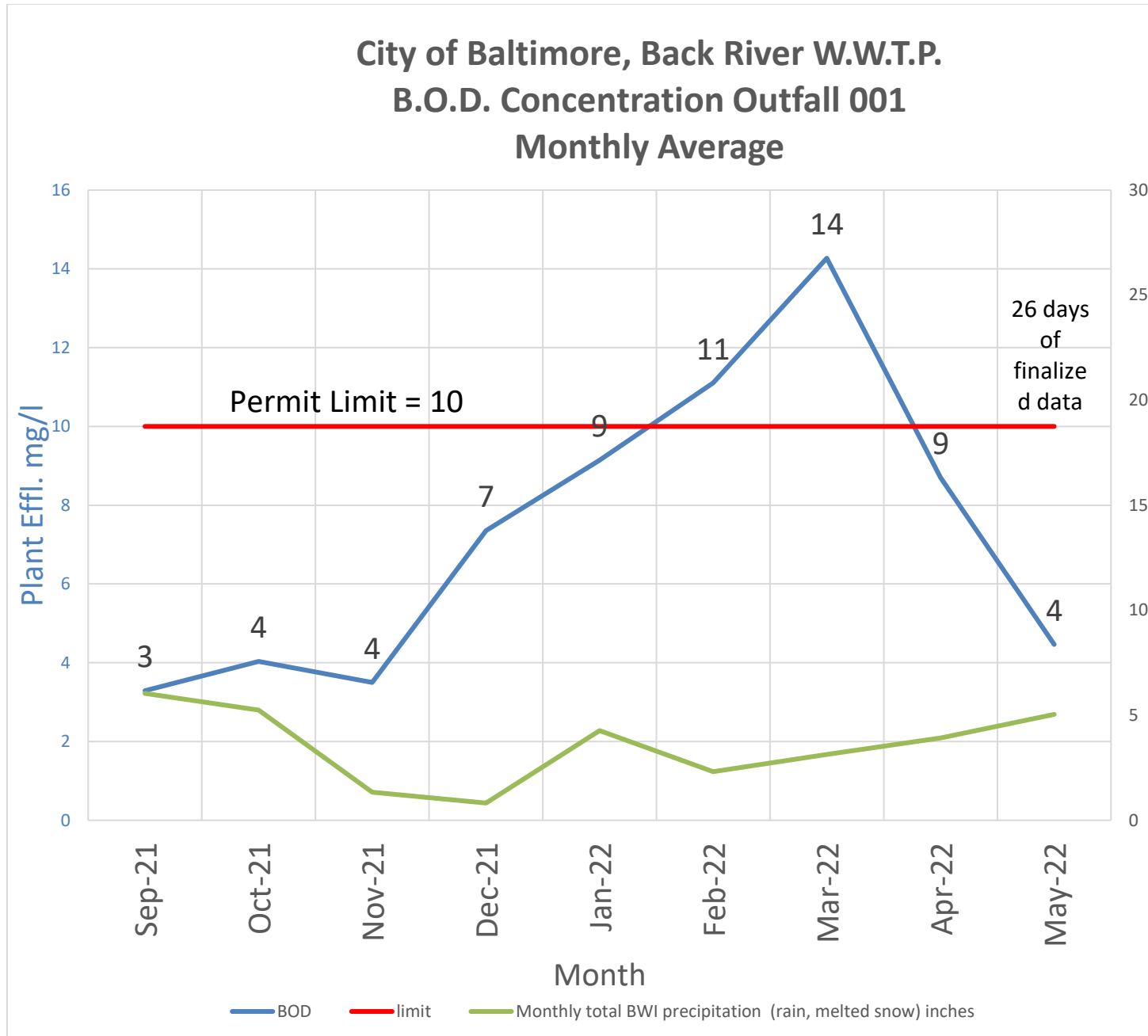
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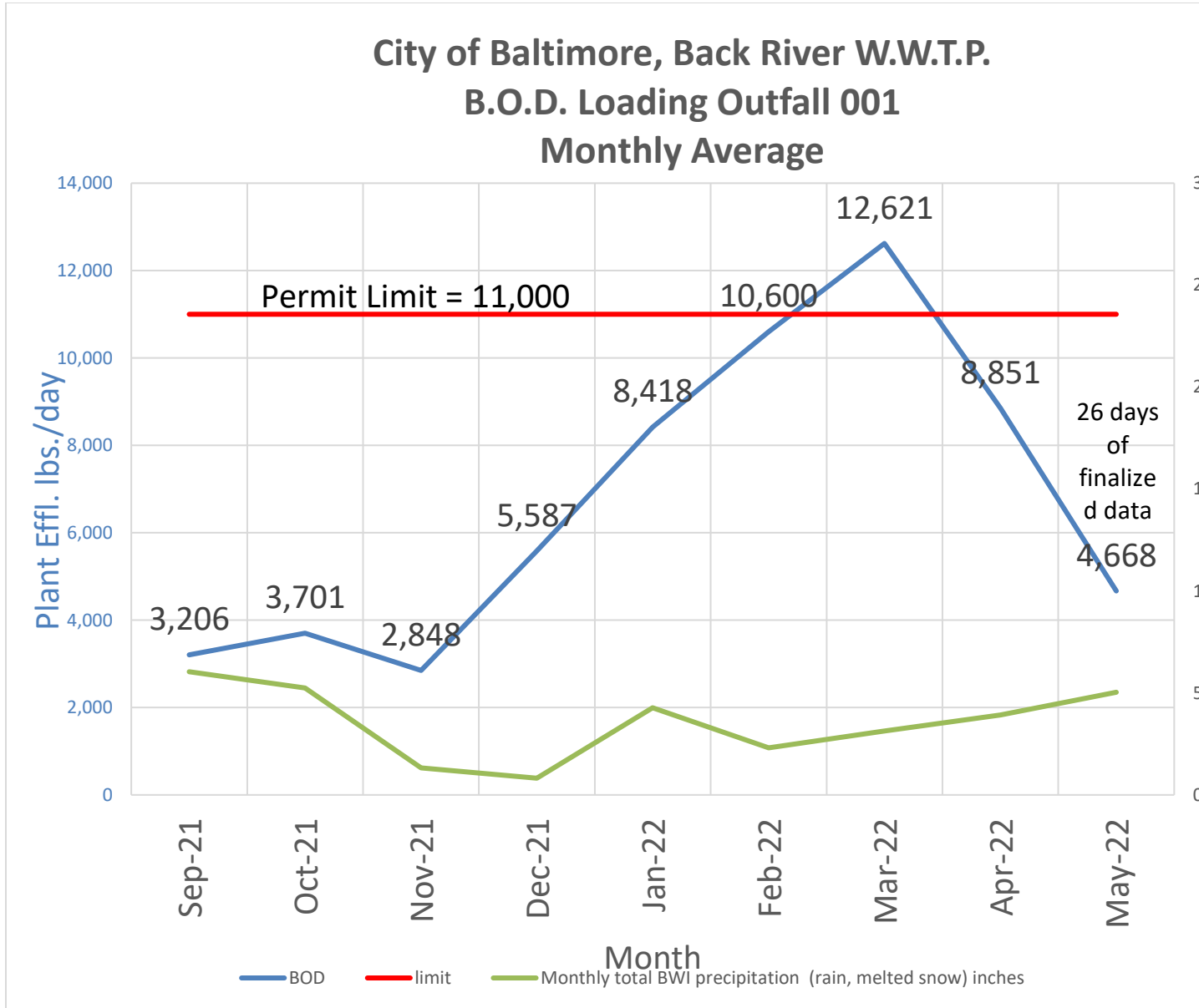
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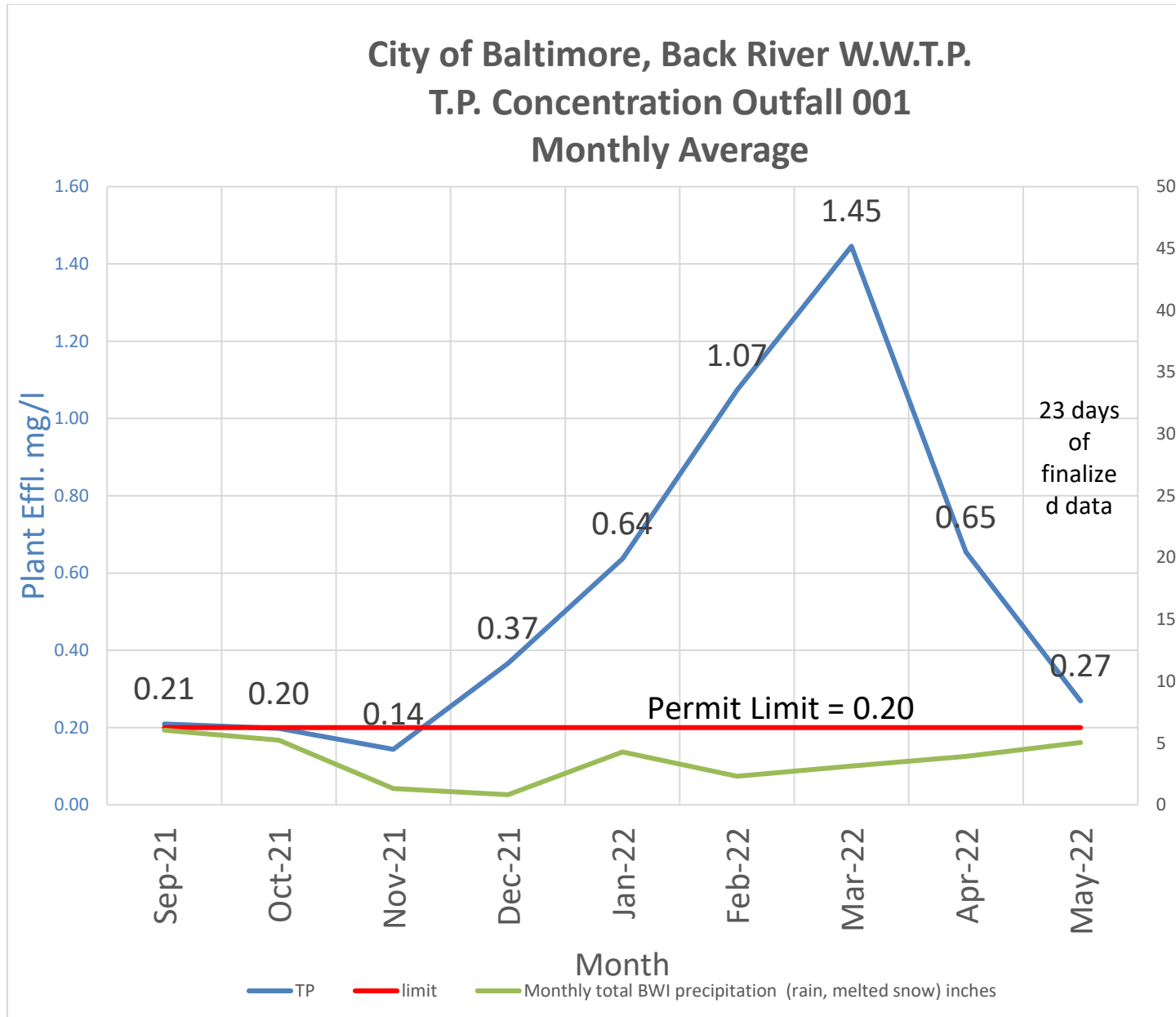
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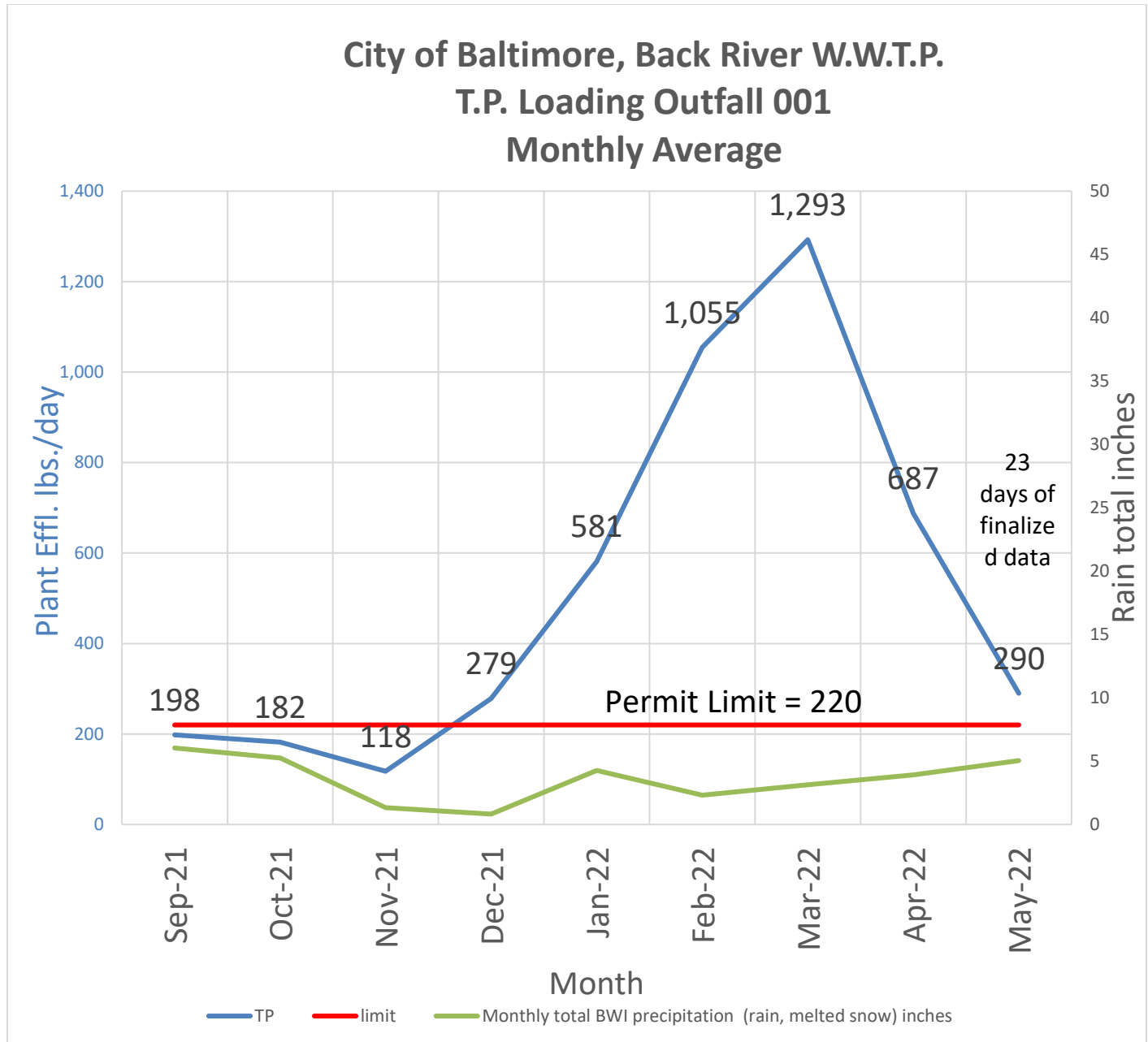
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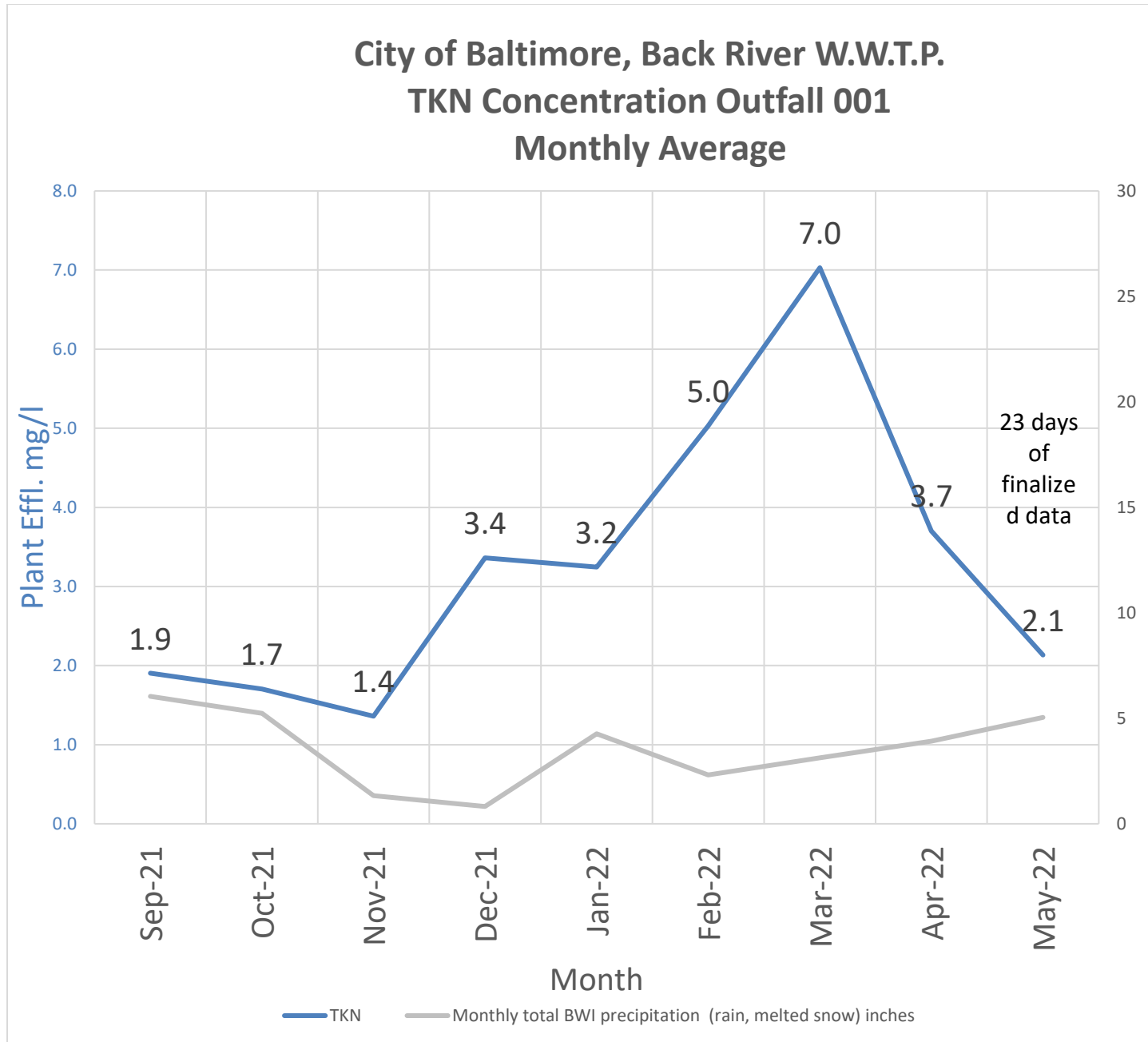
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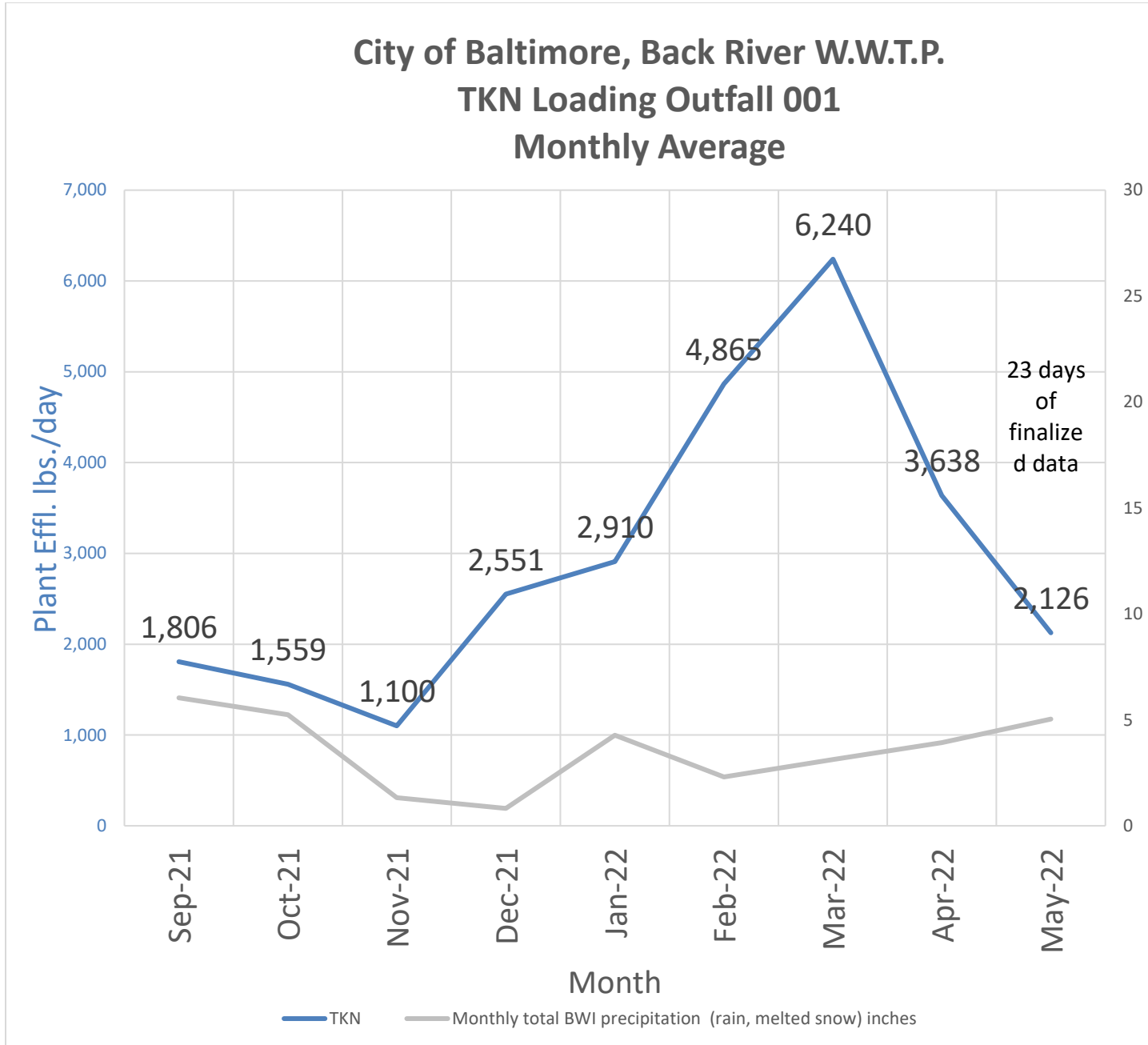
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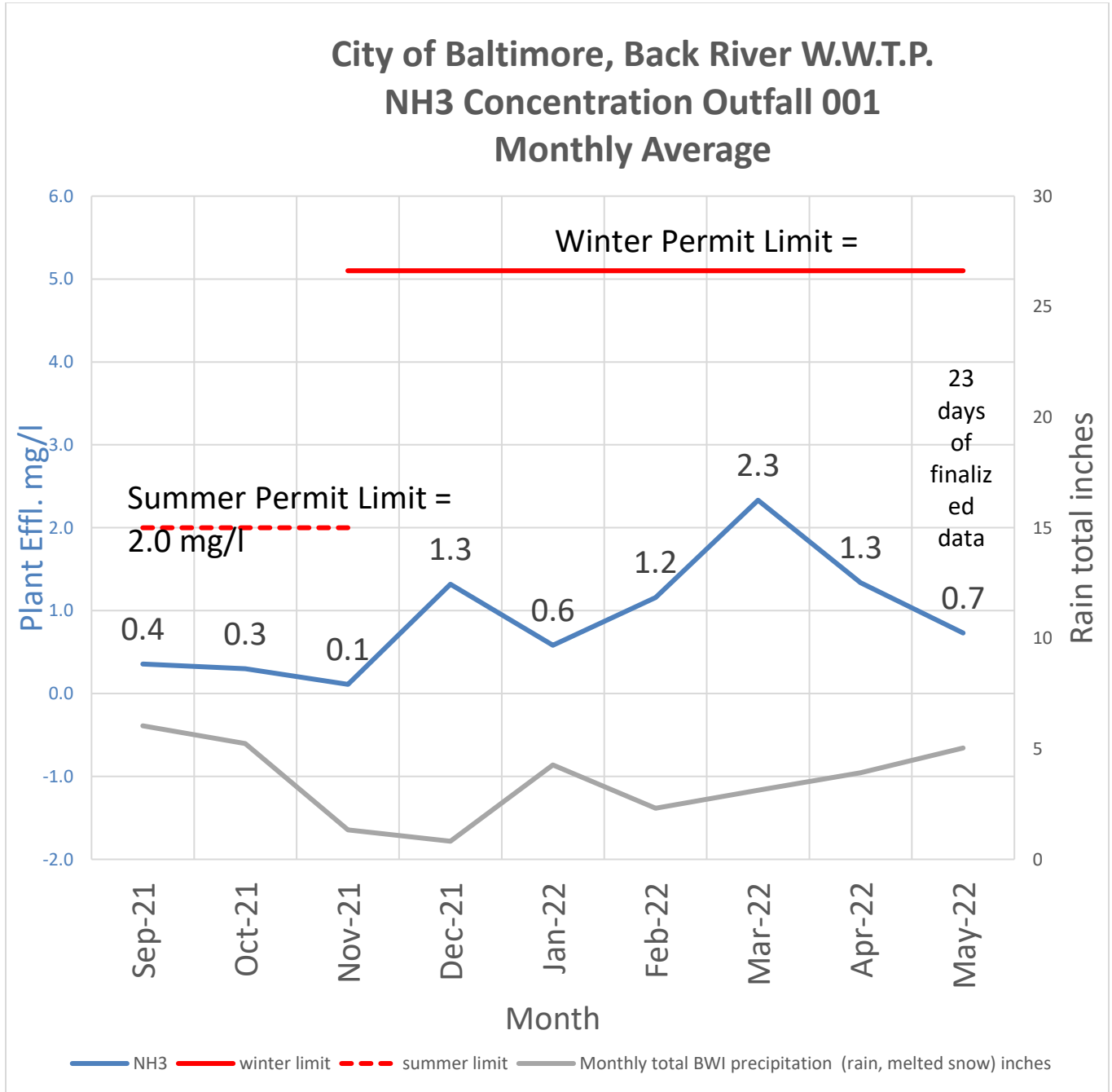






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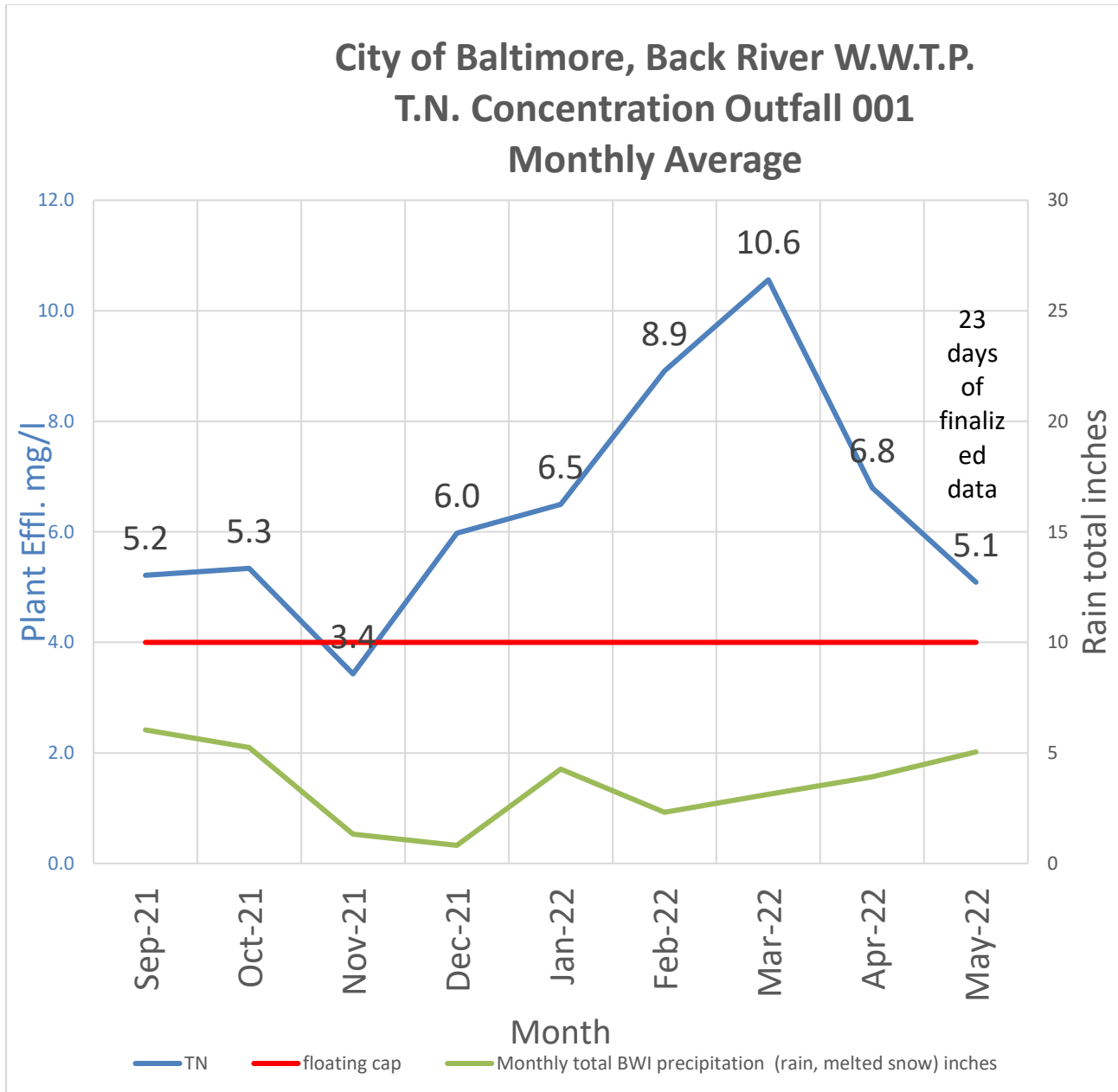
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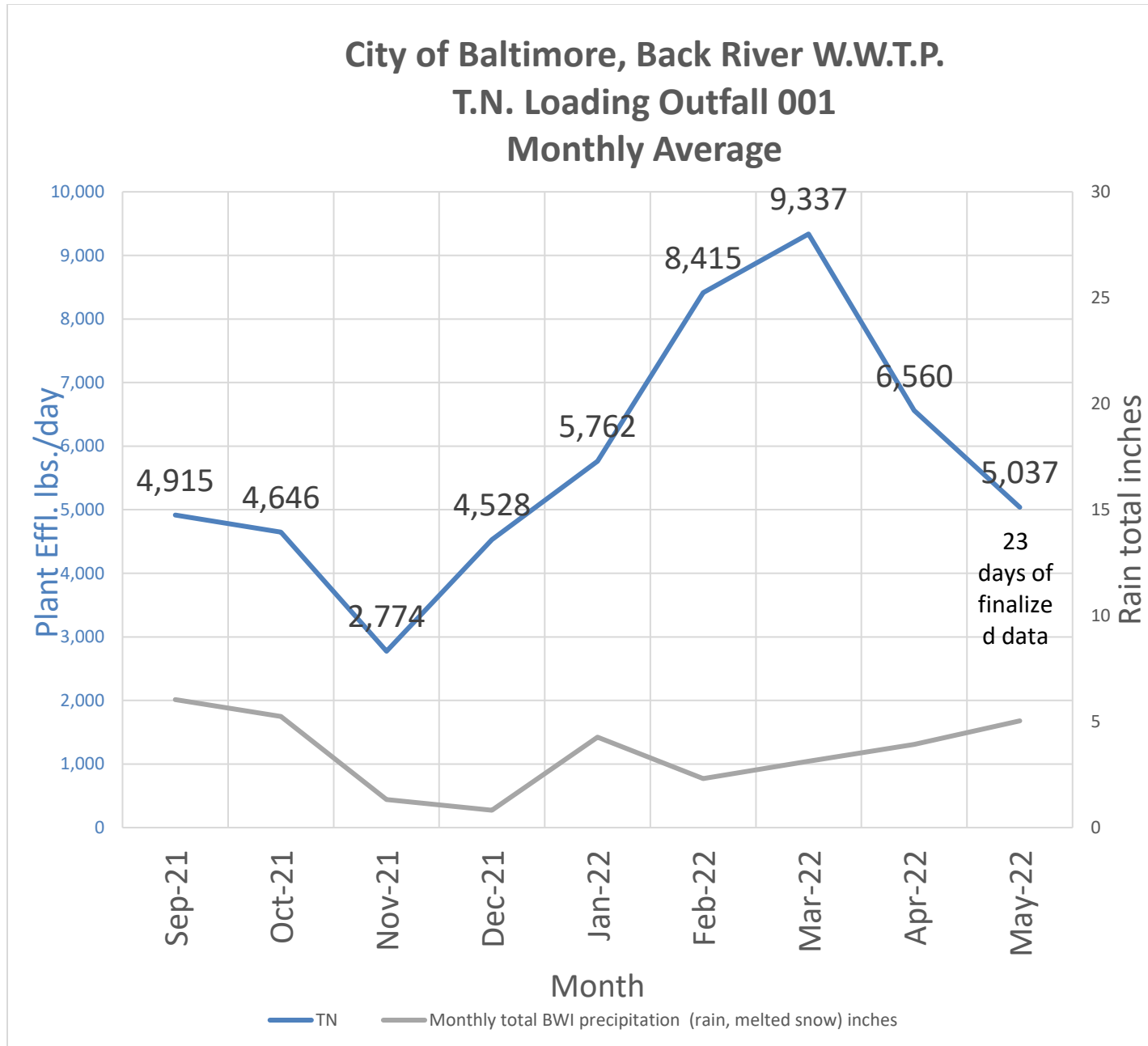
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