

Permit Application Review

Permit No. 2021-23
Received complete: April 7, 2021

Applicant: Chris Kirwin: Oak Management and Development Company
Consultant: Steve Johnston: Elan Design Lab, Inc.
Project: Acorn Mini-Storage Building Construction – Phase 2
Location: 9100 East Bloomington Freeway: Bloomington
Rule(s): 4,5,11,12
Reviewer: BCO

General Background & Comments

The project proposes the construction of Phase 2 buildings on the Acorn Mini-Storage development located at 9100 West Bloomington freeway in Bloomington. The District reviewed and approved a Permit, #2018-41, for the construction of two building additions and associated parking lot reconstruction/improvements on the site. The Phase 1 project identified the location of the Phase 2 building construction and included stormwater management for the overall site construction proposed (Phases 1 and 2).

The project site information based on the March 17, 2021 submittal is:

- Total Site Area: 4.37 acres (190,367 square feet)
- Existing Total Site Impervious Area: 3.32 acres (144,619 square feet)
- Phase 1:
 - New Site Impervious Area: 7,841 square feet
 - Disturbed and Reconstructed Impervious Area: 18,557 square feet
 - Change in Impervious Area to Pervious Area: 7,362 square feet
 - New and Disturbed and Reconstructed impervious Area: 19,036 square feet
- Phase 2:
 - New Site impervious Area: 12,850 square feet
 - Disturbed and Reconstructed Impervious Area: 11,761 square feet
 - Change in Impervious Area to Pervious Area: 7,318 square feet
 - New and Disturbed and Reconstructed impervious Area: 17,293 square feet

- Total Site:
 - New Site Impervious Area: 6011 square feet
 - $7,841 \text{ sq. sf.} + 12,850 \text{ sq. ft.} - 7,362 \text{ sq. ft.} - 7,318 \text{ sq. ft.} = 6,011 \text{ sq. ft.}$
 - 5.0% increase in site impervious area
 - Disturbed and Reconstructed Impervious Area: 36,318 square feet
 - $18,557 \text{ sq. ft.} + 11,761 \text{ sq. ft.} = 30,318 \text{ sq. ft.}$
 - 25.0% of the Existing Site Impervious is to be Disturbed and Reconstructed
 - New, Disturbed and Reconstructed Impervious Area: 36,329 square feet

The Nine Mile Creek Watershed District's Rule for Redevelopment, Rule 4.2.3, states, if a proposed activity will disturb more than 50% of the existing impervious surface on a parcel or will increase the imperviousness of the parcel by more than 50%, storm water management will apply to the entire project parcel. Otherwise, the storm water requirements will apply only to the disturbed areas and the new, disturbed and reconstructed impervious area on the parcel. The Phase 2 plans show that an increase in the on-site impervious area of 5% (6,011 square feet) with 25% of the existing site impervious area is to be disturbed and reconstructed. From the March 23, 2021 submittal, storm water management for Phases 1 and 2 is therefore required for the 85,160 square feet of disturbed area that includes 36,329 square feet of new, disturbed and reconstructed impervious area. The new, disturbed and reconstructed impervious area and disturbed project area provided in the May 4, 2018 review correspondence for Permit #2018-41 – Phase 1 have been revised based on the March 22, 2021 submittal. These revisions are based on the as-built survey for Phase 1 and the current Phase 2 construction plans.

The District's requirements for both storm water management and erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed and 5000 square feet or more surface area disturbed, Rules 4.2.1a and b and 5.2.1a and b.

Storm water management is provided within two surface/infiltration facilities that will provide rate control, volume retention and water quality management. These basins were constructed under the activities approved by Permit #2018-41.

Silt fence is to be constructed at the limits of construction, inlet protection, and a rock construction entrance will be provided for erosion control for Phase 2 construction activities.

Exhibits

1. Phase 2 Permit Application dated March 4, 2021.
2. Plans dated March 4, 2021, prepared by Elan Design Lab, Inc.
3. Storm Water Management calculations dated April 18, 2018, April 27, 2018, and March 23, 2021, prepared by Elan Design Lab.

4. An as-built plan dated June 10, 2019 prepared by Sunde Land Surveying. As-built stage-volume relationships for the two on-site basins dated April 7, 2021 prepared by Elan Design Lab.
5. E-mail correspondence with the project agent dated February 26, March 8, 23, 24, 25, and April 7, 2021.

4.0 Stormwater Management

As previously stated, storm water management, rate control, volume retention and water quality management are being provided by the two stormwater basins.

Rule 4.3.1b requires the 2-, 10-, and 100-year post development peak runoff rates be equal to or less than the existing discharge rates where stormwater leaves the site. The applicant used a HydroCAD hydrologic model to simulate runoff rates from the site. The existing and proposed 2-, 10- and 100-year frequency discharges from the site are:

Existing Conditions			
	2 year (c.f.s.)	10 year (c.f.s.)	100 year (c.f.s.)
Total	11.8	17.7	33.1

Proposed Conditions			
	2 year (c.f.s.)	10 year (c.f.s.)	100 year (c.f.s.)
Total	7.1	10.9	30.5

Rule 4.3.1b is met.

The following table shows, 1) the volume retention required for Phases 1 and 2 of the project, 2) the volume retention provided within the two on-site constructed basins based on the Sunde as-built survey and 3) the excess volume retention remaining after Phases 1 and 2 construction.

	New Impervious Area (ft²)	Disturbed and Reconstructed Impervious Area (ft²)	Change in Impervious Area to Previous Area (ft²)	New and Disturbed Reconstructed Impervious Area (ft²)	Volume Retention (inches)	Volume Retention (ft³)
Phase 1	7,841	18,557	7,362	19,036	1.0	1,586
Phase 2	12,850	11,761	7,318	17,293	1.1	1,585

From Sunde Land Surveying	7,216 (ft ³)	(As-built volume)
Phase 1 Volume Retention Required	-1586 (ft ³)	
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	5,630 (ft ³)	
Excess Available Retention Volume	5,630 (ft ³)	
Phase 2 Volume Retention Required	-1,585 (ft ³)	
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Volume Retention Remaining	4,045 (ft³)	

An infiltration volume of 1,585 cubic feet is required from the 17,293 square feet of new, disturbed, and reconstructed impervious area for Phase 2 construction activities. The Phase 2 volume retention is based on 1.1-inches of runoff from the new, disturbed and reconstructed impervious areas. The volume retention constructed, based on the Sunde Land Surveying as-built survey and the stage volume relationships provided by Elan Design Lab, is 7,216 cubic-feet. As shown in the table above with both the Phase 1 and 2 volume retention requirement of 1,586 cubic feet and 1,585 cubic feet respectively, an excess volume of 4,045 cubic feet is available to be banked for future activities. This information is summarized in the Stormwater Volume Retention Credit Bank, #18-3, established for the overall project. Rule 4.3.1a is met.

The District's water quality criterion requires a 60% annual removal efficiency for phosphorus and 90% annual removal efficiency for total suspended solids. **The results of a MIDS calculator provided show that the two basins provide an annual removal efficiency of 97% for total suspended solids (434 lbs.) and an annual removal efficiency of 96% for total phosphorus (2.4 lbs.).** Rule 4.3.1c is met.

The plans show both the low-floor and low-opening elevations of the Phase 2 buildings are elevation 839.2 M.S.L. Rule 4.3.3c states the low floor elevation of a building must be at least two feet above the 100-year high water elevation or one foot above the emergency overflow of a constructed facility. In addition, all new and reconstructed buildings must be constructed such that no opening where surface flow can enter the structure is less than two feet above the 100-year high water elevation of an adjacent facility or waterbody. The 100-year frequency flood elevation of the eastern basin, riparian to the Phase 2 buildings, is 839.2 M.S.L. A separation of 2.2 feet is to be provided between the 100-year frequency flood elevation of the eastern basin and both the low floor elevation and low opening elevation of the existing and the proposed buildings.

In accordance with Rule 4.3.1a (i), Rain Guardians were constructed at the curb inlet(s) where surface runoff from the buildings and parking lot discharges to the basin(s) providing the required pre-treatment of runoff prior to reaching the Basin.

Compliance with Rule 4.5.4d (i) requirements, providing a minimum separation of 3 feet between the bottom of an infiltration facility, practice, or system and groundwater, was submitted and approved by Permit #2018-41

In accordance with Rule 4.3.4, a post-project chloride management plan must be provided that will, 1) designate an individual authorized to implement the chloride-use plan and 2) designate a MPCA certified salt applicator engaged in the implementation of the chloride-use plan for the site.

5.0 Erosion and Sediment Control

The submitted erosion and sediment control plan includes silt fence at the limits of construction, inlet control, and a gravel construction entrance. The project contact is Steve Johnston; Elan Design Lab, Inc.

11.0 Fees

Fees for the project are:

Rules 2.0-6.0 \$1,500

12.0 Financial Assurances

Financial Assurances for the project are:

Rule 4.0 Volume Retention: Previously Provided – Phase 1	\$0
Chloride Management:	\$5,000
Rule 5: Silt fence: 70 L.F. x \$2.50/L.F. = \$175	
Inlet Control: 2 x \$100/each = \$200	
Site restoration: 1.0 acres x \$2500/acre = \$2,500	\$2,875
Contingency and Administration	\$1,325

Minimum Financial Assurance \$5000

Findings

The proposed project includes the information necessary, plan sheets and erosion control plan, for review.

1. Rules 4 and 5 are met.

Recommendation

Approval, contingent upon:

1. General Conditions
2. Financial Assurance in the amount of \$10,000, including \$5,000 for erosion control and site restoration and \$5,000 for compliance with the chloride management requirements. Compliance with the volume retention requirements were provided as a condition of Phase 1 permit - #2018-41.

By accepting the permit, when issued, the applicant agrees to the following stipulations:

1. For the release of the \$5,000 financial assurance required in Recommendation #2 for erosion control and site restoration, Rule 12.4.1a requires the site has been vegetated and stabilized to prevent erosion and sedimentation per subsection 5.3.3 and that the erosion and sedimentation controls have been removed.
2. Submission of a plan for post-project management of Chloride use on the site. The plan must include 1) the designation of an individual authorized to implement the chloride use plan and 2) the designation of a Minnesota Pollution Control Agency certified salt applicator engaged in the implementation of the chloride-use plan for the site. The release of the \$5,000 of the financial assurance required for the chloride-management plan

requires that chloride-management plan has been provided and approved by the District's Administrator

