

**Project Name** | BCWD Permit 23-05 Mikden of Stillwater / Rocket Carwash**Date** | 04/11/2023**To / Contact info** | BCWD Board of Managers**Cc / Contact info** | Shari Ahrens, Senior Project Engineer / Westwood**Cc / Contact info** | Karen Kill, Administrator / BCWD**From / Contact info** | Camilla Correll, PE; Paul Nation, EIT; John Sarafolean / EOR**Regarding** | Permit Application No. 23-05 Engineer's Report

The following review of the above mentioned project located within the legal jurisdiction of the Brown's Creek Watershed District (BCWD) was conducted to determine compliance with the BCWD rules for purposes of the engineer's recommendation to the Board of Managers for its determination of the permit application.

**Applicant:** Mikden of Stillwater**Permit Submittal Date:** 03/16/2023**Completeness Determination:** 03/30/2023**Board Action Required By:** 05/14/2023**Review based on BCWD Rules effective April 1, 2020****Recommendation: Approve with Conditions**

## GENERAL COMMENTS

**Existing Conditions:** The proposed project is located at the NE intersection of Hwy 36 Frontage and Washington Avenue. Currently the property is the site of the Harbor Freight store. The 9.52-acre Harbor Freight property was re-platted in 2022 to create three lots: Lot 1 remained the Harbor Freight site with 8.52 acres, while Lot 2 MJG Addition and Outlot A (Lot 3) from the original replatting were developed as a Caribou Coffee (BCWD permit 22-10). Since then, the 8.52-acre Harbor Freight property has been re-platted to create an additional lot: Lot 2 MJG 2<sup>nd</sup> Addition. Under existing conditions, the site slopes south to storm inlet structures which flow via storm pipe to a regional stormwater pond (Herberger's Pond).

**Proposed Conditions:** The applicant proposes the construction of a Rocket Carwash in the southeast corner of the 8.52-acre Harbor Freight property (Figure 1). The Rocket Carwash is 1.74 acres in size. Following construction of the project, there will be a 36% reduction in the amount of impervious area on the newly created parcel from 1.58 acres to 1.01 acres (Figure 2). As the property owner and applicant (Mikden) acknowledged in the approval process for permit 22-10, changes in the impervious area on the entire 9.52-acre Harbor Freight site are considered in aggregate. Total disturbed impervious for both permit 22-10 and the proposed Rocket Carwash is 1.46 acres. This is less than 50 percent of the total site impervious (8.39 acres) under existing conditions. The 0.45 acres of new and reconstructed impervious for the Caribou site were addressed in the engineer's report for 22-10 and the 1.01 acres of proposed reconstructed impervious area for the Rocket Carwash is subject to the applicable BCWD stormwater-management requirements. Future redevelopment of the original, 9.52-acre, property must be the subject of a separate, future application for a permit

from the BCWD. Any future redevelopment of the original property must consider disturbed impervious from permit 22-10, this proposed project, and future projects in aggregate for stormwater compliance analysis.

Stormwater from the newly created parcel will be treated by a bioretention basin (Basin C) and a filtration basin (Basin B). The bioretention basin (Basin C) will be constructed as a 0.5' depth filtration basin with underlying drain tile flowing to the filtration basin (Basin B). The filtration basin (Basin B) will be constructed as a 1.5 foot-deep filtration basin with underlying drain tile flowing to Herberger's Pond. Given that this site is located in a high-vulnerability area of the City of Stillwater's Drinking Water Supply Management Area (Minnesota Department of Health Source Water Protection Map Viewer), the BCWD engineer agrees that infiltration is not reasonably feasible. Treatment is provided by the bioretention and filtration basins and not by stormwater infiltration practices.

The proposed development is located within the floodplain of Herberger's Pond (i.e., proposed development within the 100-year HWL of 935.2' as reported in the District's H/H model) (Figure 3). As a result, the stormwater management plan must demonstrate replacement of flood volume (7.3.1).

**Recommendation:** The BCWD engineer recommends that the Board approve the application with the conditions outlined in the report.

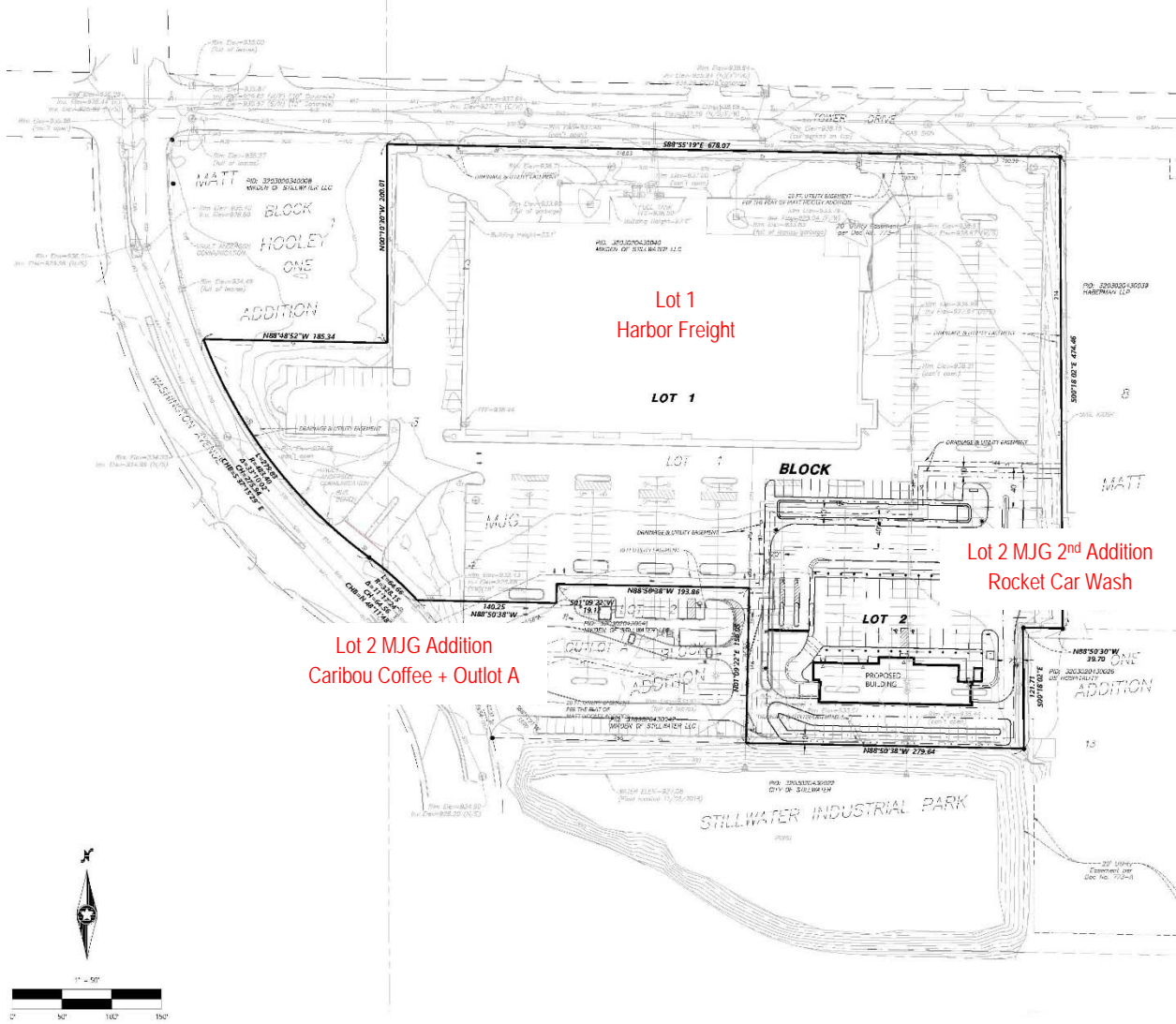


Figure 1: Site Plan

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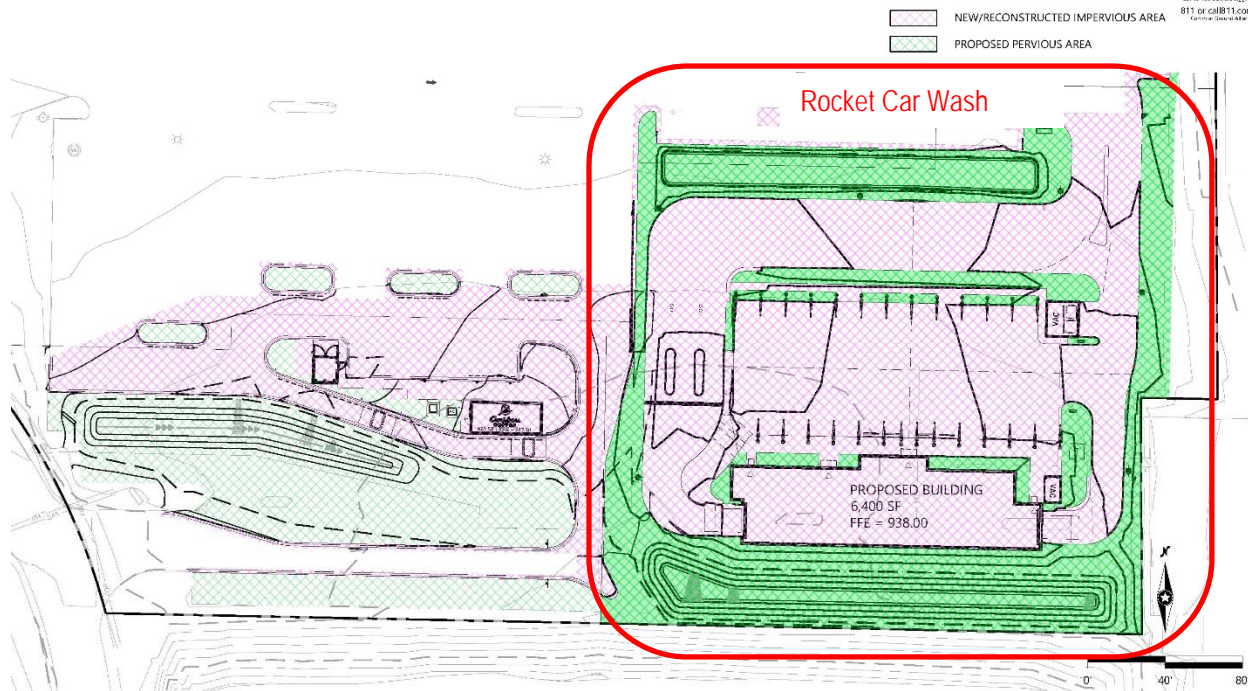


Figure 2. Pervious Area Map includes both Caribou Coffee (left) and the proposed Rocket Car Wash (right)

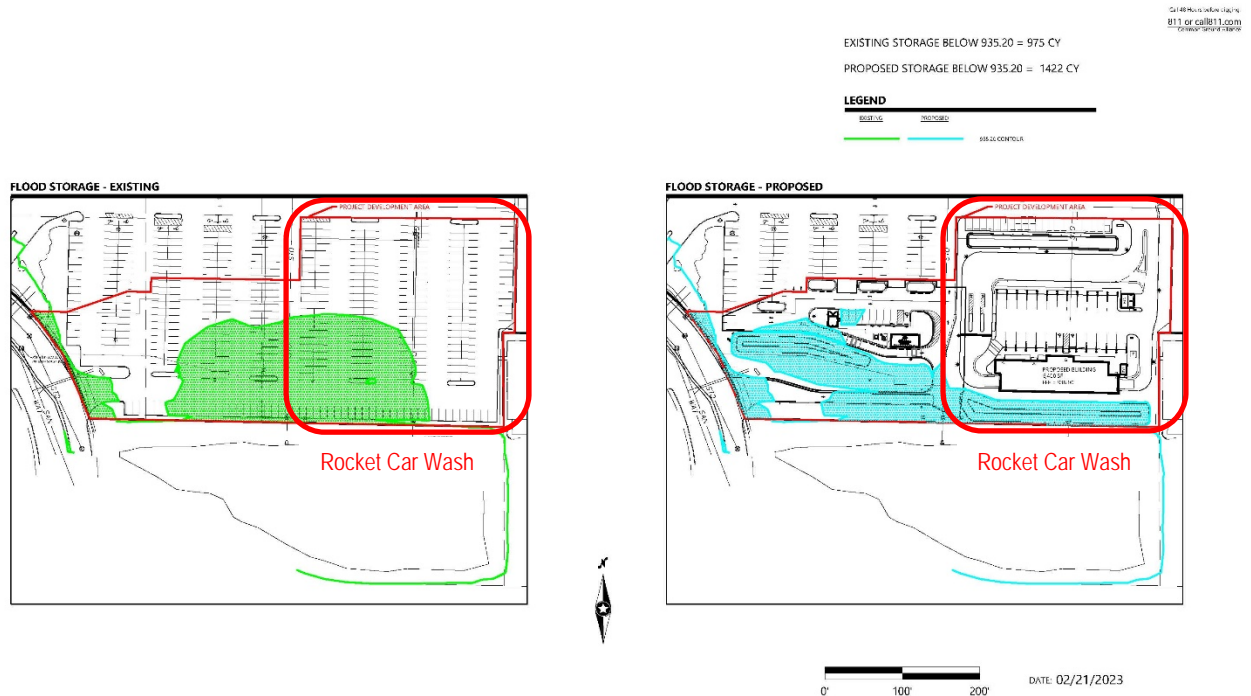


Figure 3. Flood Storage Impacts including both Caribou Coffee (left) and the proposed Rocket Car Wash (right)

## **Rule 2.0—STORMWATER MANAGEMENT**

Under 2.2(b) of the rule, the proposed project triggers the application of Rule 2.0 Stormwater Management because it creates impervious surface that, aggregated with existing impervious surface on the site, equals 10,000 square feet or more of new and/or recreated impervious surface.

As stated above, the site had a total of 8.39 acres of existing impervious prior to any redevelopment. Of that original impervious area, 1.46 acres (17.4%) will be disturbed in aggregate from both permit 22-10 and the proposed project. Under 2.2(b)(ii) since the proposed activity will disturb less than 50 percent of existing impervious surface on the site, the criteria will apply only to reconstructed and net additional impervious surface and disturbed areas on the project site. The total amount of reconstructed and net additional impervious surface currently proposed is 1.46 acres. Out of that total, 0.45 acres have been treated under permit 22-10 and the remaining 1.01 acres are treated as described below. Any future redevelopment must consider current disturbed impervious (1.46 acres) along with future proposed disturbed impervious when determining required stormwater treatment under 2.2(b)(i) or 2.2(b)(ii). The site is located within the Diversion Structure Subwatershed, so the stormwater criteria in subsection 2.4.1(b) apply.

*The stormwater management plan for the project includes:*

- *Constructing filtration and bioretention basins (with underlying drain tile) to treat runoff from the proposed project (Rocket Carwash, drive-thru lanes and 45 parking stalls).*
- *Tying the outlet structure for the filtration basin to the existing storm sewer pipe which runs from the site to Herberger's Pond.*
- *Storm structure sumps (pretreatment devices) in three storm structures collecting stormwater runoff from the parking lot and driving lanes prior to discharging to the filtration basin.*

*Under both current and proposed conditions, runoff leaves the site at a single discharge point, a storm sewer outlet to Herberger's Pond.*

### **Rate Control**

According to BCWD Rule 2.4.1(b)(i), an applicant must submit a stormwater-management plan providing no increase in the existing peak stormwater flow rates from the site for a 24-hour precipitation event with a return frequency of two, 10 or 100 years for all points where discharges leave the site.

Rule Requirement Met

*The proposed development will result in a decrease in existing impervious coverage. As a result, the existing peak flow rate for the 2-, 10-, and 100-year, 24-hour events will decrease as illustrated in Table 1. The flow rates were calculated using a HydroCAD model of existing and proposed site conditions.*



**Table 1 - Peak Discharge Rate from Filtration Basin (to Herberger's Pond)**

<i>Event</i>	<i>Existing Runoff Rate (cfs)</i>	<i>Proposed Runoff Rate (cfs)</i>
2-year (2.80")	8.22	3.37
10-year (4.17")	12.34	8.55
100-year (7.23")	19.47	15.15

**Volume Control**

According to BCWD Rule 2.4.1(b)(ii), an applicant must submit a stormwater-management plan providing retention onsite of 1.1 inches of stormwater volume from the regulated impervious surface, except where section 2.4.3 – Flexible Treatment Options applies.

Rule Requirement Met with Conditions

*Because this site is located in a high vulnerability area of a Drinking Water Supply Management Area, the permit applicant asserts that retention of stormwater volume onsite via infiltration is not reasonably feasible and the BCWD engineer concurs. Instead of using stormwater infiltration, the stormwater management plan achieves volume control using the following techniques as summarized in Table 2:*

- 1. Evapotranspiration (ET)** from trees, shrubs and perennial vegetation incorporated as part of the landscaping plan. Evapotranspiration was calculated using guidance provided by the Minnesota Pollution Control Agency and accounts for 1,713 cubic feet (CF) of the 4,033 CF required under rule 2.4.1(b)(ii). This equates to 43% of the total volume control requirement. One of the assumptions made in calculating the losses due to ET is that the vegetation is 100% mature, which will not be the case for the first five to 10 years.
- 2. Bioretention** provided in Basin C. The HydroCAD model demonstrates that 1,591 CF of the 4,033 CF required under the rule will be retained in Basin C, allowed to soak into the basin soil media and be taken up by the plants before reaching the drain tile system. This equates to 39% of the total volume requirement.

**Table 2 – Summary of Volume Requirements for Rule 2.**

<i>Volume Control Requirement</i>	<i>Required Volume (CF)</i>	<i>Provided Volume (CF)</i>	<i>% of Required Volume</i>
2.4.1(b)(ii) <i>1.1" over 1.01 acres</i>	4,033	3,304	82%
2.4.3(a) FTO (a) <i>0.55" over 1.01 acres</i>	2,016	3,304	164%
2.4.3(b) FTO (b) <i>Retention to max. extent practicable</i>	NA	3,304	NA

*As Table 2 demonstrates, the site will begin to achieve 82% of the total rule requirement at some point in the next five to 10 years, or more than Flexible Treatment Option #1 (FTO 1) in this same timeframe. The permit applicant considered other volume control practices, including stormwater reuse and green roofs, and has determined them to be cost prohibitive and inefficient. Given the limited square footage of the building and the infrastructure that would be located on the roof, a green roof would achieve only minimal treatment. Similarly, the cost associated with treatment of the stormwater for irrigation purposes, combined with the limited amount of green space on the site presented the need to explore other options. While district staff requested that the Permit Applicant explain why stormwater reuse within the car wash itself was not a viable solution, we were not provided with a response.*

*A P8 Model was used to calculate the annual total phosphorus loading for the new/reconstructed impervious area (1.01 acres) compared to the annual total phosphorus loading trapped within the proposed bioretention basin (Basin C) and the proposed filtration basin (Basin B) to demonstrate compliance with the water quality requirement. As the following results illustrate, the rule requirement (75% total phosphorus removal for Flexible Treatment Option A, 60% for Option B) is exceeded with the bioretention basin and the filtration basin providing 99% removal of the total phosphorous load.*

- *Annual total phosphorus load from new/reconstructed impervious area = 2.22 lbs/year*
- *Annual total phosphorus loading trapped in Filtration Basin B = 1.48 lbs/year*
- *Annual total phosphorus loading trapped in Bioretention Basin C = 0.72 lbs/years*

### **Infiltration Pretreatment**

According to BCWD Rule 2.5.2 surface flows to infiltration facilities must be pretreated for long-term removal of at least 50 percent of sediment loads.

- Rule Not Applicable to Permit. *There is no stormwater infiltration proposed for this site.*

*The BCWD Rule does not require pretreatment for bioretention or filtration practices. However, like infiltration practices, bioretention and filtration practices can be prone to failure from inadequate pretreatment. For the proposed filtration basin (Basin B), pretreatment of runoff is provided by 3-foot sump catch basins prior to stormwater discharge into the basin. For the proposed bioretention basin (Basin C), pretreatment of runoff is provided by a vegetated filter strip.*

### **Lake/Wetland Bounce**

According to BCWD Rule 2.4.1(b)(iii), an applicant must submit a stormwater-management plan providing no increase in the bounce in water level or duration of inundation for a 24-hour precipitation event with a return frequency of two, 10 or 100 years in the subwatershed in which the site is located, for any downstream lake or wetland beyond the limit specified in Appendix 2.1.

- Rule Not Applicable to Permit. *There are no immediate downstream lakes or wetlands.*

### **Rule 2.0 Conditions:**

- 2-1. Submit an operations and maintenance plan for the stormwater management facilities (BCWD Rule 2.7.9).
- 2-2. Provide BCWD with the final Civil Plan Set prior to start of construction (BCWD Rule 2.7.9).

- 2-3. Provide documentation as to the status of a National Pollutant Discharge Elimination System stormwater permit for the project from the Minnesota Pollution Control Agency and provide the Storm Water Pollution Prevention Plan (SWPPP) as it becomes available (BCWD Rule 2.7.15).
- 2-4. The maintenance declaration for the stormwater-management facilities must be recorded with Washington County after the draft is approved by the District (BCWD Rule 2.6).

### **Rule 3.0—EROSION CONTROL**

According to BCWD Rule 3.2, all persons undertaking any grading, filling, or other land-altering activities which involve movement of more than fifty (50) cubic yards of earth or removal of vegetative cover on five thousand (5,000) square feet or more of land must submit an erosion control plan to the District, and secure a permit from the District approving the erosion control plan. The proposed project triggers the application of Rule 3.0 Erosion Control because there will be movement of more than 50 cubic yards of earth (e.g., construction of the filtration basin alone will move 500 cubic yards of earth.)

#### Rule Requirements Met with Conditions

*The erosion and sediment control plan includes:*

- *Silt fence*
- *Redundant silt fence along the boundary of the Herberger's Pond*
- *Rock construction entrance*
- *Storm sewer inlet protection*
- *Rip rap at culvert outlets*
- *Floating silt curtain at storm sewer outfalls in the Herberger's Pond*
- *Identification of Long Lake as an impaired water that is within one mile of the proposed project location.*

*The following conditions must be addressed in the erosion and sediment control plan to comply with the District's requirements:*

#### **Rule 3.0 Conditions:**

- 3-1. Provide the contact information for the erosion and sediment control responsible party during construction once a contractor is selected. Provide the District with contact information for the Erosion Control Supervisor and the construction schedule when available (BCWD 3.3.2).

### **Rule 4.0—LAKE, STREAM, AND WETLAND BUFFER REQUIREMENTS**

According to BCWD Rule 4.2.1, Rule 4.0 applies to land that is (a) adjacent to Brown's Creek; a tributary of Brown's Creek designated as a public water pursuant to Minnesota Statutes section 103G.005, subdivision 15; a lake, as defined in these rules; a wetland one acre or larger; or a groundwater-dependent natural resource; and (b) that has been either (i) subdivided or (ii) subject to a new primary use for which a necessary rezoning, conditional use permit, special-use permit or variance has been approved on or after April 9, 2007, (for wetlands and groundwater-dependent natural resources other than public waters) or January 1, 2000 (for other waters).



- Rule Not Applicable to Permit. *There are no lakes, streams or wetlands within the applicable buffer width of the site.*

### **Rule 5.0—SHORELINE AND STREAMBANK ALTERATIONS**

According to BCWD Rule 5.2, no person may disturb the natural shoreline or streambank partially or wholly below the ordinary high water mark of a waterbody, without first securing a permit from the District.

- Rule Not Applicable to Permit. *There are no proposed shoreline or streambank alterations.*

### **Rule 6.0—WATERCOURSE AND BASIN CROSSINGS**

According to Rule 6.2, no person may use the beds of any waterbody within the District for the placement of roads, highways and utilities without first securing a permit from the District.

- Rule Not Applicable to Permit. *There are no proposed watercourse or basin crossings.*

### **Rule 7.0—FLOODPLAIN AND DRAINAGE ALTERATIONS**

According to Rule 7.2, no person may alter or fill land below the 100-year flood elevation of any waterbody, wetland, or stormwater management basin, or place fill in a landlocked basin, without first obtaining a permit from the District. No person shall alter stormwater flows at a property boundary by changing land contours, diverting or obstructing surface or channel flow, or creating a basin outlet, without first obtaining a permit from the District. The proposed project triggers the application of Rule 7.0 Floodplain and Drainage Alterations because there are land alterations below the 100-year flood elevation of an existing stormwater facility (Herberger's Pond) as shown in Figure 3.

- Rule Requirements Met

According to BCWD rule 7.3.2 all new and reconstructed buildings must be constructed such that the lowest floor is at least two feet above the 100-year high water elevation or one foot above the emergency overflow (EOF) of a constructed basin.

*The 100-year high water elevations, EOFs, and lowest adjacent building elevations were evaluated and meet the District's low floor requirement as demonstrated in Table 3.*

**Table 3 - Freeboard Requirement Summary**

<i>Stormwater Facility</i>	<i>EOF [feet]</i>	<i>100-Year HWL [feet]</i>	<i>Allowable Low Floor [feet]</i>	<i>Lowest Proposed Floor [feet]</i>
Filtration Basin (Basin B)	934.43	934.01	935.43	938.0
Bioretention Basin (Basin C)	937.00	936.94	938.00	938.0
Herberger's Pond	934.62**	935.20*	937.20	938.0

- \* 100-year HWL for Herberger's Pond was taken from the District's H/H model update performed for the Long Lake flood risk assessment. This value represents the 100-year HWL using NOAA Atlas 14.

\*\* Based on this analysis the EOF is below the 100-year HWL and therefore cannot be considered an emergency overflow under the definition in the BCWD Rules.

Under BCWD Rule 7.3.1, floodplain filling must be accompanied by a replacement of flood volume between the ordinary high water level and the 100-year flood elevation.

*The floodplain of Herberger's Pond extends into the existing parking lot (Figure 3). As Table 4 demonstrates the replacement flood volume being provided by the filtration basin (Basin B) exceeds the flood volume provided by the parking lot under existing conditions. The filtration basin has been designed to drawdown within 48 hours to ensure that this storage is available for subsequent precipitation events.*

**Table 4 – Flood Replacement Summary**

<i>Condition</i>	<i>Flood Volume [cubic yards]</i>
Existing Condition	975
Proposed Condition	1,442

Under BCWD Rule 7.3.5, the District will issue a permit to alter surface flows under paragraph 7.2 only on a finding that the alteration will not have an unreasonable impact on an upstream or downstream landowner and will not adversely affect flood risk, basin or channel stability, groundwater hydrology, stream baseflow, water quality or aquatic or riparian habitat.

*Because the proposed development will result in reduced discharge to Herberger's Pond from current levels, there will be no offsite impacts.*

**Rule 8.0—FEES**

Fees for this project as outlined below:

- |  |                |
|--|----------------|
| 1. Stormwater management fee               | \$3,000        |
| 2. Erosion control fee for grading         | \$1,000        |
| 3. Floodplain and drainage alterations fee | \$500          |
| <b>▪ TOTAL FEES</b>                        | <b>\$4,500</b> |

**Rule 9.0—FINANCIAL ASSURANCES**

Financial assurances for this project are as outlined below:

- |   |              |
|---|--------------|
| 1. Grading or Alteration (1 acre disturbed x \$2,000/acre)                                | \$2,000      |
| 2. Stormwater Management Facilities (125% of facility cost)                               | \$TBD        |
| <b>▪ TOTAL FINANCIAL ASSURANCES<br/>(\$5,000 Minimum Performance Financial Assurance)</b> | <b>\$TBD</b> |

*An engineer's estimate of the cost of stormwater management facilities has not been provided by the applicant. Once provided, this estimate will be used to determine the required financial assurance.*

**Rule 9.0 Conditions:**

- 9-1. Final estimate of stormwater management facility cost as agreed upon by applicant and BCWD engineer.

**Rule 10.0—VARIANCES**

*According to BCWD Rule 10.0, the Board of Managers may hear requests for variances from the literal provisions of these Rules in instances where their strict enforcement would cause undue hardship because of the circumstances unique to the property under consideration. The Board of Managers may grant variances where it is demonstrated that such action will be keeping with the spirit and intent of these rules. Variance approval may be conditioned on an applicant's preventing or mitigating adverse impacts from the activity.*

- Rule Not Applicable to Permit. *There are no requested variances.*

**RECOMMENDED CONDITIONS OF THE PERMIT:**

The following is a summary of the remaining tasks necessary to bring the project into compliance with the BCWD Rules in all respects other than where variances are requested as discussed above:

1. Demonstrate that the plan has received preliminary plat approval (BCWD Rule 1.3a).
2. Address all stormwater management requirements (Conditions 2-1 to 2-4).
3. Address all erosion control requirements (Condition 3-1).
4. Address all financial assurance requirements (Condition 9-1).
5. Replenish the Permit fee deposit to \$4,500 (BCWD Rule 8.0). If the permit fee deposit is not replenished within 60 days of receiving notice that such deposit is due, the permit application or permit shall be deemed abandoned and all prior approvals shall be revoked and collection proceedings shall begin on unpaid balances.
6. Provide the required financial assurances (BCWD Rule 9.0):
  - a. Total grading or alteration assurance 1 acre (\$2,000).
  - b. Stormwater management facilities assurance (\$TBD).

**STIPULATIONS OF APPROVAL:**

1. Note that the permit, if issued, will require that the applicant notify the District in writing at least three business days prior to commencing land disturbance. (BCWD Rule 3.3.1)
2. To ensure that construction is carried out according to the approved plan, provide verification that construction standards have been met for the bioretention and filtration basins. This includes, but is not limited to, confirmation that basin sub-cut reaches soil material reflected in the geotechnical report and that the vegetation establishment procedures have been followed per the landscaping/restoration plan. This can be achieved by scheduling a BCWD inspection during the excavation of the basins, independent geotechnical engineer observation and note of confirmation, or well-documented

photographic evidence by the onsite engineer along with collected survey elevations of the basins.

3. Provide the District with As-built record drawings showing that the completed grading and stormwater facilities conform to the grading plan.