memo

Project Name |	BCWD Permit 24-01 Take 5 Oil Change	**Date** |	03/15/2024
To / Contact info |	BCWD Board of Managers		
Cc / Contact info |	Joseph Bailey; Sambatek, Luke Brodeur; Jarman Development		
Cc / Contact info |	Karen Kill, Administrator / BCWD		
From / Contact info |	Camilla Correll, PE / EOR; John Sarafolean, EOR; Paul Nation, PE / EOR		
Regarding |	Permit Application No. 24-01 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: Jarman Development
Permit Submittal Date: *2/24/2024*
Completeness Determination: *2/26/2024*
Board Action Required By: *04/26/2024*
Review based on BCWD Rules effective April 1, 2020
Recommendation: Consider variance request and otherwise Approve with Conditions

GENERAL COMMENTS

The applicant proposes an oil change business named Take 5 Oil Change on a 0.53-acre parcel located in Oak Park Heights. The project site includes the Take 5 Oil Change parcel (Outlot A), an existing Goodwill parcel, and retail store parcel shown in Figure 1. The Goodwill parcel is included in the site because the proposed plan involves land-disturbing activities to place storm sewer into the filtration basin on the Goodwill parcel to the south of the project parcel. The retail store is included in the site because the proposed plan involves land-disturbing activities to install curb and gutter, paving, and sidewalk connecting the Take 5 Oil Change parcel and retail store parcel. The total site area is 4.26 acres.

Existing Conditions: The project is located southwest of the intersection of Krueger Lane and 60th Street North. The existing Take 5 Oil Change parcel (Outlot A) is turf grass. 0.17 acres of the parcel flows south to the filtration basin located on the Goodwill parcel that was constructed with the Brackey 4th Addition, 0.37 acres drains north to an existing drainage swale that runs along 60th Street North (eventually discharging to Menards Pond) and 0.02 acres drains east to Krueger Lane where it is picked up by the storm sewer and routed to Menards Pond.

Proposed Conditions: The project site impervious will increase from 2.76 acres to 3.10 acres, an increase of 12 percent. The proposed Take 5 Oil Change will create 0.34 acres of impervious surface and the remaining 0.19 acres of the parcel will consist of pervious surfaces including turf grass and a tree trench stormwater management system. The oil change development will include a drive-thru building, bituminous paved parking lot, concrete curb and gutter, concrete walk, and stormwater management system.

The majority of the stormwater generated from this project will be treated by the tree trench that will provide volume control through evapotranspiration and interception, rate control, and water quality treatment. The site is located within a Drinking Water Supply Management Area classified as having high vulnerability (Minnesota Department of Health Source Water Protection Map Viewer). The site is not, however, in an Emergency Response Area. The state Construction Stormwater General Permit precludes the use of stormwater infiltration in this setting unless a regulated Municipal Separate Storm Sewer System permittee (the City of Oak Park Heights in this case) performs or approves an engineering review sufficient to provide a functioning treatment system and to prevent adverse impacts to groundwater. The City of Oak Park Heights has neither performed nor approved such a review.

Recommendation: The BCWD engineer recommends that the board consider the applicant's variance request in light of the analysis provided below and otherwise approve the application with the conditions outlined in the report

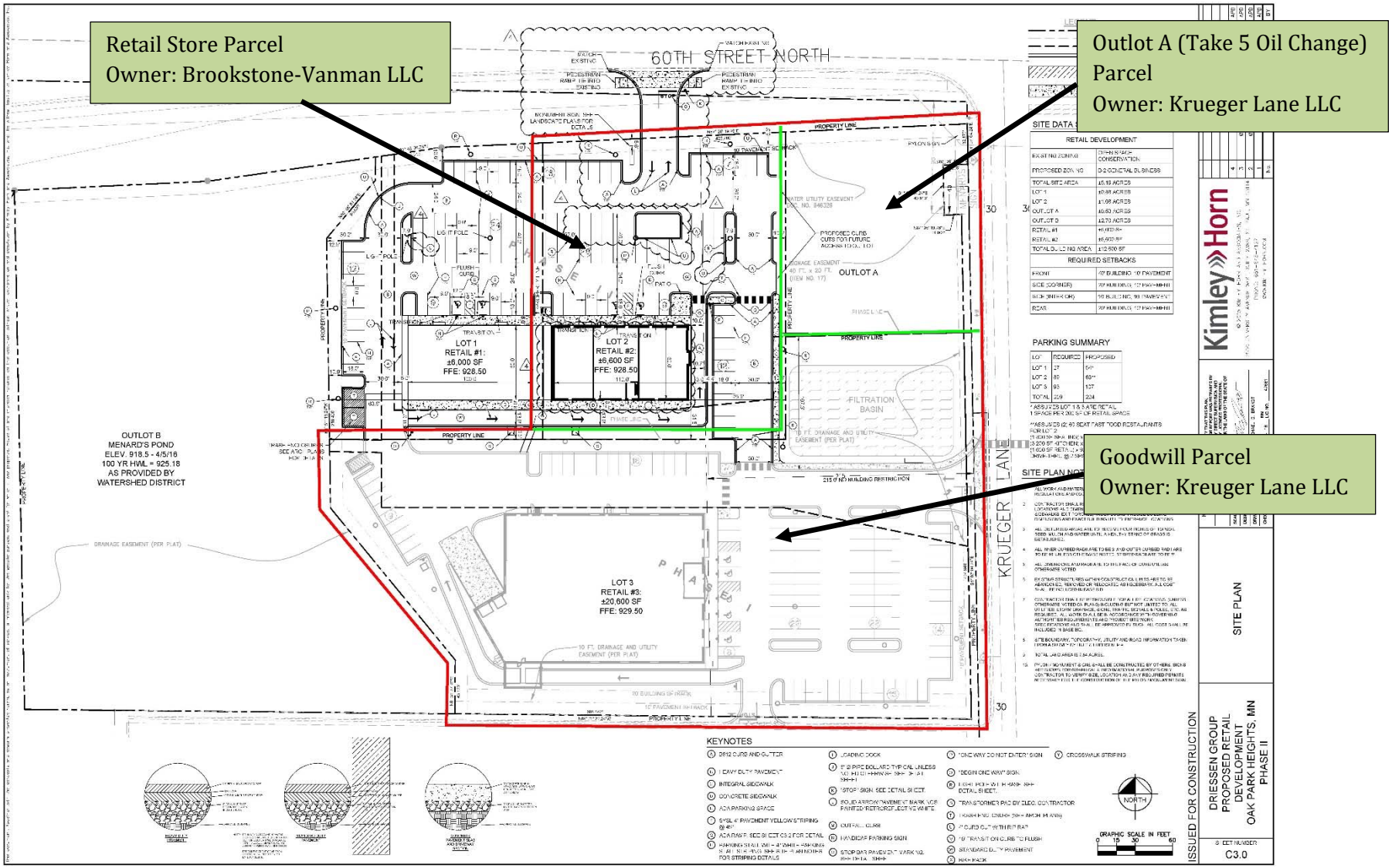

Figure 1: Site Plan

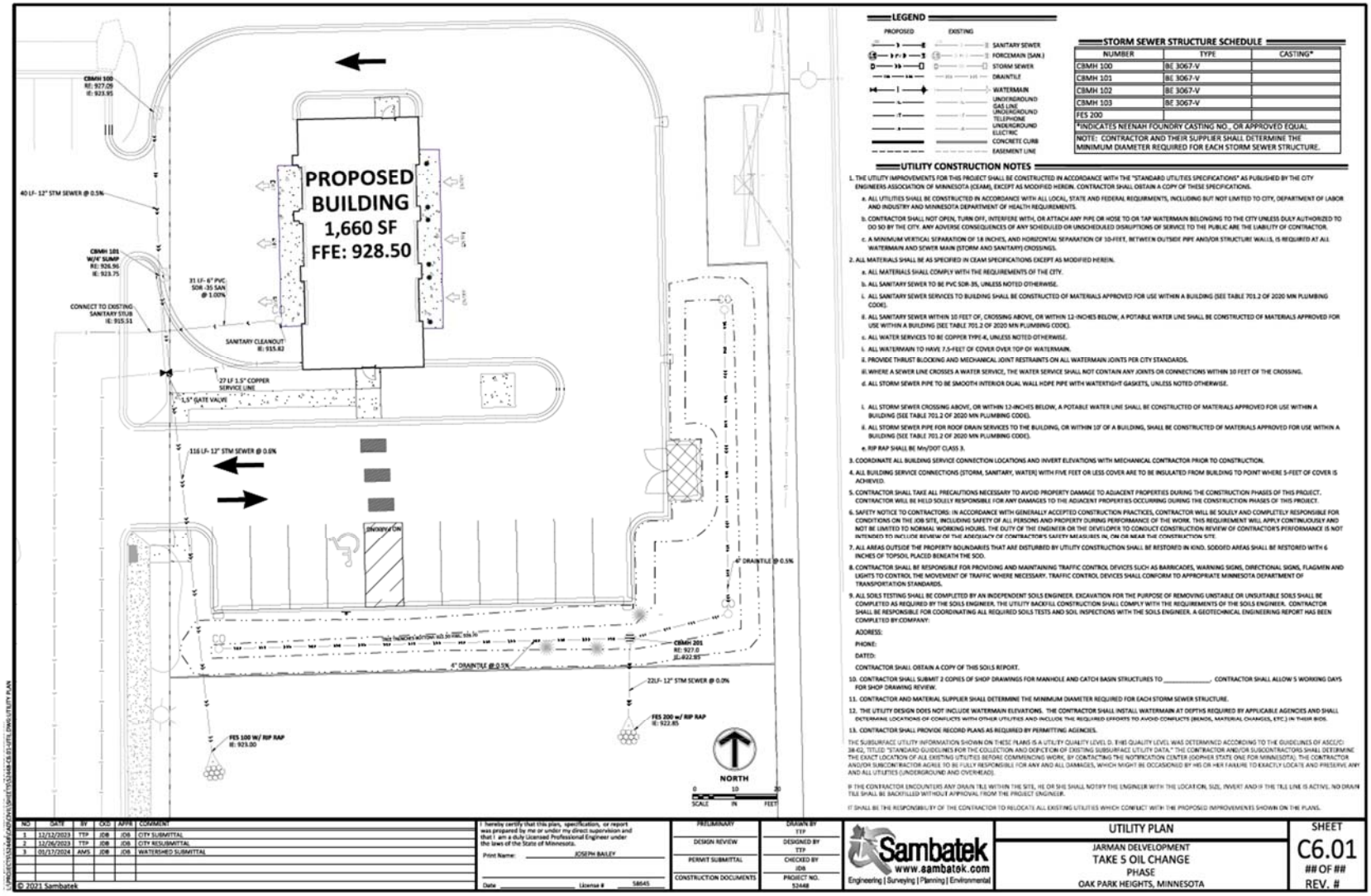

Figure 2: Take 5 Oil Change Parcel and Utility Plan

Rule 2.0—STORMWATER MANAGEMENT

Under 2.2(b) of the rules, the proposed project triggers the application of Rule 2.0 Stormwater Management because it is a redevelopment creating more than 10,000 square feet (sf) of impervious surface. Because 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 all disturbed areas on the project site. 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:

- *A tree trench stormwater management facility planted with nine deciduous trees to provide volume control, rate control, and water quality treatment.*
- *An existing filtration basin constructed with the Brackey 4th Addition.*
- *Tree trench stormwater inlet pretreatment with baffled brick inlets at each curb cut draining into the tree trench stormwater management facility.*
- *A 4-foot sump structure to treat stormwater from the 2S drainage area for water quality before entering the existing filtration basin.*

*Existing drainage from the portion of the site that is being disturbed (Outlot A) consists of three subcatchment areas: 1E, 2E, and 3E (*Figure 4*). The three subcatchments discharge to three discharge points labeled North, South, and East (*Figure 3Figure 4*). The subcatchment areas are 0.37 acres, 0.17 acres, and 0.02 acres respectively. Under existing conditions, the stormwater runoff from subcatchment 1E sheet flows across turf grass discharging to an existing drainage swale located to the north of the property along 60th Street North which routes stormwater runoff to Menard's Pond. Subcatchment 2E sheet flows to the south across turf grass discharging to an existing filtration basin facility constructed with the Brackey 4th Addition. The filtration basin outlet is a storm sewer pipe that discharges into Menards Pond, and this is the regulated discharge point at the site boundary. As this storm sewer flows west it receives runoff from the existing Goodwill building and parking lot. Subcatchment 3E sheet flows to the east across turf grass discharging to Krueger Lane and the storm sewer which routes stormwater runoff to Menards Pond. Additional discharge points from the Retail Store parcel (north to the existing swale or via separate storm sewer to Menards Pond) are not considered as there are no changes from existing to proposed conditions for these areas.*

*Under proposed conditions, there will be four drainage areas: 1S, 2S, 3S, and 4S. The four subcatchments will continue to discharge to the same three points as in the existing conditions: North, South, and East (*Figure 5*). Stormwater in subcatchment 1S will sheet flow to the north over turf grass to the existing drainage swale along 60th Street North and ultimately to Menard's Pond. Subcatchment 2S will sheet flow over bituminous pavement before being collected in catch basins located along the curb and routed via storm sewer to the Brackey 4th Addition filtration basin to the south of the property. Subcatchment 3S will sheet flow east over turf grass to Krueger Lane where it is picked up by an existing catch basin and storm sewer and is routed to Menard's Pond. Stormwater in subcatchment 4S will sheet flow over bituminous pavement before ending up in the tree trench system. Any stormwater runoff that isn't taken up by the trees and/or vegetation will be collected by drain tile and routed to the south into the Brackey 4th Addition filtration basin. All proposed new impervious surface is within subcatchment 2S and 4S.*

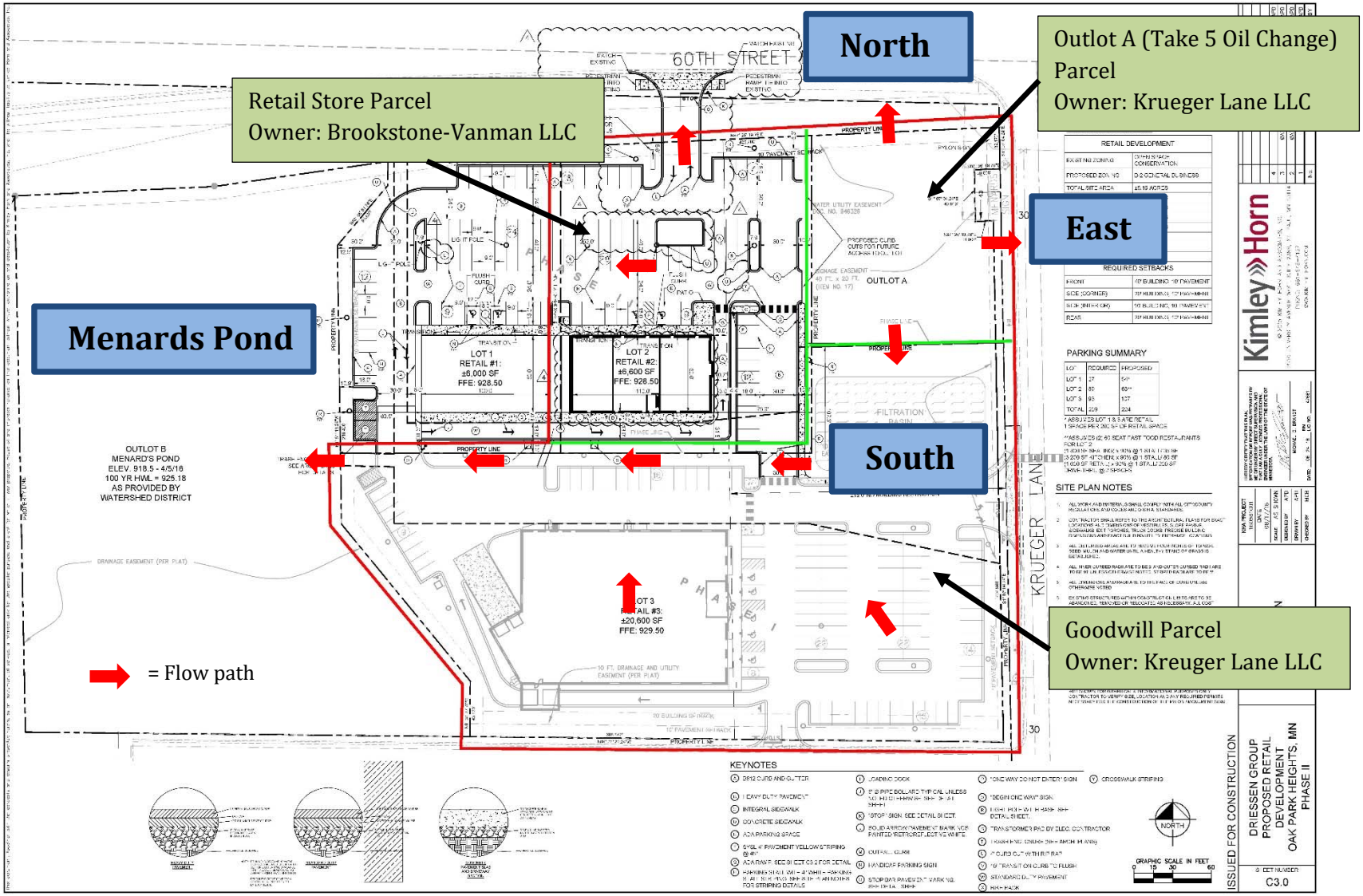

Figure 3: Stormwater discharge points for the entire project area.

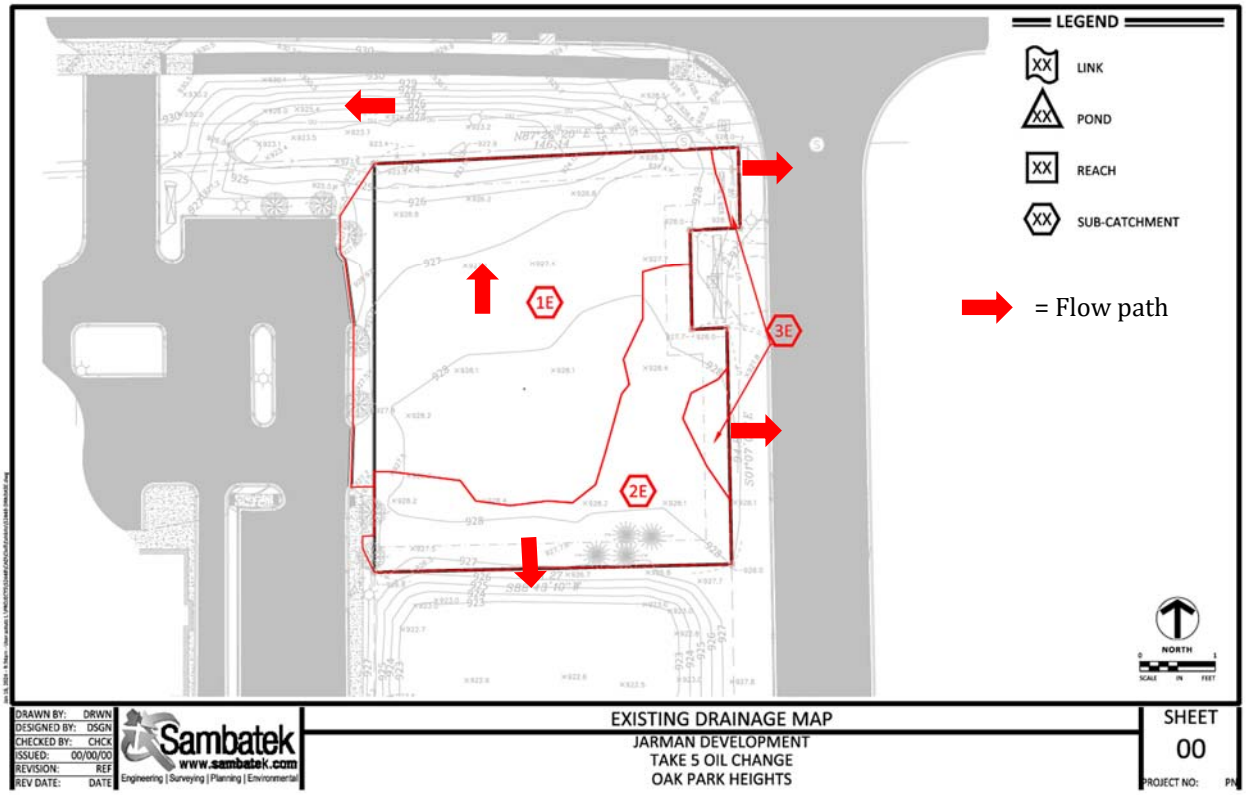

Figure 4: Existing site drainage for Outlot A (Take 5 Oil Change).

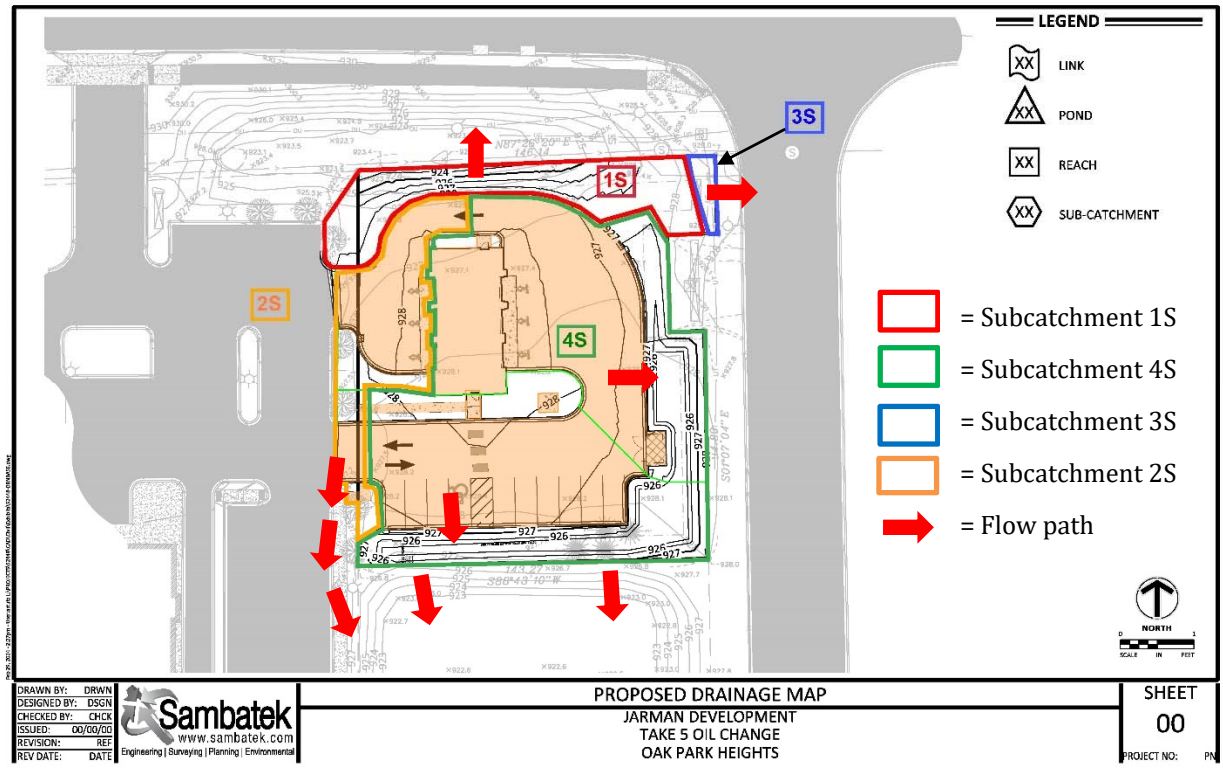

Figure 5: Proposed site drainage for Outlot A (Take 5 Oil Change).

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 Not Met. *See Rule 10.0 for variance request.*

The stormwater management plan for the site was evaluated using a HydroCAD model of existing and proposed site conditions. A comparison of the modeled peak flow rates from existing to proposed conditions for the North and East discharge points is included in Table 1 and Table 2. These tables demonstrate that the rule requirement is met at these discharge points.

Since the proposed Take 5 Oil Change parcel (Outlot A) discharges to the existing filtration basin, the rate comparison for this portion of the site (2S and 4S) is evaluated at the discharge point to Menards Pond. The rates in Table 3 represent the existing and proposed runoff rates for the Take 5 Oil Change parcel (Outlot A) and the already developed Goodwill parcel. As Table 3 demonstrates, the peak flow rates under proposed conditions exceeds the existing peak flow rates for the 100-year, 24-hour event by 0.3 cfs. For this reason, a variance is being requested and is discussed under Rule 10 (Variances) at the end of the report.

Table 1 – Peak Discharge Rate "North"

Event	*Existing Runoff Rate (cfs)*	*Proposed Runoff Rate (cfs)*
2-year (2.80")	0.1	0.02
10-year (4.17")	0.5	0.1
100-year (7.23")	1.8	0.3

Table 2 – Peak Discharge Rate "East"

Event	*Existing Runoff Rate (cfs)*	*Proposed Runoff Rate (cfs)*
2-year (2.80")	0.01	0.00
10-year (4.17")	0.03	0.01
100-year (7.23")	0.09	0.03

Table 3 – Peak Discharge Rate "South" – Discharge to Menards pond

Event	*Existing Runoff Rate (cfs)*	*Proposed Runoff Rate (cfs)*
2-year (2.80")	8.1	8.1
10-year (4.17")	12.9	12.9
100-year (7.23")	25.7	26.0

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 on the site.

Because this site is located in a Drinking Water Supply Management Area classified as having high vulnerability, the permit applicant asserts that retention of stormwater volume onsite via infiltration is not reasonably feasible. The applicant explored alternative methods for achieving volume control as described in the analysis below. The BCWD engineer concurs that it is not reasonably feasible for the applicant to meet the 2.4.1(b)(ii) standard of retention onsite of 1.1 inches of stormwater volume from the regulated impervious surface, and the flexible treatment options in subsection 2.4.3 apply to the project: "… management of volume and water quality from the regulated impervious surface [must be provided] in accordance with the following priority sequence:

(a) Retention onsite of 0.55 inches of runoff and removal of 75 percent of the annual total phosphorus loading;

(b) Retention onsite of stormwater volume to the maximum extent practicable and removal of 60 percent of the annual total phosphorus loading.

☒ Rule Requirement Met

Alternative volume control options summarized in Table 4 were evaluated to identify how much volume control could be provided onsite. The applicant proposes the following practices to provide volume control:

1. ***Evapotranspiration** (ET) and **Interception** from 9 new trees to be planted in the tree trench facility. Stormwater runoff from the building and bituminous pavement on site will be directed to the tree trench system with underdrains. This system will utilize a portion of the stormwater runoff for evapotranspiration. Evapotranspiration was calculated using the MIDS calculator and provides for 152 cubic feet (CF) of volume control. One of the assumptions made in calculating the volume-control achieved from ET is that the vegetation is 100% mature, which will not be the case for the first five to 10 years. Until the trees are fully grown, they will not be providing the assumed volume control. Since the BCWD engineer finds (below) that the project is subject to the maximum extent practicable volume standard, the increasing volume capacity provided over time meets the standard.*

Table 4 – BMPs Evaluated for Volume Control Requirement

BMP	Evaluated?	Utilized?	Why or why not?
Infiltration	Yes	No	DWSMA classified as having high vulnerability; no higher engineering analysis completed.
Harvest and Reuse	Yes	No	Limited green space for irrigation and fueling activities onsite.
Green Roofs	Yes	No	Small building footprint, minimal treatment benefits, and high roof redesign Costs.
ET/Tree Trenches	Yes	Yes	Utilizing ET with nine trees in tree trench system.
Interception	Yes	Yes	Utilized with the nine tree plantings in the tree trench system.

Permeable Pavers/ Pavement	Yes	No	DWSMA classified as having high vulnerability; no higher engineering analysis completed.

Table 5 – Summary of Volume Requirements.

Volume Control Requirement	*Provided Volume (CF)*
2.4.3(a) FTO (b) *Retention onsite of stormwater volume to the maximum extent practicable*	152

The volume retention provided by the Take 5 Oil Change tree trench system equates to 20% of the 0.55 inch retention requirement of flexible treatment option (a). The BCWD engineer agrees this is the maximum extent practicable volume control for the site.

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 are no infiltration practices proposed.*

Water Quality

According to BCWD Rule 2.4.3, an applicant must submit a stormwater-management plan providing retention onsite of stormwater volume to the maximum extent practicable and removal of 60 percent of the annual total phosphorus loading.

☒ Rule Requirement Met.

The Permit Applicant submitted MIDS Calculator modeling demonstrating compliance with Rule 2.4.3(b). The proposed tree trench system provides removal of 77% of the total phosphorus loading from the areas directed to the BMP (4S). When combined with the remaining subcatchments (1S, 2S, 3S) the average percent removal from all new impervious and disturbed areas is 62% as shown in Table 6. The sump structure provides removal of particulate phosphorus from subcatchment 2S before discharging to the existing filtration basin.

Table 6 – Phosphorus Removal

Annual Load (lb/yr)	*Annual Removal (lb/yr)*	*Outflow Load (lb/yr)*	*Percent Removal (%)*
0.7	0.4	0.3	62%

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. *No wetlands on the property or being discharged to.*

Rule 2.0 Conditions:

2-1. Provide BCWD with the final Civil Plan Set (BCWD 2.7.9).

2-2. The applicant must provide a draft amendment of the stormwater maintenance declaration recorded on the site for BCWD permit 16-08 to provide for alterations to existing facilities that will be maintained (e.g., the filtration basin) and new facilities and features for BCWD approval. After approval, the applicant must provide a receipt from the Washington County recorder demonstrating recordation.

2-3. The Permit Applicant needs to demonstrate that they have notified the adjacent landowner that they will be completing land-disturbing activities to install curb and gutter, paving, and sidewalk connecting the Take 5 Oil Change parcel and retail store parcel and provide documentation that the neighboring landowner has agreed to these land-disturbing activities.

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 of land altering activities involving movement of more than fifty cubic yards of earth and removal of vegetative cover on five thousand square feet or more of land.

☒ Rule Requirements Met with Conditions

The erosion and sediment control plan includes:

- *Silt fence*
- *Rock construction entrance*
- *Inlet protection*
- *Rip rap at stormwater outflows*
- *Temporary seeding and blanketing*

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).

3-2. Provide documentation showing that existing discharge rates will be maintained throughout construction (BCWD 3.3.2).

3-3. Provide stabilization measures for final restoration of areas that are being seeded. Call out on the landscaping plan which stabilization measures are to be installed along with the two types of seeding (MNDOT seed mixes 25-151 and 33-261) specified in the materials submitted to BCWD.

3-4. Provide erosion perimeter control for the storm sewer installation into the Goodwill filtration basin.

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 (Minnesota Statutes section 103G.005, subdivision 15); a lake, as defined in the 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 may 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.

Rule 7.0 is not triggered because there is no floodplain fill or drainage alterations at the property boundary. The criteria 7.3.2 apply by operation of paragraph 2.5.4 in the stormwater rule. 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.

☐ Rule Requirement Not Met. *See Condition 7-1.*

The 100-year high water elevations, EOFs, and lowest adjacent building elevations were evaluated and do not meet the District's low floor requirement as demonstrated in Table 7. The EOF for the proposed tree trench system does not meet the BCWD definition of an "Emergency Overflow" since it is below the 100-year HWL. Therefore, the lowest proposed floor must be 2 feet above the 100-year HWL. Condition 7-1 has been added to address this issue.

Table 7 - Freeboard Requirement Summary.

Stormwater Facility	*EOF*	*100-Year HWL*	*Allowable Lowest Floor*	*Take 5 Oil Change Lowest Proposed Floor*
Tree Trench System	926.34	926.68	928.68	928.50
Brackey 4th Addition Filtration/ET Facility	927.00	924.66	928.00	928.50

Rule 7.0 Conditions:

7-1 Adjust the low floor to meet BCWD low floor requirements (BCWD 7.3.2)

Rule 8.0—FEES

Fees for this project as outlined below:

1. Stormwater management fee	$3,000.00
2. Erosion control fee for grading	$1,000.00
▪ **TOTAL FEES**	**$4,000.00**

Rule 9.0—FINANCIAL ASSURANCES

Financial assurances for this project are as outlined below:

1. Grading or Alteration (0.56 acres disturbed x $2,000/acre)	$1,120
2. Stormwater Management Facilities (125% of facility cost)	$78,682
▪ **TOTAL FINANCIAL ASSURANCES ($5,000 Minimum Performance Financial Assurance)**	$79,802

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 in 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.

The Permit Applicant has submitted a request for a technical variance from the following rule provisions:

1. *BCWD Rule 2.4.1(b)(i) states, "Within the Diversion Structure Subwatershed… an applicant must submit a stormwater-management plan providing: (i) 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 a site."*

As Table 3 demonstrates, the proposed project does not meet the rate control requirement for the 100-year, 24-hour event at the discharge point to the Menard's Pond. The applicant has requested a variance from this criterion since the existing filtration basin was designed to treat future runoff from Outlot A.

The existing condition includes Outlot A in its current grassed condition, the existing filtration basin and the Goodwill parcel. The proposed project is unable to match this existing condition, because it relies on the filtration basin to treat a portion of the new impervious that can't be routed to the proposed tree trench (subcatchment 2S). This new impervious that drains directly to the filtration basin is the cause of the 0.3 cfs increase in runoff rates for the 100-year storm, measured at the Menards Pond discharge point in Table 3.

Because the filtration basin was designed to treat runoff from Outlot A to a pre-settlement standard and because Outlot A is being developed with less impervious coverage than assumed in the Brackey 4th Addition design, the proposed project will meet the intent of the rate control rule. Based on the findings above, the engineer finds that the applicant provided sufficient factual and analytical basis for the managers to grant this variance request.

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 2-3).
3. Address all erosion control requirements (Conditions 3-1 to 3-4).
4. Adress all floodplain and drainage alterations requirements (Condition 7-1).
5. Replenish the Permit fee deposit to $5,000 (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 will be deemed abandoned and all prior approvals will be revoked and collection proceedings will begin on unpaid balances.
6. Provide the required financial assurances (BCWD Rule 9.0):
    a. Total grading or alteration assurance 19.16 acres ($1,120).
    b. Stormwater management facilities assurance ($78,682).

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

1919 University Avenue West, Suite 300 St. Paul, MN 55104 T/ 651.770.8448 F/ 651.770.2552 www.eorinc.com