ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at: http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title: Arden Park Restoration Project**

2. **Proposer:**
   Minnehaha Creek Watershed District and City of Edina
   Renae Clark, Planner-Project Manager
   15320 Minnetonka Boulevard
   Minnetonka, MN 55345
   Phone: 952-641-4510
   Fax: 952-471-0682
   Email: rclark@minnehahacreek.org

3. **RGU**
   City of Edina
   Ross Bintner,
   Engineering Services Manager
   7450 Metro Boulevard
   Edina, MN 55439
   Phone: 952-903-5713
   Fax: 952-826-0392
   Email: rbintner@edina.mn.gov

4. **Reason for EAW Preparation:** (check one)

Required:	Discretionary:
☐ EIS Scoping	☐ Citizen petition
X Mandatory EAW	☐ RGU discretion
	☐ Proposer initiated

   If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s): Minnesota Administrative Rules 4410.4300 Mandatory EAW Categories, Subpart 26, Stream diversion > 500'

5. **Project Location:**
   County: Hennepin
   City/Township: Edina
   PLS Location (¼, ¼, Sec.18, Township 028N, Range 24W
   Watershed (81 major watershed scale): Upper Mississippi River Basin
   GPS Coordinates 44.907606°, -93.333572°
   Tax Parcel Number: 1802824430095, 1802824430097, 1802824440001, 1802824440002, 1802824430096, 1802824420003, 1902824120158, 1902824110063

Attachments to the EAW:

1. 01 Project Area Maps
   - County map showing the general location of the project;
   - U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries
   - Existing Conditions
2. 02 Project Plans (60% DRAFT)
3. 03 Water and Natural Resources
   - Arden North Catchment Stormwater Exhibit
   - Arden South Catchment Stormwater Exhibit
   - Wetland Delineation Map
   - 100-yr Flood Inundation Map
   - Wellhead Protection Exhibit
   - Groundwater Map
   - Tree Survey Map
4. 04 Soils
   - Bedrock Map
   - Sediment Testing Map
   - Sediment Sample Summary
   - 1/24/18 Sediment Analytical Results
   - 5/3/18 Sediment Analytical Results
   - Draft Boring Logs

6. Project Description:

a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

Minnehaha Creek Watershed District (MCWD) is proposing restoration of 14.5 acres of urban Minnehaha Creek Corridor within the City of Edina through the removal of a 4-foot high dam in Minnehaha Creek, restoration of approximately 2,000 linear feet of stream channel and approximately 90 acres of regional stormwater watershed treatment. The project also includes replaced and add new trails with improved accessibility and replacement of a park shelter building and playground.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

The Arden Park Restoration Project includes the restoration of approximately a 2000 feet section of meandering stream in Minnehaha Creek, including the removal of a 4-foot high dam; approximately 90 acres of regional stormwater management through underground filtration and above-ground filtration swales; construction of new and replacement trail, sidewalk, and boardwalk; demolition and replacement of a park shelter building and playground; and natural area restoration through invasive species removal, planting and management.

This project is centered around a restored Minnehaha Creek channel which has been impacted from an existing dam installed before 1938. Restoration techniques include excavation for dam removal and re-shaping the creek cross section within the existing impoundment area. The dam removal and new stream cross section will provide new habitat, stream function and ecological value. Creek banks will be reconstructed using fabric encapsulated soil lifts and other soil bioengineering techniques including the incorporation of large wood for stabilization and habitat. Bioengineered bank construction is accomplished by confining soil with a combined layer of both woven and non-woven biodegradable coir fiber blankets. Native vegetation establishment is a critical part of the project, with native plant root systems growing and replacing the biodegradable fabrics over time. Large woody habitat will be secured and incorporated into banks to provide unobtrusive fish and macroinvertebrate cover, to help define banks and also allow for the natural maintenance of pool habitat. The inside of meander bends will be stabilized by grading and shaping of banks and trenching of biodegradable erosion control fabrics. Between meander bends, small gravel will be incorporated into riffles to provide suitable substrate for fish spawning. Sediment transport analysis will ensure proper sizing of riffle material to minimize deposition of fine material in areas in pools and on riffles and prevent bank erosion and riffle migration.

Excavated soil will be stockpiled on site and managed in accordance with the plans and specifications. The total excavated quantity for all site construction is approximately 16,800 cubic yards. Approximately 4,000 cubic yards will be regraded on site as fill for former channel areas, creating new creek banks, and grading within the upland park areas. The remaining material will be hauled off-site and disposed of in accordance with the plans and specifications.

Recorded Creek flow varies depending on the time of year and operation of Gray's Bay dam outlet structure from Lake Minnetonka to Minnehaha Creek. According to the Operating Plan for Gray's Bay

dam, the structure is closed during winter months typically from December – March. Creek construction is planned to occur during the timeframe between December and March when Creek flow is at its lowest. It is likely that some dewatering or diversion of the creek flow will be needed. This can be accomplished through coffer dam construction and pumping, or through the construction of diversion channels or water diverting barriers. Groundwater in the project area, if a significant issue during winter construction, will be pumped out of the constructed area into temporary basins established onsite in accordance with guidelines set forth in the Minnesota Department of Natural Resources (DNR) water appropriation permit conditions for stream construction dewatering. If the bioswales are utilized as temporary basins for dewatering, they will be scarified and ripped to at least 3-feet to improve infiltration and groundwater connectivity.

Soils in the project area will require special construction techniques for wetland stream channels. The channel will be constructed in segments between 100-500 feet in length by building a temporary haul road over the proposed channel alignment or across the existing lawn surface in the park. This temporary road may be composed of wood or plastic mats, or could be lined with geotextile fabric and a layer of gravel or wood chips. Construction equipment will travel up and down the temporary road, thus minimizing impacts to the surrounding park and wetland surface. Channel construction will be primarily from the east site of the park from Minnehaha Boulevard. This basic plan may have some variation in methodology depending on the contractor used.

Staging of stockpiles and construction equipment and material will occur within the upland area on the east side of Arden Park with ingress/egress anticipated off of Minnehaha Boulevard.

New constructed channel segments will be connected to the existing ditch when the new constructed channel segments are established with all erosion control measures in place. Once this temporary connection is made, the Minnehaha Creek flow will be diverted on the upstream end into the new channel. The old channel segments will be partially filled with onsite soils, creating depressional wetlands.

Old channels are susceptible to being recaptured by the stream during flood flows in channel restoration projects such as this one. Thus, partial filling is required to raise the old channel bed. The need for partial filling of the old channel will allow for re-use of some material during construction and reduces the need for off-site disposal of excavated soils. This fill area will also provide a base for roughness elements such as large wood to help prevent channel avulsion (stream recapture) during flood events and will also provide reptile, amphibian, mammal, and bird habitat. The channel ends will be secured and stabilized with the same bioengineering techniques used in the channel construction. Flow will be diverted from active construction areas using sediment booms and other pre-approved methods for in-stream construction if there is significant flow during the winter construction period.

Stormwater best management practices (BMPs) will be constructed as part of the Arden Park Restoration Project to capture and treat drainage from an 85 acre drainage area north and east of the site and a 5.7 acre drainage area south and west of the site as shown on the attached Stormwater Catchment Exhibits.

BMP's for the drainage area northeast of the site include diversion structures that route flow from existing storm sewer to a SAFL Baffle for pretreatment, which outlets to above ground filtration swales which will drain and discharge to Minnehaha Creek. (Exhibit X). The above ground filtration swales consist of five cells. The swales are designed such that one to two feet of storm water are detained and filtered through sand media, which removes phosphorus and suspended sediments. Filtered stormwater is collected by drain tile, which discharges the treated water directly to the Creek. Approximately one third of the flow is routed to

Cell 1, the westernmost cell. Cell 1 overflows and discharges directly to the Creek at a depth of approximately 1.1-feet. Two thirds of the flow is routed to Cell 2, the northeastern-most swale. Overflow from Cell 2 discharges to the south to Cell 3, which discharges to Cell 4, which discharges to Cell 5, which overflows to the Creek. Outlet invert elevations were designed such that the swales will drain dry up to the two-year flow event on the Creek.

The BMP for the southwest drainage area consists of a diversion structure, a SAFL Baffle for pretreatment, and an underground filtration basin. The filtration basin is sized such that the first flush of sediment and phosphorus rich runoff is diverted to the basin for treatment; high flow with relatively clean runoff bypasses the treatment device and discharge directly to the Creek. Like the above ground swales, a layer of sand media will be used to filter runoff, removing phosphorus and sediment. Filtered stormwater is collected by drain tile, and discharges to the Creek. Existing storm sewer elevations and the surrounding topography were taken into consideration to locate the underground storage system such that positive drainage is maintained, and adequate cover is provided. Downstream outlets are set such that the BMP will drain dry up to the two-year flow event in the Creek.

Stormwater BMP construction will consist of excavation, site grading and a planting plan and is anticipated to begin spring of 2019 following creek construction.

Trails, sidewalk and boardwalk will be constructed beginning spring 2019. Layout, typical construction details and proposed surfaces are shown on the Project Plans. Trails are providing increased circulation, handicap accessibility by reducing slopes of existing trail access points, promoting public safely by adding new sidewalk along Brookview Avenue, and providing a connection to natural areas. Two new bridges are proposed as shown on Project Plans. The southern bridge in the center of the park replaces and existing bridge. The northern bridge constitutes a new creek crossing for pedestrian circulation. Both bridges will be steel beam construction on concrete foundations with helical supports. Bridges are designed to provide three feet of freeboard between to 100 year high water elevation and lowest cord. The north bridge will be pedestrian only and consist of a 6-foot wide bridge deck with an approximate 50’ span. The south bridge will be for pedestrian and maintenance truck traffic and consist of a 10 foot wide bridge at approx. 65’ span. Both bridges will be constructed of weathered steel beam with wood railings and painted steel posts. Bridge abutments will be poured concrete and may include spread footing or helical pile foundations, depending on soil conditions.

A boardwalk approximately 200 Feet in length will be constructed through forested floodplain on the northwest portion of the park to provide a pedestrian connection and circulation. The boardwalk will be elevated 1foot above the floodplain forest for the first ~100 ft. to facilitate flow passage during high flow events. Construction for the boardwalk will include installation of helical supports with a small, tracked machine and hand construction of wood decking and associated railing. Helical supports will be spaced approximately every 12 ft. The boardwalk deck will consist of pressure treated wood with wood railings and painted metal gridded guard between wood posts.

The project area currently has two canoe launch locations, one on each side of W. 54th Street. The launch south of W. 54th Street will be eliminated. Three new creek access points will be constructed as part of the creek restoration. Access will accommodate in-stream recreation within the park such as tubing and kayaking loops while also proving a canoe/kayak launch site on this regional recreational system.

Natural area and vegetation management will include buckthorn and invasive species removal and management, primarily within the wooded area on the west side of the park. Phasing of removals and

management will be considered to reduce erosion potential. The project includes will include a robust planting plan. Planting and natural areas management will be implemented in accordance with a Management Plan to be prepared in concurrence with design.

A tree survey for the project site was completed which identifies 457 trees with a diameter at breast height (DBH) of eight inches or greater. An estimated 68 trees will be removed as part of construction activities. Of the 68 trees anticipated to be removed, 24 are ash trees (Fraxinus pennsylvanica). There are a total of 77 ash trees surveyed. Emerald ash borer has been confirmed in surrounding communities and will eventually impact ash trees on this site. As part of site restoration, an ash tree management plan will be developed which includes treating specimen trees – three have been identified – and taking ash trees to the extent practical and feasible as to be determined during project design. Trees removed as part of project construction will be reused on site as woody habitat in creekbank construction. A planting robust revegetation plan will be implemented as part of the project, replacing trees at a minimum of 1:1 ratio.

The final site grading plan will establish preliminary grades for a new shelter building and playground structure. Construction of these new facilities is preliminarily planned to occur August – November 2019 following substantial completion of the creek restoration, site grading, planting and vegetation establishment plan, stormwater facilities, and trails.

The project is planned to begin January 2019 and is expected to be substantially complete November 2019.

c. Project magnitude:

Total Project Acreage	19 Acres
Linear project length	1,924 Feet (stream)
Number and type of residential units	N/A
Commercial building area (in square feet)	N/A
Industrial building area (in square feet)	N/A
Institutional building area (in square feet)	1800
Other uses – specify (in square feet)	
Structure height(s)	30’

d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

Minnehaha Creek is a regional, recreational and ecological system that is part of a 47 square mile geography which includes five urbanized cities including Minneapolis and the Chain of Lakes. The project serves local community members, canoers and kayakers from the Twin Cities region and beyond.

Development in the Minnehaha Creek watershed has significantly changed the hydrology, resulting in increased storm water volumes and flow peaks compounded by reduced infiltration and base flow. Wetlands and depression storage that naturally extend the period of flow have largely been eliminated in the Minnehaha Creek watershed. Large volumes of surface runoff are produced by impervious surfaces and are discharged over a short period, increasing peak discharge rates and increasing polluted runoff to the Creek system and downstream. Also as a result of urbanization, the creek has been ditched and the surrounding corridor has been fragmented. Minnehaha Creek and Lake Hiawatha appear on Minnesota’s §303(d) list of impaired waters for *E. coli*, chloride, and dissolved oxygen, as well as due to its impaired

biological community. Downstream Lake Hiawatha is impaired due to excess nutrients. In response, a Total Maximum Daily Load (TMDL) has been developed to address these impairments.

e. Are future stages of this development including development on any other property planned or likely to happen? ☐Yes X No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

f. Is this project a subsequent stage of an earlier project? ☐Yes X No
If yes, briefly describe the past development, timeline and any past environmental review.

7. Cover types: Estimate the acreage of the site with each of the following cover types before and after development:

	Before	**After**		**Before**	**After**
Wetlands (total)	6.2	6.7	Lawn/landscaping	3.7	1.9
Deep water/streams	2.5	1.9	Impervious surface	1.0	1.2
Wooded/forest	4.5	4.5	Stormwater Swales	0	0.5
Brush/Grassland	-	-	Other (Floodplain Forest)	2.5	3.5
Cropland	-	-	Other (Fresh – Wet Meadow Wetland)	0.3	1.3
			Other (Shallow Marsh / Deep Marsh Wetland	0.8	0
			TOTAL	**21.5**	**21.5**

8. Permits and approvals required: List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

Unit of government Type of application Status

Government Unit	**Type of Application**	**Status**
U.S. Army Corps of Engineers	Section 404 Permit for impacts to navigable waters/jurisdictional wetlands	Application to be submitted (Included in the DNR Public Waters Work Permit)
City of Edina	Permit to work in city property	Application to be submitted

	Floodplain No-Rise Application Approval	Application to be submitted
	Grading Permit	Application to be submitted
	Building Permit	Application to be submitted
	Approval of Planting Plan	Application to be submitted to City Forester
	Conditional Use Permit	Application to be submitted if needed (removal or exporting of fill in excess of 400 cubic yards)
Minnesota Pollution Control Agency (MPCA)	MPCA dredge disposals confirmation of no permit required.	Confirmation will be made prior to construction
	NPDES general permit for discharge of stormwater during construction activities	Application to be submitted
Minnesota Department of Natural Resources (MDNR)	Public Waters Work Permit	Application to be submitted
Minnehaha Creek Watershed District	Wetlands Conservation Act determination	Application to be submitted
	Combined Joint Notification Water Resource Application Form (includes permits for: Erosion control, stormwater management, floodplain alteration, dredging, wetland alteration, waterbody crossing and shoreline/streambank improvements	Application to be submitted
Minnesota Board of Water and Soil Resources (BWSR)	Landowner Statement and Contractor Responsibility for Work in Wetlands or Public Waters	Application to be submitted

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19

9. Land use:

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

The project area is approximately 14.5 acres and is designated neighborhood parkland owned by the City Edina. Approximately four acres are maintained parkland as grass which includes sidewalk, bituminous trail with a bridge over Minnehaha Creek, hockey rink, playground, and creek canoe access. The remainder of the site includes open water wetland and creek and forest. The Site is bordered by City streets and single family residential development with on street parking.

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

In 2015 the City of Edina adopted a Strategic Plan for Parks. The proposed project in Arden Park aligns with the Strategic Plan goals which include: protect, enhance and restore the City's natural resources and natural areas, create more resilient and sustainable parks, facilities and landscapes, protect and restore Edina's water resources, and increase facility accessibility and consistency throughout the City. The project is also consistent with key recommendations from park assessments which include:

- Provide greater access for passive recreation and interpretation.
- Protect and improve Edina's water resources.
- Provide more environmental education opportunities.
- Replace insufficient play areas/playgrounds and provide new facilities to fill gaps.
- Improve branding and wayfinding to parks.
- Provide additional community gathering areas.
- Develop community driven master plans for parks.
- Replace or decommission community park buildings that have outlived lifespan.

A Total Maximum Daily Load (TMDL) plan for Minnehaha Creek and downstream Lake Hiawatha to address impairments of Minnehaha Creek and Lake Hiawatha which include *E. coli*, chloride, dissolved oxygen, and biological community for Minnehaha Creek and excess nutrients for downstream Lake Hiawatha. Removal of the existing dam at W. 54th Street, the ecological restoration of Minnehaha Creek to recreate natural stream function and processes, and regional stormwater management are proposed to achieve progress towards the TMDL.

The Minnehaha Creek Watershed District's 2018 Comprehensive Plan, section 3.9.8 identifies this project within the Minnehaha Creek Subwatershed Implementation Plan.

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The project site has a designation of OpenSpace and Parks surrounded by Low Density Residential within the City of Edina Comprehensive Plan (2008).

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

The propose project is a natural resources restoration project to improve the biological and ecological function of Minnehaha Creek through Arden Park while providing enhanced park user experience consistent with the goals identified in the City of Edina Strategic Plan for Parks (2015).

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

The project does not change current land use and is consistent with current zoning.

10. Geology, soils and topography/land forms:

a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

Bedrock underlying the project area consists of middle Ordovician sandstones, limestones and shales (Depth to Bedrock figure) at a depth of approximately 60 ft. (https://umn.maps.arcgis.com/apps/StorytellingSwipe/index.html?appid=c36a3951cc174e6f9bdee7514b11b7e7). Since no shallow bedrock is present in the project area, no any susceptible geologic features are identified.

b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

Soils primarily consist of U5A – Urban land Udorthents with L52C – Urban land-Lester complex around the periphery of the project site. Topographically, the project area primarily consists of valley bottom with steep slopes along the western edge of the project area. This topographic change is associated with a transition from hummocky glacial moraine deposits, to relatively flat glacial-fluvial outwash deposits. Minnehaha Creek runs along this boundary for much of its length. Two trails will be constructed along the valley slope with the remainder of construction occurring on relatively flat valley bottom and bluff top. Approximately 7.2 acres of soil will be disturbed during construction. 16,500 cubic yards of soil is to be excavated, 3,500 cubic yards will be reused on site and the remainder will be removed from the site. All disturbed areas will be replanted and revegetated to minimize future erosion potential

NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 11 must be consistent with the geology, soils and topography/land forms and potential effects described in EAW Item 10.

11. Water resources:

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

Minnehaha Creek flows through Arden Park (PWI # MhC). Minnehaha Creek and downstream Lake Hiawatha appear on Minnesota's §303(d) list of impaired waters for *E. coli*, chloride, and dissolved oxygen, as well as due to its impaired biological community. Downstream Lake Hiawatha is impaired due to excess nutrients. In response a Total Maximum Daily Load (TMDL) has been developed to address these impairments.

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

The project site does not have any known or identified springs or seeps. Depth to groundwater figure is attached.

The project is located in an area primarily noted as Low Vulnerability, with the exception of the southern end of the project, which is in a Moderate Vulnerability area. The project is not within a well-head protection zone. The highest potential impact to groundwater is via the stormwater infiltration on the site. The stormwarter systems are planned for the north portion of the site, within the Low Vulnerability Zone. Due to the high water table, the majority of stormwater will be filtered and discharged to the creek, rather than infiltrating. The project is not anticipated to have any impact on groundwater resources. City wellhead area map is attached.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

Not applicable.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

Not applicable.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

Not applicable.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

Not applicable.

ii. Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

Stormwater runoff discharges through Arden Park to Minnehaha Creek through storm sewer. There is some existing in-line pretreatment, however the contributing drainage area is largely untreated. The Arden Park Restoration Project is being construction to provide regional stormwater treatment for up to 90 acres of urban stormwater runoff. Drainage patterns are shown on the attached stormwater exhibits. The project is being constructed to reduce nutrient loading to Minnehaha Creek. Stormwater quantity and quality data is summarized below.

Catchment	*BMP*	*Catchment Area (ac)*	*Imp. Surface (ac)*	*Phosphorus Load (lbs./yr.)*	*Phosphorus Load Removed (lbs. /yr.)*
MC-85	**Existing Infiltration Pipe**	**33.1**	23.8	43.2	12.1
MC-85 and MC-86	**Filtration Basin (underground)**	**84.0**	40.9	64.1	9.5
	Filtration Basins (above ground)	**84.0**	40.9	64.1	20.8
MC-87	**Pre-treatment manhole structure**	**5.9**[2]	2.1	4.1	-
		17.5[2]	6.3	12.1	-
	(Underground)	**5.7**[2]	2.1	3.9	2.3

Stormwater Best Management Practices

BMP	Water Quality Volume Provided (cf)	TSS			TP		
		Influent Load (lb/yr)	Total Trapped (lb/yr)	Removal Efficiency	Influent Load (lb/yr)	Total Trapped (lb/yr)	Removal Efficiency

Filter Swales	82,000*	16,151	15,875	98%	88.9	43.5	49%
MC-87 |BMP	600	924	221	24%	5.1	2.3	45%

Underground treatment area and MC-87 BMP are designed for 1" runoff. Treatment volume provided by the swales is more than the 1" runoff volume. Removal rates are based on MIDS calculator.

A P8 water quality model was created to evaluate total phosphorus (TP) removal effectiveness of two proposed best management practices (BMPs): filtration swales passing through Arden Park, and an underground filtration practice southwest of the 54th Street Bridge (assumed filtration will be required rather than infiltration due to the adjacent Creek and assumed high groundwater levels). A P8 model was initially constructed to determine the minimum swale footprint to remove 29.9 pounds of TP per year (lb-TP/yr), and the minimum underground system footprint capable of removing 3.0 lb-TP/yr. Target values were extrapolated from the 2014 *Stormwater Management Plan for the 54th Street and Arden Park Area*, prepared by SEH.

The proposed swales and underground filtration system combine to remove approximately 16,000 pounds of total suspended solids per year and approximately 33 pounds of total phosphorus per year.

The City of Edina's XP-SWMM stormwater model was updated to reflect proposed changes in Arden Park based on the propose grading plan. The inter-swale outlets are designed such that the 100-year storm event is contained within the swales and does not overflow into the surrounding park. The proposed swales and underground filtration system combine to remove approximately 16,000 pounds of total suspended solids per year (lb-TSS/yr), and approximately 33 lb-TP/yr.

The project will have a storm-water pollution prevention plan, NPDES permit, and implement erosion control measures throughout construction. Erosion control measures for this project include the following:

- General silt fence installation for general construction site erosion control in accordance with MNDOT and MNDNR guidelines
- Off-set channel relocation to eliminate moving water through the newly constructed channel
- Dewatering using guidelines set forth in the MNDOT/MNDNR document *Best Management Practices for Meeting DNR General Public Waters Work Permit GP 2004-0004 (March 2014)*
- Fabric encapsulation and bioengineering of streambanks and floodplain wetland construction areas
- Sediment boom capture of in-stream sediment
- In-situ dewatering of newly constructed channel areas including temporary infiltration basins
- Planting of native species including wetland mixes, wetland plants, eastern cottonwood and black willow
- Temporary wetland haul road construction
- Temporary stabilization of soil stockpiles

Overall, the project will improve watershed quality by providing new, regional stormwater treatment of runoff which discharges largely untreated to Minnehaha Creek today.

iii. Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

Based on two similar projects completed previously upstream on Minnehaha Creek, the project does not anticipated a need for significant dewatering during construction. The closure of Gray's Bay dam, low probability of significant precipitation during construction, and the anticipated winter construction all result in very little flow into the project site. Further, the potential for dewatering is limited by off-channel construction, which avoids the need to manage active flow in many areas of the project. In areas within existing channel, bulk bag diversions will be implemented.

iv. Surface Waters

a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

As noted above, wetlands on the project site will increase from 6.5 acres to 7.2 acres. The project involves conversion of an open water pond to a functioning lotic system, and the result is an increase in vegetated wetlands within the restored riparian area. Given the nature of the project, impact to the stream and adjacent wetlands is unavoidable. The project will include specific access areas for work, but will temporarily impact existing wetland areas. Overall, the increased wetland area and the conversion of the reach from a lentic to lotic system will improve overall ecological health within Minnehaha Creek. Invasive reed canary grass (Phalaris arudinacea) will be removed with sediment excavation in bordering areas, and native vegetation will be planted on all newly constructed streambanks and disturbed floodplain areas, resulting in a functional improvement to the wetland complex. The project has been designed to minimize impacts to existing canopy trees within the immediate riparian zone. Additional native trees and shrubs are also being planted.

Fish passage will also be included at the 54th Street Bridge, via a saw cut and naturalization of the existing concrete slab that underlies the bridge. This will provide improved fisheries and macrobiotic connectivity between the stream upstream and downstream of the project reach.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water

features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The project includes the re-meander of a straightened and impounded segment of Minnehaha Creek. The reach will increase in length approximately 150 linear feet, from 1780 ft. to 1925ft. The designed meander pattern is based on previously completed geomorphic assessment data from 2003 and 2012, historic meander patterns identified in aerial imagery, hydraulic modeling and field depth-to-refusal (historic channel bed) investigation. The dam removal and meander restoration is anticipated to increase the number of recreational boaters and anglers utilizing the creek within the park.

12. Contamination/Hazardous Materials/Wastes:

a. Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

No abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines are located within the project site. Elevated levels of arsenic and PAH's were detected during sediment sampling within the impounded sediment within the project area. Groundwater associated with the Des Moines lobe is known to have elevated Arsenic concentration (Erickson and Barnes, 2004). The edge of the Des Moines lobe runs through the project area (Figure **). Groundwater flowing out of the Des Moines lobe into Minnehaha Creek at Arden Park could therefore be elevated in arsenic. Wetlands commonly serve as a sink for Arsenic (Zhang et al., 2017). So in Arden Park there exists a potential for an source elevated in arsenic (Des Moines lobe groundwater) and an area where arsenic is likely to be precipitated (wetlands). Therefore, we conclude that the presence of arsenic in Arden Park sediment samples reflects potential background arsenic levels in the area. PAH-contaminated sediments will be disposed of based on MPCA guidelines.

Citations:

Erickson, M.L., and Barnes, R.J., (2004), Arsenic in Groundwater: Recent Research and Implications for Minnesota: Center for Urban and Regional Affairs Reporter, v. 34, no., 2.

Zhang, S-Y., William, P.N., Luo J., and Zhu, Y-G. (2017), Microbial mediated arsenic biotransformation in wetlands: Frontiers of Environmental Science and Engineering. v. 11, i. 1.

b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

There are no known sources of solid waste in the project area. Any solid waste for project materials such as erosion control materials or plant packaging will be disposed of through existing trash hauling companies as a responsibility of the contractor.

c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

Equipment using petroleum fuels, oils, and lubricants and other hazardous materials will be used during project construction and is the most likely source of hazardous or toxic materials to impact the project. No storage of any chemicals or hazardous materials would occur onsite. Equipment will be inspected daily for leaks and petroleum contamination and refueling will occur away from surface waters. Accidental releases of these materials could occur. A spill could result in surface contamination of soils and groundwater. The contractor would be required to prepare a Spill Prevention and Response Plan that would address measures to avoid and minimize spills or releases of hazardous materials or petroleum products during construction. Spills would be reported to the MPCA Duty Officer.

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Generation or storage of hazardous wastes are not anticipated as part of this project.

13. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

The Minnesota DNR has identified an occurrence of the rusty patched bumblebee (Bombus affinis), a federally-listed rare natural species, within 1 mile of the project site. The rusty patched bumble bee typically occurs underground in abandoned rodent cavities or in clumps of grasses. The proposed project includes the reduction of landscaped and turf-grass areas and an increase in native-species vegetated areas. The Rusty Patched Bumble Bee typically occupies grasslands and tall-grass prairies, which is not identified as typical vegetation for this project site, but native upland areas are proposed to include forbs and shrubs that will support pollinators.

There are no other state endangered or threatened species or rare plant communities or rare ecological resources known on the site.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (ERDB _____) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

The project will result in lower stream temperatures, improved riverine (lotic) habitat and improved riparian canopy cover. Lower stream temperatures benefit fish, mussels and macroinvertebrates, while improved habitat in the form of riffles, pools, bank cover and riparian vegetation improves conditions for aquatic and terrestrial invertebrates, fish, amphibians, reptiles and mammals. Improved riparian corridor vegetation creates additional habitat for migrating and residential bird species.

Invasive reed canary grass (*Phalaris arudinacea*), buckthorn (*Rhamnus* sp.) and any other invasive plants within the excavation areas will be removed, and native vegetation will be planted on all newly constructed streambanks and disturbed floodplain areas. The project has been designed to minimize impacts to existing canopy trees within the immediate riparian zone. Additional native trees and shrubs are also being planted.

d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

Minnehaha Creek contains warm water and pollution tolerant fish community originating primarily from out migrants from Lake Minnetonka. Minnehaha Creek is prone to freezing solid in cold winters (e.g. 2010), drying up completely in dry summers (2012), and flooding in wet periods (2014, 2015), the impact of restoration activities is comparatively minimal and of short duration. The project will not adversely affect fish or wildlife populations, but will in fact improve instream, riparian, wetland and upland habitat conditions for fish and wildlife. During construction, fish will be rescued from any dewatered segments of the channel or wetland areas to be graded, and will be relocated upstream of the project area. Dewatering activities will include diversion and in-situ dewatering to minimize downstream transport of fine sediment.

14. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

An Archaeology and Architectural History Literature Review and Archaeological Assessment for the project was conducted and has been submitted to the U.S. Army Corps of Engineers for coordination with the State Historic Preservation Office. The report finds that no previously recorded archaeological sites are located within the project area and no listed architectural history properties are located on the site.

15. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The project site is located in a residential neighborhood with open views in the northeast portion of the park and minimal views of Minnehaha Creek except at crossings. The western portion of the site is relatively higher in elevation but dense with buckthorn which obstructs views through the woodland area. There will be temporary visual impact from active construction which will include excavation and dirt moving activities, tree removals, and trail and shelter building construction activities during the construction period of January – September 2019.

16. Air:

a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

Not applicable.

b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

Not applicable. Temporary hauling of excess earthwork from the project site is anticipated, but there are no long term impacts to vehicle emissions associated with the project.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

Because of the wetland soil conditions, it is unlikely that significant dust will be generated. Odors from digging saturated soils and construction equipment exhaust are likely.

17. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Noise will be generated by equipment and machinery during construction. Equipment is anticipated to include two small to medium sized excavators, two track mounted skid loaders, trucks, small bulldozers, manual vibratory soil compactors, compressors, and de-watering pumps. Although these machines generate noise, it is unlikely that more than three machines will be running at any given time, and there is a considerable buffer (150 ft. +) between the park construction area and the majority of adjacent homes. Operation of construction equipment will meet City of St. Louis Park noise ordinance requirements and occur during allowable working hours set by the City of Edina.

18. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

On-street parking exists today. No new parking is proposed as part of the project.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance,

Not Applicable.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

Not Applicable.

19. Cumulative potential effects: (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The project has the potential to further remediation efforts in Minnehaha Creek and the Minnehaha Creek Watershed District. The cumulative effect of these efforts would result in only positive impacts, including the greater health and restoration of the watershed and contributing toward the Minnehaha Creek/Hiawatha Total Maximum Daily Load (TMDL) goals.

20. Other potential environmental effects: If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature Ross Bintner Digitally signed by Ross Bintner DN: cn=Ross Bintner, o=City of Edina, ou=Engineering, email=rbintner@edinamn.gov, c=US Date: 2018.05.18 08:03:51 -05'00' Date 5/18/2018

Title Engineering Services Manager