Spruce Valley Sehlstrom Gravel Pit Dewatering Project Appendicies Attachment A Sehlstrom Pit Dewatering Evaluation

Memo

Date: Tuesday, May 19, 2020

Project:	Sehlstrom Pit Dewatering Evaluation
To:	Louie Cater
From:	Nate Dalager, P.E. and Shane McDonald, P.G.
	HDR Engineering Inc.
Subject:	Dewatering Investigation

Intro/Purpose

The purpose of this report is to lay out the goals, processes, and results of a preliminary groundwater flow model simulating hydrogeologic conditions near Roseau County in northern Minnesota. The goal of this model is to assess the feasibility of dewatering a gravel pit to the south east of Roseau to facilitate gravel mining below the now-flooded pit. The pit is reported to be 25 feet deep and the model is intended to estimate the length of time to dewater the pit (drawdown the water level 25 feet) using a pumping system capable of withdrawing 24 million gallons per day (MGD) and the withdrawal rate that would be needed to maintain that level of drawdown.

This model is a preliminary un-calibrated groundwater flow model based on literature values, regional information, several borings conducted for exploration of gravel resources at the site, and nearby water well logs. A hydrogeologic investigation has not been conducted at the site and the hydrogeologic setting and properties are inferred from information collected for other purposes or are based on literature values. Some uncertainties exist that could have significant effects on the modelling result. The largest source of uncertainty is how conditions would vary if the gravel deposits are connected to a buried regional aquifer that exists beneath the site, or if there are isolating low-hydraulic conductivity materials between the gravel and the aquifer that limit that connection. Simulations in the model were done bracketing these conditions to show the range of possible outcomes.

These preliminary simulations estimated that if the gravel is not connected to the regional aquifer (approximate best case scenario) dewatering at 24 MGD could achieve 25 feet of drawdown in about 110 days and that level could eventually be maintained at a continuous withdrawal rate of about 11 MGD. If the gravel is connected to the underlying aquifer then dewatering at 24 MGD would require approximately 500 days to achieve 25 feet of drawdown and that level could be eventually maintained by a withdrawal rate of about 18 MGD. As noted above, these estimates are preliminary, based on inferred conditions and are from an un-calibrated model. These estimates cannot be assumed to be absolute and are intended as order-of-magnitude information.

Geologic Description

Local Materials

The geology of the modeled region features overlying lacustrine deposits rich in clay that vary in depth up to ~100 feet near the Roseau area. Embedded as well as beneath the lacustrine deposits are lenses of sandy clay, sand, and the gravel (well logs to the east-southeast of the gravel pit show extensive sand and gravel deposits that could be a continuation of the deposits being mined). Beneath the lacustrine deposits there is a buried glacial outwash deposits consisting mostly of sand and making up a regional aquifer that extends beneath the entire 300 square-mile model domain. This aquifer is known to be prolific and is the source of water for the town of Roseau (the wells are on the other side of town several miles from the gravel pit).

Groundwater Flow

The general flow of groundwater in this area is from southeast to northwest, loosely following the Roseau River. Streams and artificial drainage contribute to the Roseau River which drains to the Red River of the North in Southern Manitoba, Canada.

Model Description

The groundwater model was developed using the pre- and post-processing software Groundwater Modeling System (GMS) 10.3.4 (Aquaveo; https://www.aquaveo.com/software/gms-groundwatermodeling-system-introduction) as well as ArcMap 10.4.1 (ESRI; <u>https://www.esri.com/en-</u> <u>us/arcgis/products/index</u>). The groundwater flow software, MODFLOW-2005 (<u>https://pubs.usgs.gov/of/2004/1261/</u>) was used to solve the groundwater-flow equations for this model. The model created here is an uncalibrated model aimed to test if dewatering of the gravel pits can be achieved in a reasonable about of time. A calibrated model would require collecting specific information form the site that can be used to assess if the model is accurately simulating the conditions that exist.

Domain

The modeled area is ~300 mi² that bound the Roseau River in the center of the domain. This area was chosen to limit the need for artificial boundaries in the model and so the water budget of the model would approach actual available water based on groundwater recharge in the model domain. The boundaries of the modeled domain are drainage divides when applicable or truncated when a good boundary was not available. In the cases where the boundary was not a drainage divide (south and north west) the boundary was far from the pumping site and on the far side of a drainage divide to ensure the effects of pumping would not reach the boundary.

Grid

Throughout all 4 layers, the grid is set with refinement around the gravel pit site to use smaller cell sizes for more accurate calculations near the location of proposed pumping. The cell sizes range from 1000 feet at the far reaches of the domain, to 50 feet around the site.

Layers

The model features four layers to simulate the geology of the area. Layer thickness and material composition was obtained through The City of Roseau Wellhead Protection Plan (<u>https://www.city.roseau.mn.us/water</u>).



- Layer 1 and 2 35 feet and 25 feet thick, respectively. Made up of lacustrine clay rich layers throughout the domain except in the area of the gravel pit where it simulated the pond (layer 1) and gravel (layer 2) at the site. The hydraulic conductivity value of layers 1 and 2 are 0.7 (clay) and 1.5 ft/day (sandy clay) except around the site where it is 50,000 and 50 ft/day for the pond (open water) and gravel respectively (Table 1).
- Layer 3 90 feet thick made up of sandy clay (1.5 ft/day). In the scenario where connection to the underlying aquifer was simulated, the area near the gravel pit was simulated as sand (35 ft/day).
- Layer 4 approximately 150 feet thick simulating the sandy buried glacial outwash deposits of the regional artesian aquifer with a hydraulic conductivity of 35 ft/day.

Sources/Sinks

The Roseau River and Interior Streams

The Roseau River was simulated using the river package. The river boundaries follow the elevation of the river down gradient through the domain. The elevations were estimated from a LiDAR dataset over the model domain (<u>https://viewer.nationalmap.gov/basic/</u>). The simulated river depth ranges from 5-10 feet throughout the domain. The streams in the area were modeled using the drain package that removes water from the system.

Recharge

Recharge for the domain was applied in layer 1 to the highest active cell using a constant rate of 0.00108 ft/d (4.7 in/yr) obtained from the range reported by the U.S. Geological Survey (Delin et al., 2007). This recharge flux was the primary source of water into the model domain.

Dewatering Simulation

The model used two different approaches to simulate the pumping at the gravel pits. The first method was to simulate pumping from the gravel pit at a constant rate of 24 million gallons per day (MGD). This specified withdrawal simulation was used to estimate the time necessary to achieve 25 feet of drawdown at the pond. The second method was to simulate drains at the top of layer 2 immediately below the pond and set a conductance value of 250 to 750 ft²/day per linear foot depending on the scenario. The specified drawdown simulations estimate the long-term pumping necessary to maintain 25 feet of drawdown. The dewatering simulations used a steady-state model without dewatering (current non-pumping conditions) to produce the starting heads needed to calculate drawdown from dewatering.

Pumping Simulations (Specified Withdrawal Rate)

To simulate the dewatering of the pond/gravel pit dewatering over time to estimate the time until 25 feet of dewatering was achieved, 8 withdrawals (using the MODFLOW well package) were simulated within the pond and pumped at 1/8th of the total pumping rate for a total pumping rates of 24 MGD. The withdrawal was split into 8 wells for model stability under the large stress of 24 MGD. While the water is simulated to be withdrawn spread out across the pond, due to the high hydraulic conductivity simulating the pond, the withdrawal acts as 1 well drawing down the water level uniformly across the pond until it reaches the dry state.

Drain Simulations (Specified Drawdown)

The simulation of drains allows the model to estimate the water necessary to dewater without the withdrawal rate being specified (it estimates the water withdrawal needed to achieve a specific amount



of drawdown as opposed to estimating the amount of drawdown produced by a specified withdrawal rate). When simulated over time in a transient model the withdrawal rate starts out very high, but over time reduces to the rate needed to maintain the desired drawdown.

Scenarios

Two scenarios where simulated using both the specified withdrawal and specified drawdown. The first scenario assumes the gravel is underlain by sandy clay which limits connectivity to the underlying regional aquifer. The second scenario assumes there is a sand connection between the gravel and the underlying regional aquifer. Both specified withdrawal and specified drawdown were simulated for each scenarios.

Results and Further Testing

The simulations found that dewatering at a rate of 24 MGD will achieve the desired 25 feet of drawdown between 110 if the connection to the underlying aquifer is limited by sandy clay and 510 days if sand connects the gravel deposits vertically to the underlying aquifer. Figure 1 shows the model simulated drawdown for both scenarios. Figures 2 and 3 show the drawdown at the time when 25 feet of drawdown is achieved for each underlying layer (L3) scenario. The long-term maintenance withdrawal rate needed to keep 25 feet of drawdown ranged between 11 MGD and 18 MGD.

Due to the uncertainty in the dewatering the gravel pit in a reasonable amount of time through pumping, there are a few additional tests that can be done to better inform the current model:

- One of the biggest uncertainties is whether or not the gravel pit is connected to the regional aquifer. This information could be determined by drilling a boring to about 200 feet of depth to observe the lithology between the gravel pit and the regional aquifer. Knowing if the gravel is connected to the aquifer would help to determine whether dewatering will take less than half a year or almost two years to achieve the desired drawdown.
- In addition to learning how far down the gravel deposit goes and what type of materials are beneath it, we also do not currently have a good estimate for the lateral extent of the gravel. Additional borings to determine the width and breadth of the deposits (including associated sand) will help with the accuracy of the simulation as well.
- The current estimate for depth of the pond is simulated at 25 feet. We understand that the bottom of the pond may not be at a uniform depth. Knowing the true depth could make a big difference in the time to dewater and maintenance dewatering rate; for instance if the true depth was closer to 20 or to 30 feet would significantly change the outcome of the modeling.
- Lastly, performing a pumping test at the site in the material outside of the pit would help to constrain some of the hydraulic parameters for more accurate simulations and could provide calibration targets. For example, our aquifer storage parameters are based on general textbook values. Aquifer storage has a significant effect on rates of drawdown in the aquifer, so refinement to these parameters around the gravel pit could change required time to dewater. Implementing a pumping test would require a installing a pumping well and at least 3 monitoring wells onsite. The test would need to be conducted for at least 72 hours.

The modeling was done solely to estimate the time necessary to achieve the desired drawdown and the rate necessary maintain that drawdown once achieved. The model only simulated two years of dewatering and cannot be used to estimate the impacts on nearby water resources without further

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evaluations. Again, the model is preliminary and un-calibrated and the results must be considered order of magnitude and not exact.



Figure 1: Pumping drawdown within pond at 24 MGD.

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Figure 2: Drawdown at 114 Days - 24 MGD, Layer 3 as Clayey Sand

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Figure 3: Drawdown at 512 Days - 24 MGD, Layer 3 as Sand

Attachment B USFWS Online Information for Planning And Consultation IPaC

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location



Local office

Minnesota-Wisconsin Ecological Services Field Office

(952) 252-0092 (952) 646-2873

MAILING ADDRESS 4101 American Blvd E Bloomington, MN 55425-1665

PHYSICAL ADDRESS 4101 American Blvd E Bloomington, MN 55425-1665

http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

NOTFORCONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

- 1. Draw the project location and click CONTINUE.
- 2. Click DEFINE PROJECT.
- 3. Log in (if directed to do so).
- 4. Provide a name and description for your project.
- 5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the <u>Ecological Services Program</u> of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact <u>NOAA Fisheries</u> for <u>species under their jurisdiction</u>.

- Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the <u>listing status page</u> for more information.
- 2. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME

STATUS

Threatened

Canada Lynx Lynx canadensis There is final critical habitat for this species. Your location is outside the critical habitat. <u>https://ecos.fws.gov/ecp/species/3652</u>

Northern Long-eared Bat Myotis septentrionalis No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/9045</u>

Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act^{1} and the Bald and Golden Eagle Protection Act^{2} .

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described <u>below</u>.

- 1. The <u>Migratory Birds Treaty Act</u> of 1918.
- 2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <u>http://www.fws.gov/birds/management/managed-species/</u> <u>birds-of-conservation-concern.php</u>
- Measures for avoiding and minimizing impacts to birds <u>http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/</u> <u>conservation-measures.php</u>
- Nationwide conservation measures for birds <u>http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf</u>

The birds listed below are birds of particular concern either because they occur on the <u>USFWS Birds</u> <u>of Conservation Concern</u> (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ <u>below</u>. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the <u>E-bird data mapping tool</u> (Tip: enter your location, desired date range and a species on your list). For projects that occur off the

12/21/2020

IPaC: Explore Location

Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found <u>below</u>.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Breeds Apr 1 to Aug 31

American Bittern Botaurus lentiginosus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <u>https://ecos.fws.gov/ecp/species/6582</u>

Bald Eagle Haliaeetus leucocephalus	Breeds Dec 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	
https://ecos.fws.gov/ecp/species/1626	
Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <u>https://ecos.fws.gov/ecp/species/3093</u>	Breeds May 15 to Aug 20
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9679</u>	Breeds elsewhere

Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- 3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (=)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
American Bittern BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)		+-										
Bald Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)	-						S	الل	5	RT A		
Black Tern BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)		- (R		Ċ	A	Ĩ	+++	+			
Bobolink BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	$\langle \rangle$	<u> </u>						1	+			
Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)								1	I			
Red-headed Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)					-188				1			

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

<u>Nationwide Conservation Measures</u> describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. <u>Additional measures</u> and/or <u>permits</u> may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC)</u> and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network</u> (<u>AKN</u>). The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>AKN Phenology Tool</u>.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge Network (AKN)</u>. This data is derived from a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen</u> <u>science datasets</u>.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: <u>The Cornell Lab of Ornithology All About Birds Bird Guide</u>, or (if you are unsuccessful in locating the bird of interest there), the <u>Cornell Lab of Ornithology Neotropical Birds</u> <u>guide</u>. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

- 1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- 3. "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the <u>Eagle Act</u> requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

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Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the <u>Northeast Ocean Data Portal</u>. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS</u> <u>Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf</u> project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam</u> <u>Loring</u>.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of</u> <u>Engineers District</u>.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND

<u>PUBHx</u>

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment C Minnesota DNR Natural Heritage Information System Data Request From: Bump, Samantha (DNR) <samantha.bump@state.mn.us>
Sent: Monday, July 19, 2021 2:57 PM
To: Munsell, Anneka (DNR) <anneka.munsell@state.mn.us>
Subject: RE: NHIS for Spruce Valley Corporation Sehlstorm Gravel Pit

Hi Anneka,

Yes, it looks like their location matches the map you provided. Thank you for confirming!

Samantha Bump NHIS Review Specialist | Ecological & Water Resources

DEPARTMENT OF NATURAL RESOURCES

From: Munsell, Anneka (DNR) <<u>anneka.munsell@state.mn.us</u>>
Sent: Thursday, June 3, 2021 3:03 PM
To: Bump, Samantha (DNR) <<u>samantha.bump@state.mn.us</u>>; Joyal, Lisa (DNR) <<u>lisa.joyal@state.mn.us</u>>
Subject: RE: NHIS for Spruce Valley Corporation Sehlstorm Gravel Pit

I believe the location is correct, but I've included some maps just to double check.

From: Bump, Samantha (DNR) <<u>samantha.bump@state.mn.us</u>>
Sent: Thursday, June 3, 2021 2:57 PM
To: Munsell, Anneka (DNR) <<u>anneka.munsell@state.mn.us</u>>; Joyal, Lisa (DNR) <<u>lisa.joyal@state.mn.us</u>>
Subject: RE: NHIS for Spruce Valley Corporation Sehlstorm Gravel Pit

Hi Anneka,

I do not have their original concurrence request available, so I am missing a map of the project boundary which I need to do an adequate review. However, if all the information is correct (especially the project location they listed) and they are not impacting any potential nesting habitat, then I concur with their results.

Thank you! Samantha Bump NHIS Review Specialist | Ecological & Water Resources Minnesota Department of Natural Resources Samantha.Bump@state.mn.us





From: Munsell, Anneka (DNR) <<u>anneka.munsell@state.mn.us</u>>
Sent: Monday, May 24, 2021 8:07 AM
To: Joyal, Lisa (DNR) <<u>lisa.joyal@state.mn.us</u>>; Bump, Samantha (DNR) <<u>samantha.bump@state.mn.us</u>>; Subject: NHIS for Spruce Valley Corporation Sehlstorm Gravel Pit

Good morning,

I was wondering if you had any response to the request for concurrence for the Selhstrom Pit. I have attached the letter for your reference.

Thanks,

Anneka Munsell (she/her/hers) Groundwater Modeler | Hydrogeology and Groundwater

Minnesota Department of Natural Resources

500 Lafayette Rd Saint Paul, MN, 55155 Phone: 651-259-5671 Email: <u>anneka.munsell@state.mn.us</u> <u>mndnr.gov</u>





September 17, 2020

Lisa Joyal Minnesota Department of Natural Resources Natural Heritage Information System 500 Lafayette Road St Paul, MN 55101

RE: Request for Concurrence of Review of Natural Heritage Database (NHIS) for Spruce Valley Corporation Sehlstrom Gravel Pit Project (Township 162, Range 39W, Section 29 and 30)

Ms. Lisa Joyal,

HDR Engineering, Inc. (HDR) is assisting the Spruce Valley Corporation in developing an Environmental Assessment Worksheet for the Spruce Valley Corporation Sehlstrom Gravel Pit Project that would be located in Roseau County, Minnesota. The proposed project area is largely located in Township 162, Range 39W, Section 29 and 30 (see attached figure). HDR has reviewed publically available data and prepared a preliminary Minnesota Department of Natural Resources (MnDNR) NHIS review list using data obtained under HDR License Agreement 933. HDR requests your concurrence with the results of our preliminary database review as described below.

The MnDNR NHIS database search identified species listed in the table below within 1 mile of the proposed project boundary. None of the listed species are located directly within the proposed project boundary.

Table 1 - MN DNR Listed Species within 1 mile

Common Name	Scientific Name	Preferred Habitat	Status
Marbled Godwit	Limosa fedoa	Breeding and nesting habitat includes wet prairie,	Species of Concern
		moderately-grazed pasture or native grasslands	
		interspersed with scattered pockets of sedge fen,	
		or wet roadside ditches.	

Since the proposed project will avoid grassland, wet prairie, and pasture habitat, impacts to the marbled godwit are not expected. Please let us know if you have additional species concerns that require consideration. If you have questions regarding the information provided please feel free to contact me at 218-681-6100 or at <u>Nate.Dalager@hdrinc.com</u>.

Sincerely,

Nate Dalager

Attachment D

MNDNR Guidance on "Cleaning Heavy Equipment Used On Land To Minimize The Introduction And Spread Of Invasive Species"



Cleaning Heavy Equipment used on Land to Minimize the Introduction and Spread of Invasive Species

Vehicles and heavy equipment can gather plants and soils which can spread invasive plant seeds and invasive earthworms. It is DNR policy (Op Order 113) to minimize the movement of invasive species through DNR activities and activities DNR regulates, funds (contracts and grants), or issues permits.





Left photo: Bulldozer with soil and plants.

Right photo: Tool for scraping out soil and plants

There is a high risk for moving invasive species when moving from site to site, going off trail, visiting areas with lots of invasive species and then visiting other areas with very few invasive species. By being mindful and spending some time cleaning, we can reduce the spread of invasive species.

Where to start?

Know your equipment and your sites.

- **Plan your day:** Visit the highest-quality sites (least invasives) first and save the highly invaded sites for last.
 - o Inventory know which invasive species are present.
- If the piece of equipment is mostly staying at one site, the risk may be less than a piece of equipment that is loaned out to other sites.
 - Consider dedicated equipment for a site.
- Equipment like ATVs can be high risk because they go off-road.
- Start with clean equipment so you are not bringing invasives with you to the site.
- Work on purchasing equipment that is less likely to gather material in hard to reach places and equipment that is easy to clean equipment ideas such as wheel to wheel running boards, stiff mud flats, etc. that would prevent material from becoming attached to equipment.

What should you do on-site?

You've used the equipment at a site and the equipment has soil or plants on it.

- Do what you can in the field in terms of removal of invasives. In most cases, you would start with a hand tool and manually knock off the large pieces of soil, mud, and plants.
- In many cases, a lot of good can be accomplished with a good hand tool and 15 minutes of time.
- Keep cleaning tools in or on the equipment so they are easily accessible on site.
 - Hand tools and leaf blowers can accomplish a lot and are fairly easy to transport.
 - Be careful with hand tools not to damage the finish of the machine.



Photo: A leaf blower can blow a lot of plants (and their seeds) off a mower.

You are back at an office, but the equipment needs additional cleaning.

- If you have a dirty truck, take it to the car wash.
- If you have a pressure washer or a garden hose, you can use water to clean off the equipment. Unlike equipment that has been used in waters infested with zebra mussels, with terrestrial invasive species heat is not important. You want the equipment clean of soil and plants. Hot water to kill microorganisms is not required.
 - Pressure washing requires <u>safety equipment and training</u>. Water can be damaging to some pieces of equipment. Consult cleaning recommendations from the manufacturer. When water is needed for cleaning, sometimes a garden hose may be just as effective as a pressure washer.

Follow-up in cleaning area

• Seeds may wash off your equipment and sprout near your cleaning area. Regularly inspect the area where you clean off equipment for invasive plants. Pull or treat invasive plants when found. Carefully consider and manage the run-off from a cleaning site.

Day to Day Invasive Species Prevention

- One-size fits all guidelines may be impractical
 - Guidance depends on the piece of equipment, the tools available, whether or not the equipment is moving off site, the time of year, if you are leaving an area with an invasive of high concern, if you are entering a high quality area, if you are trying to clean mud or dry soil and vegetation, etc.
- When loaning out equipment, make it an expectation that the piece of equipment is loaned out clean and when it is returned it is returned clean.
- Discuss invasive species prevention needs with supervisors and DNR contacts ahead of time (such as tools needed or the potential need for authorization of overtime to get something cleaned).

Safety Concerns when cleaning equipment

- Plants such as poison ivy or wild parsnip can hurt your skin. Wear gloves and avoid skin contact when manually removing plants and soil you don't know what's in there.
- Where ear & eye protection when needed
- Use caution related to water and hot engines and hot surfaces.
- Use caution when using pressure washers; make sure people are trained in on needed safety equipment, releasing the pressure, and proper usage.
- Follow manufacturer's recommendations to avoid a pressure washer damaging brakes or other parts of the equipment.
- Personal protective equipment, such as respirators, may be needed if equipment has residues such as pesticides, salts, treated seeds (fungicide), etc.



Attachment E Minnesota SHPO Historic Records Request September 17, 2020

Ms. Kelly Gragg-Johnson State Historic Preservation Office Administration Building #203 50 Sherburne Avenue St Paul, MN 55101

RE: State Historic Preservation Office (SHPO) review for the Spruce Valley Corporation Sehlstrom Gravel Pit Project

Ms. Gragg-Johnson,

HDR Engineering, Inc. (HDR) is assisting Spruce Valley Corporation (SVC) in developing an Environmental Assessment Worksheet for the SVC Sehlstrom Gravel Pit Project that would be located in Roseau County, Minnesota. The proposed project area is largely located in Township 162, Range 39W, Section 29 and 30 (see attached figure).

We are writing to inquire as to whether there are any documented historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the project site. In addition, we are seeking your opinion on any specific impacts to historic resources the EAW should address. If you have questions regarding the project generally, please contact me at 218-681-6100 or at <u>Nate.Dalager@hdrinc.com</u>.

Sincerely,

Nate Dalager

From: MN_MNIT_Data Request SHPO [mailto:DataRequestSHPO@state.mn.us]
Sent: Wednesday, September 30, 2020 6:14 PM
To: Garvey, Kelly <Kelly.Garvey@hdrinc.com>
Cc: Mayer, Michael <Michael.Mayer@hdrinc.com>; Dalager, Nate <Nate.Dalager@hdrinc.com>
Subject: RE: Spruce Valley Gravel Pit.

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Kelly,

The attached zip files correspond to two of your given projects and contain both an historic and archaeologic data report. Our database had no archaeologic or historic records for the area given for the Spruce Valley project.

Jim



SHPO Data Requests Minnesota State Historic Preservation Office 50 Sherburne Avenue, Suite 203 Saint Paul, MN 55155 (651) 201-3299 datarequestshpo@state.mn.us

Notice: This email message simply reports the results of the cultural resources database search you requested. The database search is only for previously known archaeological sites and historic properties. **IN NO CASE DOES THIS DATABASE SEARCH OR EMAIL MESSAGE CONSTITUTE A PROJECT REVIEW UNDER STATE OR FEDERAL PRESERVATION LAWS** – please see our website at <u>https://mn.gov/admin/shpo/protection/</u> for further information regarding our Environmental Review Process.

Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development projects within that area. Additional research, including field surveys, may be necessary to adequately assess the area's potential to contain historic properties or archaeological sites.

Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received, if any. The following codes may be on those reports:

NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.

CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Environmental Review Process. These properties need to be further assessed before they are officially listed in the National Register.

SEF – Staff eligible Findings are those properties the MN SHPO staff considers eligible for listing in the National

Register, in circumstances other than the Environmental Review Process.

DOE – Determination of Eligibility is made by the National Park Service and are those properties that are eligible for listing in the National Register, but have not been officially listed.

CNEF – Considered Not Eligible Findings are made during the course of the Environmental Review Process. For the purposes of the review a property is considered not eligible for listing in the National Register. These properties may need to be reassessed for eligibility under additional or alternate contexts.

Properties without NR, CEF, SEF, DOE, or CNEF designations in the reports may not have been evaluated and therefore no assumption to their eligibility can be made. Integrity and contexts change over time, therefore any eligibility determination made ten (10) or more years from the date of the current survey are considered out of date and the property will need to be reassessed.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic/architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson, Environmental Review Specialist @ 651-201-3285 or by email at <u>kelly.graggjohnson@state.mn.us</u>.

The Minnesota SHPO Archaeology and Historic/Architectural Survey Manuals can be found at <u>https://mn.gov/admin/shpo/identification-evaluation/</u>.

Given the Governor's implementation of <u>Stay Safe MN</u>, SHPO staff will continue to work remotely and be available via <u>phone and email</u>, and the SHPO office will be closed to visitors and unable to accommodate in-person research and deliveries. Mail is being delivered to the office via USPS, FedEx and UPS, however, staff have limited weekly access to sort and process mail. Our office will continue to take file search requests via <u>DataRequestSHPO@state.mn.us</u>. Check <u>SHPO's webpage</u> for the latest updates and we thank you for your continued patience.



From: Garvey, Kelly <Kelly.Garvey@hdrinc.com>
Sent: Tuesday, September 29, 2020 10:23 AM
To: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Cc: Mayer, Michael <Michael.Mayer@hdrinc.com>; Dalager, Nate <Nate.Dalager@hdrinc.com>
Subject: Thief River Falls Oxbow, Warroad Safe Harbor and Spruce Valley Gravel Pit.

This message may be from an external email source.

Do not select links or open attachments unless verified. Report all suspicious emails to Minnesota IT Services Security Operations Center.

Good Morning,

HDR is assisting 3 different project proposers which are included in the letters attached above. We are writing to inquire as to whether there are any documented historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the project site.

Thank you for your assistance with this request. Please let me know if you have any questions or

require additional information.

Kelly Garvey

Environmental Project Manager

HDR

701 Xenia Avenue South, Suite 600 Minneapolis, MN 55416 D 763.591.5453 M 612.201.2630 Kelly.Garvey@hdrinc.com

hdrinc.com/follow-us