BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA	:	**HP 22-002** **APPLICANT'S RESPONSES TO STAFF'S FIRST SET OF DATA REQUESTS**

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Applicant Navigator Heartland Greenway LLC makes the following responses to Staff's First Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a). These responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

1-1) Please provide GIS shapefiles for the proposed project.

RESPONSE: Responsive shapefiles for the centerline have been provided to Staff.

1-2) Please file updated maps for Exhibits A2 through A6 that includes labels on the streets and, further, please orient those maps with north being toward the top of the page.

RESPONSE: Revised maps are attached and will be filed in the docket as exhibits to the application.

1-3) Referring to Question 7 on page 3 of Mr. Lee's direct testimony, please explain in detail what changes to the proposed route are anticipated and why those changes may occur.

RESPONSE: Slight deviations in the route may be warranted as a result of our pending Spring 2023 surveys (e.g. shifting a few 10s of feet around a resource not previously identified) and/or landowner negotiations regarding the specific location of the route in their parcel (e.g. moving to a different edge of a parcel or following a parcel line on its adjacent field).

1-4) Please provide a definition for Navigator's use of the term "micro-routing" as found in the response to Question 8 on page 4 of Mr. Lee's direct testimony.

RESPONSE: Micro-routing is the exercise of manually adjusting the route from the GIS routing program accounting for information not readily incorporated in the program such as of angles of road crossings, space for HDD pull strings, distinguishing between residential structures and out buildings, points of inflection in the alignment for field bends, etc.

1-5) Referring to Section 2.2 of the Application, please provide the weighting (or the configuration and constraint criteria) used by Navigator for each feature class analyzed by the GIS routing program (Pivvot).

RESPONSE: Please note that Pivvot is a subscription program that was used for initial routing and Navigator and its consultants who used the program cannot exactly recreate the iterative process used resulting in the proposed route. The program operates such that it identifies categories of datasets and is accompanied by an adjustable sliding scale to indicate desired level of avoidance and minimization to determine a preferred route. The following indicate categories Navigator identified for refined routing in addition to those features listed in Section 2.2, all of which were taken into account.

* Co-Located Alignment - Utilized existing utilities, roads, and parcel boundaries to determine a preferred route. This route would parallel these items for the majority of its length as well as adhere to a set avoidance criteria.

*Co-Located Alignment Adjusted - Same method as used in 'Co-Located Alignment' with an adjusted avoidance criteria to assist in averting Mines and all it's subtypes. These subtypes include: Abandoned Mines, Refuse Structure, Strip/Removal/Underground, Surficial Aggregate, and permitted areas for mining.

*Non Co-Located Alignment - Does not utilize the co-location/paralleling method. Avoidance criteria remains the same as the 'Co-Locate' routing option.

*Non Co-Located Alignment Adjusted - Does not utilize the co-location/paralleling method. Avoidance criteria remains the same as the 'Co-Located Alignment Adjusted' routing option.

1-6) Referring to Section 2.2 of the Application, please provide all initial routes generated by Pivvot.

RESPONSE: Objection. This request seeks information that Navigator maintains as confidential and proprietary. Without waiving the objection, Navigator will produce responsive KMZ files subject to entry of an appropriate protective order by the Commission.

1-7) Please provide a summary report on the plume modeling completed and the results of such modeling that are referenced on page 11 of Mr. Lee's direct testimony and in Section 2.2 of the Application.

RESPONSE: Objection. This request seeks information that is confidential and proprietary because it has commercial value and disclosure to any competitor would cause damage to Navigator. It also seeks information that may be outside the jurisdiction of the PUC based on federal preemption and to that extent is not relevant to the scope of this proceeding. Without waiving the objection, a table containing responsive information will be provided subject to entry of a protective order by the PUC.

1-8) What were the setback distances Navigator established based on the plume modeling for:
a) inhabited structures,
b) gathering places, and
c) population centers.

RESPONSE: Objection. This request seeks information that is confidential and proprietary. Navigator's plume modeling is commercially sensitive, complex, and easily misinterpreted. This request also seeks information that may be outside the jurisdiction of the PUC based on federal preemption and to that extent is not relevant to the scope of this proceeding. Without waiving the objection, a confidential responsive summary report will be provided subject to entry of an appropriate protective order by the PUC.

1-9) Will road bores have the warning tape installed? If not, please explain why warning tape cannot be installed on top of the pipeline installed by road bore.

RESPONSE: Warning tape is a flexible material that is lain in the ditch spoil during backfill operations. It is not of material that can be successfully pulled through a bore hole. Bores and HDDs have other design factors to further protect from third party damages. For one, pipeline signage is posted and readily visible at road crossings, thereby increasing awareness to its presence. Also, bore pipe has a thicker wall and additional abrasion resistant coating.

1-10) Referring to Question 28 on page 15 of Mr. Lee's direct testimony, please provide more detail on the unique odorant under R&D and the potential timeline for determining whether or not the odorant will be used.

RESPONSE: Navigator is working with a university under the terms of a confidentiality agreement, and continues to conduct olfactory testing on potential odorants. A third panel test is currently in process.

1-11) Referring to Question 28 on page 15 of Mr. Lee's direct testimony, please provide additional details on the NAV911 system.

RESPONSE: Navigator is currently evaluating various systems that would allow landowners and other interested stakeholders to enroll into a notification system that would provide an automatic call alert to a local region in the event of an emergency. This system that would be known as NAV911. The evaluation process is ongoing.

1-12) Referring to Question 42 on page 22 of Mr. Lee's direct testimony, when will Navigator receive the formal Geohazard Analysis from Terracon to determine if additional mitigation measures are needed for karst, subsidence, or landslides?

RESPONSE: Navigator expects the Geohazard Analysis to be completed by the end of Q1 2023.

1-13) Did Navigator verify the truth and accuracy of the Application in accordance with ARSD 20:10:22:04? If so, please refer to the document with the proper verification.

RESPONSE: A verification signed by Monica Howard is attached and will be filed in the docket.

1-14) Referring to Section 1.2 of the Application, when do the transportation agreements with the industrial producers expire? Further, do the transportation agreements convert to long-term contracts for firm capacity upon project completion and what will be the term of those contracts?

RESPONSE: Objection. This request seeks information that is confidential and proprietary because it has commercial value and disclosure to any competitor would cause damage to Navigator. Without waiving the objection, a table containing responsive information will be provided subject to entry of a protective order by the PUC.

1-15) Did the Application contain maps that show cemeteries, places of historical significance, and public facilities adjacent to or abutting the transmission site in accordance with ARSD 20:10:22:11? If so, please identify what map set contains those layers.

RESPONSE: Attached is a set of maps showing responsive publicly available information obtained from PAD-US, the Census Bureau, U.S. Geographic Names Information System Cemeteries, the National Register of Historic Places, the Homeland Infrastructure Foundation-Level Data, and the South Dakota Department of Transportation. The map set will be filed in the docket as an exhibit to the application.

1-16) Referring to Section 2.3 of the Application, please provide an analysis supporting the statement that the proposed route "minimizes the collective impact and maintains the health and safety of the public and environment while meeting the objectives of the Project" when compared to alternative routes.

RESPONSE: As described in the application, Navigator did not use a routing analysis that identifies a set of distinct or largely distinct potential routes. Instead, the GIS program used, Pivvot, identifies multiple paths from the designated starting and ending points, and evaluates them based on the features described in section 2.2 of the application. Micro-routing, as further described in answers to these requests, followed that process, and further refinements were made based on 2021 aerial imagery and lidar information. The centerline was then determined after consideration of appropriate setbacks from inhabited structures, gathering places, and population centers, as well as avoiding areas of known cultural resources.

1-17) Pursuant to ARSD 20:10:22:14(3) please provide a map showing the bedrock geology and surficial geology with sufficient cross sections to depict major subsurface variations in the siting area.

RESPONSE: Navigator will provide this information after receipt of the Geohazard Analysis by the end of Q1 2023.

1-18) Referring to Section 6.2.4 of the Application, when will the Geohazard Assessment Study be completed? Further, will the Geohazard Assessment Study be used to inform routing decisions? Please explain.

RESPONSE: Navigator expects the Geohazard Analysis to be completed by the end of Q1 2023. Areas where geohazard risk are identified may warrant further evaluation through review of additional mapping / survey data, aerial survey, field inspection, subsurface exploration, site characterization, stability modeling, and /or monitoring.

1-19) Referring to Section 6.3 of the Application, Navigator states "[d]uring construction activities, the topsoil layer from cultivated prime farmland areas associated with the pipeline will be stripped to a maximum depth of approximately 12 inches and segregated from the subsoil." Please explain why Navigator won't strip and segregate the topsoil beyond 12 inches for locations that may have topsoil deeper than 12 inches.

RESPONSE: Navigator will strip the topsoil to whatever depth exists, which in most locations is a maximum of approximately 12 inches. If the actual depth is more than 12 inches, Navigator will strip the topsoil to its actual depth.

1-20) Referring to Section 6.3 of the Application, Navigator states "[t]he Applicant will minimize these impacts by implementing mitigation measures such as […] limiting construction in wet weather conditions to that which typical farm operations would occur under to avoid excessive rutting or compaction." Please explain the meaning of this sentence in detail. Further, how will the Applicant know when the conditions are too wet to work and, thus, limit construction activities?

RESPONSE: Typically wet weather conditions persist with rain events and ponded water from snow melt. The passage of construction equipment in these conditions causes or is likely to cause rutting that mixes topsoil and subsoil, prevents the effective removal or replacement of topsoil and subsoil, prevents proper decompaction, and/or damages underground tile lines. This issue is addressed generally in section 6.8 of the ECG. Additionally, Notes 7 and 8 on typical drawing HGS-BMP-030-SDP (Appendix E), address the effects of using heavy equipment and the use of timber mats. Navigator's environmental inspector will monitor this issue and advise when conditions of this nature require that construction activities be limited in agricultural areas. The environmental inspector's role is addressed in section 1.1.1 of the ECG provided in Appendix E. These conditions will also be addressed in the Agricultural Construction Mitigation Plan discussed in Section 6.3 of the Application.

1-21) Referring to Section 6.3 of the Application, when will the Agricultural Mitigation Plan and Weed Control Plan be finalized?

RESPONSE: Navigator expects to this to be finalized by the end of Q1 2023.

1-22) Referring to Section 6.4.3 of the Application, please explain the expected impacts as contemplated in the following statement: "an inadvertent release [of drilling fluids] would permanently impact groundwater quality within the Project area […]"

RESPONSE: The quoted language contains a typographical omission. It should read "would not permanently impact groundwater quality."

1-23) Please identify what map-set contains "[…] the current planned water uses by […] agriculture, recreation, fish, and wildlife" as required by ARSD 20:10:22:15(2). If this information is not included on a map set that was filed with the Application, please provide updated maps with the required information.

RESPONSE: Please see Exhibit A5 to the application.

1-24) Referring to Section 6.5.2 of the Application, it is stated that "[t]he Applicant will monitor revegetation success along the pipeline ROW in accordance with applicable requirements." Please identify the applicable requirements referenced in this sentence.

RESPONSE: The applicable requirements are part of the National Pollutant Discharge Elimination System permit. The Permit can be terminated upon reaching 70% revegetation success.

1-25) Referring to Section 6.6.1 of the Application, please provide a copy of the delineation surveys.

RESPONSE: A formal report will be provided after 2023 survey work which should conclude prior to June 2023.

1-26) Please provide an updated Table C-2 of Appendix C to the Application once the crossing lengths currently identified as "TBD" are determined.

RESPONSE: Appendix C Table C-2 will be updated after 2023 survey work.

1-27) Referring to Section 6.6.3 of the Application, please identify all HDD locations for the project by updating Table 6.6-2.

RESPONSE: Table 6.6-2 will be updated as soon as 2023 field survey data necessary to determine HDD locations is available.

1-28) Referring to Section 6.6.3 of the Application, in the "Open-Cut" section Applicant states: "Excess excavated materials will be distributed in an upland area in accordance with applicable regulations."

(a) Please identify what applicable regulations are referenced.
(b) Does applicant intend to work with the property owner on where to place excess materials? Please explain.

RESPONSE:

(a) The referenced statement is incorrect. Navigator will work with landowners as described in the answer to (b).
(b) Yes. Navigator will obtain easements for temporary work space and in some cases additional temporary work space and will negotiate with individual landowners about various construction options and issues, including the placement of excess material from an open cut.

1-29) Referring to Table 6.7-1, please provide:

(a) the bat acoustic survey reports completed for the project;
(b) the eagle/raptor nest survey reports completed for the project;
(c) Avoidance/minimization measures to be implemented for the Topeka shiner and what streams/waterbodies those measures will be implemented at;
(d) survey report for the lined snake;
(e) Dakota Skipper habitat assessment survey reports; and
(f) Pollinator habitat survey report.

RESPONSE:

(a) A formal report will be provided after 2023 survey work which should conclude prior to June 2023.
(b) A formal report will be provided after 2023 survey work which should conclude prior to June 2023.
(c) A formal report will be provided after 2023 survey work which should conclude prior to June 2023.
(d) A formal report will be provided after 2023 survey work which should conclude prior to June 2023.
(e) A formal report will be provided after 2023 survey work which should conclude prior to June 2023.
(f) A formal report will be provided after 2023 survey work which should conclude prior to June 2023.

1-30) Referring to Section 6.7.1 of the Application, is there the potential for the route to change due to survey work that will be completed in 2023? Please explain.

RESPONSE: Navigator will resume species-specific and cultural surveys when the weather allows in 2023. The results could cause minor route changes to avoid or mitigate impacts to cultural or other resources.

1-31) In Section 6.8.3 of the Application, it is stated that "[a]side from the approximately 2 to 4-acre L/R site and fractions of an acre for each MLV, there will be no permanent effects on surrounding land uses as a result of HGPS." However, in Section 6.8.5 of the Application, it is stated "[t]here are no aboveground facilities proposed for the Project within South Dakota; therefore, there will be no permanent impacts on changes to land use associated with the Project." Please explain how both these statements can hold true at the same time, or, identify which statement is the correct one.

RESPONSE: The statement in Section 6.8.3 is correct. The statement made in Section 6.8.5 was an incorrect statement.

1-32) Referring to Section 6.8.6 of the Application:

(a) Identify all applicable zoning and county permit requirements and/or ordinances the Project will be subject to.

(b) On a county-by-county basis, and with specificity, identify each requirement in county or municipal land use, zoning, or building rules, regulations, or ordinances that the Applicant requests the Commission issue a SDCL 49-41B-28 finding on in order to supersede said requirement. In addition, please provide support for each requirement as to why it is unreasonably restrictive in view of existing technology, factors of cost, or economics, or needs of parties where located in or out of the county or municipality.

RESPONSE:

(a) Navigator has worked with local planning and zoning officials in each county to identify required permits. In Brookings County, a conditional use permit is required for a contractor yard during construction. Brookings County has a Transmission Pipeline Risk Reduction Overlay District, Article 24, that may require consultation between Navigator and Brookings County to define the appropriate planning zone under the ordinance for the pipeline. A permit may be required under the county's floodplain ordinance. Moody County adopted a pipeline moratorium resolution that is currently in effect, but that expires in March 2023. Under Section 4.36 of the Moody County Zoning Ordinance, Navigator must obtain a conditional use permit for the pipeline, which must be granted if Navigator adheres to all requirements set by the PUC. In Minnehaha County, no zoning permits are required, but a permit may be required under the floodplain management ordinance. A permit is required to cross any road that is part of the county highway system. In Turner County and Lincoln County, no zoning permits are required for the pipeline.

(b) Navigator does not presently seek relief from the Commission under SDCL 49-41B-28, but reserves the right to do so if any county regulation contradicts any requirements imposed by the PUC.

1-33) Referring to Section 6.9 of the Application on cultural resources:

(a) Please provide a copy of the cultural resource survey report.
(b) Please identify how much of the route has yet to be surveyed.
(c) Is there the potential for the project route to change as a result of the ongoing surveys? Please explain.

RESPONSE:

(a) A formal report will be provided after 2023 survey work which should conclude prior to June 2023.
(b) Approximately 40% of cultural surveys remain that are required in federal jurisdictional areas.
(c) Yes. Survey results could require minor route changes to avoid or mitigate impacts identified during the surveys.

1-34) Section 7.1 of the Application indicates that the project will result in up to 10 permanent jobs during operations whereas Section 7.4 indicates approximately 2-4 permanent jobs during operations. Please clarify this discrepancy in the number of South Dakota permanent jobs during operation.

RESPONSE: Both statements are correct, but not clearly explained. The 10 permanent jobs during operations include indirect jobs, meaning that the number includes persons not directly employed by the Applicant. The 2-4 permanent jobs during operations will be employees.

1-35) Regarding the discussion on law enforcement in Section 7.5 of the Application, does the Applicant anticipate the need to rely on law enforcement for security purposes during construction? If so, please explain to what extent local law enforcement may be used for construction security and the Applicant's plans to coordinate with local law enforcement.

RESPONSE: Navigator has consulted and will continue to consult with local law enforcement. Particular needs during construction have not yet been discussed, and Navigator does not anticipate protestor activity but will discuss that with local law enforcement as construction approaches. Navigator intends to use private security, where necessary, for contractor yards, pipe storage yards, and other construction-related yards.

1-36) Referring to Section 7.6 of the Application, please provide Applicant's plans for working with the SD GF&P on the closure of a walk-in area due to construction as well as how the public will be notified when a walk-in area is closed to hunting.

RESPONSE: Navigator will not unilaterally determine how to notify the public when a walk-in area is closed to hunting, but will consult with the South Dakota Department of Game Fish & Parks and provide notice based on that consultation. Navigator will supplement this answer when more information is available after continuing consultation.

1-37) Please provide Applicant's suggested amount for a road bond issued pursuant to SDCL 49-41B-38 along with support for the amount.

RESPONSE: Based on a formula previously adopted by the Commission, Applicant recommends an indemnity bond based on 10% of estimated construction cost in South Dakota, which is $142 million. Thus, Applicant suggests an indemnity bond in the amount of $7.1 million for 2024 and a bond for the same amount in 2025.

1-38) Referring to Section 7.11 of the Application, please provide a copy of the market study completed by Navigator that shows property values in rural areas are not usually affected by a pipeline.

RESPONSE: Objection. This request seeks information that is confidential and proprietary. Without waiving the objection, Navigator's market study will be provided subject to entry of an appropriate protective order by the PUC.

1-39) Does the Applicant expect any landowners to lose housing eligibilities or not be able to use a housing eligibility? If so, please quantify the impact of lost housing eligibilities within the project area and provide support for such. If not, please explain why housing eligibilities will not be impacted by the project.

RESPONSE: Navigator is aware of only one landowner directly raising this issue with a land agent. Whether the location of the right of way causes any loss of housing eligibilities (as opposed to a change in the location of those eligibilities within the parcel), and whether the location of the right of way affects the before and after value of the larger parcel subject to an easement for the right of way are issues that must be addressed case by case. In general, the value of housing eligibilities is included in the value of the larger parcel and is reflected in the sale price of the larger parcel. There may be cases in which the location of the right of way affects housing eligibilities in particular locations within a larger parcel, but without more information from affected landowners who believe that to be the case, Navigator cannot quantify the impact of lost housing eligibilities within the project area, and maintains that whether there is damage to a landowner must be determined by an appraiser in each case.

1-40) Since the project will use a SCADA system and remotely operated valves, please explain what type of cybersecurity measures are planned for operational technology (OT) during system operations and, further, what OT cybersecurity regulations the project will be subject to.

RESPONSE: This issue is within the jurisdiction of the Transportation Safety Administration and falls under TSA Security Directive Pipeline-2021-02C (SD02C), which applies to owners and operators of hazardous liquid and national gas pipelines who are notified by TSA that their pipeline system or facility is critical. Navigator will establish and implement a Cybersecurity Implementation Plan, develop and maintain a Cybersecurity Incident Response Plan to reduce the risk of operational disruption, and establish a Cybersecurity Assessment Program, all as required by the Security Directive. The control room will follow the same guidelines for cybersecurity measures that match or exceed Navigator's corporate standards including a network design that follows the Purdue Model, hardened workstations with adequate redundancy, and ongoing reviews. Communications between the control room and the Heartland Greenway operational systems will be secured and encrypted.

1-41) Please provide copies of any data requests Applicant has sent to or received from other parties in this docket. Please supplement with corresponding responses as received.

RESPONSE: Applicant received discovery from Landowner/Intervenor Rick Bonander in the form of interrogatories, document requests, and requests for admissions. Applicant also received discovery from Landowners Dwayne Pederson Land Co., LLC; Dakota Aeration, Inc; Pederson Ag, LLC; Sherwood Beek, and Kristi Devick Beek. Copies of the requests and Applicant's responses are attached. Applicant will supplement this response throughout discovery.

Dated this 13th day of February, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

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OBJECTIONS

The objections stated to Staff's First Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

CERTIFICATE OF SERVICE

I hereby certify that on the 13th day of February, 2023, a true and correct copy of the foregoing Applicant's Responses to Staff's First Set of Data Requests was served via e-mail transmission to the following:

Ms. Kristen Edwards
Staff Attorney
South Dakota Public Utilities Commission
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/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,	:	**HP 22-002** **APPLICANT'S SUPPLEMENTAL RESPONSES TO STAFF'S FIRST SET OF DATA REQUESTS**

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Applicant Navigator Heartland Greenway LLC makes the following supplemental responses to Staff's First Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a) subject to the PUC's entry of the protective order dated March 2, 2023. These supplemental responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

1-6) Referring to Section 2.2 of the Application, please provide all initial routes generated by Pivvot.

RESPONSE: Objection. This request seeks information that Navigator maintains as confidential and proprietary. Without waiving the objection, Navigator will produce responsive KMZ files subject to entry of an appropriate protective order by the Commission.

SUPPLEMENTAL RESPONSE: KMZ files are attached and produced to Staff subject to the protective order entered March 2, 2023.

1-7) Please provide a summary report on the plume modeling completed and the results of such modeling that are referenced on page 11 of Mr. Lee's direct testimony and in Section 2.2 of the Application.

RESPONSE: Objection. This request seeks information that is confidential and proprietary because it has commercial value and disclosure to any competitor would cause damage to Navigator. It also seeks information that may be outside the jurisdiction of the PUC based on federal preemption and to that extent is not relevant to the scope of this proceeding. Without waiving the objection, a table containing responsive information will be provided subject to entry of a protective order by the PUC.

SUPPLEMENTAL RESPONSE: Responsive information is attached and produced to Staff subject to the protective order entered March 2, 2023.

1-8) What were the setback distances Navigator established based on the plume modeling for:
a) inhabited structures,
b) gathering places, and
c) population centers.

RESPONSE: Objection. This request seeks information that is confidential and proprietary. Navigator's plume modeling is commercially sensitive, complex, and easily misinterpreted. This request also seeks information that may be outside the jurisdiction of the PUC based on federal preemption and to that extent is not relevant to the scope of this proceeding. Without waiving the objection, a confidential responsive summary report will be provided subject to entry of an appropriate protective order by the PUC.

SUPPLEMENTAL RESPONSE: Responsive information is included in the table on page 3 of the document attached and produced to Staff in response to DR 1-7 subject to the protective order entered March 2, 2023.

1-14) Referring to Section 1.2 of the Application, when do the transportation agreements with the industrial producers expire? Further, do the transportation agreements convert to long-term contracts for firm capacity upon project completion and what will be the term of those contracts?

RESPONSE: Objection. This request seeks information that is confidential and proprietary because it has commercial value and disclosure to any competitor would cause damage to Navigator. Without waiving the objection, a table containing responsive information will be provided subject to entry of a protective order by the PUC.

SUPPLEMENTAL RESPONSE: Responsive information is attached and produced to Staff subject to the protective order entered March 2, 2023.

1-38) Referring to Section 7.11 of the Application, please provide a copy of the market study completed by Navigator that shows property values in rural areas are not usually affected by a pipeline.

RESPONSE: Objection. This request seeks information that is confidential and proprietary. Without waiving the objection, Navigator's market study will be provided subject to entry of an appropriate protective order by the PUC.

SUPPLEMENTAL RESPONSE: Responsive information is attached and produced to Staff subject to the protective order entered March 2, 2023.

Dated this 10th day of March, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

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Attorneys for Navigator Heartland Greenway

OBJECTIONS

The objections stated to Staff's First Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

CERTIFICATE OF SERVICE

I hereby certify that on the 10th day of March, 2023, a true and correct copy of the foregoing Applicant's Supplemental Responses to Staff's First Set of Data Requests was served via e-mail transmission to the following:

Ms. Kristen Edwards
Staff Attorney
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/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

REDACTED
Pages 53-57 contain confidential information.

Applicant's Verification

STATE OF TEXAS)
: SS
COUNTY OF HARRIS)

I, Monica Howard, being duly sworn, deposes and says that she is the Vice President Environmental & Regulatory, and is authorized to sign this application on behalf of the Project Owner, Navigator Heartland Greenway, LLC.

She states that she does not have personal knowledge of all the facts recited in the application, but the information in the application has been gathered by and from employees and contractors of the owner of the Project and that the information in the application is verified by her as being true and correct on behalf of Navigator Heartland Greenway, LLC.

Dated this 9th day of February, 2023.

Monica Howard
VP, Environmental & Regulatory
Navigator Heartland Greenway, LLC

Subscribed and sworn to before me

this 9th day of February, 2023.

Notary Public - Texas

My Commission Expires: 9.29.2025
(seal)

SABRYNA COOVER
Notary Public, State of Texas
Comm. Expires 09-29-2025
Notary ID 133361850

REDACTED
Pages 59-97 contain confidential information.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,	:	**HP 22-002** **APPLICANT'S RESPONSES TO STAFF'S SECOND SET OF DATA REQUESTS**

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Applicant Navigator Heartland Greenway LLC makes the following responses to Staff's Second Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a). These responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

2-1) Refer to Page 2 of the Application. The Applicant states it "has an agreement with one of its customers to connect to an additional 10 facilities in a later phase of development and Applicant anticipates entering into agreements with additional CO_2 emitting facilities for future development phases."

a) Please identify the customer referenced in the statement.
b) Does the customer have any facilities located in South Dakota? If yes, please identify the locations in South Dakota.
c) When does the Applicant anticipate filing a siting permit with the South Dakota PUC for the pipelines connecting these facilities?
d) Has the Applicant secured other agreements with additional CO_2 emitting facilities in South Dakota since this Application was filed? If yes, please identify.

RESPONSE:

a) Objection. This request seeks information related to a second phase of development that is not presently before the Commission and is contingent on Applicant being granted a permit in this docket. Without waiving the objection, the customer referenced in the statement is POET.

b) Objection. This request seeks information related to a second phase of development that is not presently before the Commission and is contingent on Applicant being granted a permit in this docket. Without waiving the objection, permitting additional facilities in a secondary phase of the Project will be based on regulatory approvals and construction commencement of Phase 1.

c) Objection. This request seeks information related to a second phase of development that is not presently before the Commission and is contingent on Applicant being granted a permit in this docket. Without waiving the objection, there is no current schedule for filing a second application.

d) Objection. This request seeks information related to a second phase of development that is not presently before the Commission and is contingent on Applicant being granted a permit in this docket. Without waiving the objection, no other agreements have been secured.

2-2) Refer to Page 2 of the Application. The Applicant states "the initial design capacity of the HGPS, which is not expected to be fully utilized by the 21 facilities at the outset, is for the capability of capturing and transporting up to 10 million metric tons (MMT) of carbon dioxide per year and can be expanded to its full potential capacity of up to 15 MMT of carbon dioxide per year by adding booster stations along the initial system and laterals to connect any new customer locations."

a) How many MMT of carbon dioxide per year is expected to be utilized by the 21 facilities at the outset?
b) Does the Applicant know if booster stations will need to be added to the system in South Dakota to expand to the full potential capacity of 15 MMT? Please explain.

RESPONSE:

a) Objection. This request seeks information related to operation of the pipeline outside of South Dakota and not before the PUC. Without waiving the objection, the expected annual capture volume at the outset of operations from all 21 facilities is approximately 6.4 MMT.

b) Objection. This request seeks information related to a second phase of development that is not presently before the Commission and is contingent on Applicant being granted a permit in this docket. Without waiving the objection, Applicant does not know whether booster stations will need to be added in South Dakota to expand to 15 MMT per year. Whether any booster stations in South Dakota are necessary will depend on the location of additional customers, and whether they must be served by additional new mainline or can be served with additional lateral pipelines.

2-3) Refer to Page 3 of the Application, Table 1.2-1. The Applicant states it will capture 0.9 MMT of carbon dioxide per year from facilities in South Dakota. Please identify how much carbon dioxide per year will be captured from each facility in South Dakota.

RESPONSE: VLO Aurora = 392,067
POET Chancellor = 308,246
POET Hudson = 194,682

2-4) Refer to Page 3 of the Application. The Applicant states "mainline valves (MLVs), each approximately 30-feet wide by 70-feet long, will be place along the route in accordance with or exceedance of PHMSA regulations for proper and safe operation and control of the system."

a) Has the Applicant identified where the mainline valves will be located along the route? If yes, please identify. If no, please identify why the Applicant has not been able to identify the location.
b) Please identify the distance between each main line valve and explain whether the distance between each valve meets or exceeds the distance required by PHMSA regulations.
c) Please explain the quantitative and/or qualitative analysis performed when determining if the distance between mainline valves should exceed PHMSA regulations.

RESPONSE:

a) Preliminary placement of MLV's has been determined and preliminary mapping is attached to these responses. Additional valve placement may occur as a result of Emergency Flow Restriction Device (EFRD) analysis, and additional review of HCA and ESA analysis as a result of outstanding surveys. Additional locations may be identified through stakeholder engagement discussions.

b) Although the additional and exact locations of mainline valves have not yet been determined, (a) preliminary mapping of MLVs is attached to these responses subject to the Protective Order and (b) the spacing will not exceed 7.5 miles in High Consequence Areas and 20 miles in non-HCA areas, which exceeds PHMSA requirements for non-HCA areas and meets the PHMSA requirement for HCAs.

c) The spacing of mainline valves is determined based on 49 CFR Part 195, CO2 dispersion modeling, and will account for HCAs, populated areas, environmentally sensitive areas, and unusually sensitive areas. Where possible NHG is exceeding based on the aformentioned criteria and associated risk assessment of the pipeline in relation to these areas. An evaluation of exceedances of 49 CFR 195 is included in Exhibit D of the Application.

2-5) Refer to Page 4 of the Application. The Applicant states "the Project, including the approximately 1,300-mile HGPS, capture facilities and sequestration site is expected to cost approximately $3.2 billion, with the 111.9 miles of pipeline with South Dakota costing approximately $142 million."

a) Please provide a detailed breakdown of the South Dakota cost estimate provided in the Application.
b) Has inflation impacted the cost estimate provided in the Application? Please explain.

RESPONSE:

a) The updated costs account for additional information from vendors and contractors.

Right-Of-Way (Services & Acquisition)	$ 27.5 million
Engineering/Survey/Environmental	$ 9.6 million
Materials	$ 23.5 million
Construction	$ 97.8 million
TOTAL	$158 million

b) Inflation has not impacted the cost estimate provided in the Application. Cost estimates were established using a variety of best practices such as: historical actuals, expert judgment, analogous estimation, and parametric modeling. To account for uncertainty in the estimate, Navigator performed a comprehensive Risk Analysis to inform contingencies included in the estimates. As engineering diligence progresses, cost estimates will be updated, estimate accuracy will tighten, and contingency will decrease.

2-6) Pursuant to ARSD 20:10:22:10, please explain the consequences of delay or termination of the construction of the facility.

RESPONSE: Delaying construction of the Project/facilities would cause delay in capturing approximately 0.9 MMT of carbon dioxide per year of delay within the State of South Dakota. Delays could cause a loss in additional revenue for Ethanol producers that would benefit from low carbon fuel markets. Property Tax revenue for local communities and counties would also be delayed.

2-7) Refer to the Applicant's response to Staff data request 1-7. The setbacks were not clearly identified in the memo provided. Provide the specific setback distances, by foot, for inhabited structures, gathering places, and population centers.

RESPONSE: As provided in Data Request response 1-7 and 1-8, Table on Page 3, column titled "Initial Routing": The setback distances for inhabited structures, gathering places, and population centers are the same based on the plume dispersion modeling: for a 6-inch pipe, 321 feet for initial routing and for an 8-inch pipe, 417 feet for initial routing.

2-8) Refer to Page 8 of the Application. The Applicant states the following: "In addition, Applicant has filed all forms required by PHMSA in advance of constructing the CO_2." It appears this sentence is missing information. Please clarify.

RESPONSE: The sentence was missing the word "pipeline."

2-9) Refer to Pages 8 and 9 of the Application. The Applicant states they "will utilize conservative design safety factors and will pressure test the pipeline system at pressure exceeding the MOP, prior to placing the system in-service." Please specify what conservative design factor will be used and explain why the Applicant is using a more conservative design factor than is required or the industry standard.

RESPONSE: Refer to Application Exhibit D, Page 1 for pipeline design factors by pipeline diameter. Conservative design parameters are being used to enhance safety and long-term integrity of the pipeline. The standard design factor is 0.72 per 49 CFR Part 195.106.

[(2)x(60,000)x(wt)x(1.0)x(0.72)]/6.625 = 2,200 psi
wt = .169" min for 6.625" OD

[(2)x(60,000)x(wt)x(1.0)x(0.72)]/8.625 = 2,200 psi
wt = .220" min for 8.625" OD

2-10) Refer to Page 9 of the Application. The Applicant states the "ultimate spacing and location of the MLVs is dependent on final routing and will be determined after completion of necessary surveys and landowner negotiations."

a) Explain why the existing routing cannot be used to determine MLV locations when the Applicant states any additional routing modifications will be minor in nature.
b) Explain which surveys are necessary and haven't been completed to determine where MLVs should be located.
c) Explain how landowner negotiations will factor into the MLV location placement.

RESPONSE:

a) The Applications includes this statement: "Ultimate spacing and locations of the MLVs is dependent on final routing ...". This statement is not meant to convey that the existing route is not being used to determine baseline MLV locations. There is a potential for final locations to shift based on landowner negotiations and additional locations may be added based on additional analyses discussed in DR2-4(a). Baseline MLV maps are provided with this response.

b) The Applicant needs to complete biological, cultural, and threatened and endangered species surveys to determine additional environmentally sensitive locations that could be a factor in additional placement of mainline valves.

c) The Applicant will work with landowners to place valves at appropriate locations. If a landowner has concerns regarding the proposed MLV placement on their property, the Applicant will work with such landowner and with adjacent landowners in an attempt to find the appropriate location.

2-11) Refer to Page 10 of the Application. The Applicant states the "primary method of installation of the pipeline will be conventional installation via open trench at a depth of at least five feet in soil …"

a) Explain why the Applicant decided to bury the pipe at least five feet deep rather than at least four feet deep.
b) Please produce any studies or professional literature that supports burying the pipe at least five feet deep.

RESPONSE:

a) As stated in Section 4, Page 10 of the Application NHG made the decision to be at least five feet deep where conventional construction methods are employed to maintain at least a two-foot separation between the pipeline and existing infrastructure such as district drainage and existing utilities and at least one foot from existing or planned private drain tile. NHG also believes that a five-foot depth is an additional proactive safety measure to prevent damage by third parties, which are a significant threat to pipeline integrity.

b) Applicant's decision to install the pipeline at a depth of at least 5 feet was not based on any professional literature but was determined based on professional experience and the Engineering and Construction accounting of the information provided in response to 2-11(a).

2-12) Refer to Page 10 of the Application. The Applicant states that "during the construction of the pipeline, the contractor will require off ROW areas for the storage of pipe and equipment necessary for the construction of the Project facilities. Applicant expects the siting of these yards will be done by the selected contractor and Applicant." Does the Applicant expect to obtain these areas voluntarily from landowners, or would the Applicant utilize eminent domain to obtain access to land for a storage yard? Please explain.

RESPONSE: Yes, Applicant expects to obtain construction and storage yards by voluntary agreement and not through the use of eminent domain. Typically these are sited by similar previous use.

2-13) Refer to Page 11 of the Application. The Applicant states that "access roads have not yet been thoroughly defined. Applicant will seek and enter into road use agreements with respective landowners and obtain necessary permits from units of government as warranted."

a) Explain why access roads have not been defined, and when the Applicant expects that to occur.
b) Does the Applicant expect to obtain areas for access roads voluntarily from landowners, or would the Applicant utilize eminent domain to obtain access to land for access roads? Please explain.

RESPONSE:

a) There are approximately 14 temporary access roads planned for use for construction of the Project. The Applicant will gather additional information during the 2023 surveys and anticipates providing an update in June 2023

b) Applicant expects to obtain necessary access roads by voluntary agreement and not through the use of eminent domain. Applicant would condemn for an access road only if no alternative were available. Applicant is not aware of any area on the right of way where that may occur.

2-14) Refer to Page 11 of the Application. The Applicant states that "to ensure safe operation of the line, Applicant will install numerous remote controlled MLVs to allow for prompt response and isolation of line segments in the unlikely event of an emergency."

a) Provide the exact number of remote controlled MLVs that will be installed on the line.
b) The Applicant claims that an emergency is unlikely to occur. Does the Applicant have any specific estimates of the likelihood of any emergency event? If yes, please provide and support.

RESPONSE:

a) Determining the number and location of valve placement is an iterative process. To date NHG has completed its initial effort to address MLVs and currently identified 18 MLVs along the alignment in South Dakota, all of which will be remotely operated. Additionally check valves will be installed with an automatic closure.

b) The Applicant has reviewed pipeline safety data available via the PHMSA website from other CO2 pipelines that operate within the United States, to analyze the likelihood of an emergency event and incorporate findings and lessons learned into design and operations planning. CO2 pipelines have been operating safely in the United States for decades, currently there are 5,339 miles of installed CO2 pipelines. Federal pipeline safety law and government safety regulations administered by the U.S. Pipeline and Hazardous Materials Safety Administration mandate safe operations of CO2 pipelines. Per PHMSA records, there have been 102 incidents from 2003-2023, resulting in 1 PHMSA reportable injury in 2007 see attached PHMSA Facts Table. The Liquid Energy Pipeline Association (LEPA) advocates for policies and regulations that support the pipeline industry's safety record, operational excellence, and environmental stewardship. LEPA promotes safe, reliable, and efficient transportation of liquid products through pipelines. Please refer to LEPA's website (link below) and CO2 Pipeline Safety Fact Sheet (link provided and attached) for additional information on CO2 pipeline safety track record and operations.

About LEPA | Liquid Energy Pipeline Association (liquidenergypipelines.org)

CapturingCarbon_082922 (liquidenergypipelines.org)

2-15) Refer to Page 11 of the Application. The Applicant states that "every valve site and pump station will be connected to an Operations Control Center by modern communication facilities." Has the Operations Control Center been constructed? If not, what is the timeline for construction?

RESPONSE: No, the Operations Control Center (OCC) has not been constructed. Applicant is progressing its evaluation of the location of the OCC in the Midwest. A backup OCC will be in a different location. Applicant does not anticipate constructing an OCC building, but using an existing building/office space that will be outfitted for an OCC. The location(s) of the OCC(s) are anticipated to be determined by the end of 2023.

2-16) Refer to Page 13 of the Application. The Applicant states that "if/when decommissioning is necessary it will be done pursuant to applicable federal and state laws at the time of decommissioning."

a) Regarding the statement of "if", does the Applicant foresee a scenario where decommissioning is not required? Please explain.
b) Provide the current federal and state laws regarding decommissioning.
c) Does the Applicant intend to remove the pipe from the ground in the decommissioning process? Please explain.

RESPONSE:

a) The pipeline will not be decommissioned as long as it is in-service. With proper operations and maintenance the pipeline can operate in perpetuity.

b) 49 CFR 159.9 currently governs the abandonment or deactivation of facilities. Applicant is not aware of any South Dakota law that governs decommissioning.

c) If decommissioning were to occur, NHG plans to adhere to abandonment procedures, including PHMSA requirements, in place at the time that abandonment of the pipeline occurs. Such procedures may not require "removal" but may allow, and even prefer, abandonment in place. Additionally, removal from the ground would cause additional impacts to the land and environment.

2-17) Refer to Page 17 of the Application. The Applicant states that "HGPS will be constructed to meet or exceed federal, state, and local standards to withstand impacts from landslides or slips." Please identify the main construction standards that help the pipeline withstand landslides or slips.

RESPONSE: Mitigation measures of landslides and slips include micro routing to minimize areas of impact, installation of trench breakers, and the use of benched slopes and/or terraces. Enhanced monitoring of these areas is incorporated into the integrity management plan.

2-18) Refer to Table 6.4-2 which reflect water wells within 400 feet of the HGPS centerline. Please explain why 400 feet was selected as the appropriate distance from the pipeline to identify wells of potential consequence.

RESPONSE: NHG identified water wells within 400 feet to ensure spill related impacts would not affect any municipal water supply wells, as stated in Section 6.4.3, Fuel Handling and Storage. Evaluation of water wells within 400 feet is a typical industry standard to ensure mitigation of impacts from construction activities.

2-19) Please explain the impact on groundwater, specifically aquifers and wells, if there was a CO_2 release from the pipeline. If the response is based on any studies, please provide citations to those studies.

RESPONSE: As described in Section 6.4.2 of Application the major aquifers crossed by the Project are the Big Sioux, the Dakota, and the Sioux Quartzite aquifers which range in depth from less than 100 feet deep to 1,000 feet deep. The deepest the pipeline will be installed will be at HDD crossings (typically 25-50 foot depth). The pipeline would be installed above drinking water aquifers within South Dakota and in the event of a release the CO2 would migrate upward and not downward. While CO2 is non-toxic and non-combustible temporary impacts to groundwater or surface streams could occur and result from increased CO2 concentrations by lowering the pH of the water, soil and surrounding vegetation.

A study conducted by Shell Canada Limited to assess the potential risk of CO2 pipeline leakages into groundwater found that the initial pH of groundwater could drop from 7.5 to 5.5 after 20 years of CO2 leakage. However, unintentional releases of CO2 to groundwater resources will be avoided through regular pipeline monitoring and using trace detection technology to identify any pipeline failures as early as possible and implementing emergency response procedures in the event of a leak detection, and no long-term leakages would occur with proper use of such pipeline monitoring tools.

Reference:
Li, Z., Fall, M., & Ghirian, A. (2018). CCS risk assessment: Groundwater contamination caused by CO2. Geosciences, 8(11), 397.

2-20) Refer to Page 27 of the Application. The Applicant states it "will collaborate with the rural water systems regarding crossing their respective lines."

a) Please elaborate on what the Applicant means by collaborating with the rural water systems.
b) Has the Applicant been able to resolve the concerns of the South Dakota Association of Rural Water Systems? Please explain what was done to address the concerns if Applicant has been able to resolve their issues.

RESPONSE:

a) NHG is in the process of engaging county rural water districts and drainage districts to gather mapping and permit information related to crossing stipulations.

b) Applicant is only aware of the statements provided in their Party Status application indicating that the Project crosses several Member Companies. Applicant will engage SD Association of Rural Water Systems in crossing agreements where applicable; these types of agreements are typically approached subsequent to receipt of the state siting permit.

2-21) Refer to Page 28 of the Application. The Applicant states it "will work with municipal and rural water system districts to manage well or source water protection conflicts that they are made aware of." Please elaborate on how the Applicant will work to resolve well or source water protection conflicts.

RESPONSE: Applicant anticipates engaging municipal and rural water system districts in regard to crossing stipulations in Q2 2023 upon additional finalization of the route.

2-22) Refer to Page 30 of the Application, Table 6.5-1. The Applicant states that 2.93 miles of the pipeline are going to go through developed vegetation communities. Please explain all the measures implemented by the Applicant to minimize the amount of developed vegetation communities impacted by the pipeline.

RESPONSE: NHG will work to limit disturbance to developed vegetation, like windbreaks, shelterbelts, and roadside ditches via reduced workspace or construction methodologies. NHG does not anticipate disturbance to landscaped yards. Developed communities disturbed by construction of the pipeline will be restored to pre-existing conditions as practicable and allowed to revert to preconstruction land use. Specific measures will be implemented during construction to enhance and expedite the restoration of disturbed lands to pre-construction condition. Such measures will include topsoil management, soil-segregation, erosion control practices, decompaction and timely restoration.

2-23) Refer to Page 33 of the Application. The Applicant states that "landowners will be compensated for crop losses, short term reduced yields, and other damages resulting from the pipeline construction."

a) Will the Applicant compensate landowners for long term reduced yields? Please explain.
b) Please provide some of the other damages resulting from the pipeline construction that the Applicant may compensate landowners.

RESPONSE:

a) NHG offers a crop loss at 250% calculated over 5 years which is anticipated to exceed actual loss. Should yield loss beyond this occur as a result of the project, NHG will negotiate with the landowner. NHG does not anticipate that yield losses will exceed that amount, but should yield loss beyond 250% occur as a result of the pipeline construction or operation, NHG will compensate the landowner based on actual additional documented yield losses resulting from the pipeline construction or operation.

b) Other damages can include but are not limited to: tree removal, relocation of livestock, replacement of drain tile, and any activities landowners may self perform such as decompaction, restoring terraces or other conservation measures, fence repair or replacement, and soil inputs/enhancements.

2-24) Refer to Page 33 of the Application. The Applicant states that "landowners will be compensated for loss to landscaping and timber on areas impacted by the Project." Please explain how compensation is determined for landscaping and timber.

RESPONSE: Compensation is negotiated with the Landowner and calculated on a per acre value basis.

2-25) The Commission received comments from Mr. Glen Heynen on December 09, 2022, and January 30, 2023, that propose an alternative route for the Big Sioux River crossing in Lincoln County. Please assess the feasibility of the alternative route proposed by Mr. Heynen and provide an analysis as to whether Mr. Heynen's proposed route would further mitigate impacts from the potential pipeline at that location.

RESPONSE: The alternative route that Mr. Glen Heynen proposed extends beyond NHG's notice corridor in South Dakota and in Iowa. This route would traverse through two wildlife management areas in Iowa (Hidden Bridge Wildlife Area and the Peterson Prairie Wildlife Area) and introduces additional impacts to wetlands and waterbodies.

In November of 2022, NHG agreed to an alignment shift with Mr. Heynen to address his concerns at that time. This shifted the alignment approximately 900 feet to the west to accommodate his plans for subdividing lots. Further, this segment of the pipeline across the Big Sioux River and Mr. Heynen's property will be installed via horizontal directional drill (HDD) resulting in no surface impacts and only a development restriction of the 50-foot permanent easement.

2-26) Please provide a copy of DNV-RP-F104 Design and Operations of CO_2 Pipelines (September 2021) as cited in the prefiled testimony of Mr. Lee.

RESPONSE: Objection. This request seeks information that is proprietary and is maintained as confidential. Without waiving the protective order, a copy of the document is provided subject to the Protective Order entered by the Commission.

2-27) Would Navigator oppose a permit condition that requires the use of an odorant in the pipeline? If yes, please explain in detail why Navigator opposes such a condition.

RESPONSE: Applicant is still studying and working to identify viable technology that would allow the use of an odorant. Absent evidence that a specific odorant could be effectively used without affecting sequestration, Applicant would oppose a general condition requiring use of an odorant. The Commission should not mandate the use of something that may not technologically be feasible.

2-28) Would Navigator oppose a permit condition that requires the use of the NAV911 system? If yes, please explain in detail why Navigator opposes such a condition.

RESPONSE: Applicant intends to implement what it has described as the NAV911 system with or without a permit condition, but it is still under development. However, Applicant would oppose a permit condition tied to the system that it develops. This system and process is part of the Applicant's comprehensive Emergency Response Program; to condition one part of a larger program with multiple facets may not be an applicable effective condition in the future.

2-29) Please provide a copy of the Agricultural Mitigation Plan and Weed Control Plan when finalized.

RESPONSE: The Weed Control Plans and The Agricultural Mitigation Plan will be provided before the end of April 2023.

2-30) Referring to Navigator's response to DR 1-30, are the potential minor route changes expected to occur on the same tract of land? Is there the potential for the minor route changes to move the pipelines centerline to a new tract of land? Please explain.

RESPONSE: Results of outstanding cultural and biological surveys may have the potential to shift the route on the same tract of land or onto an adjacent tract. A minor route change could result in an alignment shift of tens of feet to a few hundred feet in either direction depending on the resource found.

2-31) Referring to section 7.11 of the Application and the market studies produced for Navigator's response to DR1-38, please elaborate on how the market study supports the following statement from the Application: "*[p]roperty values are not usually affected by the installation or presence of a pipeline in rural areas, which was reflected in the market study*."

RESPONSE: NHG was pointing out that the market study did not include an adjustment of property values for the installation or presence of a pipeline in a rural area, as this is a factor that does not usually affect rural area property values. NHG is aware of a study that indicates that the presence of natural gas pipelines does not affect the value of a home.

See https://www.ingaa.org/PropertyValues.aspx.

2-32) Will the pipeline have pressure relief valves? If yes, please provide:
a) The location of the valves;
b) The amount of carbon dioxide that could be released from a relief valve should an over-pressurization event occur; and
c) An explanation as to whether or not the valves could potentially get frozen open if they do cycle.

RESPONSE: Yes.

a) Relief values will be located at the booster stations and launcher/receive sites.

b) A pressure relieve valve would only release CO2 in the event the pressure exceeded the defined maximum operating limit. The volume of CO2 released would be limited to the volume necessary to return pressure to below the defined maximum limit. The duration of the relief event would be limited to several seconds. This would result in a temporary release of negligible unknown volume. Complete relief valve sizing will be completed once the equipment has been purchased and abnormal operating scenarios have identified. The primary pressure safety is that compression equipment will have automated controls to shut down the equipment in an abnormal operating scenario. Relief valves are utilized as a secondary measure of protection.

c) Valves subject to low temperatures associated with planned releases are designed to withstand low temperatures and will be flanged into the piping for ease of replacement. These valves will be properly maintained to ensure their proper function. Navigator is planning for relief scenarios which should vent from a "hot" stream versus a "cool" stream when the opportunity exists. Relieving pressure from a hot stream will prevent the deep temperature drops which may approach low temperature operating limits. The CO2 at the capture facilities will be dehydrated before compressed to supercritical pressures. "Freezing" of a relief valve would not occur once the water is removed to the HGS pipeline quality specification.

Dated this 11th day of April, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

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OBJECTIONS

The objections stated to Staff's Second Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

CERTIFICATE OF SERVICE

I hereby certify that on the 11th day of April, 2023, a true and correct copy of the foregoing Applicant's Responses to Staff's Second Set of Data Requests was served via e-mail transmission to the following:

Ms. Kristen Edwards
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/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,	:	**HP 22-002** **APPLICANT'S SUPPLEMENTAL RESPONSE TO STAFF'S SECOND SET OF DATA REQUESTS**

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Applicant Navigator Heartland Greenway LLC makes the following supplemental response to Staff's Second Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a). This supplemental response is made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

2-29) Please provide a copy of the Agricultural Mitigation Plan and Weed Control Plan when finalized.

RESPONSE: The Weed Control Plans and The Agricultural Mitigation Plan will be provided before the end of April 2023.

SUPPLEMENTAL RESPONSE: Attached are copies of the Weed Management Plans (Rolling Till Prairie MLRA-102A; Till Plains MLRA-102B; Loess Uplands MLRA-102C) and the South Dakota Agricultural Protection Plan.

Dated this 22nd day of May, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

James E. Moore
P.O. Box 5027
300 South Phillips Avenue, Suite 300
Sioux Falls, SD 57117-5027
Phone (605) 336-3890
Fax (605) 339-3357
Email: James.Moore@woodsfuller.com
Attorneys for Navigator Heartland Greenway

OBJECTIONS

The objections stated to Staff's Second Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

CERTIFICATE OF SERVICE

I hereby certify that on the 22nd day of May, 2023, a true and correct copy of the foregoing Applicant's Supplemental Response to Staff's Second Set of Data Requests was served via e-mail transmission to the following:

Ms. Kristen Edwards
Staff Attorney
South Dakota Public Utilities Commission
500 E. Capitol Ave.
Pierre, SD 57501
Kristen.edwards@state.sd.us

Mr. Jon Thurber
Staff Analyst
South Dakota Public Utilities Commission
500 E. Capitol Ave.
Pierre, SD 57501
jon.thurber@state.sd.us

Mr. Darren Kearney
Staff Analyst
South Dakota Public Utilities Commission
500 E. Capitol Ave.
Pierre, SD 57501
darren.kearney@state.sd.us

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

REDACTED
Pages 137-141 contain confidential information.

CO_2 PIPELINE SAFETY

TRACK RECORD OF SAFE OPERATIONS

CO_2 pipelines have been operating safely in the United States for decades. Federal pipeline safety law and government safety regulations administered by the U.S. Pipeline and Hazardous Materials Safety Administration mandate safe operations of CO_2 pipelines.

FEDERAL GOVERNMENT PIPELINE SAFETY REQUIREMENTS

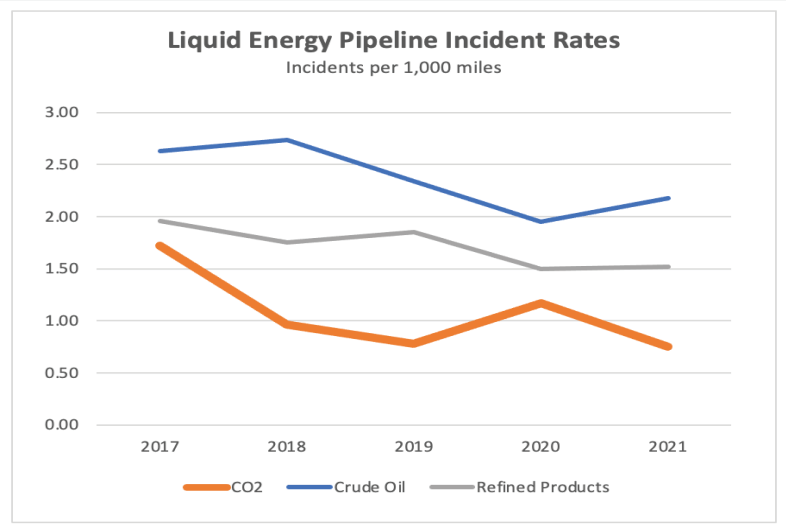
- Congress in the *Pipeline Safety Reauthorization Act of 1988* required the U.S. Department of Transportation to regulate CO_2 pipelines under federal pipeline safety regulations.
- The U.S. Department of Pipeline and Hazardous Materials Safety Administration (PHMSA) in 1989 expanded its federal pipeline safety regulations to cover CO_2 pipelines.
- Current PHMSA regulations at 49 CFR Part 195 prescribe hundreds of requirements on the construction, inspection, maintenance, monitoring and incident response for CO_2 pipelines.
- PHMSA inspects and enforces compliance on pipeline operators violating federal CO_2 pipeline safety requirements.

CO_2 PIPELINE OPERATOR SAFETY PROGRAMS

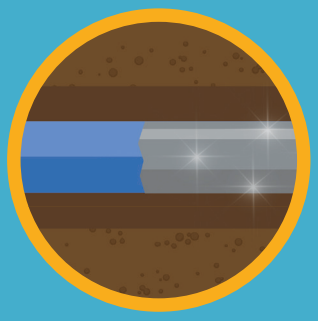
- CO_2 pipeline operators proactively inspect their pipelines on regular schedules to look for any issues and ensure the pipeline remains safe. Pipeline operators perform preventative maintenance on their pipes to address potential issues before they become a problem.
- Operators use diagnostic tools called “smart pigs” that travel inside pipelines scanning the walls with technology similar to an ultrasound or MRI found in a doctor’s office. Specially trained controllers keep a watchful eye 24/7 monitoring pipeline pressure and flow.

CO_2 PIPELINE SAFETY RECORD

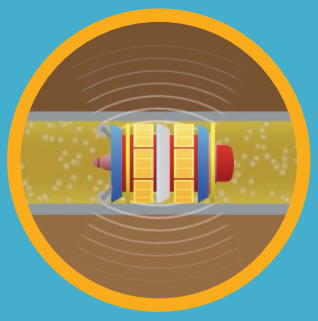
- Government pipeline safety data collected by PHMSA and publicly available shows CO_2 pipeline incidents are rare and declining.



- CO_2 pipelines have a lower incident rate than both crude oil and refined products pipelines. Over the last 5 years, a CO_2 pipeline is 55% less likely to have an incident than a crude oil pipeline and 37% less likely compared to a pipeline delivering gasoline, diesel or jet fuel.

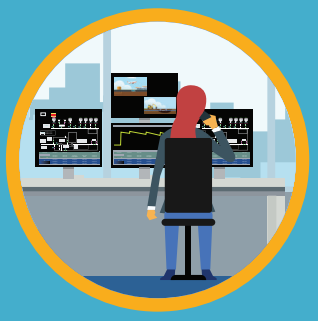


Hi-Grade Steel & Protective Coatings



Hi-Tech Inspection Tools

Preventative Maintenance



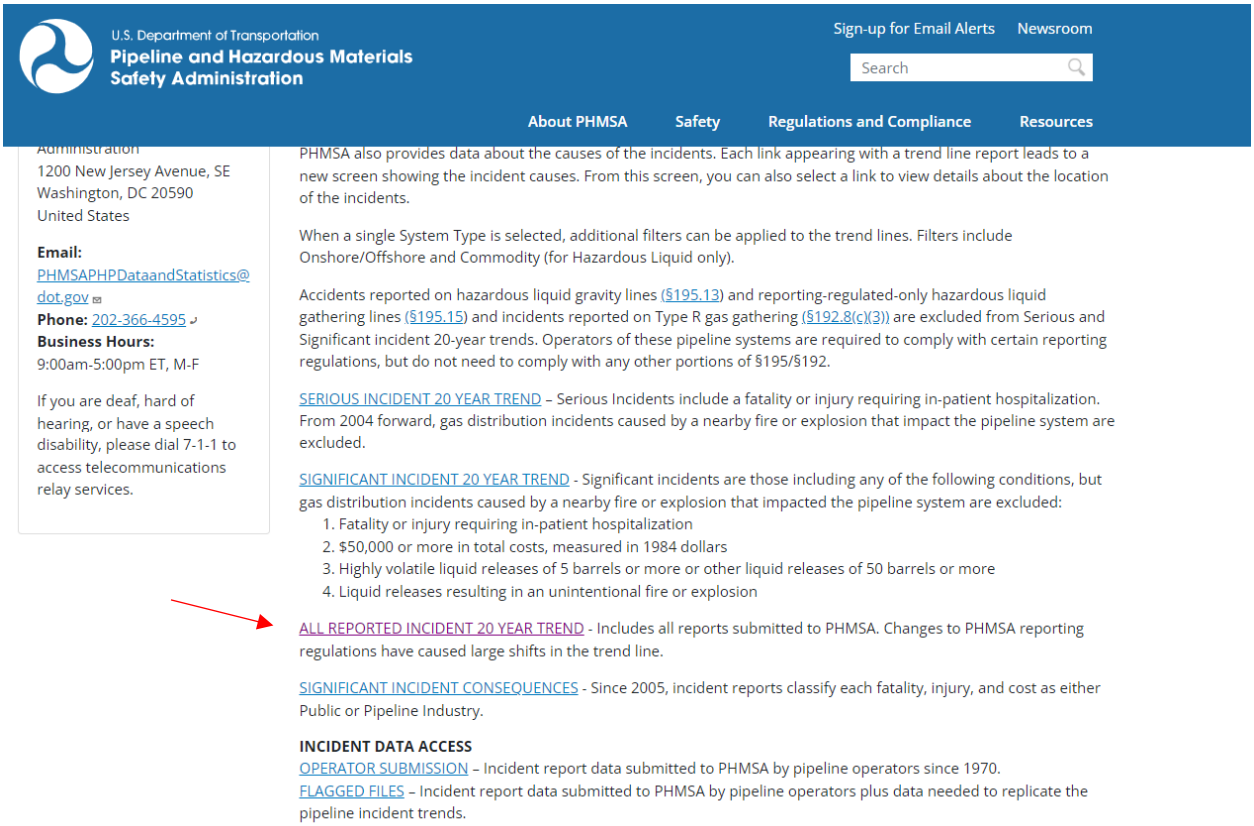
24/7 Monitoring

Information in the Table below was obtained from [Pipeline Incident 20 Year Trends | PHMSA (dot.gov)](#).

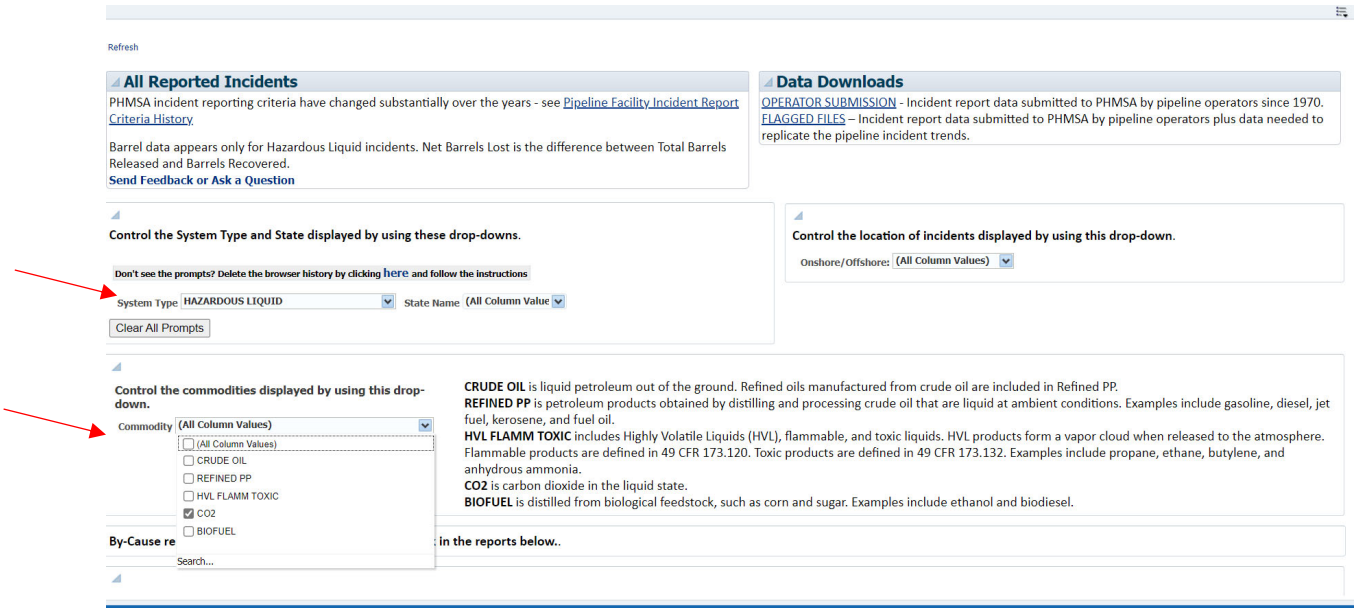
PHMSA Pipeline Incidents: (2003-2022)
Incident Type: All Reported **System Type:** HAZARDOUS LIQUID **State:** (All Column Values)
Offshore Flag : (All Column Values) **Commodity:** CO2

Calendar Year	Number	Fatalities	Injuries	Total Cost As Reported	Barrels Spilled	Net Barrels Lost
2003	7	0	0	$62,871	11	11
2004	3	0	0	$74,101	8,182	8,182
2005	2	0	0	$3,888	2,401	2,401
2006	7	0	0	$763,912	25,086	25,086
2007	4	0	1	$115,425	24,540	24,540
2008	7	0	0	$11,444	103	103
2009	4	0	0	$153,134	1,077	1,077
2010	6	0	0	$212,521	329	329
2011	4	0	0	$168,770	2,542	2,542
2012	2	0	0	$5,823	19	19
2013	5	0	0	$270,387	52	52
2014	5	0	0	$32,948	2,190	2,190
2015	7	0	0	$67,224	1,281	1,281
2016	9	0	0	$71,029	1,709	1,709
2017	9	0	0	$132,993	218	218
2018	5	0	0	$299,047	406	406
2019	4	0	0	$375,395	480	480
2020	6	0	0	$4,035,553	50,903	50,903
2021	4	0	0	$66,184	787	787
2022	2	0	0	$7,576	681	681
Grand Total	**102**	**0**	**1**	**$6,930,225**	**122,999**	**122,999**

From the link above click on "All Reported Incidents 20 Year Trend" as shown in the screenshot here. This link will take the user to a PHMSA Incident Portal.



Once in the Portal Database search for “Hazardous Liquids” and “CO2” as Commodity Type.



REDACTED
Pages 146-228 contain confidential information.

From: James Moore
To: Edwards, Kristen
Cc: Thurber, Jon; Kearney, Darren; Kirstin Lange
Subject: RE: [EXT] HP22-002
Date: Tuesday, April 18, 2023 2:41:09 PM
Attachments: image002.png

Kristen,

We think that the initial routing buffer, which provides the setback distances, can be disclosed in testimony as not confidential, but not the distances for design and operations, emergency response, and public awareness, as shown below. Is that sufficient for your testimony?

PIPELINE DIAMETER (NPS)	INITIAL ROUTING	DESIGN AND OPERATIONS	EMERGENCY RESPONSE	PUBLIC AWARENESS	Analogous *195.210* BUFFER	Analogous PIR per *192.903* (MAOP = 2,200 psig)
6"	~321'	[redacted]			*50'	**194'
8"	~417'				*50'	**259'
[redacted]					[redacted]	

* Unless it is provided with at least 12 inches of cover in addition to that perscribed in 195.248; EFRD requires MLV placement to reduce risk of could affect HCAs

** PIR is calculated per 192.903; PIR = 0.69 * sqrt (p x d^2); p = Pressure and d = nominal dia

Code references above to PHMSA 49 CFR Part 192 and Part 195

James

From: Edwards, Kristen <Kristen.Edwards@state.sd.us>
Sent: Tuesday, April 18, 2023 10:01 AM
To: James Moore <James.Moore@woodsfuller.com>
Cc: Thurber, Jon <Jon.Thurber@state.sd.us>; Kearney, Darren <Darren.Kearney@state.sd.us>; Kirstin Lange <Kirstin.Lange@woodsfuller.com>
Subject: HP22-002

James:

In response to staff data request 2-7, Navigator provided its proposed setbacks from inhabited structures. Should the distances proposed be treated as public or confidential information? The response referenced the plume dispersion modeling provided in response to DR 1-7, which is marked confidential. Staff would like to use the information in our testimony.

Please let us know.

Regards,

Kristen N. Edwards
Staff Attorney
South Dakota Public Utilities Commission
500 East Capitol Avenue, Pierre, SD 57501
(605) 773-3201 | kristen.edwards@state.sd.us

PUBLIC UTILITIES COMMISSION

Public business must always be done by somebody… If wise men decline it, others will not; if honest men refuse it, others will not. -John Adams

HEARTLAND GREENWAY PIPELINE SYSTEM

SOUTH DAKOTA WEED MANAGEMENT PLAN
ROLLING TILL PRAIRIE MLRA – 102A

May 2023

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INTRODUCTION

This Weed Management Plan was developed by Navigator Heartland Greenway, LLC (NHG) for the Heartland Greenway Pipeline System (HGPS), to comply with State and Local statutes. NHG is committed to preventing new infestations of weeds along the HGPS Right-of-Way (ROW). The purpose of the Weed Management Plan (Plan) is to avoid exacerbating areas of existing infestations.

Weed treatment methods may include herbicide application and/or mechanical treatments (mowing, disking, hand pulling); which will reduce competition with desirable species and will prohibit the introduction of additional weed seed into the soil.

This plan addresses affected counties in the Rolling Till Prairie (RTP) Major Land Resource Area (MLRA), which spans through South Dakota, Minnesota, and into North Dakota. The pipeline will be installed in the RTP area of South Dakota and affects the Counties of Brookings and Moody.

IDENTIFICATION

A weed survey should be conducted prior to construction to identify noxious weeds and other undesirable species. State and local noxious weeds are identified below (Appendix B, Table 1). Weedy species not listed below may be treated as deemed necessary by weed surveyors and/or agriculture inspectors.

A. Threshold Requirements

All State and County noxious weeds will be treated regardless of density or size of infestation area. Non-noxious species will be treated if an infestation area reaches 10 square feet in size.

PRE-CONSTRUCTION TREATMENT

Herbicide use history is to be obtained from landowners so that herbicides with residual effects are known. (e.g., Atrazine will be a potential problem). If herbicide use with residual impacts are reported, the Weed Management Plan may then be amended to address the side effects of such residual impacts.

Weed treatment will begin as soon as practical upon weed surveying of non-row crop areas. Weed Infested areas are to be identified during survey and geospatially documented. Excessive or heavy traffic in weed infested areas should be avoided to reduce impacts of transporting weed seed along the ROW. Weedy areas will be treated within a target time of 15 days but not to exceed 30 days of surveying using a labelled contact kill chemical application by a state licensed commercial chemical applicator. All herbicide treatment is to occur prior to seed ripening. Herbicide selection will be based on target species and applied per the label. Pre-emergent application is not to be utilized due to the potential to negatively affect future seeding germination. If herbicide treatments cannot be applied to identified areas, then weedy areas will be addressed during construction during the topsoil segregation process or via mechanical treatment, so long as the weed seeds do not ripen before said treatment.

DURING CONSTRUCTION TREATMENT

Disking or stockpiling of topsoil throughout ROW will address untreated weedy vegetation from pre-construction surveys. Temporary stabilization of stockpiles per the Topsoil Stockpile Seeding Protocol (see below) will aid in the prevention of infestation and weed establishment. An agriculture inspector will monitor stockpiles and ROW for weed encroachment and schedule herbicide treatment prior to weedy vegetation creating viable seed.

Seasons will be defined as the following:

Spring: April, May,
Summer: June, July, August,
Fall: September, October,
Winter: November, December, January, February, March

A. Topsoil (and subsoil) Stockpile Seeding Protocol

To prevent weedy infestations of topsoil and subsoil stockpiles, temporary seeding of said areas is needed. Temporary seed must be properly labeled and tested within 9 months of application for germination viability. Purity and germination percentages are to be equal to or greater than industry standards for the respective species. Seed cannot contain any prohibited noxious weed seeds, and restricted noxious weed seeds shall not excel a cumulative total of 20 per pound.

In accordance with project SWPPP plans, and not greater than 7 days after stockpiling the soil, the stockpiles will be temporarily seeded to accomplish soil stabilized and prevent weedy vegetation establishment.

The seeding of the soil stockpiles will be completed in accordance with Natural Resource Conservation Service (NRCS) Conservation Practice 327 via broadcast seeding methodology.

Seeding windows and species selection per NRCS:

- March 15 - May 15 - Perennial Ryegrass - 10 pounds per acre
- May 16 - August 30 - Sudangrass - 20 pounds per acre
- September 1 - December 15 - Winter Rye - 2 bushels per acre
- December 16 - March 14 - Spring Wheat - 2 bushels per acre

Mulch stabilization is warranted if 30% vegetative ground cover is not achieved after 14 days from seed being planted to achieve soil stabilization and prevent weedy vegetation establishment.

Mulch options and related specifications are as follows:

Hydromulch

- Type: KoTon Hydromulch
- Rate: 5,000 lbs per acre
- Tackifier: PAM at a rate of 1 pound per 1000 gallons of slurry.
- Equivalent hydromulch substitution must be approved by the agricultural inspector.

Certified Weed Free Straw mulch

- Type: any agricultural small grain crop biomass in which the seed has been previously harvested utilizing NAISMA standards to help prevent unwanted noxious weeds
- Application Rate: 2 tons per acre
- Anchor method: Tackifier: PAM at a rate of 1 pound per 1000 gallons of water. One gallon of water is to be applied to 10 square feet.

POST CONSTRUCTION TREATMENT

Upon completion and restoration of the ROW, post construction weed monitoring surveyor will begin the following growing season. Monitoring will continue for two calendar years following completion of construction. In areas of persistent infestation, a third year of monitoring may be required. Any identified weedy areas will be treated within a target time of 15 days but not to exceed 30 days of surveying using a labelled contact kill chemical application by a state licensed commercial chemical applicator. All herbicide treatment is to occur prior to seed ripening. Herbicide selection will be based on target species and applied per the label. Pre-emergent application is not to be utilized due to the potential to negatively affect future seeding germination. If herbicide treatments cannot be applied to identified areas, then weedy areas will via mechanical treatment, so long as the weed seeds do not ripen before said treatment.

Weed surveying and treatment should occur in spring and late summer. Locations with noxious/invasive weeds should be mowed, tilled or sprayed prior to flowering and seed head production. When a weed infestation is surveyed, a chemical treatment will be applied within a target time of 15 days but not to exceed 30 days and a late summer or fall chemical application will be applied to the same area. All selected chemicals must be labeled for the target species. If a water feature is present (e.g. wetland or waterbody), spraying should be conducted using an aquatic herbicide for the targeted species.

A site-specific remediation plan will be developed for areas of material weed infestation (large plot) caused by construction impacts (not caused by adjacent, offsite weed encroachment). This plan will likely include existing vegetation termination, tillage, and reseeding.

WEED MANAGEMENT REPORTING AND DOCUMENTATION

Weed treatment methods may include herbicide application or mechanical treatments (mowing, disking, hand pulling). Methods will reduce competition with desirable species and will prohibit the introduction of additional weed seed into the soil.

Applicators are responsible for logging the following data per treatment area: Geospatially referenced polygon of entire treatment area, parcel ID, treatment type, herbicides used (if any), herbicide applicator name (if applicable).

Herbicide SDS sheets are to be provided to Navigator prior to use.

REFERENCES

USDA
https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-cover-ac-327-conservation-practice-standard

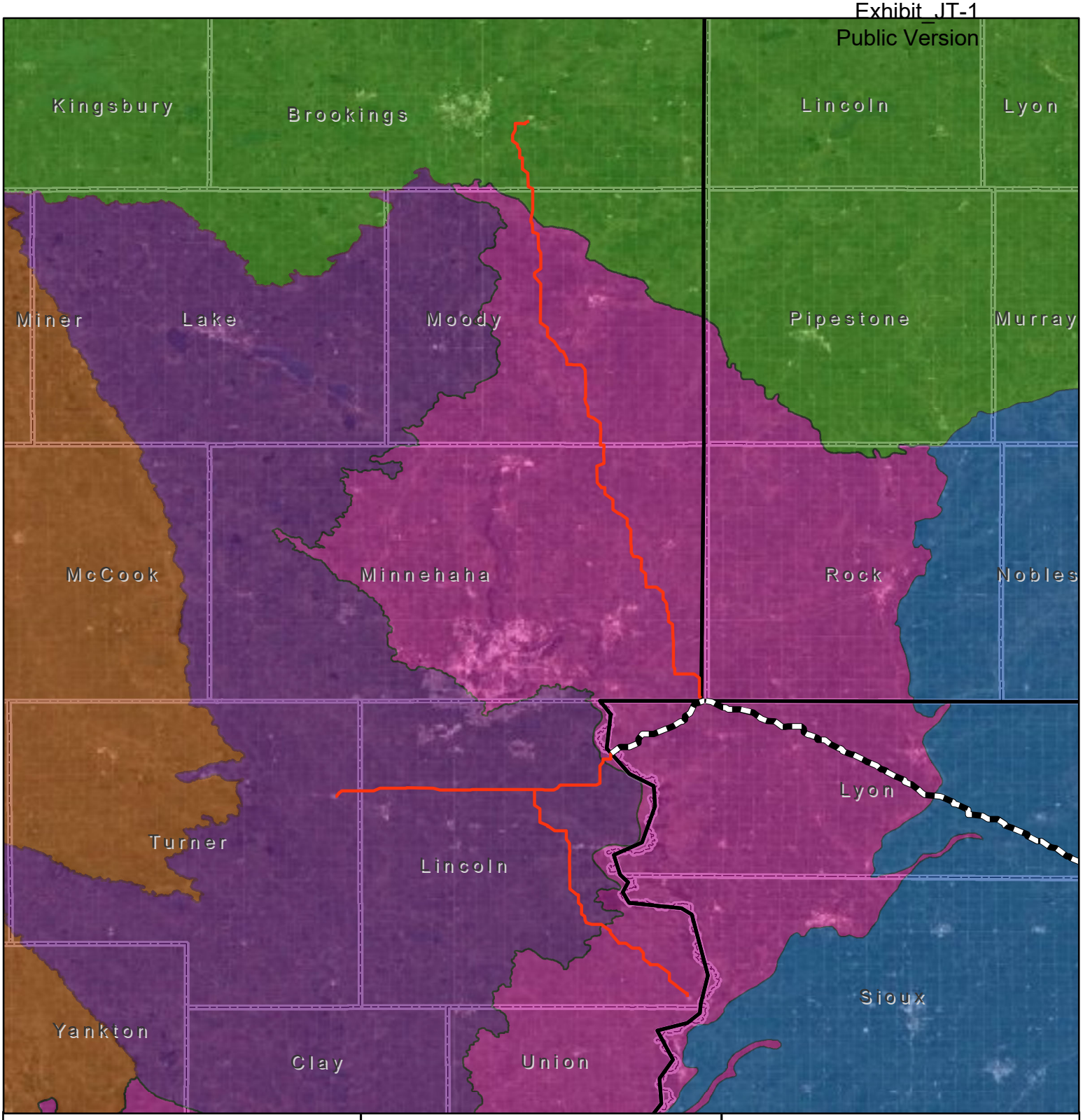
South Dakota Department of Agriculture and Natural Resources
https://danr.sd.gov/Conservation/PlantIndustry/WeedPest/WeedandPestInfo/StateNoxious/default.aspx
https://danr.sd.gov/Conservation/PlantIndustry/WeedFreeForageProgram/WeedFreeForage.aspx
https://danr.sd.gov/Conservation/PlantIndustry/WeedPest/WeedandPestInfo/LocalNoxious/default.aspx
https://danr.sd.gov/Conservation/PlantIndustry/Seed/docs/2019%20Seed%20Inspection%20Brochure.pdf

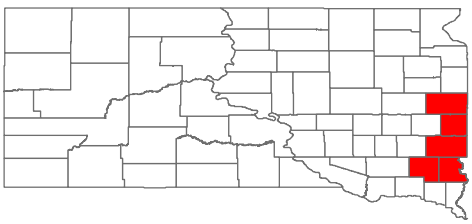
South Dakota State University Extension
https://extension.sdstate.edu/noxious-weeds-south-dakota

North Dakota State University
https://www.ag.ndsu.edu/pubs/plantsci/weeds/w1411-01.pdf

Brookings County
https://www.brookingscountysd.gov/261/Weed-Pest

APPENDIX A: MAJOR LAND RESOURCE AREA MAP





South Dakota Project Centerline
Iowa Project Centerline
State Boundary
County Boundary

Iowa and Minnesota Loess Hills
Loess Uplands
Rolling Till Prairie
Southern Black Glaciated Plains
Till Plains

Miles
0 5 10

NORTH

HEARTLAND GREENWAY

MLRA Map
Heartland Greenway Pipeline System
Navigator Heartland Greenway, LLC
Brookings, Lincoln, Minnehaha,
Moody & Turner Counties, South Dakota

Page 1 of 1	Scale: 1:800,000
NAD 83 UTM 15N ft	Date: April 2023

Path: P:\GIS\Client\Navigator CO2\Heartland Greenway System\Maps\ENV\Other\20230410_MLRA\MLRA.mxd

Author: MB

APPENDIX B: NOXIOUS WEEDS

Table 1. Noxious Weed List - South Dakota, MLRA 102A*

Common Name	Scientific Name	Area of Concern
Absinth wormwood	*Artemisia absinthium*	Statewide
Bull thistle	*Cirsium vulgare*	Brookings Co.
Canada thistle	*Cirsium arvense*	Statewide
Hoary cress	*Cardaria draba*	Statewide
Leafy spurge	*Euphorbia esula*	Statewide
Musk thistle	*Carduus nutans*	Brookings
Plumeless thistle	*Carduus acanthoides*	Brookings
Purple loosestrife	*Lythrum salicaria*	Statewide
Saltcedar	*Tamarix spp.*	Statewide
Perennial Sow Thistle	*Sonchus arvensis*	Statewide

* To be updated per the South Dakota locally noxious weed pest list (noxiousweeds.pdf (sd.gov))

Table 2. Noxious weed Mechanical/Cultural Treatment and Species Photos

Common Name	Mechanical/Cultural Treatment	Photo of Species
Absinth Wormwood	Mowing and tillage has a negligible effect on reducing absinth. Herbicide treatment is the most effective method to treat and reduce populations.	 
Bull Thistle	Cultivation or hand digging during the rosette stage prior to bolting will kill this plant. Herbicide treatment is the most effective method to treat and reduce populations.	 
Canada Thistle	Cattle, goats, and sheep will graze young, succulent Canada thistle. Tillage and hand pulling are generally ineffective for reducing Canada thistle as root fragments can stimulate new growth. Mowing can be effective if completed every 10 to 21 days to cause root depletion. Mow when the plants are in early bud growth stage to prevent seed spread. Herbicide treatment is the most effective method to treat and reduce populations.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Hoary Cress	Repeated cultivation is effective during the growing season for two to four years. Herbicide treatment is the most effective method to treat and reduce populations. In areas of small infestations digging could be used as a mechanism for removal if the entire root is removed, however this is not the primary method of removal.	
Leafy Spurge	Grazing (sheep and goats) can be effective at reducing growth, infestation, and spread of spurge, but will not eradicate the species. Cutting, mowing, or pulling is often ineffective as pieces of roots as small as 0.5 inch long and 0.1 inch diameter can produce new shoots. Intensive cultivation (tillage to 4 inches every 3 weeks until soil freezes) or cultivation of 3 to 6 inch tall plants post-harvest can be effective at reducing leafy spurge. Herbicide treatment is the most effective method to treat and reduce populations.	
Musk Thistle	Mowing prior to seed set and flowering will reduce infestation. Cut below the terminal bud before the stem elongates. Herbicide treatment prior to plant bolting is the most effective method to treat and reduce populations. Herbicide effectiveness is severely diminished after late plant bolting and should then mow plants off to prevent seeding.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Plumeless Thistle	Grazing of young, immature plants early on can help control thistle. Hand pulling or tillage can be effective if the thistle plants are severed 2 to 4 inches below the soil surface. Repeat mowing can deplete root stores and cause root dieback. Small and/or isolated infestations can be controlled by removing the seed head and placing in bags for disposal. This is effective for reducing further spread or seedling establishment. Proper disposal is required to prevent seed spread. Herbicide treatment is the most effective method to treat and reduce populations.	 
Purple Loosestrife	Small infestations should be controlled by digging. Herbicide treatment is the most effective method to treat and reduce populations.	 
Saltcedar	Do not remove top growth for three years following herbicide application due to resprouting. Burning and bulldozing have been unsuccessful. Herbicide treatment is the most effective method to treat and reduce populations.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Perennial Sow Thistle	Cultivation will reduce populations. Do not spread roots to noninfested areas. Herbicide treatment is the most effective method to treat and reduce populations.	 

Photo Sources

https://cropwatch.unl.edu/2017/absinth-wormwood-new-invasive-species-nebraska-panhandle

https://www.nwcb.wa.gov/weeds/bull-thistle

https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/bull-thistle.aspx

https://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/canadathistle

https://www.nwcb.wa.gov/weeds/canada-thistle

https://tswcd.org/noxious-weeds/hoary-cress/

https://www.ndsu.edu/pubweb/chiwonlee/plsc211/student%20papers/articles06/kalevanbruggen/kvanbruggen.html

https://weedid.missouri.edu/weedinfo.cfm?weed_id=49

https://www.nwcb.wa.gov/weeds/plumeless-thistle

https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/purple-loosestrife.aspx

https://www.nwcb.wa.gov/weeds/purple-loosestrife

https://www.nps.gov/sagu/learn/nature/tamarisk.htm

https://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/spottedknapweed

https://www.canr.msu.edu/resources/spotted-knapweed-centaurea-stoebe

https://www.illinoiswildflowers.info/weeds/plants/per_sowthistle.htm

https://www.canr.msu.edu/resources/perennial-sowthistle-sonchus-arvensis

HEARTLAND GREENWAY

HEARTLAND GREENWAY PIPELINE SYSTEM

SOUTH DAKOTA WEED MANAGEMENT PLAN
TILL PLAINS MLRA – 102B

May 2023

TABLE OF CONTENTS

INTRODUCTION

This Weed Management Plan was developed by Navigator Heartland Greenway, LLC (NHG) for the Heartland Greenway Pipeline System (HGPS), to comply with State and Local statutes. NHG is committed to preventing new infestations of weeds along the HGPS Right-of-Way (ROW). The purpose of the Weed Management Plan (Plan) is to avoid exacerbating areas of existing infestations.

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This plan addresses affected counties in the Till Plains (TP) Major Land Resource Area (MLRA), which spans through South Dakota. The pipeline will be installed in the TP area of South Dakota and affects the Counties of Turner and Lincoln.

IDENTIFICATION

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Weed treatment will begin as soon as practical upon weed surveying of non-row crop areas. Weed Infested areas are to be identified during survey and geospatially documented. Excessive or heavy traffic in weed infested areas should be avoided to reduce impacts of transporting weed seed along the ROW. Weedy areas will be treated within a target time of 15 days but not to exceed 30 days of surveying using a labelled contact kill chemical application by a state licensed commercial chemical applicator. All herbicide treatment is to occur prior to seed ripening. Herbicide selection will be based on target species and applied per the label. Pre-emergent application is not to be utilized due to the potential to negatively affect future seeding germination. If herbicide treatments cannot be applied to identified areas, then weedy areas will be addressed during construction during the topsoil segregation process or via mechanical treatment, so long as the weed seeds do not ripen before said treatment.

DURING CONSTRUCTION TREATMENT

Disking or stockpiling of topsoil throughout ROW will address untreated weedy vegetation from pre-construction surveys. Temporary stabilization of stockpiles per the Topsoil Stockpile Seeding Protocol (see below) will aid in the prevention of infestation and weed establishment. An agriculture inspector will monitor stockpiles and ROW for weed encroachment and schedule herbicide treatment prior to weedy vegetation creating viable seed.

Seasons will be defined as the following:

Spring: April, May,
Summer: June, July, August,
Fall: September, October,
Winter: November, December, January, February, March

A. Topsoil (and subsoil) Stockpile Seeding Protocol

To prevent weedy infestations of topsoil and subsoil stockpiles, temporary seeding of said areas is needed. Temporary seed must be properly labeled and tested within 9 months of application for germination viability. Purity and germination percentages are to be equal to or greater than industry standards for the respective species. Seed cannot contain any prohibited noxious weed seeds, and restricted noxious weed seeds shall not excel a cumulative total of 20 per pound.

In accordance with project SWPPP plans, and not greater than 7 days after stockpiling the soil, the stockpiles will be temporarily seeded to accomplish soil stabilized and prevent weedy vegetation establishment.

The seeding of the soil stockpiles will be completed in accordance with Natural Resource Conservation Service (NRCS) Conservation Practice 327 via broadcast seeding methodology.

Seeding windows and species selection per NRCS:

- March 15 - May 15 - Perennial Ryegrass - 10 pounds per acre
- May 16 - August 30 - Sudangrass - 20 pounds per acre
- September 1 - December 15 - Winter Rye - 2 bushels per acre
- December 16 - March 14 - Spring Wheat - 2 bushels per acre

Mulch stabilization is warranted if 30% vegetative ground cover is not achieved after 14 days from seed being planted to achieve soil stabilization and prevent weedy vegetation establishment.

Mulch options and related specifications are as follows:

Hydromulch

- Type: KoTon Hydromulch
- Rate: 5,000 lbs per acre
- Tackifier: PAM at a rate of 1 pound per 1000 gallons of slurry
- Equivalent hydromulch substitution must be approved by the agricultural inspector.

Certified Weed Free Straw mulch

- Type: any agricultural small grain crop biomass in which the seed has been previously harvested utilizing NAISMA standards to help prevent unwanted noxious weeds
- Application Rate: 2 tons per acre
- Anchor method: Tackifier: PAM at a rate of 1 pound per 1000 gallons of water. One gallon of water is to be applied to 10 square feet.

POST CONSTRUCTION TREATMENT

Upon completion and restoration of the ROW, post construction weed monitoring surveyor will begin the following growing season. Monitoring will continue for two calendar years following completion of construction. In areas of persistent infestation, a third year of monitoring may be required. Any identified weedy areas will be treated within a target time of 15 days but not to exceed 30 days of surveying using a labelled contact kill chemical application by a state licensed commercial chemical applicator. All herbicide treatment is to occur prior to seed ripening. Herbicide selection will be based on target species and applied per the label. Pre-emergent application is not to be utilized due to the potential to negatively affect future seeding germination. If herbicide treatments cannot be applied to identified areas, then weedy areas will via mechanical treatment, so long as the weed seeds do not ripen before said treatment.

Weed surveying and treatment should occur in spring and late summer. Locations with noxious/invasive weeds should be mowed, tilled or sprayed prior to flowering and seed head production. When a weed infestation is surveyed, a chemical treatment will be applied within a target time of 15 days but not to exceed 30 days and a late summer or fall chemical application will be applied to the same area. All selected chemicals must be labeled for the target species. If a water feature is present (e.g. wetland or waterbody), spraying should be conducted using an aquatic herbicide for the targeted species.

A site-specific remediation plan will be developed for areas of material weed infestation (large plot) caused by construction impacts (not caused by adjacent, offsite weed encroachment). This plan will likely include existing vegetation termination, tillage, and reseeding.

WEED MANAGEMENT REPORTING AND DOCUMENTATION

Weed treatment methods may include herbicide application or mechanical treatments (mowing, disking, hand pulling). Methods will reduce competition with desirable species and will prohibit the introduction of additional weed seed into the soil.

Applicators are responsible for logging the following data per treatment area: Geospatially referenced polygon of entire treatment area, parcel ID, treatment type, herbicides used (if any), herbicide applicator name (if applicable).

Herbicide SDS sheets are to be provided to Navigator prior to use.

REFERENCES

USDA
https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-cover-ac-327-conservation-practice-standard

South Dakota Department of Agriculture and Natural Resources
https://danr.sd.gov/Conservation/PlantIndustry/WeedPest/WeedandPestInfo/StateNoxious/default.aspx
https://danr.sd.gov/Conservation/PlantIndustry/WeedFreeForageProgram/WeedFreeForage.aspx
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https://danr.sd.gov/Conservation/PlantIndustry/Seed/docs/2019%20Seed%20Inspection%20Brochure.pdf

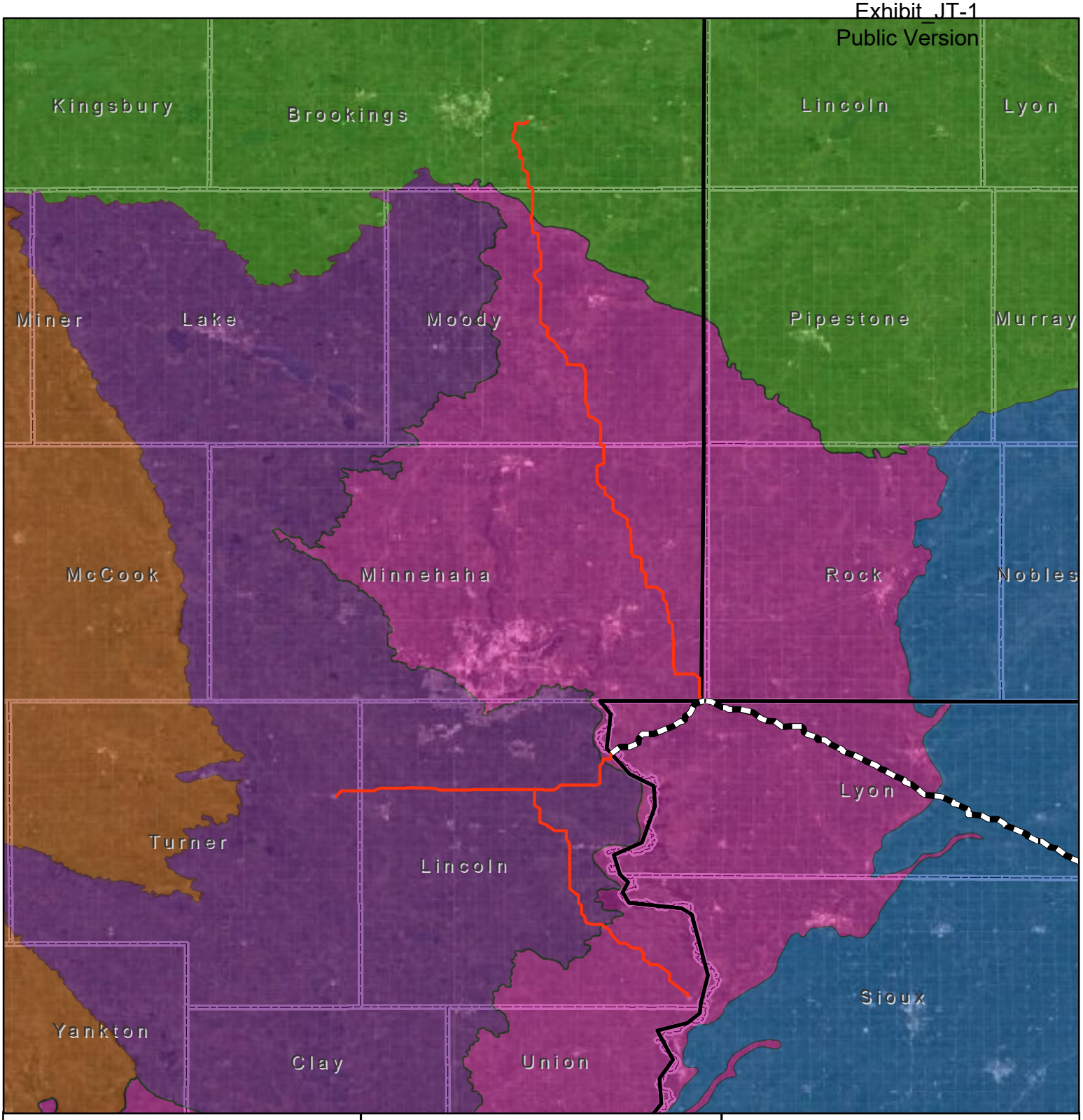
South Dakota State University Extension
https://extension.sdstate.edu/noxious-weeds-south-dakota

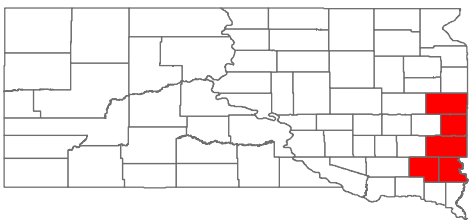
North Dakota State University
https://www.ag.ndsu.edu/pubs/plantsci/weeds/w1411-01.pdf

Turner County
https://turner.sdcounties.org/weed-pest/2021-notice-of-responsibility-to-control-noxious-weeds/

Lincoln County
https://www.lincolncountysd.org/357/Weed-Department

APPENDIX A: MAJOR LAND RESOURCE AREA MAP





South Dakota Project Centerline
Iowa Project Centerline
State Boundary
County Boundary

Iowa and Minnesota Loess Hills
Loess Uplands
Rolling Till Prairie
Southern Black Glaciated Plains
Till Plains

Miles
0 5 10

NORTH

HEARTLAND GREENWAY

MLRA Map
Heartland Greenway Pipeline System
Navigator Heartland Greenway, LLC
Brookings, Lincoln, Minnehaha,
Moody & Turner Counties, South Dakota

Page 1 of 1	Scale: 1:800,000
NAD 83 UTM 15N ft	Date: April 2023

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Author: MB

APPENDIX B: NOXIOUS WEEDS

Table 1. Noxious Weed List - South Dakota, MLRA 102B Till Plains*

Common Name	Scientific Name	Area of Concern
Absinth wormwood	*Artemisia absinthium*	Statewide
Bull thistle	*Cirsium vulgare*	Turner Co.
Canada thistle	*Cirsium arvense*	Statewide
Hoary cress	*Cardaria draba*	Statewide
Leafy spurge	*Euphorbia esula*	Statewide
Musk thistle	*Carduus nutans*	Lincoln Co.
Plumeless thistle	*Carduus acanthoides*	Lincoln Co.
Purple loosestrife	*Lythrum salicaria*	Statewide
Saltcedar	*Tamarix spp.*	Statewide
Spotted knapweed	*Centaurea biebersteinii*	Lincoln Co.
Perennial Sow Thistle	*Sonchus arvensis*	Statewide

* To be updated per the South Dakota locally noxious weed pest list (noxiousweeds.pdf (sd.gov))

Table 2. Noxious weed Mechanical/Cultural Treatment and Species Photos

Common Name	Mechanical/Cultural Treatment	Photo of Species
Absinth Wormwood	Mowing and tillage has a negligible effect on reducing absinth. Herbicide treatment is the most effective method to treat and reduce populations.	 
Bull Thistle	Cultivation or hand digging during the rosette stage prior to bolting will kill this plant. Herbicide treatment is the most effective method to treat and reduce populations.	 
Canada Thistle	Cattle, goats, and sheep will graze young, succulent Canada thistle. Tillage and hand pulling are generally ineffective for reducing Canada thistle as root fragments can stimulate new growth. Mowing can be effective if completed every 10 to 21 days to cause root depletion. Mow when the plants are in early bud growth stage to prevent seed spread. Herbicide treatment is the most effective method to treat and reduce populations.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Hoary Cress	Repeated cultivation is effective during the growing season for two to four years. Herbicide treatment is the most effective method to treat and reduce populations. In areas of small infestations digging could be used as a mechanism for removal if the entire root is removed, however this is not the primary method of removal.	
Leafy Spurge	Grazing (sheep and goats) can be effective at reducing growth, infestation, and spread of spurge, but will not eradicate the species. Cutting, mowing, or pulling is often ineffective as pieces of roots as small as 0.5 inch long and 0.1 inch diameter can produce new shoots. Intensive cultivation (tillage to 4 inches every 3 weeks until soil freezes) or cultivation of 3 to 6 inch tall plants post-harvest can be effective at reducing leafy spurge. Herbicide treatment is the most effective method to treat and reduce populations.	
Musk Thistle	Mowing prior to seed set and flowering will reduce infestation. Cut below the terminal bud before the stem elongates. Herbicide treatment prior to plant bolting is the most effective method to treat and reduce populations. Herbicide effectiveness is severely diminished after late plant bolting and should then mow plants off to prevent seeding.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Plumeless Thistle	Grazing of young, immature plants early on can help control thistle. Hand pulling or tillage can be effective if the thistle plants are severed 2 to 4 inches below the soil surface. Repeat mowing can deplete root stores and cause root dieback. Small and/or isolated infestations can be controlled by removing the seed head and placing in bags for disposal. This is effective for reducing further spread or seedling establishment. Proper disposal is required to prevent seed spread. Herbicide treatment is the most effective method to treat and reduce populations.	 
Purple Loosestrife	Small infestations should be controlled by digging. Herbicide treatment is the most effective method to treat and reduce populations.	 
Saltcedar	Do not remove top growth for three years following herbicide application due to resprouting. Burning and bulldozing have been unsuccessful. Herbicide treatment is the most effective method to treat and reduce populations.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Spotted Knapweed	When found in a small infestation, hand pulling is the most effective option. Large infestations should be "removed and destroyed by burning or mulching." Herbicide treatment is the most effective method to treat and reduce populations.	 
Perennial Sow Thistle	Cultivation will reduce populations. Do not spread roots to noninfested areas. Herbicide treatment is the most effective method to treat and reduce populations.	 

Photo Sources

https://cropwatch.unl.edu/2017/absinth-wormwood-new-invasive-species-nebraska-panhandle

https://www.nwcb.wa.gov/weeds/bull-thistle

https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/bull-thistle.aspx

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https://tswcd.org/noxious-weeds/hoary-cress/

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https://www.nwcb.wa.gov/weeds/plumeless-thistle

https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/purple-loosestrife.aspx

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https://www.canr.msu.edu/resources/spotted-knapweed-centaurea-stoebe

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https://www.canr.msu.edu/resources/perennial-sowthistle-sonchus-arvensis

HEARTLAND GREENWAY

HEARTLAND GREENWAY PIPELINE SYSTEM

SOUTH DAKOTA WEED MANAGEMENT PLAN
LOESS UPLANDS MLRA – 102C

May 2023

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INTRODUCTION

This Weed Management Plan was developed by Navigator Heartland Greenway, LLC (NHG) for the Heartland Greenway Pipeline System (HGPS), to comply with State and Local statutes. NHG is committed to preventing new infestations of weeds along the HGPS Right-of-Way (ROW). The purpose of the Weed Management Plan (Plan) is to avoid exacerbating areas of existing infestations.

Weed treatment methods may include herbicide application and/or mechanical treatments (mowing, disking, hand pulling); which will reduce competition with desirable species and will prohibit the introduction of additional weed seed into the soil.

This plan addresses affected counties in the Loess Uplands (LU) Major Land Resource Area (MLRA), which spans through South Dakota, Nebraska, and Iowa. The pipeline will be installed in the LU area of South Dakota and affects the Counties of Moody, Minnehaha, and Lincoln.

IDENTIFICATION

A weed survey should be conducted prior to construction to identify noxious weeds and/or undesirable species. State and local noxious weeds are identified below (Appendix B, Table 1). Weedy species not listed below may be treated as deemed necessary by weed surveyors and/or agriculture inspectors.

A. Threshold Requirements

All State and County noxious weeds will be treated regardless of density or size of infestation area. Non-noxious species will be treated when an infestation area reaches 10 square feet in size.

PRE-CONSTRUCTION TREATMENT

Herbicide use history is to be obtained from landowners so that herbicides with residual effects are known. (e.g., Atrazine will be a potential problem). If herbicide use with residual impacts are reported, the Weed Management Plan may then be amended to address the side effects of such residual impacts.

Weed treatment will begin as soon as practical upon weed surveying of non-row crop areas. Weed Infested areas are to be identified during survey and geospatially documented. Excessive or heavy traffic in weed infested areas should be avoided to reduce impacts of transporting weed seed along the ROW. Weedy areas will be treated within a target time of 15 days but not to exceed 30 days of surveying using a labelled contact kill chemical application by a state licensed commercial chemical applicator. All herbicide treatment is to occur prior to seed ripening. Herbicide selection will be based on target species and applied per the label. Pre-emergent application is not to be utilized due to the potential to negatively affect future seeding germination. If herbicide treatments cannot be applied to identified areas, then weedy areas will be addressed during construction during the topsoil segregation process or via mechanical treatment, so long as the weed seeds do not ripen before said treatment.

DURING CONSTRUCTION TREATMENT

Disking or stockpiling of topsoil throughout ROW will address untreated weedy vegetation from pre-construction surveys. Temporary stabilization of stockpiles per the Topsoil Stockpile Seeding Protocol (see below) will aid in the prevention of infestation and weed establishment. An agriculture inspector will monitor stockpiles and ROW for weed encroachment and schedule herbicide treatment prior to weedy vegetation creating viable seed.

Seasons will be defined as the following:

- Spring: April, May,
- Summer: June, July, August,
- Fall: September, October,
- Winter: November, December, January, February, March

A. Topsoil (and subsoil) Stockpile Seeding Protocol

To prevent weedy infestations of topsoil and subsoil stockpiles, temporary seeding of said areas is needed. Temporary seed must be properly labeled and tested within 9 months of application for germination viability. Purity and germination percentages are to be equal to or greater than industry standards for the respective species. Seed cannot contain any prohibited noxious weed seeds, and restricted noxious weed seeds shall not excel a cumulative total of 20 per pound.

In accordance with project SWPPP plans, and not greater than 7 days after stockpiling the soil, the stockpiles will be temporarily seeded to accomplish soil stabilized and prevent weedy vegetation establishment.

The seeding of the soil stockpiles will completed in accordance with Natural Resource Conservation Service (NRCS) Conservation Practice 327 via broadcast seeding methodology.

Seeding windows and species selection per NRCS:

- March 15 - May 15 - Perennial Ryegrass - 10 pounds per acre
- May 16 - August 30 - Sudangrass - 20 pounds per acre
- September 1 - December 15 - Winter Rye - 2 bushels per acre
- December 16 - March 14 - Spring Wheat - 2 bushels per acre

Mulch stabilization is warranted if 30% vegetative ground cover is not achieved after 14 days from seed being planted to achieve soil stabilization and prevent weedy vegetation establishment.

Mulch options and related specifications are as follows:

Hydromulch

- Type: KoTon Hydromulch
- Rate: 5,000 lbs per acre
- Tackifier: PAM at a rate of 1 pound per 1000 gallons of slurry.
- Equivalent hydromulch substitution must be approved by agricultural inspector

Certified Weed Free Straw mulch

- Type: any agricultural small grain crop biomass in which the seed has been previously harvested utilizing NAISMA standards to help prevent unwanted noxious weeds
- Application Rate: 2 tons per acre
- Anchor method: Tackifier: PAM at a rate of 1 pound per 1000 gallons of water. One gallon of water is to be applied to 10 square feet.

POST CONSTRUCTION TREATMENT

Upon completion and restoration of the ROW, post construction weed monitoring surveyor will begin the following growing season. Monitoring will continue for two calendar years following completion of construction. In areas of persistent infestation, a 3rd year of monitoring may be required. Any identified weedy areas will be treated within a target time of 15 days but not to exceed 30 days of surveying using a labelled contact kill chemical application by a state licensed commercial chemical applicator. All herbicide treatment is to occur prior to seed ripening. Herbicide selection will be based on target species and applied per the label. Pre-emergent application is not to be utilized due to the potential to negatively affect future seeding germination. If herbicide treatments cannot be applied to identified areas, then weedy areas will via mechanical treatment, so long as the weed seeds do not ripen before said treatment.

Weed surveying and treatment should occur in spring and late summer. Locations with noxious/invasive weeds should be mowed, tilled or sprayed prior to flowering and seed head production. When a weed infestation is surveyed, a chemical treatment will be applied within a target time of 15 days but not to exceed 30 days and a late summer or fall chemical application will be applied to the same area. All selected chemicals must be labeled for the target species. If a water feature is present (e.g. wetland or waterbody), spraying should be conducted using an aquatic herbicide for the targeted species.

A site-specific remediation plan will be developed for areas of material weed infestation (large plot) caused by construction impacts (not caused by adjacent, offsite weed encroachment). This plan will likely include existing vegetation termination, tillage, and reseeding.

WEED MANAGEMENT REPORTING AND DOCUMENTATION

Weed treatment methods may include herbicide application or mechanical treatments (mowing, disking, hand pulling). Methods will reduce competition with desirable species and will prohibit the introduction of additional weed seed into the soil.

Applicators are responsible for logging the following data per treatment area: Geospatially referenced polygon of entire treatment area, parcel ID, treatment type, herbicides used (if any), herbicide applicator name (if applicable).

Herbicide SDS sheets are to be provided to Navigator prior to use.

REFERENCES

USDA

https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-cover-ac-327-conservation-practice-standard

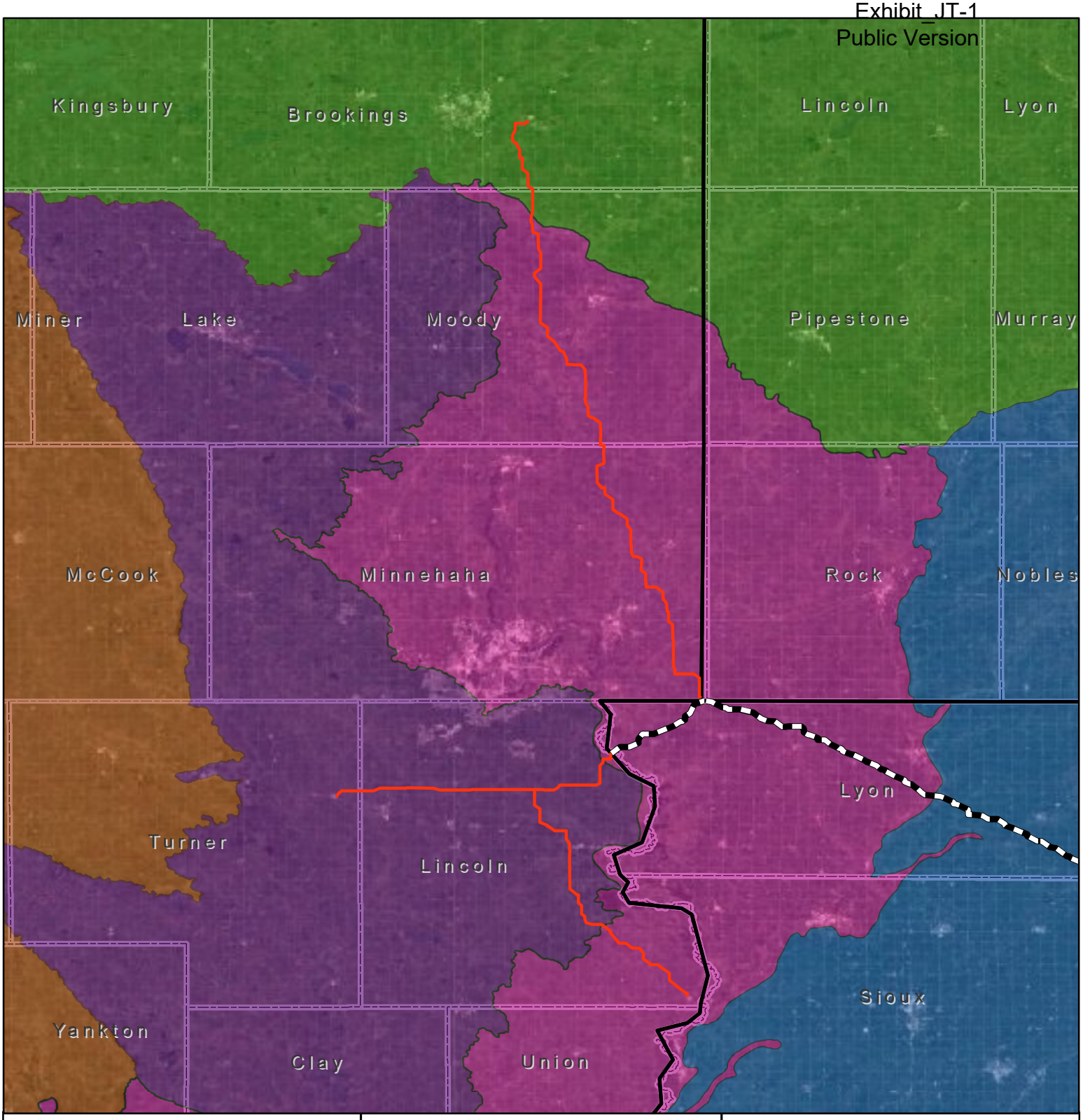
South Dakota Department of Agriculture and Natural Resources
https://danr.sd.gov/Conservation/PlantIndustry/WeedPest/WeedandPestInfo/StateNoxious/default.aspx
https://danr.sd.gov/Conservation/PlantIndustry/WeedFreeForageProgram/WeedFreeForage.aspx
https://danr.sd.gov/Conservation/PlantIndustry/WeedPest/WeedandPestInfo/LocalNoxious/default.aspx
https://danr.sd.gov/Conservation/PlantIndustry/Seed/docs/2019%20Seed%20Inspection%20Brochure.pdf

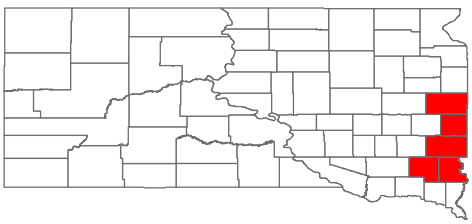
South Dakota State University Extension
https://extension.sdstate.edu/noxious-weeds-south-dakota

North Dakota State University
https://www.ag.ndsu.edu/pubs/plantsci/weeds/w1411-01.pdf

Lincoln County
https://www.lincolncountysd.org/357/Weed-Department

APPENDIX A: MAJOR LAND RESOURCE AREA MAP





South Dakota Project Centerline
Iowa Project Centerline
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County Boundary

Iowa and Minnesota Loess Hills
Loess Uplands
Rolling Till Prairie
Southern Black Glaciated Plains
Till Plains

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HEARTLAND GREENWAY

MLRA Map
Heartland Greenway Pipeline System
Navigator Heartland Greenway, LLC
Brookings, Lincoln, Minnehaha,
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Page 1 of 1	Scale: 1:800,000
NAD 83 UTM 15N ft	Date: April 2023

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Author: MB

APPENDIX B: NOXIOUS WEEDS

Table 1. Noxious Weed List - South Dakota, MLRA 102C Loess Uplands*

Common Name	Scientific Name	Area of Concern
Absinth wormwood	*Artemisia absinthium*	Statewide
Canada thistle	*Cirsium arvense*	Statewide
Hoary cress	*Cardaria draba*	Statewide
Leafy spurge	*Euphorbia esula*	Statewide
Musk thistle	*Carduus nutans*	Lincoln Co.
Plumeless thistle	*Carduus acanthoides*	Lincoln Co.
Purple loosestrife	*Lythrum salicaria*	Statewide
Saltcedar	*Tamarix spp.*	Statewide
Spotted knapweed	*Centaurea biebersteinii*	Lincoln Co.
Perennial Sow Thistle	*Sonchus arvensis*	Statewide

* To be updated per the South Dakota locally noxious weed pest list (noxiousweeds.pdf (sd.gov))

Table 2. Noxious weed Mechanical/Cultural Treatment and Species Photos

Common Name	Mechanical/Cultural Treatment	Photo of Species
Absinth Wormwood	Mowing and tillage has a negligible effect on reducing absinth. Herbicide treatment is the most effective method to treat and reduce populations.	 
Canada Thistle	Cattle, goats, and sheep will graze young, succulent Canada thistle. Tillage and hand pulling are generally ineffective for reducing Canada thistle as root fragments can stimulate new growth. Mowing can be effective if completed every 10 to 21 days to cause root depletion. Mow when the plants are in early bud growth stage to prevent seed spread. Herbicide treatment is the most effective method to treat and reduce populations.	 
Hoary Cress	Repeated cultivation is effective during the growing season for two to four years. Herbicide treatment is the most effective method to treat and reduce populations. In areas of small infestations digging could be used as a mechanism for removal if the entire root is removed, however this is not the primary method of removal.	

Common Name	Mechanical/Cultural Treatment	Photo of Species
Leafy Spurge	Grazing (sheep and goats) can be effective at reducing growth, infestation, and spread of spurge, but will not eradicate the species. Cutting, mowing, or pulling is often ineffective as pieces of roots as small as 0.5 inch long and 0.1 inch diameter can produce new shoots. Intensive cultivation (tillage to 4 inches every 3 weeks until soil freezes) or cultivation of 3 to 6 inch tall plants post-harvest can be effective at reducing leafy spurge. Herbicide treatment is the most effective method to treat and reduce populations.	
Musk Thistle	Mowing prior to seed set and flowering will reduce infestation. Cut below the terminal prior to plant bolting bud before the stem elongates. Herbicide treatment is the most effective method to treat and reduce populations. Herbicide effectiveness is severely diminished after late plant bolting and should then mow plants off to prevent seeding.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Plumeless Thistle	Grazing of young, immature plants early on can help control thistle. Hand pulling or tillage can be effective if the thistle plants are severed 2 to 4 inches below the soil surface. Repeat mowing can deplete root stores and cause root dieback. Small and/or isolated infestations can be controlled by removing the seed head and placing in bags for disposal. This is effective for reducing further spread or seedling establishment. Proper disposal is required to prevent seed spread. Herbicide treatment is the most effective method to treat and reduce populations.	 
Purple Loosestrife	Small infestations should be controlled by digging. Herbicide treatment is the most effective method to treat and reduce populations.	 
Saltcedar	Do not remove top growth for three years following herbicide application due to resprouting. Burning and bulldozing have been unsuccessful. Herbicide treatment is the most effective method to treat and reduce populations.	 

Common Name	Mechanical/Cultural Treatment	Photo of Species
Spotted Knapweed	When found in a small infestation, hand pulling is the most effective option. Large infestations should be "removed and destroyed by burning or mulching." Herbicide treatment is the most effective method to treat and reduce populations.	 
Perennial Sow Thistle	Cultivation will reduce populations. Do not spread roots to noninfested areas. Herbicide treatment is the most effective method to treat and reduce populations.	 

Photo Sources

https://cropwatch.unl.edu/2017/absinth-wormwood-new-invasive-species-nebraska-panhandle

https://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/canadathistle

https://www.nwcb.wa.gov/weeds/canada-thistle

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https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/purple-loosestrife.aspx

https://www.nwcb.wa.gov/weeds/purple-loosestrife

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https://www.illinoiswildflowers.info/weeds/plants/per_sowthistle.htm

https://www.canr.msu.edu/resources/perennial-sowthistle-sonchus-arvensis

HEARTLAND GREENWAY PIPELINE SYSTEM

SOUTH DAKOTA

AGRICULTURAL PROTECTION PLAN

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PURPOSE AND APPLICABILITY

This Agricultural Impact Mitigation Plan (APP or Plan) was developed by Navigator Heartland Greenway LLC (NHG) in coordination with the South Dakota Department of Agriculture (SDDA) for the Heartland Greenway Pipeline System (HGPS) in South Dakota. The HGPS is an approximately 1,350-mile carbon dioxide pipeline system across five states connecting 21 emitting facilities to sequestration and/or commercial/industrial users of carbon dioxide. The South Dakota portion of consists of approximately 112 miles of the HGPS located in Brookings, Moody, Minnehaha, Lincoln and Turner counties, South Dakota.

The purpose of the Plan is to specify measures that NHG will implement to avoid, minimize and mitigate for impacts to privately owned agricultural areas that may result from pipeline construction. The measures described in this document apply only to construction activities occurring partially or wholly on privately owned Agricultural Land. In addition to measures identified in this Plan, NHG will implement practices as appropriate in its Stormwater Pollution Prevention Plan for compliance with Section 402 of the Clean Water Act per the South Dakota NPDES Construction Stormwater General Permit as well as Best Management Practices identified in its Environmental Construction Guidance (ECG) document filed as part of the South Dakota Public Utilities Commission (PUC) permit application.

Unless the easement or other written agreement, regardless of nature, between NHG and the Landowner specifically requires the contrary, the mitigation measures specified in this Plan will be implemented in accordance with the conditions discussed below.

GENERAL PROVISIONS

Conditions in any Federal, State or Local permit and any Landowner agreement supersede the measures in this agreement in those respective areas. Tenants will be consulted where a Landowner has designated in writing that a Tenant has decision making authority on their behalf. If any provision of this Plan is held to be unenforceable, no other provision will be affected by that holding, and the remainder of the Plan will be interpreted as if it did not contain the unenforceable provision.

NHG will implement the mitigation measures and Best Management Practices (BMPs) described in this Plan to the extent they do not conflict with the requirements of Federal and State rules and regulations and/or permits, and approvals obtained by NHG.

NHG will retain qualified contractors to perform mitigation measures; however, Landowners may elect to implement their own measures that may or may not coincide with the measures of this plan. These circumstances are documented on a ‘construction line list’ that will accompany the project alignment sheets.

INSPECTION

NHG will employ independent third-party inspectors that are not affiliated with NHG or its construction contractors on each construction spread. The Agricultural Inspectors' role will be to verify and document compliance with the requirements of this Plan during construction and make appropriate recommendations. The Agricultural Inspectors will:

- Have a bachelor's degree in agronomy, soil science, or equivalent work experience
- be a full-time 3rd party participant on the project;
- provide construction personnel with training on provisions of this Plan before construction begins;
- provide construction personnel with field training on specific topics, such as protocols for topsoil stripping;
- observe construction activities on Agricultural Land for compliance with this APP;
- be responsible for verifying NHG's compliance with provisions of this Plan during construction;
- work collaboratively with the contractor, other NHG inspectors, and right-of-way (ROW) agents in achieving compliance with this APP;
- work to identify problems areas to prevent a non-compliance to be protective of the resources; document instances of noncompliance and work with construction personnel to identify and implement appropriate corrective actions as needed;
- have the authority to stop construction activities that are determined to be out of compliance with the provisions of this Plan, and
- maintain a written log of communications from Landowners regarding compliance with this Plan as well as report Landowner complaints to NHG's lead inspector or right-of-way representative.

CONSTRUCTION SEQUENCE AND SCHEUDLE

Pipeline construction will commence following the receipt of the required permits, approvals, and materials. Initial pipeline construction is estimated to take approximately 4 to 6 months to complete. The activities for pipeline construction, subsequent notification to landowners and governmental agencies as warranted, will be undertaken in the sequence below with the mitigation measures discussed in this plan:

- Topsoil inventory
- Stake centerline and workspace;

- Access-road installation;
- Grubbing and clearing of the construction corridor;
- Installation of stormwater and erosion control measures;
- Placement of pipe and other supplies along the construction corridor;
- Pipeline welding and bending where necessary;
- Installation of tile header systems, if warranted
- Excavation of the pipeline trench;
- Temporary repairs to tile lines, if encountered;
- Placement of the pipeline within the trench;
- Permanent repairs to tile lines damaged during construction activities;
- Backfill of the trench and rough grading;
- Hydrostatic testing of the pipeline;
- Final grading and restoration.

NHG will initiate mitigation measures pursuant to this Plan, unless otherwise specified in this Plan or in an Easement or other agreement with an individual Landowner, within thirty (30) days following completion of Final Cleanup on an affected property, weather permitting or unless otherwise delayed at the request of the Landowner. If implementation of mitigation measures requires additional time, NHG will make temporary repairs or stabilization measures, as warranted, to minimize the risk of property damage or interference with the Landowner's access to or use of the property.

CONTACTS AND NOTICE

NHG will provide Landowners with a telephone number and address that can be used to contact NHG, during and following the completion of construction, regarding construction-related matters and the agricultural mitigation work that is performed on their property. If the contact information changes following construction, NHG will provide Landowners with updated contact information. NHG will respond to Landowner telephone calls and correspondence within a reasonable time.

The following are points of contact (POC) details for the project.

1. **ROW Agent for landowner questions or claims is:**

   NAME, TITLE

   COMPANY

PHONE

EMAIL

2. Agricultural Inspector:

NAME, TITLE

COMPANY

PHONE

EMAIL

3. Advance Notice of Access to Private Property

A. NHG or its agents will provide the Landowner with a minimum of twenty-four (24) hours' notice before accessing his/her property for construction, in addition to any regulatory notifications.

B. Prior notice will consist of a personal or telephone contact, whereby the Landowner is informed of NHG's intent to access the land. If the Landowner cannot be reached in person or by telephone, NHG will mail or hand-deliver to the Landowner's home a dated, written notice of NHG's intent. The Landowner need not acknowledge receipt of the written notice before NHG enters the property.

4. Distribution of Plan

Prior to construction, NHG will provide a copy of this Plan to all landowners and known tenants of the property that will be disturbed by the construction.

DEFINITIONS

Agricultural Inspector	On-site 3rd party Inspector retained by NHG to verify compliance with requirements of this Plan during construction.
Agricultural Land	Land that is actively managed for agricultural purposes, including: cropland, hayland, or pasture; silvicultural activities (i.e., tree farms); and land in government set-aside programs such as Conservation Reserve Program and Conservation Reserve Enhancement Program. Agricultural Land may also include land that is otherwise fallow but would likely be cultivated within 5 years of construction completion.
Best Management Practices (BMPs)	Any structural, vegetative, or management practice used to treat, prevent, manage, or reduce soil erosion. Such practices may be temporary or permanent.
Cropland	Land actively managed for growing row crops, small grains, or hay.
Drain Tile	Artificial subsurface drainage systems and their aboveground appurtenances. Including, but not limited to, clay and concrete tile, vitrified sewer tile, corrugated plastic tubing, and stone drains.

Easement	The agreement(s) and/or interest in privately owned Agricultural Land held by NHG by virtue of which it has the right to construct and operate together with such other rights and obligations as may be set forth in such agreement.
Final Cleanup	Pipeline construction activity that occurs after backfill but before restoration of fences and required reseeding. Final Cleanup activities include: replacing Topsoil, removal of construction debris, removal of excess rock, decompaction of soil as required, final grading, and installation of permanent erosion control structures.
Landowner	Person(s) holding legal title to Agricultural Land from whom NHG is seeking, or has obtained, a temporary or permanent Easement. The term “Landowner” shall include any person(s) authorized in writing by the actual Landowner to make decisions regarding the mitigation or restoration of agricultural impacts to such Landowner’s property.
Livestock	Domesticated animals raised in an agricultural setting to produce labor and commodities, such as meat, eggs, milk, fur, leather, and wool; or to promote the survival of rare breeds.
SDDANR	South Dakota Department of Agriculture & Natural Resources
SD PUC	South Dakota Public Utilities Commission
Non-Agricultural Land	Any land that is not "Agricultural Land" as defined above
Person	An individual or entity, including any partnership, corporation, association, joint stock company, trust, joint venture, limited liability company, unincorporated organization, or governmental entity (or any department, agency, or political subdivision thereof).
Pipeline	The Navigator Heartland Greenway LLC pipeline and related appurtenances located in in South Dakota, as described in Navigator Heartland Greenway LLC’s application to the South Dakota Public Utility Commission.
Planned Drain Tile	Locations where the proposed Drain Tile installation is made known in writing to NHG by the Landowner either: 1) within 60 days after the signing of an Easement; or 2) before the issuance of a Route Permit to NHG; whichever is sooner.
Right-of-Way (ROW)	Land with executed easement agreements upon which NHG has rights for the purpose of operation and/or construction.
Siting Permit	Siting permit issued by the South Dakota Public Utility Commission.
Subsoil	The layer of soil located below the topsoil, but above the parent material. The subsoil layer contains the maximum accumulation of clay minerals, iron, and aluminum oxides and other compounds. The subsoil commonly has blocky or prismatic structure and generally is firmer and lighter in color than the topsoil layer. The subsoil is also called the “B” horizon.

Tenant	Any person, other than the Landowner, lawfully residing on or in possession or control of the land that makes up the "right-of-way" as defined in this Plan.
Topsoil	The uppermost layer of the soil with the darkest color and the highest content of organic matter
Trench Crown	Restored contour elevation along the trench to a finished elevation somewhat above the surrounding ground surface to account for post-construction settling of soil returned to the trench.
USDA	United States Department of Agriculture
Wet Conditions	Adverse soil conditions due to rain events, antecedent moisture, or ponded water, where the passage of construction equipment is or is likely to: cause rutting that mixes topsoil and subsoil, prevent the effective removal or replacement of topsoil and subsoil, prevent proper decompaction, and/or damage underground tile lines.

MITIGATION MEASURES

1. Construction Right-of-Way (ROW) Width

The construction ROW limits and property boundaries will be shown on alignment sheets and provided to the construction contractor, inspectors, and necessary regulatory authorities.

A. The construction workspace will be governed by the Route Permit and potentially other permits and is expected to be a typical 100-feet wide, of which 50 feet will typically be retained in a permanent easement, and 50 feet is considered Temporary Workspace (TWS). At certain select areas where the pipeline crosses natural geographic or larger man-made features such as roads, railroads, or waterbodies, a defined area of additional temporary workspace (ATWS) will be required on each side of the feature.

B. The limits of construction will be staked prior to work at each location prior to initiating any ground disturbing activities.

C. If, for a variety of reasons, the planned construction ROW and/or ATWS is not sufficient to perform the work and implement warranted BMPs, NHG will discuss the need for more workspace with the construction contractor, inspection team, and the Landowner, and will not use more workspace unless allowed in the Landowner agreement or until approved by the Landowner and regulatory authorities, as applicable.

2. Pipeline Depth of Cover

A. Except for aboveground facilities, such as mainline valves, and except as otherwise stated in this Plan, the pipeline will be buried with the following depths of cover on Agricultural Land.

B. NHG will place the pipeline underground in South Dakota with a nominal 60-inches of cover on top of the pipe in all areas of conventional installation and as deep as 10 to 25 or more feet in areas where the pipeline will be installed via bore or horizontal direction drill methods, respectively.

C. Where existing Drain Tile systems are present, and where landowners have, prior to construction, consulted with NHG on specific future planned Drain Tile systems that may be impacted by construction, the pipeline will be installed at a depth that will achieve at least a 12-inch separation between the pipeline and Drain Tile. If unforeseen physical conditions are discovered during construction that prevents minimum separation, the Landowner will be notified. If the Landowner is not reached after a good faith effort, the Agricultural Inspector will be informed, and construction will continue.

D. If, prior to construction, the Landowner plans to install a new Drain Tile system, the Landowner must provide to NHG plans drawn by a qualified professional with experience in Drain Tile design and installation. In determining the proper depth of the pipeline, NHG will accommodate the depth and grade needed for both existing and Planned Drain Tile to function properly. NHG will not change the grade of existing Drain Tile to accommodate the pipeline without the Landowner's advance written consent.

E. NHG intends to maintain a minimum of twelve (12) inches of separation between the pipeline and existing buried utilities.

3. Winter Construction

Winter construction is not planned for the project in South Dakota; however, if constructing the pipeline in winter through agricultural lands is deemed necessary, the following mitigation measures are proposed to protect the productivity of Agricultural lands:

A. *Minimize Topsoil Stripping in frozen conditions.* Frozen conditions can preclude effective Topsoil stripping. When soil is frozen to a depth greater than the depth of the Topsoil, Topsoil cannot be efficiently stripped from the subsoil. If Topsoil stripping must proceed under these conditions, it will only be removed from the area of the trench. A ripper (deep tillage device or scarifier) may be used to break up the frozen Topsoil over the trenchline and a backhoe will remove the Topsoil layer and store the material in a separate pile. The ripper will extend to the depth of Topsoil or twelve (12) inches elsewhere, whichever is less.

B. *Minimize Final Clean-up activities in frozen conditions*. Frozen conditions can preclude effective replacement of frozen topsoil, removal of construction debris, removal of excess rock, soil decompaction, final grading, and installation of permanent erosion control structures. If seasonal or other weather conditions preclude Final Clean-up activities, the trench will be backfilled, the construction ROW stabilized, and temporary erosion control measures will be installed until conditions are conducive for restoration activities to be completed. If Topsoil/spoil piles remain throughout the winter, the Topsoil/spoil piles will be stabilized by an application of mulch and a tackifier or other methods. To prevent subsidence, backfill operations will resume when the ground is

thawed, and the subsoil will be compacted (as needed) prior to Final Clean-up activities. NHG or the construction contractor must monitor these areas until final restoration is complete.

4. Erosion and Sediment Control

Temporary and Permanent erosion and sediment controls will be implemented as required in the respective Construction Stormwater Permit and are described in the ECG to prevent soil erosion and sedimentation.

5. Topsoil Stripping, Trenching, Soil Storage, and Replacement

NHG will use the following Topsoil segregation methods during construction on Agricultural lands. The method selected will be dependent on topsoil conditions, construction method, and Landowner to agreements, regulatory authority or permit requirements and/or other factors:

- Full Construction ROW (see Appendix)
- Ditch-Plus-Spoil Side (see Appendix)

A. The Full Construction ROW topsoil segregation technique consists of stripping topsoil from the entire construction ROW except for the area on which the topsoil will be stored. Ditch-Plus-Spoil Side accounts for stripping the topsoil from only the trench and adjacent area where the subsoils excavated from the trench will be placed to avoid mixing subsoil and topsoil. This may be performed in areas of deep topsoil where use of the construction travel lane would not result in mixing topsoil and underlying sub soil and full-width topsoil segregation would result in an excessively incised ROW imposing stormwater and stabilization concerns.

B. It is not feasible to segregate topsoil in wetlands with saturated soils; all wetland construction will be done in accordance with respective permit conditions.

C. The depth of soil required to be removed will be the lesser of the actual depth of the topsoil or 12 inches. The Agricultural Inspector will periodically observe topsoil segregation operations so that appropriate depths are removed.

D. Equipment operators will be trained to discriminate between Topsoil and subsoil based on obvious color changes. In locations where the Topsoil/subsoil color changes are not easily distinguishable or variable, the Agricultural Inspector will determine the depth.

E. Trench spoil will be placed in a stockpile that is maintained separate from stockpiled Topsoil. If spoil cannot be stockpiled on opposite sides of the trench there will at least approximately 1-foot separation between Topsoil and trench spoil, or a physical barrier in between the piles to prevent mixing.

F. Stockpiled topsoil will be stabilized with a nurse crop, mulch, and/or tackifier in accordance with the Construction Stormwater Permit

G. Topsoil will not be used to construct field entrances or drives, or be otherwise removed from the property, without the written consent of the landowner;

H. During trench backfilling, subsoil material will be replaced first, followed by Topsoil. To prevent subsidence, subsoil will be backfilled and compacted. Compaction by operating construction equipment along the trench is acceptable.

I. Replacing Topsoil will typically be initiated within fourteen (14) days after backfilling the trench and completion of any necessary Drain Tile repairs. If seasonal or other weather conditions prevent compliance with this timeframe, temporary erosion control measures will be implemented and maintained until conditions allow for restoration.

J. Topsoil will be replaced across the stripped area as near as practicable to its original depth. A Trench Crown over the trenchline is permissible to offset potential settling. Following placement of the subsoil crown, Topsoil would be uniformly returned across the stripped area. The height of the crown will generally be equal to, or less than, twelve (12) inches at the center. Breaks in the crown may be cut to accommodate overland water flow across the right-of-way. (see Appendix)

K. If agreed upon in writing between NHG and the landowner, topsoil segregation may not be performed where the pipeline can be installed with a trench width of eighteen (18)-inches or less.

6. Protection of Livestock

NHG will work with landowners with Livestock in proximity of the construction area to ensure proper measures are in place to protect Livestock during all phases of construction and restoration.

A. Ideally the livestock would be able to utilize a field that is not planned to be crossed by the project.

B. Alternately NHG could install exclusion fencing along the disturbed ROW separating livestock from construction.

C. Another option as described in the ECG, where deemed appropriate by NHG, the Contractor may leave plugs of subsoil in the ditch or will construct temporary access bridges across the trench for the Livestock to move Livestock. Trenches may also be sloped where started and ended to allow ramps for Livestock or other wildlife to escape. Space of plugs and ramps will be determined in the field.

7. Temporary and Permanent Repairs of Drain Tile

If underground drain tile is damaged by the pipeline’s construction, it shall be repaired in a manner that assures the tile line's proper operation at the point of repair ensures the functionality of the tile. The following standards and policies shall apply to drain tile repair:

A. The affected Landowner may elect to negotiate with NHG for payment to directly repair, relocate, reconfigure, or replace the damaged Drain Tile. In the event the Landowner chooses to perform the repair, relocation, reconfiguration, or replacement of the damaged Drain Tile, NHG is not responsible for correcting Drain Tile repairs after completion of the pipeline and the Landowner’s repairs. NHG is only responsible for correcting Drain Tile repairs if the repairs were made by NHG or its agents or

designees.

B. Prior to pipeline installation, NHG will contact Landowners to determine if Tile systems may be affected. NHG will attempt to locate and mark the lines within the ROW prior to ground disturbing activities by placing a highly visible flag at the edge of the construction right-of-way directly over the Drain Tile lines. These markers may be moved to coincide with the actual location of the Drain Tile once unearthed; unknown Drain Tile locations encountered during construction will also be marked. Markers should not be removed until the Drain Tile has been permanently repaired.

C. The pipeline trench will provide a minimum of twelve (12) inches of clearance, where practicable, between the pipe and Drain Tiles. In most situations, the pipe will be installed under the Drain Tile; however, where Drain Tiles are deeper than approximately seven (7) feet NHG may elect to install the pipe above the Drain Tile lines.

D. NHG will ensure Drain Tile repairs are made in a manner consistent with industry-accepted methods. Local contractors may perform the repair, replacement, or reconfiguration of the Drain Tiles damaged by pipeline construction. Where damaged Drain Tile is repaired by NHG, the following procedures will apply and algin with drawings in the Appendix:

- If water is flowing through a damaged Tile, temporary repairs should be completed and maintained until permanent repairs can be made.
- Before completing permanent repairs, Drain Tiles will be examined to the extents of the work area to check for damage caused by construction.
- NHG will make efforts to complete permanent Drain Tile repairs within 14-days of lowering-in, weather and soil conditions permitting.
- Following final cleanup, NHG will correct repairs to Drain Tile that fail, provided NHG or its agents or designees made the initial repairs. NHG will not be responsible for Tile repairs that NHG has paid the Landowner to perform.
- Any necessary modifications to the configuration of existing Drain Tile systems will be consistent with the United States Department of Agriculture (“USDA”), Natural Resources Conservation Service.

8. Rock Removal

Excess rocks will be removed from the right-of-way (ROW) such that the size and distribution on the construction ROW will be similar to adjacent, non-disturbed areas.

A. Upon completion of topsoil replacement, the easement area will be free of all rocks larger than three (3) inches in average diameter that are not native to the topsoil prior to excavation.

B. Where rocks are over three (3) inches in size are present, their size and frequency to be similar to adjacent soil not disturbed by construction.

C. The top 24 inches of the trench backfill will not contain rocks in any greater

concentration or size than that which exists in or on the adjacent, natural soils. Soil from which excess rock has been removed may be used for backfill in the top twenty four (24) inches.

D. Consolidated rock removed by blasting or mechanical means will not be placed in the backfill above the natural bedrock profile or above the frostline.

E. In addition, the Pipeline Company will examine areas adjacent to the easement and along access roads and remove any large rocks or debris that may have rolled or blown from the ROW or fallen from vehicles.

9. Removal of Construction Debris

NHG will remove all construction-related debris, material, and litter from the Landowner's property at NHG's expense. The Landowner or land-managing agency may approve leaving specific materials onsite that may provide for beneficial uses for stabilization or habitat restoration.

10. Compaction, Rutting, and Soil Restoration

The following measures will be implemented as practical to avoid, mitigation, and remediate soil compaction.

A. In an effort to minimize soil compaction prior to trenching activities, NHG will, where practical, transport pipe joints (i.e., stringing trucks) as closely as possible along the pipeline centerline.

B. After construction, compaction of the subsoil and/or topsoil will be alleviated on Cropland using deep-tillage equipment.

C. Decompaction of the topsoil, if necessary, will be performed during favorable soil conditions. If the Agricultural Inspector determines that the soil is too wet, decompaction will be delayed until the subsoil is friable/tillable in the top eighteen (18) inches.

D. Deep subsoil ripping in cropland will occur in all traffic and work areas of the pipeline right-of-way where there was full ROW Topsoil stripping unless the Agricultural Inspector determines compaction has not occurred. This includes ATWS.

E. Subsoil ripping equipment may include v-rippers, chisel plows, or equivalents.

F. NHG will restore rutted land as near as practical to its preconstruction condition.

G. Rutted land will be graded and tilled until restored as near as practical to its preconstruction condition. On lands where topsoil was removed, rutting will be remedied before topsoil is replaced.

H. NHG will compensate Landowners, as agreed upon, for the cost of soil restoration on the construction right-of-way and ATWS to the extent such restoration work is performed by the landowner or landowner agent or designee.

I. In the event of a dispute between the Landowner and NHG regarding what areas need

to be deep tilled (i.e., ripped) or chiseled, or the depth at which compacted areas should be ripped or chiseled, NHG will determine the appropriate actions based on the County Inspector's opinion.

11. Land Leveling

A. Following completion of the pipeline, NHG shall restore the construction work areas as practicable to the original preconstruction contours.

B. NHG shall provide the Landowners with a telephone number and address that may be used to alert NHG of the need to perform additional land leveling services.

C. If uneven settling occurs or surface drainage problems develop as a result of the pipeline construction, NHG will provide such land leveling services subsequent to Landowner's notice, weather and soil conditions permitting. Typically, this would be performed at time of year coordinated with field operations and prior to planting or after harvest. Alternately, if the Landowner chooses to perform land leveling activities, NHG shall reimburse the Landowner for that work at an agreed upon rate/price.

12. Repair of Damaged Soil Conservation Practices

NHG shall repair conservation practices (such as conservation easements, agricultural land enrolled in a conservation program, sensitive areas, wetlands, filter strips, terraces, grassed waterways, etc.) that are damaged by the pipeline project, to their pre-construction grade, elevation, vegetation cover, and working condition, unless otherwise agreed upon in writing with the Landowner.

13. Interference with Irrigation Systems

If the pipeline right-of-way and/or ATWS interfere with an operational (or soon-to-be operational) spray irrigation system NGH will

A. implement temporary measures will be implemented to allow an irrigation system to continue to operate across land on which the pipeline is being constructed, if practical; or.

B. establish an acceptable amount of time that the irrigation system may be out of service with the Landowner or Tenant. If not negotiated in advance of construction, NHG will inform the Landowner of the need to take the Irrigation system out of service and agree upon an acceptable amount of time the irrigation system may be out of service. If NHG and the Landowner are unable to agree on the amount of time within ten (10) days of NHG informing the Landowner of the need to take the irrigation system out of service, construction will proceed, and the Landowner will be asked to take the irrigation system out of service.

14. Ingress and Egress

NHG should maximize the use of enter and exit the construction ROW from public roads. Temporary access ramps/road approaches may be constructed using a variety of approved

materials such as rock, timber mats, and other means/methods as permitted by permit or agreement to facilitate the movement of equipment between public roads and the Construction ROW.

15. Temporary Access Roads

A. If public roads do not provide sufficient access to the Construction ROW, NHG will use existing farms roads if feasible and, subject to Landowner approval or easement rights.

B. If temporary access roads in Agricultural Lands require gravel stabilization, geotextile construction fabric will be placed beneath the rock to add stability and to provide a distinctive barrier between the rock and soil surface.

C. Any temporary roads will be designed so as not to affect surface drainage and constructed to minimize soil erosion. Following construction, new temporary roads may be left intact through mutual agreement of the Landowner and NHG unless otherwise restricted by federal, state, or local regulations.

D. During restoration of the right-of-way, temporary access roads will be removed or restored to preconstruction conditions. Where temporary roads are to be removed, the Agricultural Land on which the temporary roads are constructed will be returned to its previous use and restored to a condition equivalent to what existed prior to construction. Restoration techniques for temporary roads will be similar to those used in restoring the construction right-of-way (e.g., decompaction).

16. Weed Control

A. NHG has identified and will implement weed control measures as described in the ECG for pipeline construction.

B. NHG will provide weed control at its aboveground facility sites (e.g., mainline block valve sites, pump stations) to avoid the spread of weeds onto adjacent Agricultural Land during operation activities. Weed control spraying will be conducted in accordance with applicable regulations.

17. Construction Water Discharges

A. NHG will identify locations for discharging water pumped out of trenches or excavations and from hydrostatic test discharges.

B. When dewatering trenches, NHG will discharge the water in a manner that will minimize damaging adjacent Agricultural Land, crops, and/or pasture. Such damages may include, but are not limited to, inundation of crops for more than twenty-four (24) hours and deposition of sediment in cropland and drainage ditches. If water-related damage during discharge from trenches results in a loss of yield, compensation of Landowners will be determined as described in Section 22 of this Plan.

C. Discharge of water will be conducted in accordance with the ECG, federal and state regulations, and permit conditions.

18. Construction in Wet Conditions

The Agricultural Inspector shall determine when construction should not proceed in a given area due to wet conditions and will work with NHG's construction management and the construction superintendent to shut down construction if conditions are too wet to proceed.

Construction in wet soil conditions will not commence or continue at times when or locations where the passage of heavy construction equipment may cause rutting to the extent that the topsoil and subsoil are mixed or underground drainage structures may be damaged.

To facilitate construction in wet soils, SCS may elect to install mats or padding, or use other methods acceptable to the Agricultural Inspector.

19. Procedures for Determining Construction-Related Damages

A. NHG will negotiate in good faith with Landowners who assert claims for construction-related damages. The procedure for resolution of these claims will be in accordance with the terms of the Easements.

B. Negotiations between NHG and any affected Landowner will be voluntary in nature and no party is obligated to follow a specific procedure or method for computing the amount of loss for which compensation is sought or paid, except as otherwise specifically provided in the Easements. In the event a Landowner should decide not to accept compensation offered by NHG, the compensation offered is only an offer to settle, and the offer shall not be introduced in any proceeding brought by the Landowner to establish the amount of damages NHG must pay. In the event that NHG and a Landowner are unable to reach an agreement on the amount of compensation, any such Landowner may seek further recourse as provided in the Easement.

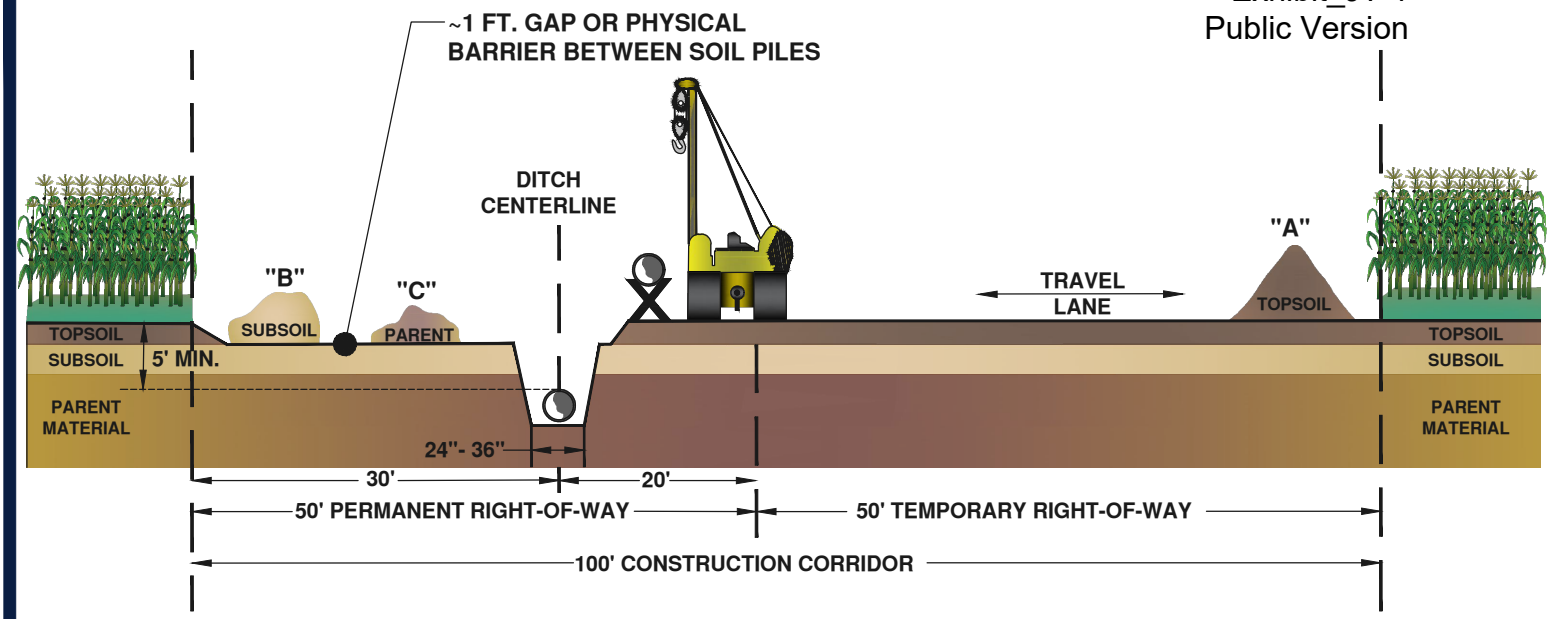
20. Indemnification

Indemnification obligations relating to the pipeline installation covered by this Plan shall be determined in accordance with the terms of the Easements and applicable law.

21. Drain Tile Repair Following Pipeline Installation

A. If, after pipeline installation, the Landowner must make repairs to the Drain Tile system within the right-of-way or plans to install a new Drain Tile system, the Landowner may contact NHG for review of the work plan prior to commencing any activities within the right-of-way to be aware of any requirements and limitations on the work as necessary to protect the safety and integrity of NHG's facilities. The Landowner will be responsible for contacting 811 or the local one call center prior to any excavation near the pipeline and complying with all necessary requirements to protect the safety and integrity of NHG's facilities.

APPENDIX A: CONSTRUCTION TYPICAL DRAWINGS



NOTES:

1. STRIP TOPSOIL ("A") ACCORDING TO THE TOPSOIL DEPTHS BASED ON RESULTS FROM THE TOPSOIL SURVEYS. PLACE "A" ALL THE WAY TO THE FAR SIDE OF THE TRAVEL LANE . IN AREAS OF THICKER "A" HORIZONS, "A" MAY BE SPLIT TO BOTH FAR SIDES OF THE RIGHT-OF-WAY IF NEEDED AND APPROVED BY THE AGRICULTURAL INSPECTOR.

2. EXCAVATE TRENCH. ENSURE DIFFERENT SOIL HORIZONS ("B" AND "C") ARE IN SEPARATE STOCKPILES. STOCKPILE THE "B" SPOIL (AND "C" IF PRESENT) SUCH THAT IT IS ON EXISTING SUBSOIL AND NOT ON TOP OF TOPSOIL. MAINTAIN A VISUAL SEPARATION FROM AND/OR OR A PHYSICAL BARRIER BETWEEN THE "B" AND THE "A" STOCKPILES.

3. STOCKPILING SHALL ALLOW FOR REPLACEMENT OF SOIL HORIZONS BACK TO ORIGINAL SEQUENCES WITHOUT LOSS OF SOIL. MAINTAIN A VISUAL SEPARATION (APPROXIMATELY 1-FT.) OR PHYSICAL BARRIER (SILT FENCE, MULCH, FABRIC, ETC.) BETWEEN STOCKPILES AT ALL TIMES. WHEN PARENT MATERIAL IS PRESENT IN THE TRENCH PROFILE, ENSURE IT IS STOCKPILED SEPARATELY, USING A VISUAL SEPARATION OR PHYSICAL BARRIER, FROM OTHER STOCKPILED SOILS AND IS NEVER STOCKPILED ON TOP OF EXISTING TOPSOIL/ NATURAL GRADE.

4. LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGE PATHWAYS.

5. TOPSOIL AND TRENCH SPOIL PILES RELATIVE POSITIONS CAN BE EDITED WITH AGREEMENT OF THE AGRICULTURAL INSPECTORS OR COMPANY REPRESENTATIVE.

6. TO AVOID WIND EROSION, TEMPORARILY SUSPEND TOPSOIL HANDLING OPERATIONS DURING INORDINATELY WINDY CONDITIONS UNTIL MITIGATIVE MEASURES CAN BE IMPLEMENTED OR CONDITIONS CALM.

7. STABILIZE TOPSOIL (TEMPORARY SEED, TACKIFIER, MULCH) THAT WILL REMAIN FOR MORE THAN 14 DAYS IN COMPLIANCE WITH RESPECTIVE WEED PLAN OR AGRICULTURAL MITIGATION PLAN.

FOR CONSTRUCTION OF LESS THAN 12" OUTSIDE DIAMETER

HEARTLAND GREENWAY

HGS-BMP-029-SDP

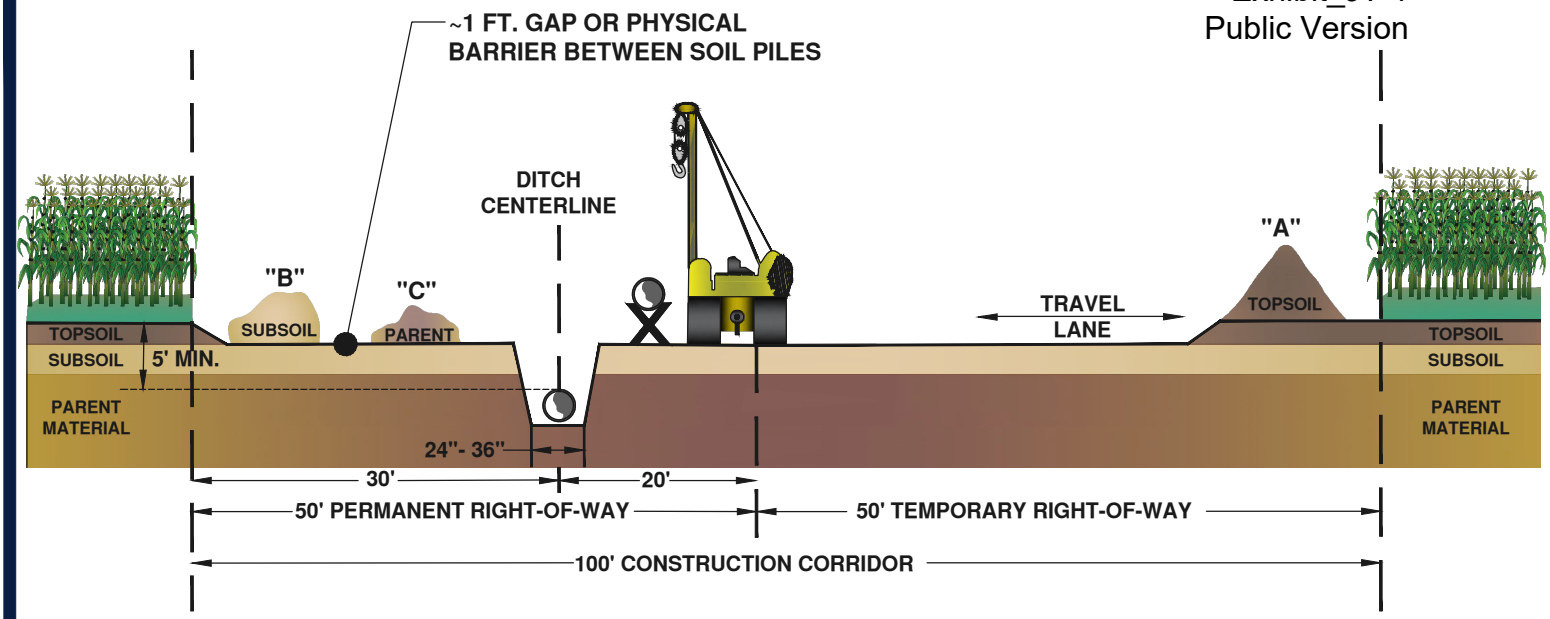
DITCH AND SPOIL TOPSOIL SEGREGATION

SMALL DIAMETER (<12"Ø) PIPE

NOT TO SCALE

Navigator CO_2

TYPICAL CONSTRUCTION DETAIL



NOTES:

1. STRIP TOPSOIL ("A") ACCORDING TO THE TOPSOIL DEPTHS BASED ON RESULTS FROM THE TOPSOIL SURVEYS. PLACE "A" ALL THE WAY TO THE FAR SIDE OF THE TRAVEL LANE . IN AREAS OF THICKER "A" HORIZONS, "A" MAY BE SPLIT TO BOTH FAR SIDES OF THE RIGHT-OF-WAY IF NEEDED AND APPROVED BY THE AGRICULTURAL INSPECTOR.

2. EXCAVATE TRENCH. ENSURE DIFFERENT SOIL HORIZONS ("B" AND "C") ARE IN SEPARATE STOCKPILES. STOCKPILE THE "B" SPOIL (AND "C" IF PRESENT) SUCH THAT IT IS ON EXISTING SUBSOIL AND NOT ON TOP OF TOPSOIL. MAINTAIN A VISUAL SEPARATION FROM AND/OR OR A PHYSICAL BARRIER BETWEEN THE "B" AND THE "A" STOCKPILES.

3. STOCKPILING SHALL ALLOW FOR REPLACEMENT OF SOIL HORIZONS BACK TO ORIGINAL SEQUENCES WITHOUT LOSS OF SOIL. MAINTAIN A VISUAL SEPARATION (APPROXIMATELY 1-FT.) OR PHYSICAL BARRIER (SILT FENCE, MULCH, FABRIC, ETC.) BETWEEN STOCKPILES AT ALL TIMES. WHEN PARENT MATERIAL IS PRESENT IN THE TRENCH PROFILE, ENSURE IT IS STOCKPILED SEPARATELY, USING A VISUAL SEPARATION OR PHYSICAL BARRIER, FROM OTHER STOCKPILED SOILS AND IS NEVER STOCKPILED ON TOP OF EXISTING TOPSOIL/ NATURAL GRADE.

4. LEAVE GAPS IN TOPSOIL AND SPOIL PILES AT OBVIOUS DRAINAGE PATHWAYS.

5. TOPSOIL AND TRENCH SPOIL PILES RELATIVE POSITIONS CAN BE EDITED WITH AGREEMENT OF THE AGRICULTURAL INSPECTORS OR COMPANY REPRESENTATIVE.

6. TO AVOID WIND EROSION, TEMPORARILY SUSPEND TOPSOIL HANDLING OPERATIONS DURING INORDINATELY WINDY CONDITIONS UNTIL MITIGATIVE MEASURES CAN BE IMPLEMENTED OR CONDITIONS CALM.

7. STABILIZE TOPSOIL (TEMPORARY SEED, TACKIFIER, MULCH) THAT WILL REMAIN FOR MORE THAN 14 DAYS IN COMPLIANCE WITH RESPECTIVE WEED PLAN OR AGRICULTURAL MITIGATION PLAN.

FOR CONSTRUCTION OF LESS THAN 12" OUTSIDE DIAMETER

HEARTLAND GREENWAY

HGS-BMP-028-SDP

FULL WIDTH TOPSOIL SEGREGATION

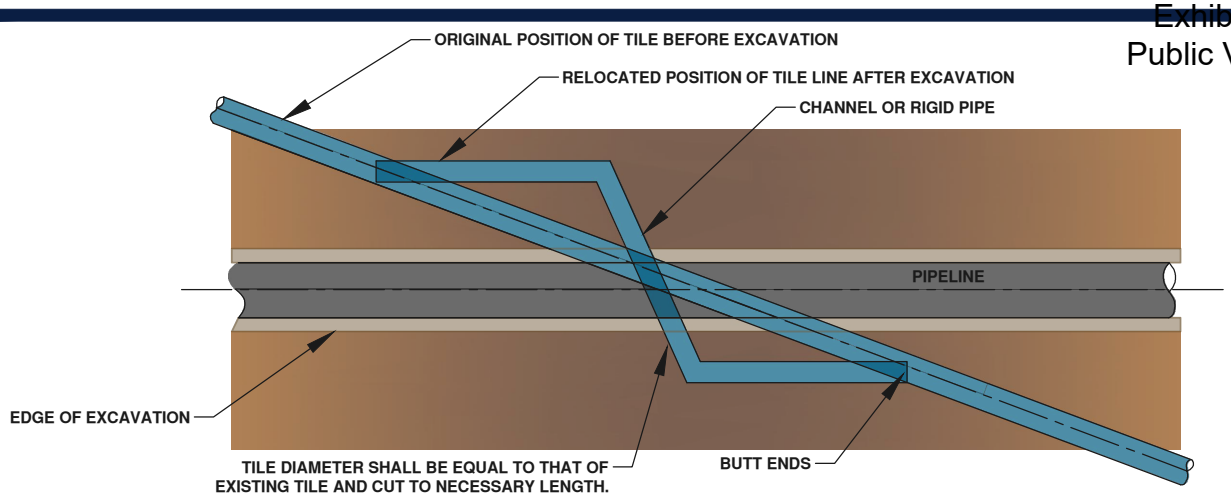
SMALL DIAMETER (<12"Ø) PIPE

NOT TO SCALE

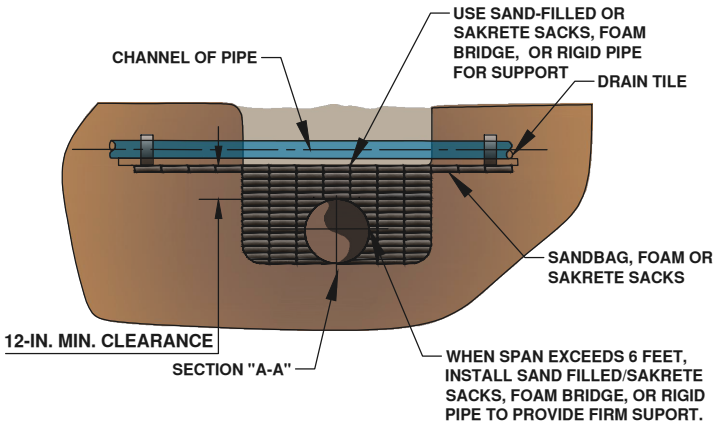
Navigator CO_2

TYPICAL CONSTRUCTION DETAIL

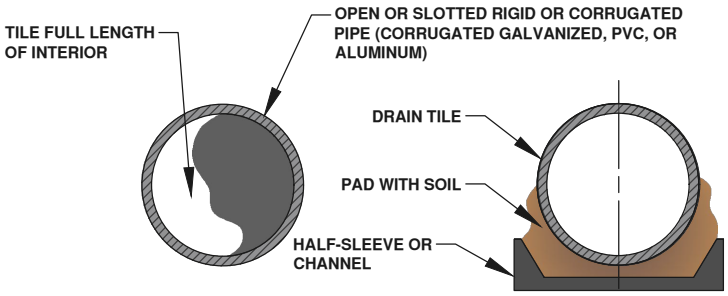
MAY 2022



PLAN VIEW



SECTION VIEW



SECTION A-A
RIGID OR DOUBLE WALL CORRUGATED PIPE OR CHANNEL

Minimum Support Table

Tile Size	Pipe Size
3"	4" Standard Wt.
4"-5"	6" Standard Wt.
8"-9"	10" Standard Wt.
10"	12" Standard Wt.

Channel Schedule

Tile Size	Channel Size
3"	4" @ 5.4 lb.
4"-5"	5" @ 6.7 lb.
8"-9"	7" @ 9.8 lb.
10"	10"@ 15.3 lb.

NOTES:

1. PRACTICAL TILE REPAIR AND REPLACEMENT SHALL MAINTAIN ORIGINAL ALIGNMENT GRADIENT AND WATER FLOW TO THE GREATEST EXTENT POSSIBLE. IF RELOCATION IS REQUIRED, THE INSTALLATION ANGLE MAY VARY DUE TO SITE SPECIFIC CONDITIONS AND LANDOWNER RECOMMENDATIONS.

2. 2-FT. MIN. LENGTH OF CHANNEL OR RIGID PIPE SHALL BE SUPPORTED BY UNDISTURBED SOIL, OR IF CROSSING IS NOT AT 90 DEGREES TO PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TO TRENCH. SHIM WITH SAKRETE, SANDBAGS, OR FOAM TO UNDISTURBED SOIL. OTHER METHODS OF SUPPORTING DRAIN TILE MAY BE USED IF ALTERNATE PROPOSED EQUIVALENT IN STRENGTH AND IF APPROVED BY COMPANY REPRESENTATIVES AND LANDOWNER IN ADVANCE.

3. DRAIN TILES WILL BE PERMANENTLY CONNECTED TO EXISTING DRAIN TILES 2 FT. MIN. OUTSIDE OF EXCAVATED TRENCH LINE USING INDUSTRY STANDARD TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES, INCLUDING SLIP COUPLINGS.

4. DIAMETER OF RIGID PIPE SHALL BE OF ADEQUATE SIZE TO ALLOW FOR THE INSTALLATION OF THE TILE FOR THE FULL LENGTH OF RIGID PIPE. SITE SPECIFIC ALTERNATIVE SUPPORT SYSTEM TO BE DEVELOPED BY COMPANY REPRESENTATIVES AND FURNISHED TO CONTRACTOR FOR SPANS IN EXCESS OF 20', TILE GREATER THAN 10', AND HEADER SYSTEMS.

5. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE LATERALLY INTO THE EXISTING TILE TO FULL WIDTH OF THE RIGHT-OF-WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. ALL DAMAGED TILE SHALL BE REPAIRED TO ORIGINAL GRADE AND CONDITION.

6. RELOCATION OF DRAIN TILE IS ONLY TO OCCUR WHEN THE ANGLE OF THE PROPOSED PIPE TO THE EXISTING DRAIN TILE IS LESS THAN 20°. IN THESE CIRCUMSTANCES, THE RELOCATED TILE SHALL BE 45° FOR THE ENTIRETY OF THE NORMAL TRENCH WIDTH. IN AREAS WHERE THE TRENCH WIDTH ITSELF EXCEEDS NORMAL WIDTH, THE RELOCATED DRAIN TILE TO PIPELINE MAY EXCEED 45°.

HEARTLAND GREENWAY

HGS-BMP-026

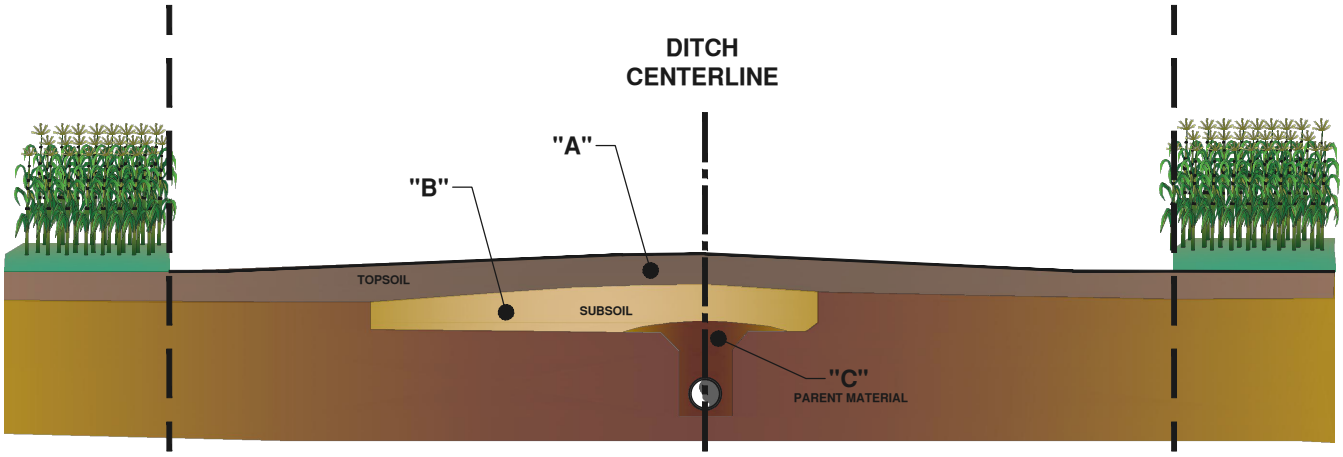
PERMANENT TILE DRAIN INSTALLATION/REPAIR

NOT TO SCALE

Navigator CO_2

TYPICAL CONSTRUCTION DETAIL

MAY 2022



NOTES:

1. REPLACE SPOIL PILES IN THE REVERSE ORDER THEY WERE REMOVED SUCH THAT PARENT MATERIAL, IF PRESENT, IS REPLACED FIRST; FOLLOWED BY SUBSOIL.

2. COMPACT SPOIL DURING REPLACEMENT.

3. SUBSOIL DE-COMPACTION OF AGRICULTURAL LANDS TO BE PERFORMED IN ACCORDANCE WITH STATE AGRICULTURAL MITIGATION PLAN OR LANDOWNER SPECIFICATION IN LINE LIST.

4. PRIOR TO DE-COMPACTION, APPLY SOIL ENHANCEMENTS AS DETAILED IN THE AGRICULTURAL MITIGATION PLAN. INCORPORATE SOIL ENHANCEMENTS VIA DE-COMPACTION PROCEDURES.

5. CROWN TRENCH WITH SPOIL MATERIALS TO ACCOUNT FOR ANTICIPATED SETTLING OVER THE TRENCH.

6. REPLACE TOPSOIL IN AN EFFORT TO REFLECT PRE-CONSTRUCTION DEPTHS, AS PRACTICAL.

HEARTLAND GREENWAY

HGS-BMP-031

DITCH RESTORATION AND BACKFILL

NOT TO SCALE

Navigator CO_2

TYPICAL CONSTRUCTION DETAIL

MAY 2022

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o

IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,	:	**HP 22-002** **APPLICANT'S RESPONSES TO STAFF'S THIRD SET OF DATA REQUESTS**

o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o

Applicant Navigator Heartland Greenway LLC makes the following responses to Staff's Third Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a). These responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

3-1) Refer to Page 37 of the Application. The Applicant states it "will consult with the appropriate regulatory agencies to establish the appropriate protective measures to avoid or mitigate wildlife seasonal, timing or mitigation concerns." Have the protective measures been determined? If yes, please provide. If no, please provide a timeline for determination.

RESPONSE: Applicant received a consultation letter from the South Dakota Department of Game Fish & Parks on January 25, 2022, and October 3, 2022. A copy of the letter is attached. Additional consultation will be performed to address comments related to construction methodologies or time of year restrictions. Applicant expects this to be completed by the end of Q2.

3-2) Refer to Page 38 of the Application. The Applicant states that "consultation with USFWS regarding migratory birds and potential impacts to BCCs is ongoing." Has the Applicant concluded its consultation with USFWS? If yes, please summarize the consultation and potential impacts.

RESPONSE: USFWS informed Applicant in the last half of 2022 that its guidance on this issue was imminent and would be provided by the end of March 2023. Applicant has not yet received the guidance, but will consult as appropriate after receipt. Applicant will supplement this answer when it has received guidance from USFWS.

3-3) Refer to Page 38 of the Application. Regarding walk-in area access impacts, the Applicant states that "these impacts are considered small because of the area of impact in comparison to the acreage open for hunting, and the small numbers of hunters that likely use the area." Please provide support for the statement that small numbers of hunters likely use the area.

RESPONSE: As of the date of this response and according to the SDGFP Public Hunting Atlas there is currently one walk-in area crossed by the Project on the POET Chancellor Lateral.

3-4) Refer to the Applicant's response to Staff data request 1-12 and 1-17. Please provide the Geohazard Analysis when completed and the map required by ARSD 22:10:22:14(3). Also, describe the mitigation measures that will be implemented.

RESPONSE: The Phase I - Geological and Geohazard Desktop Study Report was developed in support of the Project preliminary planning efforts. The report provides an overview of the expected geotechnical conditions along and in proximity to the route using publicly available data and in-house database information from our consultant, to identify potential geohazard risks and hazards which could affect the proposed pipeline segments within the state of South Dakota. This Phase I Desktop Report is provided as an attachment.

The Phase II study will include field verification and additional due diligence activities which may include site specific assessments documented by geotechnical observations, field notes, photographs, limited measurements, and GPS location of features at select areas of interest identified in the Phase I report. Information captured in this Phase of the Project will be utilized to further assess the potential risk, outline areas for potential further study, and develop potential risk mitigation measures.

3-5) Refer to the Applicant's response to Staff data request 1-32. Please provide an update on Moody County's pipeline moratorium resolution.

RESPONSE: The Moody County Planning and Zoning Board voted on March 21, 2023, to extend the one-year pipeline moratorium that it had earlier passed. It was extended for one year. The Applicant understands that the Board may form a working group and hold a series of public-input meetings to address setbacks, starting in May 2023, with a stated goal of adopting an ordinance by July 2023.

3-6) Refer to Page 53 of the Application. The Applicant states "the remaining 93.4 miles of the Project could not be surveyed due to lack of access or were located outside of high and medium priority areas. Additional cultural resource surveys for the unsurveyed jurisdictional areas and areas of high and medium probability are planned after harvest in 2022 and will follow the same strategy outlined in this summary."

a) How many miles of the Project is the Applicant unable to survey due to lack of access? Please explain the main reason(s) for the lack of access.
b) Was the Applicant able to survey the areas of high and medium probability after harvest? If not, when will the Applicant finish the surveying?

RESPONSE: See below for responses.

a) Surveys will resume in April 2023 and approximately 11 miles are needed for cultural surveys in federal jurisdictional areas. Of that mileage approximately 8.6 miles are not accessible. Lack of access is due to landowners not granting survey permission. Although Applicant has provided notice to landowners that we have survey rights under SDCL § 21-35-31, Applicant is choosing not to survey those landowners that are emphatically resistant to grant survey permission and/or those landowners represented by counsel that have stated that no surveys take place on their property without proceeding through the injunction process.
b) Refer to response in 3-6 (a).

3-7) Refer to Page 57 of the Application. The Applicant states it has executed a letter of intent with four trade Unions to ensure highly skilled and qualified labor resources are available to support the construction of the Project. Please provide the executed letters of intent.

RESPONSE: Copies of the executed letters of intent are attached.

3-8) Refer to Page 59 of the Application. The Applicant states "all employees and contractors must abide by all federal, state and local laws. If any infractions occur, the employees or contractors will be subject to termination." Please clarify if an infraction may lead to termination or will be subject to termination. For example, if an employee receives a speeding ticket, will they be subject to termination?

RESPONSE: Any infraction of Federal, State, and Local laws may lead to and be subject to termination. The Applicant will review on a case by case basis if the situation occurs.

3-9) Refer to Page 59 of the Application. The Applicant states "generally, trash will be removed from the construction ROW on a daily basis." In what situations will trash not be removed from the construction ROW on a daily basis?

RESPONSE: General refuse will be removed daily. Section 2.4 of Applicant's Environmental Construction Guidance, which addresses waste management, provides that all waste materials (defined as general household refuse, oil or other waste liquids generated as a result of equipment maintenance) will be removed daily. Larger construction-related refuse, like pipe skids, for example, may be removed later than the same day the pipe is placed in the ground.

3-10) Refer to Page 59 of the Application. The Applicant states it will "maintain emergency response equipment and personnel at strategic points along the route and train their personnel to respond to any pipeline emergencies."

a) What type of emergency response equipment will be maintained at strategic points along the route? How many strategic points has the Applicant identified along the route?
b) The Applicant stated that it will hire 2 to 4 permanent employees in South Dakota. Please explain how 2 to 4 permanent employees can cover all the strategic points along the 111.9 mile route.

RESPONSE: See below for responses.

a) Applicant's Emergency Response Plan will include the specific information requested. The plan is under development and a draft should be completed in Q4 2023. Emergency response equipment and locations of personnel and equipment are under review. There is a series of baseline equipment that will be maintained across the footprint, which includes but is not limited to stationary/personal monitors and SCBA's.
b) 2-4 full time staff are assumed with supplemental contract labor. Sections 7.1 and 7.2 of the Application and as reiterated in Vidal Rosa's testimony #21, state that approximately 10 employees/ permanent jobs are anticipated in South Dakota. Full time staff will include measurement and pipeline techs within the State and subject matter experts that float across the system.

3-11) Refer to Page 60 of the Application. The Applicant states "an emergency response plan for the HGPS is being prepared and will be in place prior to commencing operation." Can the Applicant prepare the emergency response plan and submit it for Commission consideration prior to the evidentiary hearing? If no, please explain.

RESPONSE: Objection. The emergency response plan is within the jurisdiction of PHMSA and is preempted by federal law. Without waiving the objection, the Emergency Response Plan is under development and a draft will be completed after collaboration with local EMS departments. The coordination activities that have been and will be undertaken with first responders, and their timing, are described in the answer to DR 3-12 (a)). PHMSA requires that the emergency response plan be submitted before operation, which is not anticipated until Q4 2024. As indicated in the PHMSA Exceedance Table provided in Exhibit D of the Application, Applicant expects to have the plan completed and vetted 90-180 days before in-service, which would be Q3 2024.

3-12) Refer to Page 60 of the Application. The Applicant states in the development of the emergency response plan, the Applicant will be coordinating with "existing emergency response department along, and in proximity to, the route to ensure they and any mutual aid parties are informed of the operation risks and equipped to respond in the unlikely event of a release."

a) Please describe in detail what that coordination will entail.
b) Has the Applicant begun coordinating with existing county emergency response departments? If yes, please identify all departments the Applicant has coordinated with. If no, when does the Applicant intend to begin coordinating with those departments?
c) Does the Applicant intend to purchase the necessary emergency response equipment for each county? If yes, please provide a list of equipment that the Applicant intends to purchase for each county.

RESPONSE: See below for response.

a) The Applicant's Emergency Response Engagement Plan includes the following:
- Conduct stakeholder and emergency/first responder proctored CO2 training Q1 2023
- Draft preliminary Emergency Response Plan between NHG and external stakeholders in development Q3 2023
- Identify and obtain necessary resources to execute the preliminary plan after local/regional plans are compiled Q1 to Q2 2024.
- The Applicant will set up a process for first responders to submit equipment requests.
- NAV911 outcall system training
- Operations personnel and/or 3rd party response team to supplement regional first responders
- Perform drills to measure the effectiveness of the plan and adjust accordingly prior to placing in service and assets are established (49 CFR 195.402.15)
- Conduct annual drills upon in-service

b) Yes, the Applicant has been engaging local county officials and emergency response personnel since Summer of 2022. Most recently, during Q1 2023, NHG conducted emergency/first responder CO2 training. The following is a list of emergency response departments NHG has coordinated with and attended the CO2 training:

- Brookings County - Director of County Development and Emergency Management
- City of White and Brookings County Ambulance
- Brookings County Ambulance

- Lincoln County, Director of EMS
- Lincoln County Sheriff's Office
- Lincoln County 911 dispatch center
- Lincoln County Emergency Management Office
- City of Hudson Fire Department
- Worthing Fire Department
- Tea Fire Department
- Lennox Area Ambulance
- Lennox Fire Department
- Minnehaha County Director of EMS
- Minnehaha County Sheriff's Office
- Valley Springs Fire Department
- Moody County Director of Emergency Management
- Moody County Sheriff's Office
- Colman Fire and Rescue Department
- South Dakota Emergency Management
- Flandreau Santee Sioux Tribe

c) Developing the list of necessary emergency equipment is a collaborative process between Applicant and the emergency responders. The first step was providing initial CO2 training in January-February 2023 so that all departments had the same awareness of what could happen in the event of a CO2 release. Applicant gathered information to start developing drafts of the emergency response plans. In Summer 2023 NHG will deploy an online tool where EMS departments can communicate equipment they have or feel they need to respond to an emergency of our system. Applicant will assess the responses, continue collaboration, and procure necessary equipment and/or reimburse departments to procure as warranted such that all necessary equipment needs are fulfilled prior to operating the system.

3-13) Refer to Page 60 of the Application. The Applicant states "throughout operation of the system, the Applicant will conduct and host emergency response drills with its employees and local emergency responders, which will include planned drills, desktop events, and simulated field events." Please provide the frequency in which each type drills will be conducted.

RESPONSE: PHMSA requires emergency response drills to be performed once a calendar year and no more than 15 months apart. The Applicant will perform each type of drill at least once per year.

3-14) Refer to Page 61 of the Application. The Applicant states "in order to address the potential for delays associated with weather and site conditions, the Applicant may need to conduct construction activities between the hours of 7:00 PM and 7:00 AM on an as needed basis." Does the Applicant have any policies regarding the distance from an occupied residence when it proposes to conduct either late night or early morning construction activities?

RESPONSE: The Applicant assumes, conservatively, that residences within 1/4 of a mile may be affected from HDD construction activities that may take place overnight due to noise potential to approach 55 DbA Ldn. Applicant will coordinate with the affected persons offering compensation and hotel accommodations.

3-15) Refer to Page 61 of the Application. The Applicant states "HDD activities are required to run longer hours or even continuously to maintain the integrity of the drilled pathway for safe and proper installation of the respective pipe section." Please explain why the Applicant can't commence HDD drilling at a specific point of time during the day to ensure that the installation can be completed by approximately 7:00 PM.

RESPONSE: Installation of a pipeline segment via HDD can take weeks to months to complete depending on factors including the geology, diameter of the pipeline, and the length of the HDD. The vast majority of the HDD installation process will be performed during typical working hours; extended hours and/or overnight activity is limited to critical points when pausing could compromise the integrity of the HDD hole or successful completion of the pipeline pull back (pulling the pipeline segment though the hole).

Dated this 14th day of April, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

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Attorneys for Navigator Heartland Greenway

OBJECTIONS

The objections stated to Staff's Third Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

CERTIFICATE OF SERVICE

I hereby certify that on the 14th day of April, 2023, a true and correct copy of the foregoing Applicant's Responses to Staff's Third Set of Data Requests was served via e-mail transmission to the following:

Ms. Kristen Edwards
Staff Attorney
South Dakota Public Utilities Commission
500 E. Capitol Ave.
Pierre, SD 57501
Kristen.edwards@state.sd.us

Mr. Jon Thurber
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/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

SOUTH DAKOTA DEPARTMENT OF
GAME, FISH AND PARKS
523 EAST CAPITOL AVENUE | PIERRE, SD 57501

January 25, 2022

Laurid Broughton
Environmental Solutions &Innovations, Inc.
4525 Este Ave.
Cincinnati, OH 45232

RE: Heartland Greenway-Navigator
Proposed Carbon Capture Pipeline
Brookings, Minnehaha and Moody Counties, South Dakota
South Dakota Game, Fish and Parks Siting Recommendations

Dear Laurid,

Thank you for contacting South Dakota Game, Fish and Parks (GFP) regarding the proposed Heartland Greenway Navigator carbon capture and sequestration pipeline project in Brookings, Minnehaha and Moody Counties, South Dakota. The proposed project would include the construction of approximately 60 miles of underground pipeline through South Dakota. We strive to collaborate with developers to balance wildlife conservation with development in our state. The purpose of this letter is to provide information, siting recommendations (e.g. avoidance, minimization and mitigation measures) and wildlife survey recommendations for the development and siting of the proposed project. We have prepared the following information to address environmental concerns regarding threatened, endangered, and rare species, areas of high conservation value, and species of concern in South Dakota. Impacts to wildlife and their associated habitats can be minimized by using responsible, wildlife friendly siting recommendations early in the project planning stage of development.

The Heartland Greenway project was originally introduced to GFP in October of 2021 via a submission to our online environmental review tool. Shortly after the project submission, representatives from GFP as well as the South Dakota Department of Agriculture and Natural Resources met with representatives from Environmental Solutions & Innovations (ESI) to discuss the project and any permitting needs from each respective agency. During that meeting, GFP made ESI aware of potential threatened or endangered species present in the project area, as well as our role in permitting. GFP appreciates the early engagement with us at this stage of project planning. We are providing this letter as a follow-up to that meeting, and to document our wildlife related concerns and recommendations for the Heartland Greenway Project.

SOUTH DAKOTA NATURAL HERITAGE DATABASE

The South Dakota Natural Heritage Program monitors species at risk. Species at risk are those that are listed as threatened or endangered at the state or federal level or those that are rare. Rare species in South Dakota are found at the periphery of their range, have isolated populations or are species of which we simply do not have extensive information. A list of species monitored by the Heritage Program can be found at https://gfp.sd.gov/natural-heritage-program/. We recommend a ***yearly database***

search, to ensure that developers are aware of changing patterns in wildlife use at a site. **Please note many places in South Dakota have not been surveyed for rare or protected species and the absence of a species from the database does not preclude its presence from your project area.**

Species records can be requested through the Natural Heritage Program at this link: https://gfp.sd.gov/forms/heritagedata/. Alternatively, GFP has an online Environmental Review Tool available for project planning purposes: https://ert.gfp.sd.gov/ This tool is free to use and has a number of publicly available spatial layers as well as the capability to generate a report of species that may be present. Please note that this tool will not give specific locations of sensitive species; only a list of species that may be found in the project area. ESI submitted a project to the environmental review tool, and a resulting report (Project ID: 2021-10-21-163) was generated and provided to the project proponent. The results in the report include any species within 5 miles of the proposed project area.

We have completed an initial search of the project area and found the following records within 1 mile of the proposed project boundary:

- Topeka Shiner (*Notropis topeka*), federally endangered
- Powesheik Skipperling (*Oarisma powesheik*), federally endangered; last observed in 1995
- Lined Snake (*Tropidoclonion lineatum*), state endangered

HABITATS IMPORTANT TO CONSERVATION IN SOUTH DAKOTA

Native Grasslands

Grasslands are of high conservation value in South Dakota, and many acres are converted to cropland annually. Approximately 70% of the native mixed-grass prairie has been lost in eastern South Dakota, and approximately 32% has been lost in western South Dakota (Wright and Wimberly 2013, Bauman et al. 2016, Bauman et al. 2016). All grasslands within the project boundary should be identified. Untilled grasslands, large grassland blocks and grasslands with native plant species are of particular importance and special care should be taken to avoid these areas. Other grassland types such as native rangeland, grazed grasslands (with native plant species), pasture (grazed grasslands with non-native plant species), and Conservation Reserve Program lands (formerly tilled lands planted to vegetative cover for erosion control and wildlife habitat) also serve as wildlife habitat. Placement of project infrastructure in contiguous blocks of grasslands causes fragmentation and result in less suitable habitat for grassland dependent species. Early identification of grassland areas provides the information needed to avoid further grassland loss, degradation, and fragmentation. Game, Fish and Parks recommends using both the National Land Composition Data (NLCD) layer and a layer available from the SDSU Extension office that identified potentially undisturbed lands in easter South Dakota (Bauman et al. 2016) to identify and quantify grassland habitats that may be impacted by the construction of this project. The report and associated spatial layer associated with Bauman et al. (2016) can be found at: https://openprairie.sdstate.edu/.

Our initial review of the proposed project area indicates that a majority of the land cover is in agricultural production. The majority of grassland/hayland resources are present near riparian areas and associated with locations where the proposed project crosses major streams (Big Sioux River, Slplit Rock Creek, etc.).

Grasslands should not be "ranked" or considered less important solely based on height of grass or composition of species. Some grassland dependent species such as Sharp-Tailed Grouse (*Tympanuchus phasianellus*), Baird's Sparrow (*Centronyx bairdii*), and Northern Harriers (*Circus hudsonius*) require grassland patches with relatively tall (12 inches or more) vegetation and accumulation of residual litter characterized by light grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Other species such as Ferruginous Hawks *(Buteo regalis)***,** Burrowing Owl (*Athene cunicularia*), Thick Billed Longspur (*Rhynchophanes mccownii*), and Chestnut-collared Longspur (*Calcarius ornatus*) require open expanses of grasslands characterized by short vegetation that is typical of moderate to heavy grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Sprague's Pipit (*Anthus spragueii*), Long-billed Curlew *(Numenius americanus)*, Bobolink (*Dolichonyx oryzivorus)* and Dickcissel (*Spiza americana*) require grasslands with moderate grass heights and periodic disturbance from grazing, mowing or prescribed fire (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Although various patches of grassland habitat can appear in "better" or "worse" condition based on vegetation height and plant species composition, GFP considers all grassland habitat as important for wildlife based on the information presented above.

Wetlands and Streams

The prairie pothole region of South Dakota supports a wide diversity of bird species (~80 species; Johnson et al. 1997). All wetlands and other waterbodies within the project boundary should be identified and delineated. Note that wetland delineation should occur during time periods when a basin typically holds water (late spring-early summer) and that the spatial extent of a wetland may change within or among years. Please see the US Army Corps of Engineers Midwest Regional Supplement for details on prairie pothole wetland delineation (USACE 2010). We recommend avoiding siting the project in wetlands, streams or within a wetland complex (multiple wetland basins adjacent to each other that may be hydrologically connected). Wetland complexes support higher species richness compared to isolated wetlands of similar size (Naugle et al. 1999). If streams, particularly stream crossings where Topeka Shiners may be present cannot be avoided, we recommend horizontal directional drilling to avoid impacts to this federally endangered species.

Invasive and Non-native Plant Species

Ground disturbing activity can increase opportunity for the introduction and establishment of invasive, non-native plant species. Based on the information listed above, GFP recommends controlling noxious weeds at the project site, as well as revegetating with native, weed-free seed mixes.

SPECIES OF CONCERN

Grassland Nesting Birds

Grassland nesting bird populations have been declining faster than any other bird group in North America (Peterjohn and Sauer 1999, Rosenberg et al. 2019). Many grassland nesting bird species require large tracts of open, contiguous grasslands. Placement of project infrastructure (e.g. roads) in large, intact grassland parcels can fragment habitat and displace certain species of grassland dependent birds such as Western Meadowlark (*Sternella neglecta*), Upland Sand Piper (*Bartramia longicauda*), Grasshopper Sparrow (*Ammodramus savannarum*), Chestnut Collared Longspur (Pruett et al. 2009, Shaffer and Buhl 2015, Bakker 2020). We recommend avoiding grassland habitats during project siting. If grassland habitats cannot be avoided, we recommend minimizing disturbance to these areas by siting project infrastructure along previously disturbed areas, such as road rights-of-way.

If impacts to grassland habitats cannot be avoided, GFP may recommend mitigation in the form of voluntary habitat offsets/compensation. Shaffer et al. (2019) provides a science-based framework that

calculates biological values lost by development in grassland or prairie pothole habitats. We suggest using this framework and associated models to estimate impacts and develop a voluntary habitat offset plan. GFP employs several private lands habitat biologists, partners with habitat conservation organizations and can assist with development of habitat offset/improvement plans. Examples of potential voluntary conservation measures could include (but are not limited to): working with landowners to create grazing management plans to enhance existing grassland habitats and increase forage production for livestock, installation of grazing infrastructure (water lines, fencing, etc.) to assist with rotational grazing, cedar removal in areas where encroachment is a threat to grasslands, conservation easements, prescribed burning plans, etc. Please contact us if you have any questions or would like to learn more about ways to improve or enhance working lands and existing grassland habitat in and around the project area.

Lined Snake-State Endangered

Lined snakes typically inhabit remnant, undisturbed prairie habitats, particularly along woodland corridors. They are most often observed by searching under objects they are sheltering under, such as rocks and logs. In South Dakota, lined snakes have a limited population and are typically found along the Big Sioux River, as far north as Palisades State Park. Lined snakes are active from April through October. Roads can be a major source of mortality for this species of snake. You can find more information on lined snake biology and habitat needs here: https://www.sdherps.org/species/tropidoclonion_lineatum.

For project planning purposes, we recommend first completing a desktop habitat assessment to delineate any potential lined snake habitat within the project area. In particular, lined snakes and their habitat may occur along: Beaver Creek, Fourmile Creek and Split Rock Creek. After a desktop habitat assessment is completed, we further recommend completing visual surveys along the pipeline route in lined snake habitat. Visual surveys should occur during the active season (April-October).

If lined snakes are encountered during the construction phase of the project we recommend the following avoidance measures:

- Lined snakes could use construction material staging areas as shelter during the active season. When staging construction materials near lined snake habitat, we recommend elevating those materials slightly off the ground, in order to allow snakes to escape when materials are removed.

- If the project requires trenching for installation of infrastructure, we recommend backfilling the trench at the end of each workday (April-October), so snakes cannot fall into open trenches and to be trapped and buried under fill. If trenches cannot be filled prior to the end of the workday, we further recommend covering open trenches and inspecting open trenches left overnight for endangered snake species prior to backfilling.

If lined snakes are encountered during pre-construction surveys or during project construction, please contact Eileen Dowd Stukel (605-773-4229 or Eileen.DowdStukel@state.sd.us) for further consultation.

Poweshiek Skipperling-Federally Endangered

The Poweshiek Skipperling is a prairie-dependent butterfly. These small butterflies typically inhabit remnant tallgrass and mixed grass prairie. To avoid impacting this species, we recommend avoiding siting project infrastructure in undisturbed grassland tracts. Under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service has authority over federally listed species. We urge you to

coordinate with the U.S. Fish and Wildlife Service South Dakota Ecological Services office further on this matter.

Topeka Shiner-Federally Endangered

The Topeka Shiner is a small-bodied prairie stream fish. These fish typically inhabit mid-sized prairie streams. Topeka shiners are known to inhabit: West Pipestone Creek, Brookfield Creek, Big Sioux River, Medary Creek, Split Rock Creek, Beaver Creek and Four Mile Creek within the project area. To avoid impacts to Topeka Shiner, we recommend horizontal directional drilling at any stream crossings where Topeka Shiner are known to occur. Under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service has authority over federally listed species. We urge you to coordinate with the U.S. Fish and Wildlife Service South Dakota Ecological Services office further on this matter.

OTHER CONSIDERATIONS

Public and Other Protected Lands

South Dakota is home to approximately 5 million acres of publicly accessible lands for hunting, fishing, and recreation. Public lands provide a multitude of recreational opportunities such as fishing, hunting, hiking, biking, bird watching, camping, boating, swimming, and educational opportunities. Public lands also provide a wide diversity of habitat that supports hundreds of species including birds, bats, amphibians, insects, and plants. To protect the recreational, educational, and biological integrity of these lands, they need to be identified early in the development process. Some areas may have special designations that prohibit wind energy facilities. Spatial information on public lands can be found at https://gfp.sd.gov/maps/ or on our Environmental Review Tool. If GFP owned lands or private lands leased for hunting access (e.g. Walk-In-Area program) will be impacted by project activities, GFP requests to be notified of construction timelines and details of the potential disruption in order to notify the public of any impacts to these areas. If private lands leased for hunting access (Walk-In-Areas) will be permanently affected or hunting access prohibited, GFP may recommend voluntary mitigation/off sets to public access. Palisades State Parks appears to be near, but not impacted by the proposed project. It is not clear if any impacts will occur to the state park. If impacts are anticipated, or a temporary construction easement is required, please contact the Park Manager (John Drummer) at 605-594-3824.

We also wanted to note that the project footprint appears to be adjacent to The Aurora Prairie tract, owned and managed by The Nature Conservancy. This property is located approximately 1.5 miles south of the town of Aurora, South Dakota. We recommend consulting with The Nature Conservancy if any impacts are proposed to this property.

Powerlines

It's unclear whether this project will include the installation of any power lines, however we include the following information for project planning purposes. Powerline strikes and electrocutions are a known cause of mortality to birds. GFP recommends implementing mitigation measures described in The Avian Power Line Interaction Committee guidelines (https://www.aplic.org/). Additionally, GFP recommends avoiding placement of over-head powerlines adjacent to or between bodies of water (wetlands and lakes), as this could increase the risk of bird strikes, particularly for waterfowl. We further recommend burying collection and transmission lines when possible.

SUMMARY

Thank you for the opportunity to provide comments on the proposed Heartland Greenway carbon capture and sequestration pipeline in Brookings, Minnehaha and Moody Counties, South Dakota. We

strive to work with developers to balance wildlife conservation with development in our state. In summary, GFP recommends the following to avoid or minimize impacts to wildlife and wildlife habitats:

- Consulting with GFP and USFWS early and often during the development of the project
- Making annual data requests from the South Dakota Natural Heritage Database or the Environmental Review Tool
- Conducting desktop analysis of project area to assess initial risks to wildlife and wildlife habitat
- Conducting appropriate field surveys to assess wildlife habitat and wildlife use
- Use results of wildlife field surveys to inform project siting (e.g. if a project identifies sensitive wildlife habitat or a resource rich area, the project should consider relocation)
- Calculating impacts of proposed project
- Avoid siting of project infrastructure in grassland, especially undisturbed grasslands
    - If grassland habitats cannot be avoided, minimize project footprints in grassland blocks or co-locate along already disturbed areas
    - Prepare a voluntary habitat offset/compensation plan for any unavoidable impacts to grassland habitats in the project area
- Site project infrastructure in previously disturbed areas as much as possible
- Avoid siting project infrastructure in wetlands, streams, or waterbodies, as well as in wetland complexes
- Horizontally Drill under any stream crossing where Topeka Shiners are known to occur

Please keep GFP involved in all future correspondence. We would appreciate a chance to review any proposed changes to the project footprint or specific information related to project infrastructure siting when it is available. For any additional questions or information, please contact me at 605.773.6208 or the email below.

Sincerely,

Hilary Morey
Environmental Review Senior Biologist
523 East Capitol Avenue
Pierre, SD 57501
hilary.morey@state.sd.us

cc: Natalie Gates (USFWS Pierre)
Darren Kearny (SD PUC)

Literature Cited

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SOUTH DAKOTA DEPARTMENT OF
GAME, FISH AND PARKS
523 EAST CAPITOL AVENUE | PIERRE, SD 57501

October 3, 2022

Michelle Cortez
Perennial Environmental Services LLC
13100 Norwest Freeway
Suite 150
Houston, TX 77040

RE: Heartland Greenway-Navigator
Poet Laterals Expansion
Proposed Carbon Capture Pipeline
Lincoln and Turner Counties, South Dakota
South Dakota Game, Fish and Parks Siting Recommendations

Dear Michelle,

Thank you for contacting South Dakota Game, Fish and Parks (GFP) regarding the proposed expansion of the Heartland Greenway Navigator carbon capture and sequestration pipeline project in Lincoln and Turner Counties, South Dakota. The proposed project would include the construction of approximately 46 miles of underground pipeline through South Dakota. We strive to collaborate with developers to balance wildlife conservation with development in our state. The purpose of this letter is to provide information, siting recommendations (e.g. avoidance, minimization and mitigation measures) and wildlife survey recommendations for the development and siting of the proposed project. We have prepared the following information to address environmental concerns regarding threatened, endangered, and rare species, areas of high conservation value, and species of concern in South Dakota. Impacts to wildlife and their associated habitats can be minimized by using responsible, wildlife friendly siting recommendations early in the project planning stage of development.

The Heartland Greenway project was originally introduced to GFP in October of 2021 via a submission to our online environmental review tool. Shortly after the project submission, representatives from GFP as well as the South Dakota Department of Agriculture and Natural Resources met with representatives from Environmental Solutions & Innovations (ESI) to discuss the project and any permitting needs from each respective agency. During that meeting, GFP made ESI aware of potential threatened or endangered species present in the project area, as well as our role in permitting. GFP provided a siting recommendation letter to ESI on January 25th, 2022, with information on sensitive species and sensitive wildlife habitat that may be found in the project area. GFP was contacted in August of 2022 with an expansion of the project to include two lateral lines in Lincoln and Turner Counties. This recommendation letter specifically addresses the potential sensitive species and wildlife habitats that may be impacted by the two proposed lateral lines that will connect to the larger project.

GFP appreciates the early engagement with us at this stage of project planning. We are providing this letter as a follow-up to the request for information from August 11th, 2022, for the two new lateral lines, and to document our wildlife related concerns and recommendations for this portion of the Heartland Greenway Project.

SOUTH DAKOTA NATURAL HERITAGE DATABASE

The South Dakota Natural Heritage Program monitors species at risk. Species at risk are those that are listed as threatened or endangered at the state or federal level or those that are rare. Rare species in South Dakota are found at the periphery of their range, have isolated populations or are species of which we simply do not have extensive information. A list of species monitored by the Heritage Program can be found at https://gfp.sd.gov/natural-heritage-program/. We recommend a ***yearly database search***, to ensure that developers are aware of changing patterns in wildlife use at a site. A search of the Natural Heritage Database was conducted, and results were provided to Perennial Environmental on 9/16/22. **Please note many places in South Dakota have not been surveyed for rare or protected species and the absence of a species from the database does not preclude its presence from your project area.**

Species records can be requested through the Natural Heritage Program at this link: https://gfp.sd.gov/forms/heritagedata/. Alternatively, GFP has an online Environmental Review Tool available for project planning purposes: https://ert.gfp.sd.gov/ This tool is free to use and has a number of publicly available spatial layers as well as the capability to generate a report of species that may be present. Please note that this tool will not give specific locations of sensitive species; only a list of species that may be found in the project area. ESI submitted a project to the environmental review tool, and a resulting report (Project ID: 2022-08-11-468) was generated and sent to ESI. The results in the report include any species within 5 miles of the proposed project area.

We have completed an initial search of the project area and found the following records of sensitive species within 1 mile of the proposed project boundary:

- Topeka Shiner (*Nootropic topeka*), federally endangered
- North American River Otter (*Lontra canadensis*), Species of Greatest Conservation Need (SGCN)
- Blue Sucker (*Cycleptus elongatus*), SGCN

HABITATS IMPORTANT TO CONSERVATION IN SOUTH DAKOTA

Native Grasslands

Grasslands are of high conservation value in South Dakota, and many acres are converted to cropland annually. Approximately 70% of the native mixed-grass prairie has been lost in eastern South Dakota, and approximately 32% has been lost in western South Dakota (Wright and Wimberly 2013, Bauman et al. 2016, Bauman et al. 2016). All grasslands within the project boundary should be identified. Untilled grasslands, large grassland blocks and grasslands with native plant species are of particular importance and special care should be taken to avoid these areas. Other grassland types such as native rangeland, grazed grasslands (with native plant species), pasture (grazed grasslands with non-native plant species), and Conservation Reserve Program lands (formerly tilled lands planted to vegetative cover for erosion control and wildlife habitat) also serve as wildlife habitat. Placement of project infrastructure in contiguous blocks of grasslands causes fragmentation and result in less suitable habitat for grassland dependent species. Additionally, once grasslands are disturbed, it is very difficult to reclaim untilled

native grasslands to their original state (Bauman et al. 2020). Early identification of grassland areas provides the information needed to avoid further grassland loss, degradation, and fragmentation. Game, Fish and Parks recommends using both the National Land Composition Data (NLCD) layer and a layer available from the SDSU Extension office that identified potentially undisturbed lands in eastern South Dakota (Bauman et al. 2016) to identify and quantify grassland habitats that may be impacted by the construction of this project. The report and associated spatial layer associated with Bauman et al. (2016) can be found at: https://openprairie.sdstate.edu/.

Our initial review of the proposed project area indicates that most of the land cover is in agricultural production. Remnant grassland/hayland resources are present near riparian areas and associated with locations where the proposed project crosses streams (Beaver Creek, Long Creek, etc.).

Grasslands should not be "ranked" or considered less important solely based on height of grass or composition of species. Some grassland dependent species such as Sharp-Tailed Grouse (*Tympanuchus phasianellus*), Baird's Sparrow (*Centronyx bairdii*), and Northern Harriers (*Circus hudsonius*) require grassland patches with relatively tall (12 inches or more) vegetation and accumulation of residual litter characterized by light grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Other species such as Ferruginous Hawks *(Buteo regalis)***,** Burrowing Owl (*Athene cunicularia*), Thick Billed Longspur (*Rhynchophanes mccownii*), and Chestnut-collared Longspur (*Calcarius ornatus*) require open expanses of grasslands characterized by short vegetation that is typical of moderate to heavy grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Sprague's Pipit (*Anthus spragueii*), Long-billed Curlew *(Numenius americanus)*, Bobolink (*Dolichonyx oryzivorus)* and Dickcissel (*Spiza americana*) require grasslands with moderate grass heights and periodic disturbance from grazing, mowing or prescribed fire (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Although various patches of grassland habitat can appear in "better" or "worse" condition based on vegetation height and plant species composition, GFP considers all grassland habitat as important for wildlife based on the information presented above.

Wetlands and Streams

The prairie pothole region of South Dakota supports a wide diversity of bird species (~80 species; Johnson et al. 1997). All wetlands and other waterbodies within the project boundary should be identified and delineated. Note that wetland delineation should occur during time periods when a basin typically holds water (late spring-early summer) and that the spatial extent of a wetland may change within or among years. Please contact the US Army Corps of Engineers to determine the appropriate regional supplement for use in your project area. We recommend avoiding siting the project in wetlands, streams or within a wetland complex (multiple wetland basins adjacent to each other that may be hydrologically connected). Wetland complexes support higher species richness compared to isolated wetlands of similar size (Naugle et al. 1999). If streams, particularly stream crossings where Topeka Shiners may be present cannot be avoided, we recommend horizontal directional drilling to avoid impacts to this federally endangered species.

Invasive and Non-native Plant Species

Ground disturbing activity can increase opportunity for the introduction and establishment of invasive, non-native plant species. Based on the information listed above, GFP recommends controlling noxious weeds at the project site, as well as revegetating with native, weed-free seed mixes.

SPECIES OF CONCERN

Grassland Nesting Birds

Grassland nesting bird populations have been declining faster than any other bird group in North America (Peterjohn and Sauer 1999, Rosenberg et al. 2019). Many grassland nesting bird species require large tracts of open, contiguous grasslands. Placement of project infrastructure (e.g., roads) in large, intact grassland parcels can fragment habitat and displace certain species of grassland dependent birds such as Western Meadowlark (*Sternella neglecta*), Upland Sand Piper (*Bartramia longicauda*), Grasshopper Sparrow (*Ammodramus savannarum*), and Chestnut Collared Longspur (Pruett et al. 2009, Shaffer and Buhl 2015, Bakker 2020). We recommend avoiding grassland habitats during project siting. If grassland habitats cannot be avoided, we recommend minimizing disturbance to these areas by siting project infrastructure along previously disturbed areas, such as road rights-of-way.

If impacts to grassland habitats cannot be avoided, GFP may recommend mitigation in the form of voluntary habitat offsets/compensation. Shaffer et al. (2019) provides a science-based framework that calculates biological values lost by development in grassland or prairie pothole habitats. We suggest using this framework and associated models to estimate impacts and develop a voluntary habitat offset plan. Shaffer et al. (2022) also provides a tutorial on how to use the avian-impact off-set method that was developed in Shaffer et al. 2019. GFP employs several private lands habitat biologists, partners with habitat conservation organizations and can assist with development of habitat offset/improvement plans. Examples of potential voluntary conservation measures could include (but are not limited to): working with landowners to create grazing management plans to enhance existing grassland habitats and increase forage production for livestock, installation of grazing infrastructure (water lines, fencing, etc.) to assist with rotational grazing, cedar removal in areas where encroachment is a threat to grasslands, conservation easements, prescribed burning plans, etc. Please contact us if you have any questions or would like to learn more about ways to improve or enhance working lands and existing grassland habitat in and around the project area. Bauman (2020) provides best management practices related to reclamation of grassland habitats after energy development.

Topeka Shiner-Federally Endangered

The Topeka Shiner is a small-bodied prairie stream fish that typically inhabit mid-sized prairie streams. Topeka shiners are known to inhabit Long Creek, which is within the project area. To avoid impacts to Topeka Shiner, we recommend horizontal directional drilling at any stream crossings where Topeka Shiner are known to occur. Under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service has authority over federally listed species. We urge you to coordinate with the U.S. Fish and Wildlife Service South Dakota Ecological Services office further on this matter.

OTHER CONSIDERATIONS

Public and Other Protected Lands

South Dakota is home to approximately 5 million acres of publicly accessible lands for hunting, fishing, and recreation. Public lands provide a multitude of recreational opportunities such as fishing, hunting, hiking, biking, bird watching, camping, boating, swimming, and educational opportunities. Public lands also provide a wide diversity of habitat that supports hundreds of species including birds, bats, amphibians, insects, and plants. To protect the recreational, educational, and biological integrity of these lands, they need to be identified early in the development process. Some areas may have special designations that prohibit development. Spatial information on public lands can be found at https://gfp.sd.gov/maps/ or on our Environmental Review Tool. If GFP owned lands or private lands leased for hunting access (e.g. Walk-In-Area program) will be impacted by project activities, GFP

requests to be notified of construction timelines and details of the potential disruption in order to notify the public of any impacts to these areas. If private lands leased for hunting access (Walk-In-Areas) will be permanently affected or hunting access prohibited, GFP may recommend voluntary mitigation/off sets to public access. It does not appear that this project will impact GFP owned, leased, or managed lands.

Powerlines

It's unclear whether this project will include the installation of any power lines, however we include the following information for project planning purposes. Powerline strikes and electrocutions are a known cause of mortality to birds. GFP recommends implementing mitigation measures described in The Avian Power Line Interaction Committee guidelines (https://www.aplic.org/). Additionally, GFP recommends avoiding placement of over-head powerlines adjacent to or between bodies of water (wetlands and lakes), as this could increase the risk of bird strikes, particularly for waterfowl. We further recommend burying collection and transmission lines when possible.

SUMMARY

Thank you for the opportunity to provide comments on the proposed Heartland Greenway carbon capture and sequestration pipeline laterals in Lincoln and Turner Counties, South Dakota. We strive to work with developers to balance wildlife conservation with development in our state. In summary, GFP recommends the following to avoid or minimize impacts to wildlife and wildlife habitats:

- Consulting with GFP and USFWS early and often during the development of the project
- Making annual data requests from the South Dakota Natural Heritage Database or the Environmental Review Tool
- Conducting desktop analysis of the project area to assess initial risks to wildlife and wildlife habitat
- Conducting appropriate field surveys to assess wildlife habitat and wildlife use
- Share results and copies of field surveys with GFP and USFWS for project review
- Use results of wildlife field surveys to inform project siting (e.g., if a project identifies sensitive wildlife habitat or a resource rich area, the project should consider relocation)
- Calculating impacts of proposed project
- Avoid siting of project infrastructure in grassland, especially undisturbed grasslands
    - If grassland habitats cannot be avoided, minimize project footprints in grassland blocks or co-locate along already disturbed areas (e.g., Road Rights-of-Way)
    - Use Best Management Practices outlined in Bauman 2020 if impacts to grasslands cannot be avoided
    - Prepare a voluntary habitat offset/compensation plan for any unavoidable impacts to grassland habitats in the project area
- Site project infrastructure in previously disturbed areas as much as possible
- Avoid siting project infrastructure in wetlands, streams, or waterbodies, as well as in wetland complexes

- Horizontally Drill under any stream crossing where Topeka Shiners are known to occur

Please keep GFP involved in all future correspondence. We would appreciate a chance to review any proposed changes, to the project footprint, proposed field study designs, field study results or specific information related to project infrastructure siting when it is available. For any additional questions or information, please contact me at 605.773.6208 or the email below.

Sincerely,

Hilary Morey
Environmental Review Senior Biologist
523 East Capitol Avenue
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hilary.morey@state.sd.us

cc: Natalie Gates (USFWS Pierre)
Darren Kearny (SD PUC)

Literature Cited

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Rosenberg, K.V., A.M. Dokter, P.J. Blancher, J.R. Sauer, A.C. Smith, P.A. Smith, J.C. Stanton, A. Panjabi, L. Helft, M. Parr and P.P. Mara. 2019. Decline of the North American Avifauna. Science 336: 120-124.

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REDACTED
Pages 329-379 contain confidential information.

February 28th, 2022

Mr. James Hoffa – General President IBT
25 Louisiana Ave
Washington, DC 20001

RE: Navigator Heartland Greenway Pipeline Project – Contractor and Labor Selection

Navigator CO2 Ventures LLC (collectively with its subsidiaries, "Navigator") through its subsidiary Navigator Heartland Greenway LLC is planning the permitting, construction, and installation of the Heartland Greenway pipeline system ("Heartland Greenway") in the Midwest US. Heartland Greenway will include approximately 1,300 miles of 6" to 20" diameter pipeline that will transport carbon dioxide in a liquid state from commercial emitters of carbon dioxide in Illinois, Iowa, Minnesota, Nebraska, and South Dakota for transportation services to Navigator's permanent storage and sequestration sites in central Illinois. Heartland Greenway is currently planned to transport up to 10 million metric tons per year of carbon dioxide to be in service by late 2024 or early 2025. The project can potentially be expanded to transport up to 15 million metric tons per year of carbon dioxide.

Navigator is currently in the process of identifying its contracting and construction strategy for Heartland Greenway that will allow Navigator to meet its commercial execution goals in a safe, timely, efficient, and technically proficient manner. To ensure these goals are met, Navigator has decided to perform the mainline pipeline construction work for Heartland Greenway in Illinois, Iowa, Minnesota, Nebraska and South Dakota utilizing organized labor in order to access the International Brotherhood of Teamster's (IBT) skilled and qualified labor resources, subject to and conditioned on the availability of adequate skilled labor resources in kind and quantity. We believe this relationship with IBT is critical to the project's success by solidifying access to skilled and qualified labor and promoting public outreach at levels ranging from local to state and federal.

Navigator is also planning on implementing lessons learned from previous pipeline installation projects in the region and direct-hire drain tile repair/mitigation and restoration contractors to proactively mitigate landowner and external stakeholder concerns. These contractors may be selected by regional experience and competitively bid.

Navigator looks forward to this relationship as we work together on this important Midwest US infrastructure project.

Regards,

Stephen Lee
Executive Vice President, Engineering and Construction

Cc: David Giles, President and Chief Operating Officer, Navigator
Matt Vining, Chief Executive Officer, Navigator
David LaBorde, Pipeline Director, IBT

February 28th, 2022

Mr. James Callahan – General President IUOE
1125 17th St NW
Washington DC 20036

RE: Navigator Heartland Greenway Pipeline Project – Contractor and Labor Selection

Navigator CO2 Ventures LLC (collectively with its subsidiaries, "Navigator") through its subsidiary Navigator Heartland Greenway LLC is planning the permitting, construction, and installation of the Heartland Greenway pipeline system ("Heartland Greenway") in the Midwest US. Heartland Greenway will include approximately 1,300 miles of 6" to 20" diameter pipeline that will transport carbon dioxide in a liquid state from commercial emitters of carbon dioxide in Illinois, Iowa, Minnesota, Nebraska, and South Dakota for transportation services to Navigator's permanent storage and sequestration sites in central Illinois. Heartland Greenway is currently planned to transport up to 10 million metric tons per year of carbon dioxide to be in service by late 2024 or early 2025. The project can potentially be expanded to transport up to 15 million metric tons per year of carbon dioxide.

Navigator is currently in the process of identifying its contracting and construction strategy for Heartland Greenway that will allow Navigator to meet its commercial execution goals in a safe, timely, efficient, and technically proficient manner. To ensure these goals are met, Navigator has decided to perform the mainline pipeline construction work for Heartland Greenway in Illinois, Iowa, Minnesota, Nebraska and South Dakota utilizing organized labor in order to access the International Union of Operating Union's (IUOE) skilled and qualified labor resources, subject to and conditioned on the availability of adequate skilled labor resources in kind and quantity. We believe this relationship with IUOE is critical to the project's success by solidifying access to skilled and qualified labor and promoting public outreach at levels ranging from local to state and federal.

Navigator is also planning on implementing lessons learned from previous pipeline installation projects in the region and direct-hire drain tile repair/mitigation and restoration contractors to proactively mitigate landowner and external stakeholder concerns. These contractors may be selected by regional experience and competitively bid.

Navigator looks forward to this relationship as we work together on this important Midwest US infrastructure project.

Regards,

Stephen Lee
Executive Vice President, Engineering and Construction

Cc: David Giles, President and Chief Operating Officer, Navigator
Matt Vining, Chief Executive Officer, Navigator
Bob Wilds, Pipeline Director, IUOE

February 16th, 2022

Mr. Terry O'Sullivan – General President of LiUNA
905 16th St NW
Washington DC 20006

RE: Navigator Heartland Greenway Pipeline Project – Contractor and Labor Selection

Navigator CO2 Ventures LLC (collectively with its subsidiaries, "Navigator") through its subsidiary Navigator Heartland Greenway LLC is planning the permitting, construction, and installation of the Heartland Greenway pipeline system ("Heartland Greenway") in the Midwest US. Heartland Greenway will include approximately 1,300 miles of 6" to 20" diameter pipeline that will transport carbon dioxide in a liquid state from commercial emitters of carbon dioxide in Illinois, Iowa, Minnesota, Nebraska, and South Dakota for transportation services to Navigator's permanent storage and sequestration sites in central Illinois. Heartland Greenway is currently planned to transport up to 10 million metric tons per year of carbon dioxide to be in service by late 2024 or early 2025. The project can potentially be expanded to transport up to 15 million metric tons per year of carbon dioxide.

Navigator is currently in the process of identifying its contracting and construction strategy for Heartland Greenway that will allow Navigator to meet its commercial execution goals in a safe, timely, efficient, and technically proficient manner. To ensure these goals are met, Navigator has decided to perform the mainline pipeline construction work for Heartland Greenway in Illinois, Iowa, Minnesota, Nebraska and South Dakota utilizing organized labor in order to access Laborers International Union of North America's (LiUNA) skilled and qualified labor resources, subject to and conditioned on the availability of adequate skilled labor resources in kind and quantity. We believe this relationship with LiUNA is critical to the project's success by solidifying access to skilled and qualified labor and promoting public outreach at levels ranging from local to state and federal.

Navigator is also planning on implementing lessons learned from previous pipeline installation projects in the region and direct-hire drain tile repair/mitigation and restoration contractors to proactively mitigate landowner and external stakeholder concerns. These contractors may be selected by regional experience and competitively bid.

Navigator looks forward to this relationship as we work together on this important Midwest US infrastructure project.

Regards,

Stephen Lee
Executive Vice President, Engineering and Construction

Cc: David Giles, President and Chief Operating Officer, Navigator
Matt Vining, Chief Executive Officer, Navigator
Luke Johnson, Pipeline Director, LiUNA

February 28th, 2022

Mr. Mark McManus – General President UA
3 Park Place
Annapolis, MD 21401

RE: Navigator Heartland Greenway Pipeline Project – Contractor and Labor Selection

Navigator CO2 Ventures LLC (collectively with its subsidiaries, "Navigator") through its subsidiary Navigator Heartland Greenway LLC is planning the permitting, construction, and installation of the Heartland Greenway pipeline system ("Heartland Greenway") in the Midwest US. Heartland Greenway will include approximately 1,300 miles of 6" to 20" diameter pipeline that will transport carbon dioxide in a liquid state from commercial emitters of carbon dioxide in Illinois, Iowa, Minnesota, Nebraska, and South Dakota for transportation services to Navigator's permanent storage and sequestration sites in central Illinois. Heartland Greenway is currently planned to transport up to 10 million metric tons per year of carbon dioxide to be in service by late 2024 or early 2025. The project can potentially be expanded to transport up to 15 million metric tons per year of carbon dioxide.

Navigator is currently in the process of identifying its contracting and construction strategy for Heartland Greenway that will allow Navigator to meet its commercial execution goals in a safe, timely, efficient, and technically proficient manner. To ensure these goals are met, Navigator has decided to perform the mainline pipeline construction work for Heartland Greenway in Illinois, Iowa, Minnesota, Nebraska and South Dakota utilizing organized labor in order to access the United Association's (UA) skilled and qualified labor resources, subject to and conditioned on the availability of adequate skilled labor resources in kind and quantity. We believe this relationship with the UA is critical to the project's success by solidifying access to skilled and qualified labor and promoting public outreach at levels ranging from local to state and federal.

Navigator is also planning on implementing lessons learned from previous pipeline installation projects in the region and direct-hire drain tile repair/mitigation and restoration contractors to proactively mitigate landowner and external stakeholder concerns. These contractors may be selected by regional experience and competitively bid.

Navigator looks forward to this relationship as we work together on this important Midwest US infrastructure project.

Regards,

Stephen Lee
Executive Vice President, Engineering and Construction

Cc: David Giles, President and Chief Operating Officer, Navigator
Matt Vining, Chief Executive Officer, Navigator
Chad Gilbert, Pipeline Director, UA

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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HP 22-002

IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,	:	**APPLICANT'S RESPONSES TO STAFF'S FOURTH SET OF DATA REQUESTS**

o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o

Applicant Navigator Heartland Greenway LLC makes the following responses to Staff's Fourth Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a). These responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

4-1) Refer to Page 3 of Stephen Lee's direct testimony. Mr. Lee commits to updating Navigator's exhibits during the course of this proceeding to show any changes to the proposed route. When does Navigator anticipate filing updated exhibits?

RESPONSE: To date route changes are minor, do not affect any new landowners, and reflect landowner preferences and/or constructability factors. We anticipate a few more revisions with the 2023 surveys and continued landowner negotiations and anticipate filing updates with supplemental testimony.

4-2) Refer to Page 4 of Stephen Lee's direct testimony. Mr. Lee stated that discussions with local officials may result in further micro-routing to be performed. Please provide all instances where discussions with local officials led to routing changes.

RESPONSE: As of the date of this response none of our discussions with local officials have led to routing changes.

4-3) Refer to Page 8 of Stephen Lee's direct testimony. Mr. Lee stated that Navigator used "CO_2 plume dispersion modeling and buffer concentration for initial route alignment and high consequence area determinations." Please identify the areas that Navigator determined to be high consequence areas along the pipeline route.

RESPONSE: Objection. This request seeks information that is confidential for safety and security reasons. Subject to the Protective Order entered by the Commission, attached is an overview that shows the High Consequence Areas in South Dakota.

4-4) Refer to Page 13 of Stephen Lee's direct testimony. Mr. Lee stated that Navigator would "strategically place carbon dioxide monitoring devices" along the pipeline route.

a) Please further describe the carbon dioxide monitoring devices referenced.
b) Please identify where these devices will be located along the pipeline route.

RESPONSE: See below for responses:

a) The referenced carbon dioxide monitoring devices would be located on the pipeline system and connected to the pipeline SCADA System and alert the OCC in the event CO2 is detected in the atmosphere above ambient/ present threshold in the vicinity of the device location. Applicant implements redundant systems to offer increased reliability in leak detection. Applicant is currently evaluating static monitors for installation.

This sensor technology is similar to a 5-gas monitor for personal protection which Applicant will employ for mobile use. Original equipment manufacturers include Dräger, RKI Instruments and Honeywell, Industrial Scientific. An example of personal mobile devices can be found at the following website: https://us.msasafety.com/Portable-Gas-Detection/Multi-Gas/ALTAIR%C2%AE-5X-Multigas-Detector/p/0000800016000010 23?locale=en

b) CO2 monitoring devices will be located at above ground facilities across the system. In South Dakota, this includes mainline valve sites, for which preliminary mapping was provided in response to 2-4(a).

4-5) Refer to Page 3 of Vidal Rosa's direct testimony. Mr. Rosa stated that Navigator will "be building out a full scale highly qualified operations team including a VP of Operations and regional directors, and managers in addition to the subject matter experts and technicians, to perform measurement, corrosion prevention and protection, electrical, and instrumentation duties, as well as a robust safety training program." Does Navigators have any concerns about its ability to hire the necessary expertise to form a highly qualified operations team? Please explain how Navigator intends to recruit and retain the necessary talent to build the organization from the ground up.

RESPONSE: Applicant does not have any concerns over the ability to hire necessary resources for the operations team. Applicant will recruit experienced individuals and will include onboarding training and on-the-job training. Applicant's leadership has extensive knowledge and experience with recruiting and building teams based on past work experience and organization connections.

4-6) Refer to Page 6 of Vidal Rosa's direct testimony. Mr. Rosa stated that "comprehensive public awareness and education efforts will also help optimize safe operation of the Pipeline and minimize the risk of a release." Please provide more information on Navigator's anticipated public awareness and education efforts.

RESPONSE: Applicant's public outreach and education program is in development, ongoing, and consistent with PHMSA regulations. Applicant has been working with Paradigm, a third-party liaison for public outreach and awareness, to develop its public education program. Applicant has already met with local emergency responders in South Dakota in January 2023 as part of this outreach and training. The next phase will occur in the summer of 2023 with additional meetings with county officials and public education.

4-7) Refer to Page 7 of Vidal Rosa's direct testimony. Mr. Rosa stated that "Navigator is committed to purchasing necessary equipment for emergency responders so that an emergency can be properly responded to." Does Navigator have a list of the necessary equipment that it plans to purchase for the applicable emergency response agencies? If yes, please provide.

RESPONSE: See Applicant's Response to Staff's DR 3-12(c).

4-8) Has Navigator determined where the operational control center and back-up operational control center will be located? If yes, please provide the locations.

RESPONSE: See Applicant's Response to Staff's DR 2-15.

4-9) Refer to Page 9 of Vidal Rosa's direct testimony. Mr. Rosa stated that Navigator "estimates that 80-100 full time employees will be stationed along the entire pipeline, with approximately 10 employees located in South Dakota." In response to Staff data request 1-34, Navigator stated that there would be 2-4 permanent employees during operations. Should Mr. Rosa's testimony be updated to say 2-4 employees will be stationed along the pipeline in South Dakota? Please explain.

RESPONSE: See Applicants Response to Staff's DR 3-10(b)

4-10) Explain why the pipeline is not routed through state and federal lands.

RESPONSE: As discussed in Section 2.2 of the Application many sensitive features were avoided including state and federal lands. State and federal lands are typically purchased or managed for conservation, recreation, or other public use and impacts to these resources are avoided by infrastructure when feasible.

4-11) Provide the distance in feet of the closest occupied residence from the pipeline.

RESPONSE: The route is not finalized due to outstanding surveys and landowner negotiations. Final placement of the pipeline would affect these distances. However, based on the current route, the nearest residence is located approximately 190 feet of the proposed pipeline.

4-12) Provide the distance in feet of the closest school from the pipeline.

RESPONSE: The route is not finalized due to outstanding surveys and landowner negotiations. Final placement of the pipeline would affect these distances. However, based on the current route, the nearest school is located approximately 6,540 feet from the pipeline.

4-13) Provide the distance in feet of the closest gathering place from the pipeline.

RESPONSE: The route is not finalized due to outstanding surveys and landowner negotiations. Final placement of the pipeline would affect these distances. However, based on the current route, the nearest gathering place is located approximately 1,530 feet from the pipeline.

4-14) Provide the distance in feet from the following cities to the proposed pipeline, as measured from the pipeline to the city border at its closest point:

a) Egan
b) Aurora
c) Brandon
d) Valley Springs
e) Canton

RESPONSE: See below for responses:

a) The pipeline is located approximately 1,130 feet from the closest city border of Egan.
b) The pipeline is located approximately 1,050 feet from the closest city border of Aurora. Note that the Valero facility, which is the origin of the lateral, is located adjacent to the city of Aurora. The pipeline route deviates west upon exiting the Valero facility.
c) The pipeline is located approximately 9,420 feet from the closest city border of Brandon.
d) The pipeline is located approximately 4,310 feet from the closest city border of Valley Springs.
e) The pipeline is located approximately 2,850 feet from the closest city border of Canton.

4-15) Explain how main line valves continue to operate during electric outages.

RESPONSE: All isolation valves will have an uninterrupted power supply and redundant power and communication systems to ensure constant connectivity in the event there is an interruption of the primary power or communications source.

4-16) How will the public be notified in the event of a release? Who will be notified of a release? How quickly will notification occur after the release?

RESPONSE: Objection. This request is vague, broad, and difficult to answer without more specific information about the release. Without waiving the objection, as explained in the Direct Testimony of Vidal Rosa (#22 on Page 9 and 10) and elsewhere in discovery responses, Applicant is in the process of developing its Emergency Response Plan and public awareness plan for the HGPS. Applicant will implement extensive public education and outreach programs in accordance with or exceedance of PHMSA requirements (including 49 CFR 195.440, Public Awareness) to establish and increase public awareness regarding the HGPS and related safety matters. The public would be notified of an event through the local Emergency Management System. Applicant will also employ a "Nav911" system which will provide an automatic, almost instantaneous, call alert to local government authorities and first responders via telephone; as Applicant develops this system it is evaluating ways it could include alerts to the public or area landowners.

4-17) Provide the liability terms included in the landowner easements associated with the pipeline. Is the provided terms standard in all easements, or has company negotiated unique liability terms with any South Dakota landowners along the pipeline route?

RESPONSE: The easement provides: "Grantee hereby agrees to indemnify and hold Grantor harmless from and against any claim or liability or loss from personal injury, property damage resulting from or arising out of the use of the Easements by Grantee, its servants, agents or invitees, excepting, however, (a) the Initial Damages and the Clearing Damages, and (b) such claims, liabilities or damages as may be due to or caused by the acts of Grantor, or its servants, agents or invitees."

If a landowner has comments to the form, Applicant will review and respond to the comments in the ordinary course of acquisition discussions; all landowners are initially presented the form easement language as provided.

4-18) Does the temperature of the pipeline buried at least 5 ft. below the surface have any impact on the soil quality above the pipe? Please explain.

RESPONSE: The pipeline at a depth of at least 5 feet below ground surface is not expected to have an impact on soil quality above the pipeline. The CO2, while injected into the system at 90-110 degrees F, will normalize to ground temperature as it flows along the system within a few miles of the injection points, which in SD are the capture facilities. Therefore, the temperature of the pipeline is not anticipated to affect the soil quality above or around the pipeline. Further, Applicant's soil management practices described in Exhibit E are implemented to avoid negative effects to soil quality along and above the pipeline during construction/installation.

Dated this 24th day of April, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

James E. Moore
P.O. Box 5027
300 South Phillips Avenue, Suite 300
Sioux Falls, SD 57117-5027
Phone (605) 336-3890
Fax (605) 339-3357
Email: James.Moore@woodsfuller.com
Attorneys for Navigator Heartland Greenway

OBJECTIONS

The objections stated to Staff's Fourth Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

CERTIFICATE OF SERVICE

I hereby certify that on the 24th day of April, 2023, a true and correct copy of the foregoing Applicant's Responses to Staff's Fourth Set of Data Requests was served via e-mail transmission to the following:

Ms. Kristen Edwards
Staff Attorney
South Dakota Public Utilities Commission
500 E. Capitol Ave.
Pierre, SD 57501
Kristen.edwards@state.sd.us

Mr. Jon Thurber
Staff Analyst
South Dakota Public Utilities Commission
500 E. Capitol Ave.
Pierre, SD 57501
jon.thurber@state.sd.us

Mr. Darren Kearney
Staff Analyst
South Dakota Public Utilities Commission
500 E. Capitol Ave.
Pierre, SD 57501
darren.kearney@state.sd.us

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

REDACTED
Page 405 contains confidential information.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,	:	**HP 22-002** **APPLICANT'S RESPONSES TO STAFF'S FIFTH SET OF DATA REQUESTS**

o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o

Applicant Navigator Heartland Greenway LLC makes the following responses to Staff's Fifth Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a). These responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

5-1) Has an Agricultural Impact Mitigation Plan been prepared for the project? If so, please provide. This Plan should be prepared in accordance with industry standard construction and restoration plans and at a minimum include a detailed sequence of construction events and schedule, details regarding vegetation clearing, topsoil segregation and replacement, a detailed description of drain tiles (marking, repair, inspection), restoration after soil compaction and rutting, descriptions of restoration of contours, construction in wet conditions and weed/invasives control.

RESPONSE: As indicated in Applicant's response to Staff DR 2-29, the Agricultural Impact Mitigation Plan is expected be completed by the end of April 2023 and will be provided.

5-2) Has a Sediment and Erosion Control Plan been prepared for the project? If so, please provide. This Plan should be prepared in accordance with industry standard construction and restoration plans and at a minimum include a description of the permits and notifications the project will require during the construction process and the schedule at which these permits will be obtained. A detailed description of the construction sequence that demonstrates planning to limit the amount and duration of open trench sections as necessary, a description of the Environmental Inspectors responsibilities, a description of the erosion and sediment controls/BMPs, seeding, mulch, if necessary winter construction plans, and post construction monitoring activities.

RESPONSE: Plans that address sediment and erosion control for projects come in many forms and with many titles. Applicant provided its Environmental Construction Guidance document as Exhibit E to the Application. This guidance document communicates the Applicant's standards that enable compliance with federal, state, tribal, and local environmental protections, erosion control requirements, specifications, and practices. The ECG is designed to address typical circumstances that may be encountered during the construction of the Project. Project-specific plans, permit conditions and/or landowner agreements may supersede general practices described in this document. General construction procedures are addressed in Section 4.0 of the ECG. The responsibilities of environmental inspectors are described in Section 1.1.1 of the ECG. BMP's for erosion and sediment control are addressed in Section 4.0, with more detailed procedures addressed in Section 5.0. Winter construction is addressed in Section 6.0, and post-construction activities are addressed in Section 9.0.

Permits required for construction were provided in Table 1.8-1 of the Application.

5-3) Has Navigator identified and addressed changes in status of ephemeral waterbodies, or any other waters potentially previously excluded based on EPA and U.S. Army Corps of Engineers updates to jurisdictional status of Waters of the U.S. published in the Federal Register on 18 January 2023 that may require permits and construction impact mitigation?

RESPONSE: Applicant took a conservative approach to delineating Waters of the US (WOTUS) that fits both pre-2015 and 2023 WOTUS rules to avoid and minimize any regulatory uncertainty and is permitting impacts to WOTUS using a PJD.

5-4) When does Navigator intend to provide a complete field assessment of wetlands and waterbodies crossed by the Project?

RESPONSE: Applicant is supplementing its 2022 survey efforts with additional surveys in 2023 and has a current assessment based on a combination of field and desktop delineated features.

5-5) There is specified intentions not to complete concrete coating within 100 feet of wetlands. Will Navigator apply this same restriction as it relates to waterbodies?

RESPONSE: Yes, concrete coating activities will not take place within 100 feet of wetlands or waterbodies.

5-6) Will there be seeding of disturbed non-agricultural wetland areas to facilitate revegetation?

RESPONSE: As Described in Section 5.2.4 of Exhibit E (ECG): Typically, wetlands are not reseeded and are revegetated via natural succession. In wetlands where no standing water is present, the construction ROW may be seeded with annual rye or be allowed to revegetate naturally based on site conditions, landowner agreements, and respective permits.

5-7) Is there intention to utilize water from the Big Sioux River, which hosts invasive aquatic species, as the application outlines, for hydrostatic testing? If so, would discharge of that water be returned to the Big Sioux River or to an upland area to prevent spread of aquatic invasive species?

RESPONSE: Source water for hydrostatic testing is being evaluated by the project team and will be further assessed by the selected contractor. If it is determined that the Big Sioux River is a necessary water source appropriate water withdrawal and discharge permits will be obtained. Best management practices for water withdrawal would include water intakes to be suspended within the water column to avoid disruption of benthic setting and minimize stirring up sediments. Mesh filters would also be placed at the intake piping to avoid entrainment and/or entrapment of aquatic species. Yes, the discharge water would be returned to the river or to an upland area to prevent the spread of the undesirable species.

5-8) CO2 is a regulated air pollutant in SD under the definition at 74:36:01:15. What emissions/regulatory analysis with citations were used to show that the operations at are not subject to an operating permit?

RESPONSE: No aboveground facilities subject to air permitting are being constructed in South Dakota.

5-9) Was a general conformity analysis completed to assess air quality impact?

RESPONSE: No, carbon capture results in a reduction of emissions. In addition, there will be electric generation equipment at the capture facilities, which are not subject to the PUC's review.

5-10) What technical studies and supporting documentation was used to the development of the buffers for the 6", 8", 12", 16", and 20" pipelines as shown in the table on page 3 of 5 in the document titled "Heartland Greenway System Plume Modeling and Buffer Overview"? Please provide.

RESPONSE: Objection. This request seeks information that is confidential and proprietary and is maintained as such. Without waiving the objection, subject to the Protective Order entered by the Commission, information Utilized for Evaluation of Routing and Plume/Dispersion Modeling is included on Page 2 of the document above the referenced Table on page 3. Additional information is included in the document provided in response to DR 2-26, DNV-RP-F104 Design and Operations of CO2 Pipelines.

Dated this 24th day of April, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

James E. Moore
P.O. Box 5027
300 South Phillips Avenue, Suite 300
Sioux Falls, SD 57117-5027
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Fax (605) 339-3357
Email: James.Moore@woodsfuller.com
Attorneys for Navigator Heartland Greenway

OBJECTIONS

The objections stated to Staff's Fifth Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

CERTIFICATE OF SERVICE

I hereby certify that on the 24th day of April, 2023, a true and correct copy of the foregoing Applicant's Responses to Staff's Fifth Set of Data Requests was served via e-mail transmission to the following:

Ms. Kristen Edwards
Staff Attorney
South Dakota Public Utilities Commission
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Mr. Jon Thurber
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darren.kearney@state.sd.us

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,	:	**HP 22-002** **APPLICANT'S RESPONSES TO STAFF'S SIXTH SET OF DATA REQUESTS**

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Applicant Navigator Heartland Greenway LLC makes the following responses to Staff's Sixth Set of Data Requests pursuant to SDCL § 15-6-33, and SDCL § 15-6-34(a). These responses are made within the scope of SDCL 15-6-26(e) and shall not be deemed continuing nor be supplemented except as required by that rule. Applicant objects to definitions and directions in answering the requests to the extent that such definitions and directions deviate from the South Dakota Rules of Civil Procedure.

6-1) Refer to the Applicant's responses to Staff data requests 2-7 and 4-11. In response to Staff data request 2-7, the Applicant stated that "the setback distances for inhabited structures, gathering places, and population centers are the same based on the plume dispersion modeling: for a 6-inch pipe, 321 feet for initial routing and for an 8-inch pipe, 417 feet for initial routing." In response to Staff data request 4-11, the Applicant states "based on the current route, the nearest residence is located approximately 190 feet from the proposed pipeline."

a) Explain why the pipeline was placed 190 feet from an occupied residence when the Applicant stated the setback is either 321 ft. or 417 ft.
b) What additional safety measures is the Company implementing when the pipeline is placed within the Applicant's recommended setback?

RESPONSE: See responses below.

a) The routing buffers based on the plume dispersion modeling are one of the criteria used in routing the pipeline to avoid as many areas of inhabitable structures and places of gathering as practical. Initial routing distance tolerances are the goal, but not always practicable due to other routing criteria, physical limitations, as well as landowner-specific location requests. As discussed in Section 2.2 of the Application, features that were considered in the route development process include, but are not limited to, existing linear infrastructure (i.e. railroads, pipelines, and electric power lines, roads); infrastructure and structures (e.g. buildings, wells, levees,); environmental (i.e. wetlands, waterbodies, protected habitats, floodplains); land use (e.g. land cover, conservation easements, land cover, state and national parks, national forests, and wildlife management areas; other federal and state lands; other recreation lands and areas; easements); geological (e.g. slope, topography, depth bedrock, karst, fault lines/areas, landslide potential, peak ground acceleration; mines and mining activity); soils (series, soils categories, prime farmlands, hydric soils, and corrosivity); cultural (cemeteries, national register of historic places); and other (e.g. brownfield, superfund, and hazardous waste sites and landfills).
b) As discussed below in response to Staff DR 6-5, Applicant uses design and construction controls to maintain the same level of safety and risk when routing buffers cannot be maintained, for example, increased design factor, heavier wall pipe, or increased depth of cover.

REDACTED
Pages 421-425 contain confidential information.

6-6) Has Navigator committed to develop a Pipeline Safety Management System (described in API RP 1173)? Please explain.

RESPONSE: Yes, Navigator will be establishing a Pipeline Safety Management System that helps focus on pipeline safety, training, process effectiveness and continuous improvements. The management system will be reflective of the guidance as set in API RP 1173.

Dated this 15th day of May, 2023.

WOODS, FULLER, SHULTZ & SMITH P.C.

By /s/James E. Moore

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OBJECTIONS

The objections stated to Staff's Sixth Set of Data Requests were made by James E. Moore, one of the attorneys for Navigator Heartland Greenway, for the reasons and upon the grounds stated therein.

/s/ James E. Moore
One of the Attorneys for Navigator Heartland Greenway