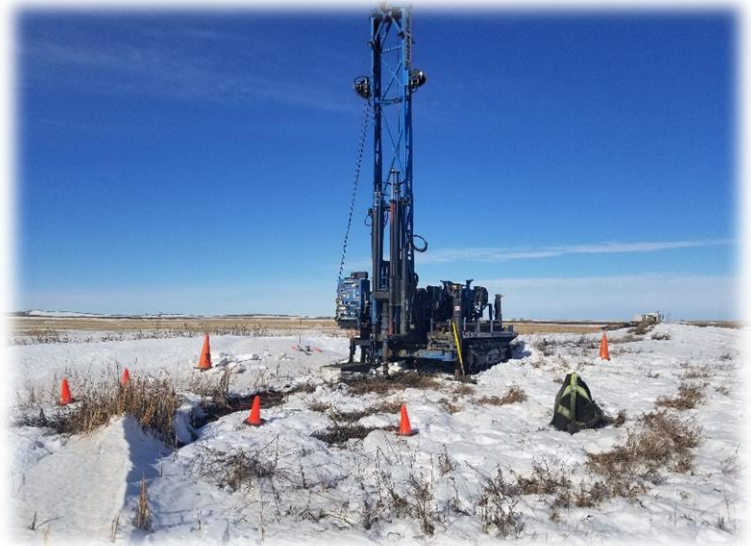


# Corrective Action Report

NDIC Site 1358-13  
SE $\frac{1}{4}$  of S4, NE $\frac{1}{4}$  of S9, & NW $\frac{1}{4}$  of S10-T159N-R101W  
Williams County, North Dakota

March 12, 2020

Terracon Project No. M1187015



**Prepared for:**

NDIC Oil and Gas Division  
Bismarck, North Dakota

**Prepared by:**

Terracon Consultants, Inc.  
West Fargo, North Dakota

[terracon.com](http://terracon.com)

**Terracon**

Environmental



Facilities



Geotechnical



Materials

March 12, 2020



Mr. Cody VanderBusch  
Reclamation Specialist  
NDIC Oil and Gas Division  
600 East Boulevard Avenue Dept. 405  
Bismarck, ND 58505-0840  
Office 701-328-8020  
Cell 701-391-1959

Re: Corrective Action Report  
NDIC Site 1358-13  
SE¼ of S4, NE¼ of S9, & NW¼ of S10-T159N-R101W  
Williams County, North Dakota  
Terracon Project No. M1187015

Dear Mr. VanderBusch:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Corrective Action Report (CAR) which summarizes sealing of three seismic boreholes. The boreholes had groundwater emanating along the annulus resulting in surface impacts to agricultural cropland northwest of Zahl, Williams County, North Dakota. Prior to proceeding with borehole sealing activities at the site, Terracon prepared a Corrective Action Plan (CAP) dated January 31, 2020, which was submitted to the North Dakota Industrial Commission (NDIC) Oil and Gas Division for review and approval. Terracon conducted the scope of services outlined in the CAP in general accordance with our Master Service Agreement (reference number 110.7-19-008) dated June 11, 2019 and your notice to proceed January 31, 2020.

Based on our oversight of the activities, the seismic boreholes have been sealed. Impacts to the site from borehole sealing activities have been repaired to minimize surficial impacts to cropland. Please refer to the report for details.

Terracon appreciates this opportunity to provide our services to NDIC Oil and Gas Division. Should you have questions or require additional information, please do not hesitate to contact our office.

Sincerely,  
**Terracon Consultants, Inc.**

Jacqueline M. Finck, PG  
Environmental Group Manager

Chad A. Cowley, PE  
Approved Project Reviewer

Jonathan B. Ellingson, PG, CPG  
Subject Matter Expert



Terracon Consultants, Inc. 860 9<sup>th</sup> Street NE, Unit K West Fargo, North Dakota 58078  
P 701-282-9633 F 701-282-9635 terracon.com

Environmental



Facilities



Geotechnical



Materials

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    1.1 Corrective Action..... 1  
2.0 DISCUSSION..... 2  
    2.1 Seismic Borehole Sealing and Site Reclamation ..... 2  
3.0 CONCLUSIONS..... 2  
4.0 RECOMMENDATIONS..... 3  
5.0 STANDARD OF CARE ..... 3

**APPENDIX A - EXHIBITS**

- Exhibit 1 – Topographic Map
- Exhibit 2 – Site Diagram

**APPENDIX B – PHOTOLOG**

**CORRECTIVE ACTION REPORT**  
**NDIC SITE 1358-13**  
**SE<sup>1</sup>/<sub>4</sub> of S4, NE<sup>1</sup>/<sub>4</sub> of S9, & NW<sup>1</sup>/<sub>4</sub> of S10-T159N-R101W**  
**WILLIAMS COUNTY, NORTH DAKOTA**

**Terracon Project No. M1187015**  
**March 12, 2020**

## **1.0 INTRODUCTION**

The site is located in the southeast (SE)  $\frac{1}{4}$  of Section 4 (S4), northeast (NE)  $\frac{1}{4}$  of Section 9 (S9), and northwest (NW)  $\frac{1}{4}$  of Section 10 (S10), Township 159 North (T159N), Range 101 West (R101W) near Zahl, Williams County, North Dakota. Terracon understood the site is located on parcels of land owned by Mr. Dennis Christianson and Mrs. Carmen McCormick (S4), Mr. Oscar Quarne (S9), and Mr. Ellis Berg (S10). An access agreement was obtained with the respective landowners.

### **1.1 Corrective Action**

A CAP was prepared by Terracon dated January 31, 2020 to manage remediation activities and the sealing of the seismic boreholes. The CAP was approved by the NDIC on January 31, 2020. The CAP and general correspondence with NDIC proposed the following response actions:

- Based upon data obtained through visual site assessment, three abandoned seismic boreholes required sealing. Terracon would seal the abandoned boreholes in accordance with North Dakota Department of Environmental Quality (NDDEQ) water well abandonment guidelines outlined in Article 33-18 of the North Dakota Administrative Code (NDAC) by restoring, as far as possible, the geological conditions which existed before the boreholes were drilled.
- Each borehole would be made free of all loose material that could cause bridging during decommissioning by over-drilling using solid/hollow stem auger or air/mud rotary drilling techniques.
- The borehole will be filled with an appropriate plugging material to a depth not less than three feet below grade surface. Neat cement or a cement/bentonite mixture may be used throughout the entire length of the borehole. Grout will be injected at the bottom of the hole using a pressure grouting technique or gravity-fed with a *tremie*' pipe forcing grout and fluids present upwards. This will be done in one continuous operation in such a fashion as to prevent voids or air pockets from forming; side-discharge *tremie*' pipe will be placed in the hole and slowly pulled up as the grout reaches the bottom of the *tremie*' pipe. Concrete or topsoil will be used as a cap for the remainder of the borehole to the surface. If Terracon's efforts to grout the borehole from the bottom up are unsuccessful due to

flowing water, Terracon will reverse drill bentonite pellets packing the borehole in efforts to seal it.

- Cuttings from the drilling operations will be thin spread on the site.

## 2.0 DISCUSSION

We collected photographs at the site from January 30 to February 4, 2020. Representative photos are provided in Appendix B.

### 2.1 Seismic Borehole Sealing and Site Reclamation

Terracon was on-site February 3<sup>rd</sup> and 4<sup>th</sup>, 2020 to complete sealing activities for the three seismic boreholes. Terracon was able to pinpoint the exact location of each borehole prior to sealing activities. Terracon observed evidence of previous borehole abandonment activities at approximately 24 feet below grade surface (bgs) in boring 1358-13 (1), approximately 26 feet bgs in boring 1358-13 (2), and at approximately 12.5 feet bgs in boring 1358-13 (3) using hollow stem auger techniques, stopping the flow of groundwater. Bentonite was then placed into the boreholes via back-drilling techniques, sealing the boreholes. Please refer to the table below (Table 1) for details of each borehole. Approximate locations of each borehole can be found in Appendix A – Exhibit 2.

**Table1: Borehole Sealing Records**

Borehole ID	Location	Latitude	Longitude	Date Completed	Sealing Material	Depth (ft)
1358-13 (1)	SE¼ of the SE¼ of S4-T159N-R101W	48.61951°	-103.73314°	2/4/2020	Bentonite Pellets	0-24
1358-13 (2)	NE¼ of the NE¼ of S9 & NW¼ of the NW¼ of S10-T159N-R101W	48.61794°	-103.73300°	2/3/2020	Bentonite Pellets	0-26
1358-13 (3)	SW¼ of the NE¼ of S9-T159N-R101W	48.61517°	-103.73958°	2/3/2020	Bentonite Pellets	0-12.5

Terracon visited the site the week after sealing the boreholes to verify the boreholes were sealed and groundwater was not emanating from the annulus of the borehole. At the time of our visit, no visible signs of a breach were noted.

## 3.0 CONCLUSIONS

Terracon was able to identify evidence of previous sealing activities using hollow stem auger techniques stopping the flow of groundwater. The three abandoned seismic boreholes were

sealed by back-drilling bentonite into the boreholes, stopping groundwater from emanating from the annulus of the borehole. The depths ranged from approximately 12.5 to 26 feet bgs.

## **4.0 RECOMMENDATIONS**

Based on the results, Terracon recommends no further action for the site.

## **5.0 STANDARD OF CARE**

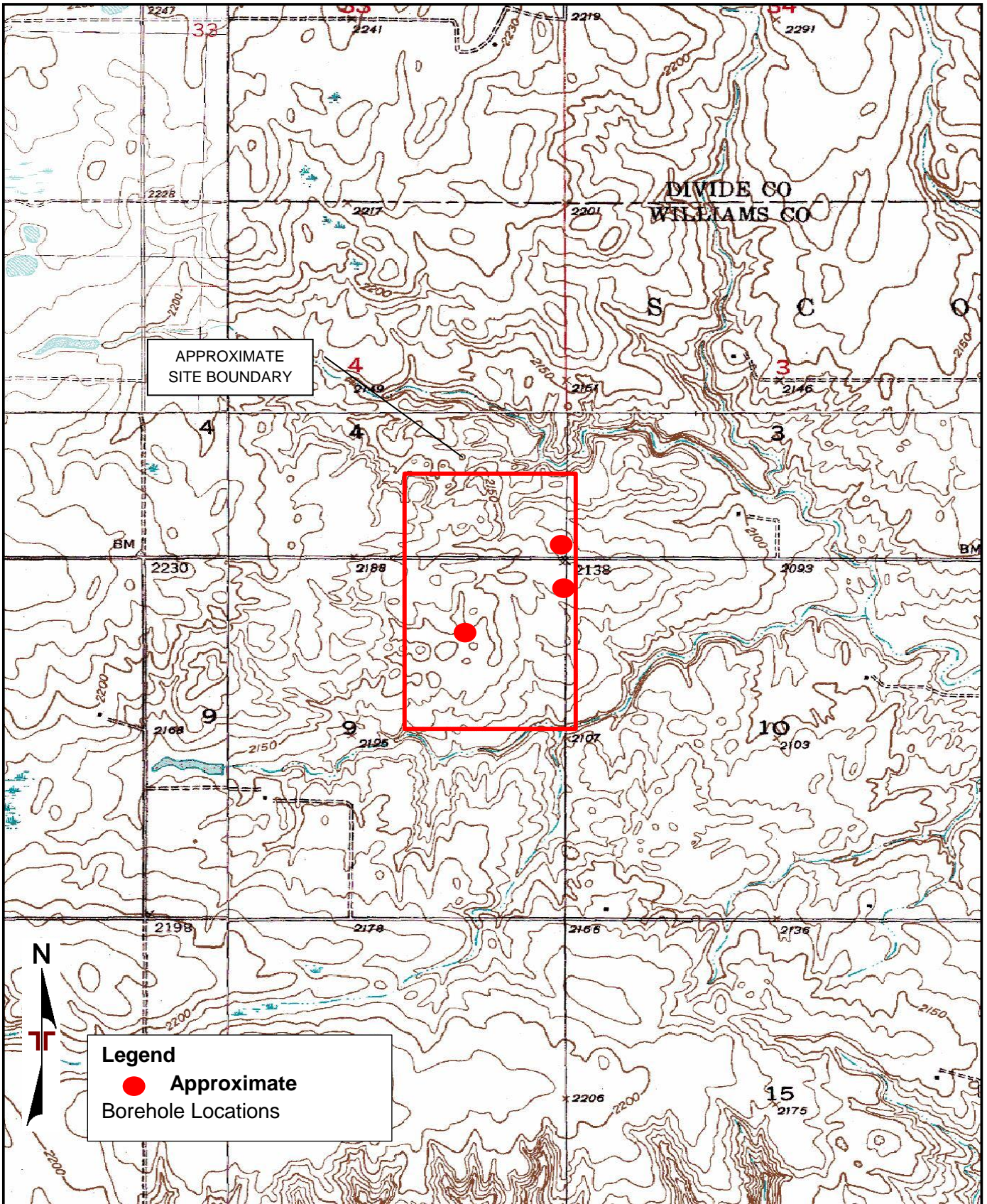
Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These corrective action services were performed in accordance with the scope of work agreed with you, our client, as reflected in our Corrective Action Plan and were not restricted by ASTM E1903-11.

## **APPENDIX A – EXHIBITS**

Topographic Map

Site Diagram





Project Manager: JMF	Project No. M1187015
Drawn by: SAT	Scale: 1"=2,000'
Checked by: JMF	File Name: M1187015.pdf
Approved by: CAC	Date: 2/13/2020

**Terracon**

860 9th St. NE, Unit K  
 West Fargo, ND 58078

**TOPOGRAPHIC MAP**

**NDIC 1358-13 Borehole Sealing**  
 SE ¼ of S4 & NE ¼ of S9-T159N-R101W  
 Williams County, ND

Exhibit
1



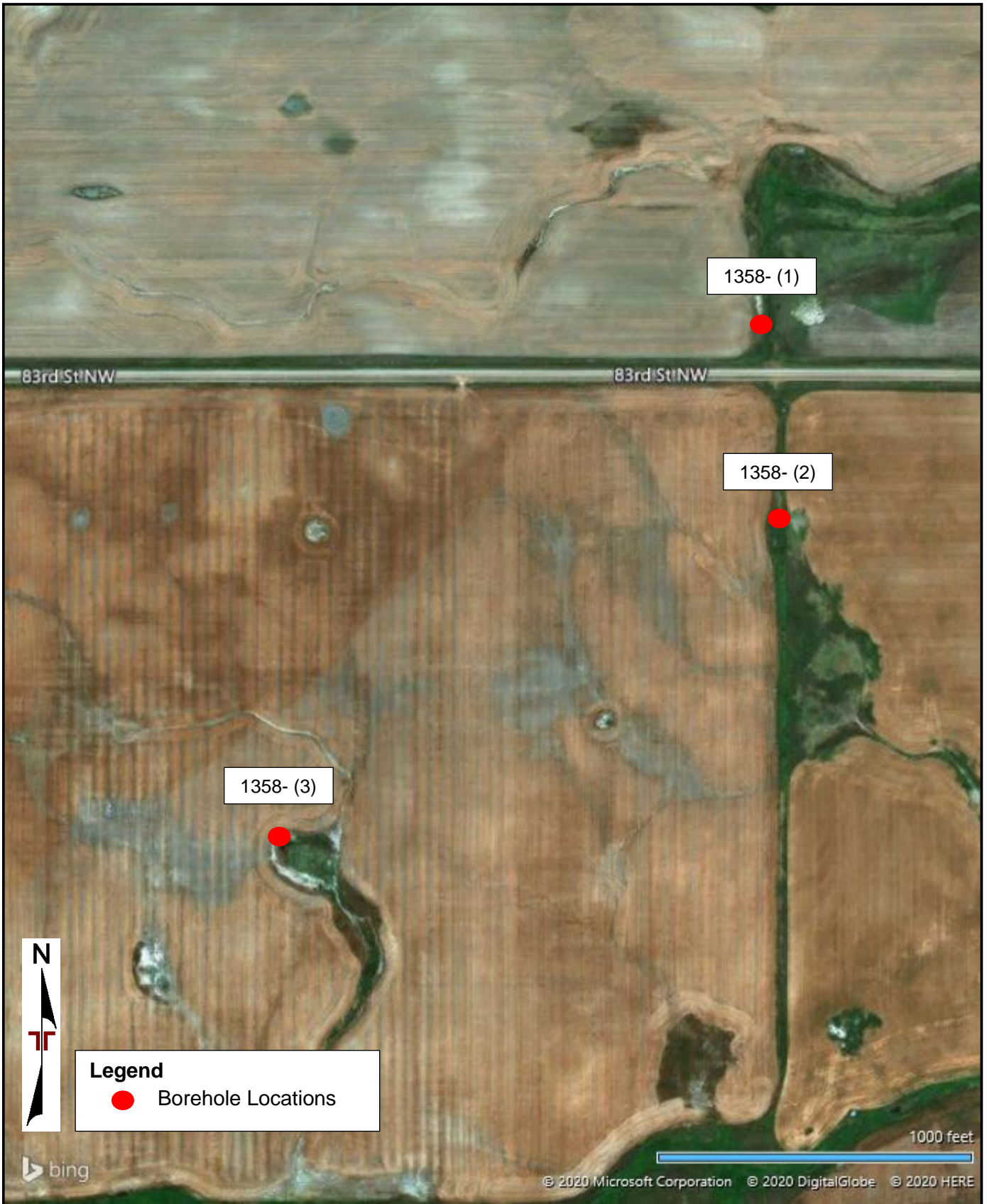


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager:	JMF	Project No.	M1187015
Drawn by:	SAT	Scale:	AS SHOWN
Checked by:	JMF	File Name:	MT187015.pdf
Approved by:	CAC	Date:	2/13/2020

**Terracon**  
 860 9th St. NE, Unit K  
 West Fargo, ND 58078

**SITE DIAGRAM**

**NDIC 1358-13 Borehole Sealing**  
 SE ¼ of S4 & NE ¼ of S9-T159N-R101W  
 Williams County, ND

Exhibit	<b>2</b>
---------	----------

## **APPENDIX B – PHOTOLOG**





**Photo #1** View northeast of borehole 1358-13 (2).



**Photo #2** View at borehole 1358-13 (2) - groundwater stopped flowing at approximately 24 feet bgs.



**Photo #3** View of borehole 1358-13 (1).



**Photo #4** View south of borehole 1358-13 (1).



**Photo #5** View of completed borehole 1358-13 (1).



**Photo #6** View north at borehole 1358-13 (3) – groundwater stopped flowing at approximately 12.5 feet bgs.



NDIC 1358-13 – Corrective Action Report  
Terracon Project No. M1187015  
Date Photos Taken: 2/3/2020 and 2/4/2020



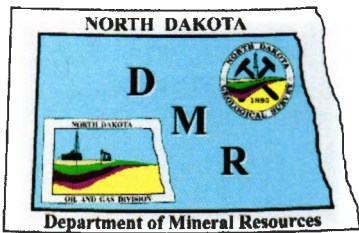
**Photo #7** View south at borehole 1358-13 (3).



**Photo #8** View of driller backfilling borehole 1358-13 (3) with bentonite chips.



**Photo #9** View south of completed borehole 1358-13 (3).



# Department of Mineral Resources

Lynn D. Helms -- Director

North Dakota Industrial Commission

www.dmr.nd.gov

July 25, 2014

To: N.D. County Emergency Managers

Re: N.D. Oil and Gas Division – Abandoned Oil and Gas Well Plugging and Site Reclamation Fund (AWPSRF)

The members of the North Dakota Industrial Commission - Department of Mineral Resources – Oil and Gas Division (OGD) appreciate your ongoing efforts regarding the protection of the people and environment of our great State.

As you may know, the mission of the OGD is to encourage and promote the development, production, and utilization of oil and gas in the State in such a manner as will prevent waste, maximize economic recovery, and fully protect the correlative rights of all owners to the end that the landowners, the royalty owners, the producers, and the general public realize the greatest possible good from these vital natural resources.

Keeping this mission in mind, the OGD has been managing the AWPSRF for over 30 years since its creation by the legislature in 1983. We have recently created a new program team, within the OGD, that is responsible to oversee the proper reclamation of these types of sites that ***may result from the illegal dumping of oil-field waste.***

Most importantly, the fund was created and is sustained from oil and gas taxes, penalties from violations, and fees collected by the OGD. The fund is currently capped at \$75 million with \$5 million available per fiscal year. ***Funds are authorized from this fund to pay for projects in instances where no responsible party can be found.***

It is important to understand that in order for the costs of a reclamation project to be eligible for reimbursement from AWPSRF, ***an OGD field inspector must be contacted prior to the conduct of any remedial activity and provided an opportunity to visit and evaluate the site.*** The OGD has contracted with an environmental services provider who can affect the proper assessment and reclamation of these types of sites at the direction of the OGD. Attached to this letter is the contact information for our field inspection staff and their respective offices and an AWPSRF Program review diagram that is used by the OGD to evaluate the suitability of cost reimbursement.

Additional information on new rules and regulations that have been implemented in order to reduce illegal dumping incidents can be found on the OGD website at: <https://www.dmr.nd.gov/oilgas/>

Through the continued management of AWPSRF and the new rules that have been put forth by our Division we will continue to take positive and constructive steps to ensure responsible development and management of our States oil and gas resources.

Please feel free to contact our offices at any time if you have any questions about the AWPSRF program.

Respectfully,

N.D. Department of Mineral Resources:

Fred J. Anderson  
GeoTech Support Staff Officer



Funds Request / Complaint Investigation 43-02-03-54 / Discovery by Inspector / Spill Response

**AUTHORIZED USE OF FUND?**

- 1) Plug an abandoned well
- 2) Reclaim an abandoned oil and gas or injection well site, saltwater disposal pit, drilling fluid pit, or access road put into service after 7/31/1983
- 3) Reclaim an oil and gas related pipeline or associated facility put into service after 7/31/1983
- 4) Reclaim damage from an illegal dumping incident,
- 5) Compensate a mineral owner's royalty share of confiscated oil



DO NOT FUND

**LEAK OR SERIOUS THREAT?**

Well, equipment, or pipeline leak, or dumping incident is likely to cause a serious threat of pollution or injury to public health or safety



USE AWPSRF  
Unless responsible party is responding

**NO RESPONSIBLE PARTY?**

Company cannot be found, has no assets, or cannot be legally required to plug/re-plug/reclaim



COMPLAINT or  
JUDGMENT ==>  
RESPONSIBLE PARTY  
CLEANS UP, PAYS, OR  
REIMBURSES AWPSRF

**NO BOND?**

No bond or cost to plug/re-plug/reclaim exceeds the bond amount

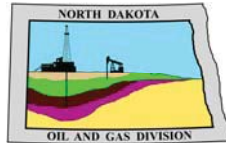


CONFISCATE BOND,  
EQUIPMENT, AND  
OIL

USE ABANDONED OIL AND GAS WELL PLUGGING AND SITE RECLAMATION FUND (AWPSRF)

**North Dakota Industrial Commission**  
**North Dakota Department of Mineral Resources**  
**North Dakota Oil & Gas Division**

**Lynn Helms**  
*Director*



**Bruce Hicks**  
*Assistant Director*

**Abandoned Oil and Gas Well Plugging and  
Site Reclamation Fund Program  
(AWPSRF)**

**Program Team Contacts:**

**Cody Vanderbusch**  
*Reclamation Supervisor*  
*Bismarck*  
*(701) 328-8018*  
*cwvanderbusch@nd.gov*

**Dave Hvinden**  
*Field Supervisor*  
*Bismarck*  
*(701) 391-7181*  
*dhvinden@nd.gov*

**Rick Hutchens**  
*Dickinson District Supervisor*  
*(701) 290-7425*  
*rhutchens@nd.gov*

**John Axtman**  
*Williston District Supervisor*  
*(701) 770-2564*  
*jaxtman@nd.gov*

**Bob Garbe**  
*Minot District Supervisor*  
*(701) 720-3262*  
*bgarbe@nd.gov*



March 20, 2018

Mr. Cody VanderBusch  
Reclamation Specialist  
NDIC Oil and Gas Division  
600 East Boulevard Avenue Dept. 405  
Bismarck, ND 58505-0840

Office 701-328-8020  
Cell 701-391-1959

Re: Corrective Action Plan  
NDIC 1358-13  
NE $\frac{1}{4}$  of S9 & SE $\frac{1}{4}$  of S10-T159N-R101W  
Williams County, North Dakota  
Terracon Project No. M1187015

Dear Mr. VanderBusch:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to submit the enclosed Corrective Action Plan (CAP) for the above-referenced site. The following sections provide an outline of the project, Terracon's CAP scope of services, including schedule, and our estimated fee.

## 1.0 PROJECT INFORMATION

Terracon understands the North Dakota Industrial Commission Oil and Gas Division (NDIC) has identified the sites located in the NE $\frac{1}{4}$  of Section 9 (S9) and SE $\frac{1}{4}$  of Section 10 (S10), Township 159 North (T159N), Range 101 West (R101W) in Williams County, North Dakota with groundwater emanating along the annulus of an abandoned borehole causing surface impacts. Terracon further understands the boreholes are located on a parcel of land owned by Mr. Oscar Quarne. The location of the sites and indications of the abandoned boreholes are depicted on Exhibits 1 and 2. Terracon understands up to five boreholes require plugging.

If our understanding of the current site conditions is not correct, or if you have additional useful information, please let us know as soon as possible.



## **2.0 COMMITMENT TO SAFETY**

Terracon has a 100% commitment to the safety of its employees. As such, and in accordance with our *Incident and Injury Free*® safety culture, Terracon will develop a health and safety plan in conjunction with Pre-Task Planning to be used by our personnel during field services. Prior to commencement of on-site activities, Terracon will hold a meeting to review health and safety needs for this specific project. At this time, we anticipate performing fieldwork in a United States Environmental Protection Agency (USEPA) Level D work uniform consisting of hard hats, safety glasses, protective gloves, reflective vests, and steel-toed boots. It may become necessary to upgrade this level of protection, at additional cost, while sampling activities are being conducted in the event that petroleum or chemical constituents are encountered in soils or groundwater that present an increased risk for personal exposure.

## **3.0 SCOPE OF SERVICES**

The objective of the CAP is to seal the abandoned boreholes in accordance with North Dakota Department of Health (NDDoH) water well abandonment guidelines outlined in Article 33-18 of the North Dakota Administrative Code by restoring, as deep as possible, the geological conditions which existed before the borehole was drilled. The desired product for this CAP is to decommission the boreholes to eliminate surficial physical hazards, prevent contamination of groundwater, maintain aquifer pressure head, prevent intermingling of desirable and undesirable waters, and eliminate the possibility the borehole will be used for purposes other than intended.

Following receipt of your executed Task Order and no later than 48 hours prior to intrusive activities, Terracon will contact North Dakota One Call to arrange for identification of underground utility locations at the above referenced site.

### **3.1 Location**

Terracon completed a reconnaissance site visit on March 2, 2018 to locate the boreholes using visual inspection and physical evidence. Excavation and dewatering will be used to verify the location and/or to access some of the boreholes (see Exhibit 2 for details). Excavation may be accomplished by shovel or larger equipment such as an excavator or hydro vacuum trucks depending on success in finding the proximity of the initial site of excavation to where the borehole is discovered or excavation ceases.

### **3.2 Plugging Procedure**

Terracon will initially check each borehole to determine if previous sealing attempts have been conducted by advancing a split-barrel sampler into the borehole. The Standard Penetration Test (SPT) or N-value will be used to estimate the in-situ relative density of cohesionless soils and the

## NDIC 1358-13 Corrective Action Plan

NDIC Oil and Gas Division ■ Williams County, North Dakota

March 20, 2018 ■ Terracon Project No. PM1187015



consistency of cohesive soils. We will record the number of blows required to advance the sampling spoon the last 12 inches of an 18-inch sampling interval as the standard penetration resistance value, N.

Terracon will seal the borehole with an appropriate plugging material to a depth not less than three feet below grade surface if a determination has been made in the field that a previous sealing attempt has been made to a depth deemed appropriate.

If a determination cannot be made that a previous sealing attempt has been made, the borehole will be made free of all loose material that could cause bridging during decommissioning by over-drilling using solid/hollow stem auger or mud rotary drilling techniques to a maximum of 200 feet.

If water is present, the water in the borehole will be disinfected to 100 parts per million (ppm) chlorine concentration. A 100 ppm chlorine concentration will require two pounds of laundry bleach or 1.2 pounds of calcium hypochlorite per one thousand gallons of water.

Following completion of disinfecting activities, the borehole will be filled with an appropriate plugging material to a depth not less than three feet below grade surface. Neat cement or a cement/bentonite mixture may be used throughout the entire length of the borehole. Grout will be injected at the bottom of the hole using a pressure grouting technique or gravity-fed with a tremie pipe forcing grout and fluids present upwards. This will be done in one continuous operation in such a fashion as to prevent any voids or air pockets from forming; side-discharge *tremie* pipe will be placed in the hole and slowly pulled up as the grout reaches the bottom of the *tremie* pipe. Concrete or topsoil will be used as a cap for the remainder of the borehole to the surface.

Cuttings from the drilling operations will be thin spread on the site.

### 3.3 Preparation of Report

Upon completion of site activities, a report will be prepared and submitted to NDIC that will include the following:

- Site plan showing pertinent site features;
- Decommissioning date;
- Personnel on hand;
- Procedures used in the field;
- Plugging materials used;
- Measurements made, depths encountered, fluids pumped,
- Field location of the borehole;
- Water quality analyses results, if any; and,
- Recommendations concerning further action, if necessary.



## **NDIC 1358-13 Corrective Action Plan**

NDIC Oil and Gas Division ■ Williams County, North Dakota

March 20, 2018 ■ Terracon Project No. PM1187015



Terracon is prepared to commence work on this project following notification to proceed. We anticipate completing the field activities in approximately two days per borehole. The report will be available approximately ten business days upon returning from the site. This written report will reflect results, findings, and recommendations, and, as such, will take precedence over any verbal reports that Terracon personnel may have provided. The analysis, comments, and recommendations presented in the written report will be based on the information collected as discussed in this work plan.

### **3.4 General Considerations and Limitations**

Terracon's services will be performed in a manner consistent with generally accepted practices of the environmental profession. Terracon makes no warranties, expressed or implied, regarding its services, findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These CAP services will be performed in accordance with the scope of work agreed with you, our client, as set forth in this work plan.

Findings, conclusions, and recommendations resulting from these services will be based upon information derived from on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic substances, petroleum products, or other latent conditions beyond those identified during this CAP. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings and our recommendations are based solely upon data obtained at the time and within the scope of these services.

## **4.0 COMPENSATION**

The Scope of Services outlined in this work plan will be performed on a time and materials basis estimated at \$68,500.00. Do to the fact that there are several unknowns associated with regard to the availability of groundwater and borehole depth at the site, a 20% contingency of \$13,700.00 has been added to the total cost. If, as a result of these services, additional work is required outside the scope of this work plan, you will be contacted, and upon request, proposed costs for additional work will be provided if costs are estimated to exceed \$82,200.00 (20% contingency). Client authorization will be obtained prior to commencement of any additional work outside the scope of this work plan.

**NDIC 1358-13 Corrective Action Plan**

NDIC Oil and Gas Division ■ Williams County, North Dakota

March 20, 2018 ■ Terracon Project No. PM1187015



<b>ESTIMATED COSTS</b>	
Consulting Costs (includes spring follow-up site visit, project management, travel and field services, and report preparation)	\$ 9,000.00
Drilling Services (includes over-drilling, disinfecting, and plugging five boreholes to a maximum depth up to 200') and equipment mobilization (one trip)	\$ 50,000.00
Location and excavation services (includes landscaping repair)	\$ 7,500.00
Expenses	\$ 2,000.00
<b>Estimated Cost</b>	<b>\$ 68,500.00</b>
<b>20% Contingency</b>	<b>\$ 13,700.00</b>
<b>Total Estimated Cost</b>	<b>\$ 82,200.00</b>

Subcontractor and other direct costs include a 15% handling fee. The project cost summary is based on the scope of services outlined in this work plan. This work plan and cost estimate were prepared based on the following assumptions:

- NDIC will provide to Terracon, prior to mobilization, legal right of entry to the site (and other areas if required) to conduct the scope of services.
- NDIC will notify Terracon, prior to mobilization, of any restrictions, special site access requirements, or known potentially hazardous conditions at the site (e.g., hazardous materials or processes, specialized protective equipment requirements, unsound structural conditions, etc.).
- The estimated cost assumes that the proposed scope of work can be completed during two mobilizations due to unknowns.
- Utilities on private land that are not located by public companies will be located by property owner/operator.
- Work can be performed during normal business hours (Monday through Friday, 7:00 am to 7:00 pm).
- Traffic control services are not required.
- The site is readily accessible by track-mounted drill rig.
- Transportation and disposal of removed soil cuttings and/or development water and other waste materials are out-of-scope services and not included in this proposal.

If any of these assumptions or conditions are not accurate or change during the project, the stated fee is subject to change. Please contact us immediately if you are aware of any inaccuracies in these assumptions and conditions, so that we may revise the work plan or fee.

**NDIC 1358-13 Corrective Action Plan**

NDIC Oil and Gas Division ■ Williams County, North Dakota

March 20, 2018 ■ Terracon Project No. PM1187015



**5.0 GENERAL COMMENTS**

The proposed scope of work will be completed under the existing Contract dated September 1, 2015 between Terracon and the State of North Dakota. This work plan is valid for 60 days from the date of this work plan. We appreciate the opportunity to provide this proposal and look forward to working with you on this project. If this work plan meets with your approval, please sign the attached Task Order and return a copy to our office via email, fax 701-282-9635, or mail to our Fargo office.

If you should have any questions or comments regarding this proposal, please contact either of the undersigned.

Sincerely,

**Terracon Consultants, Inc.**

A handwritten signature in blue ink that reads "Jacqueline M. Finck".

Jacqueline M. Finck  
Senior Staff Geologist

A handwritten signature in blue ink that reads "Derek A. Brown".

Derek A. Brown  
Approved Project Reviewer

Attachment: Task Order  
Exhibit 1 – Topographic Map  
Exhibit 2 – Site Diagram

## MASTER SERVICES AGREEMENT

## TASK ORDER

This TASK ORDER is issued under the MASTER SERVICES AGREEMENT (dated 09/01/2018, agreement reference number 110.7-15-004) between State of North Dakota ("Client") and Terracon Consultants, Inc. ("Consultant") for Services to be provided by Consultant for Client on the NDIC 1358-13 Borehole Sealing project ("Project"), as described in the Project Information section of the Consultant's Task Order Proposal dated 03/20/2018 ("Task Order Proposal") unless the Project is otherwise described below or in Exhibit A to this Task Order (which section or Exhibit are incorporated into this Task Order). This Task Order is incorporated into and part of the Master Services Agreement.

## 1. Project Information

See Terracon Corrective Action Plan (CAP) for project number M1187015 dated March 20, 2018.

## 2. Scope of Services The scope of Services to be provided under this Task Order are described in the Scope of Services section of the Consultant's Task Order Proposal, unless Services are otherwise described below or in Exhibit B to this Task Order.

See Terracon Corrective Action Plan (CAP) for project number M1187015 dated March 20, 2018.

## 3. Compensation Client shall pay compensation for the Services performed at the fees stated in the Task Order Proposal unless fees are otherwise stated below or in Exhibit C to this Task Order.

See Terracon Corrective Action Plan (CAP) for project number M1187015 dated March 20, 2018.

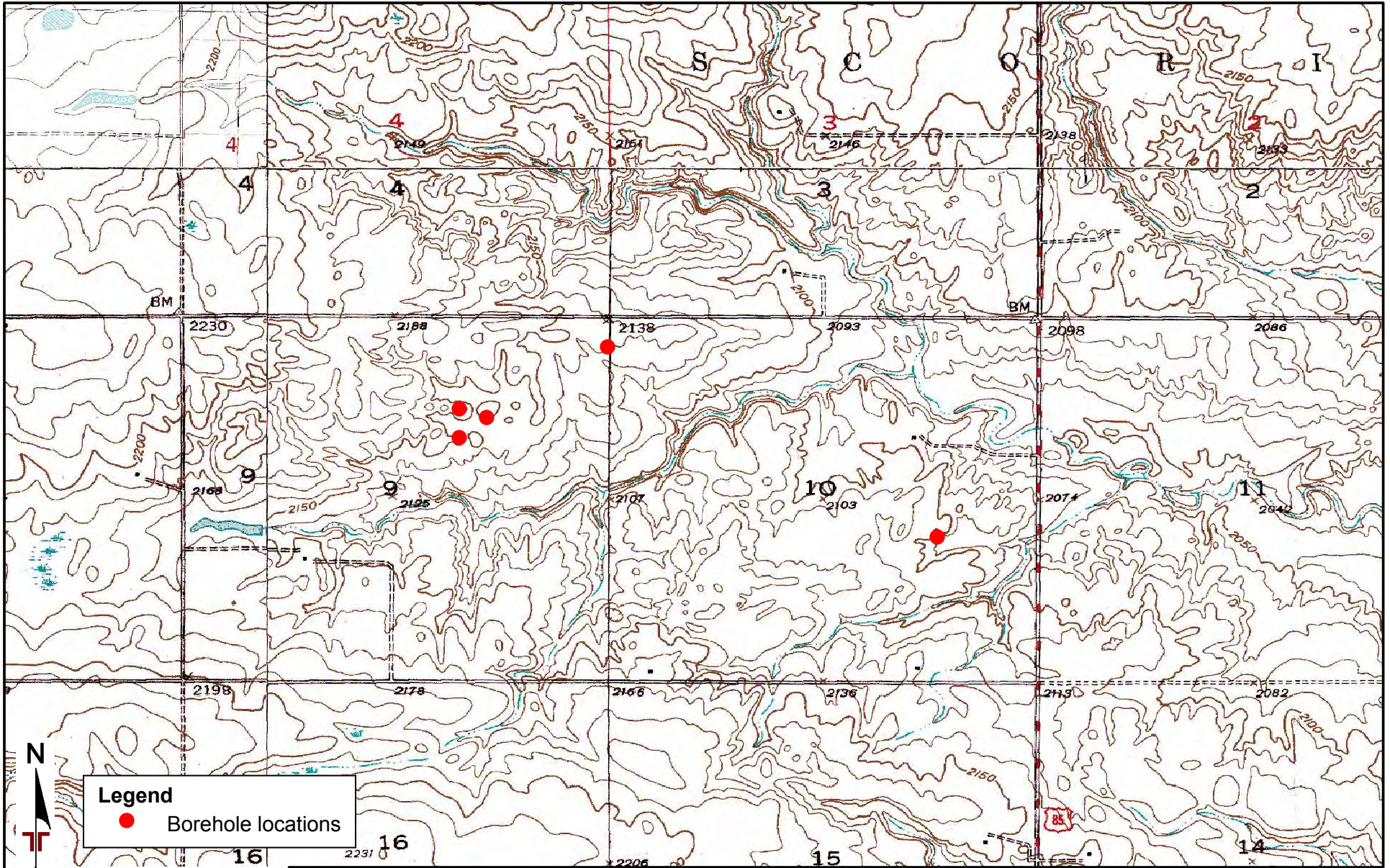
All terms and conditions of the Master Services Agreement shall continue in full force and effect. This Task Order is accepted and Consultant is authorized to proceed.

Consultant: Terracon Consultants, Inc.  
By:  Date: 3/20/2018  
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Client: State of North Dakota  
By: \_\_\_\_\_ Date: \_\_\_\_\_  
Name/Title: Cody VanderBusch / Reclamation Specialist  
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Phone: (701) 328-8020 Fax: \_\_\_\_\_  
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Reference Number: M1187015





**Legend**  
 ● Borehole locations

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY  
 QUADRANGLES INCLUDE: WRITING ROCK SOUTH, ND (1/1/1983), STADY, ND (1/1/1948), HANKS, ND (1/1/1948) and ZAHL, ND (1/1/1948).  
 DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: LHS	Project No. M1187015
Drawn by: JMF	Scale: 1"=2,000'
Checked by: JBE	File Name: M1187015.pdf
Approved by: DAB	Date: 3/19/2018

**Terracon**  
 860 9th St. NE Unit K  
 West Fargo, ND 58078

**TOPOGRAPHIC MAP**  
 NDIC 1358-13 Borehole Sealing  
 Williams County, North Dakota

Exhibit  
 1





**Legend**  
 ● Borehole locations

Dewatering needed to locate and/or access borehole



1000 feet

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AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS  DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES	Project Manager: LHS	Project No. M1187015	 860 9th St. NE Unit K West Fargo, ND 58078	SITE DIAGRAM	Exhibit
	Drawn by: JMF	Scale: AS SHOWN		NDIC 1358-13 Borehole Sealing  Williams County, North Dakota	2
	Checked by: JBE	File Name: M1187015.pdf			
	Approved by: DAB	Date: 3/19/2018			