

For KCC Use:	
Effective Date:	
District #	
SGA? Yes No	

#### KANSAS CORPORATION COMMISSION OIL & GAS CONSERVATION DIVISION

Form CB-1 March 2010 Form must be Typed Form must be Signed All blanks must be Filled

#### **CATHODIC PROTECTION BOREHOLE INTENT**

Must be approved by the KCC sixty (60) days prior to commencing well.

·	Surface Owner Notification Act, MUST be submitted with this form.
Expected Spud Date:	Spot Description:
, ,	Sec Twp S. R E W
OPERATOR: License#	feet from N / S Line of Section
Name:	feet from E / W Line of Section
Address 1:	Is SECTION: Regular Irregular?
Address 2:	(Check directions from nearest outside corner boundries)
City:	County
Contact Person:	County.
Phone:	Facility Name:
	Borehole Number:
CONTRACTOR: License#	Ground Surface Elevation: MSI
Name:	Cathodic Borehole Total Depth:fee
Type Drilling Equipment:	Depth to Bedrock: fee
Air Rotary Other	Water Information
Construction Features	Aquifer Penetration: None Single Multiple
Length of Cathodic Surface (Non-Metallic) Casing	Depth to bottom of fresh water:
Planned to be set: feet	Depth to bottom of usable water:
Length of Conductor pipe (if any): feet	Water well within one-quarter mile: Yes No
Surface casing borehole size: inches	
Cathodic surface casing size: inches	Water Source for Drilling Operations:
Cathodic surface casing centralizers set at depths of:;;	☐ Well ☐ Farm Pond ☐ Stream ☐ Other
;;;;;	Water Well Location:
Cathodic surface casing will terminate at:	DWR Permit #
☐ Above surface ☐ Surface Vault ☐ Below Surface Vault	Standard Dimension Ratio (SDR) is =
Pitless casing adaptor will be used: Yes No Depth feet	(Cathodic surface csg. O.D. in inches / MWT in inches = SDR)
Anada installation double are:	Annular space between borehole and casing will be grouted with:
Anode installation depths are:;; ;; ;;	☐ Concrete ☐ Neat Cement ☐ Bentonite Cement ☐ Bentonite Clay
;;;;;;	Anode vent pipe will be set at: feet above surface
	Anode conductor (backfill) material TYPE:
	Depth of BASE of Backfill installation material:
AFFIDAVIT	Depth of TOP of Backfill installation material:
	Borehole will be Pre-Plugged? Yes No
The undersigned hereby affirms that the drilling, completion and eventual pluggin of this well will comply with K.S.A. 55-101 et. seq.	9
is agreed that the following minimum requirements will be met:	
. Notify the appropriate District office prior to spudding and again before plugging the	
and placement is necessary prior to plugging. In all cases, notify District Office pri	or to any grouting.
Notify appropriate District Office 48 hours prior to workover or re-entry.	
A copy of the approved notice of intent to drill shall be posted on each drilling rig.	
!. The minimum amount of cathodic surface casing as specified below shall be set by	
<ol> <li>File all required forms: a. File Drill Pit Application (form CDP-1) with Intent to Drill (form KSONA-1) with Cathodic Protection Borehole Intent (CB-1) c. File Completion</li> </ol>	(form CB-1). b. File Certification of Compliance with Kansas Surface Owner Notification Act
d. Submit plugging report (CP-4) within 30 days after final plugging is completed.	on Form (ACO-1) within 30 days from spud date.
Cubacitta d Ela atraccica III	
Submitted Electronically	
For KCC Use ONLY	
API # 15	If this permit has expired or will not be drilled, check a box below, sign, date and return
Conductor pipe requiredfeet	to the address below.
Minimum Cathodic Surface Casing Required:feet	Permit Expired Well Not Drilled
Approved by:	
This authorization expires:	
(This authorization void if drilling not started within 12 months of approval date.)	
	Date Signature of Operator or Agent
Spud date: Agent:	Signatura Si Aparata Si Again
·	

Side Two



For KCC Use ONLY	
API # 15	

#### IN ALL CASES, PLEASE FULLY COMPLETE THIS SIDE OF THE FORM.

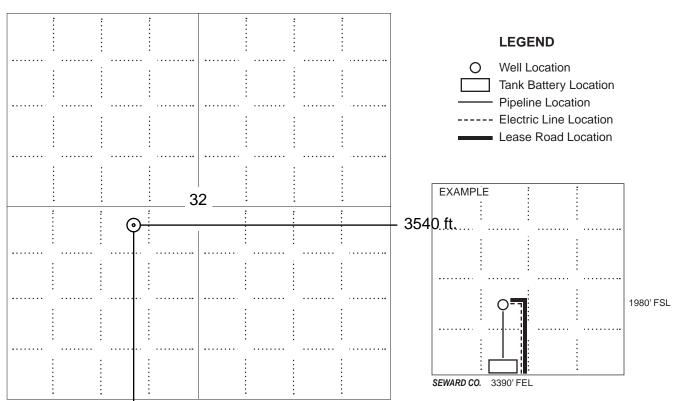
In all cases, please fully complete this side of the form. Include items 1 through 3 at the bottom of this page.

Operator:	Location of Well: County:
Facility Name:	feet from N / S Line of Section feet from E / W Line of Section
Borehole Number:	feet from L E / W Line of Section
	Sec Twp S. R
	Is Section: Regular or Irregular
	If Section is Irregular, locate well from nearest corner boundary.  Section corner used: NE NW SE SW

#### **PLAT**

Show location of the Cathodic Borehole. Show footage to the nearest lease or unit boundary line. Show the predicted locations of lease roads, tank batteries, pipelines and electrical lines, as required by the Kansas Surface Owner Notice Act (House Bill 2032).

You may attach a separate plat if desired.



NOTE: In all cases locate the spot of the proposed drilling locaton.

#### 2370 ft.

#### In plotting the proposed location of the well, you must show:

- 1. The manner in which you are using the depicted plat by identifying section lines, i.e. 1 section, 1 section with 8 surrounding sections, 4 sections, etc.:
- 2. The distance of the proposed drilling location from the section's south / north and east / west; line.
- 3. The predicted locations of lease roads, tank batteries, pipelines, and electrical lines.



## Kansas Corporation Commission Oil & Gas Conservation Division

Form CDP-1 May 2010 Form must be Typed

## **APPLICATION FOR SURFACE PIT**

Submit in Duplicate

Operator Name:			License Number:			
Operator Address:						
Contact Person:		Phone Number:				
Lease Name & Well No.:		Pit Location (QQQQ):				
Type of Pit:	Pit is:					
Emergency Pit Burn Pit	Proposed	Existing	SecTwp R			
Settling Pit Drilling Pit	If Existing, date co	nstructed:	Feet from North / South Line of Section			
Workover Pit   Haul-Off Pit   (If WP Supply API No. or Year Drilled)	Pit capacity:		Feet from East / West Line of Section			
		(bbls)	County			
Is the pit located in a Sensitive Ground Water A	rea? Yes	No	Chloride concentration: mg/l (For Emergency Pits and Settling Pits only)			
Is the bottom below ground level?	Artificial Liner?		How is the pit lined if a plastic liner is not used?			
Yes No	Yes N	No				
Pit dimensions (all but working pits):	Length (fe	et)	Width (feet) N/A: Steel Pits			
	om ground level to dee					
If the pit is lined give a brief description of the li material, thickness and installation procedure.	ner		dures for periodic maintenance and determining acluding any special monitoring.			
Distance to nearest water well within one-mile of	of pit:	Depth to shallo Source of infor	west fresh water feet. mation:			
feet Depth of water well	feet	measured	well owner electric log KDWR			
Emergency, Settling and Burn Pits ONLY:		Drilling, Work	over and Haul-Off Pits ONLY:			
Producing Formation:		Type of materia	ıl utilized in drilling/workover:			
Number of producing wells on lease:		Number of working pits to be utilized:				
Barrels of fluid produced daily:		Abandonment	procedure:			
Does the slope from the tank battery allow all spilled fluids to flow into the pit? Yes No		Drill pits must be closed within 365 days of spud date.				
Submitted Electronically						
	КСС	OFFICE USE O	NLY Liner Steel Pit RFAC RFAS			
Date Received: Permit Num	her:	Dormi	t Date: Lease Inspection:Yes No			



1161833

Form KSONA-1
July 2010
Form Must Be Typed
Form must be Signed
All blanks must be Filled

# CERTIFICATION OF COMPLIANCE WITH THE KANSAS SURFACE OWNER NOTIFICATION ACT

This form must be submitted with all Forms C-1 (Notice of Intent to Drill); CB-1 (Cathodic Protection Borehole Intent); T-1 (Request for Change of Operator Transfer of Injection or Surface Pit Permit); and CP-1 (Well Plugging Application).

Any such form submitted without an accompanying Form KSONA-1 will be returned.

Select the corresponding form being filed: C-1 (Intent) CB-1 (CB-1)	Cathodic Protection Borehole Intent) T-1 (Transfer) CP-1 (Plugging Application)
OPERATOR: License #	Well Location:
Name:	SecTwpS. R East
Address 1:	County:
Address 2:	Lease Name: Well #:
City: State: Zip:+	If filing a Form T-1 for multiple wells on a lease, enter the legal description of
Contact Person:	the lease below:
Phone: ( ) Fax: ( )	
Email Address:	
Surface Owner Information:	
Name:	When filing a Form T-1 involving multiple surface owners, attach an additional
Address 1:	sheet listing all of the information to the left for each surface owner. Surface owner information can be found in the records of the register of deeds for the
Address 2:	county, and in the real estate property tax records of the county treasurer.
City:	
the KCC with a plat showing the predicted locations of lease roads, tank	dic Protection Borehole Intent), you must supply the surface owners and k batteries, pipelines, and electrical lines. The locations shown on the plat in the Form C-1 plat, Form CB-1 plat, or a separate plat may be submitted.
☐ I certify that, pursuant to the Kansas Surface Owner Notice A owner(s) of the land upon which the subject well is or will be to CP-1 that I am filing in connection with this form; 2) if the form to form; and 3) my operator name, address, phone number, fax, at ☐ I have not provided this information to the surface owner(s). I at KCC will be required to send this information to the surface owner(s).	cknowledge that, because I have not provided this information, the vner(s). To mitigate the additional cost of the KCC performing this
task, I acknowledge that I am being charged a \$30.00 handling  If choosing the second option, submit payment of the \$30.00 handling form and the associated Form C-1, Form CB-1, Form T-1, or Form CP-	fee with this form. If the fee is not received with this form, the KSONA-1
Submitted Electronically	

Form	CB1CDP1 - Cathodic Protection Borehole Intent
Operator	OneOK, Inc. dba Kansas Gas Service
Well Name	Rect 93-2712-2013 2
Doc ID	1161833

## Anode Installation Depths

Depth Depth	
30	
40	
50	
60	
70	
80	
90	
100	
110	
120	
130	
140	
150	
160	
170	



#### PRODUCT OVERVIEW

The EnvirAnode® CP System\* for impressed current cathodic protection (CP) is a premium product aimed at applications that demand high performance, long life and environmental compliance. The EnvirAnode® offers the following value proposition:

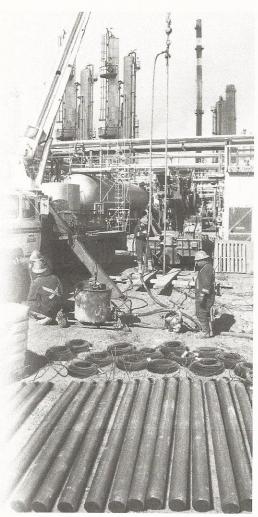
- 1. An Environmentally Neutral Solution
- 2. Longest Lasting Performance
- 3. Most Efficient Performance and
- Best overall value for money (lowest CAPEX on a NPV Basis)

#### PRODUCT FEATURES

The EnvirAnode® is the world's first molecular bonded tertiary energy transfer technology developed expressly for CP applications, and is behind its stunning performance as a fully operational, environmentally-neutral cathodic protection anode. Notable features include:

- The conductive Conducrete® backfill sets up to form a solid, impermeable column that stops water migration and aquifer cross-contamination, a major issue with coke breeze type anode beds;
- The combined volume of the three energy transfer materials, with their inherent protection against water penetration and corrosion give the EnvirAnode® its phenomenal operational lifespan of 2 to 3 times that of traditional CP anode beds;
- Two carbon and one mixed metal oxide (MMO)
   energy transfer materials, molecularly bonded together into a single CP anodic column;
- The molecular bonding process that ties the active energy materials together results in a highly
  efficient electronic energy transfer to the soil that provides a stable and predictable electrical
  performance throughout its operational life;
- The large surface area of the EnvirAnode® lowers the surface energy density, and efficiently manages the normal gas byproducts produced that out-gassing vent pipes are not required;
- The EnvirAnode® even ages differently. The "shelving off" and "end effect" phenomenon
  associated with traditional anode beds is effectively eliminated, as the CP process slowly
  depletes carbon from within the energy transfer materials, leaving the column itself intact
  and impermeable, thus eliminating abandonment costs and environmental pollution risks.

These features add up to unparalleled operational and environmental performance, which creates a compelling business case for EnvirAnode® CP solution even before considering the significantly lower total cost of ownership.



EnvirAnode® installation at an oil refinery

T: +1 705.733.3307 | F: +1 705.733.1218 | Toll Free: 1 877.234.2502 US and Canada | info@saeinc.com | www.saeinc.com



#### How Envir Anode® Works

The EnvirAnode® CPS is first and foremost an effective impressed current cathodic protection solution — familiar, but different:

- Familiar in that an EnvirAnode® CP system is installed using the same tools and techniques as as those used in traditional anode beds, though simpler as the vent pipe and anode centering rings are not required;
- Different in that an EnvirAnode® CP system is constructed from robust SAE extendedlife AEL Anodes® embedded in a conductive impermeable column made from specially formulated Conducrete® backfill material (see diagram);
- Installed, this configuration transforms into a molecularly bonded tertiary electronic energy transfer system with a very large active surface area over which the CP energy is effectively dissipated into the soil. This results in the ionic reaction boundary being shifted away from the surface of the anode core to the interface between the column and soil, where the large surface area reduces the circumferential energy density,



EnvirAnode® installation using familiar drilling, mixing and pumping tools and techniques

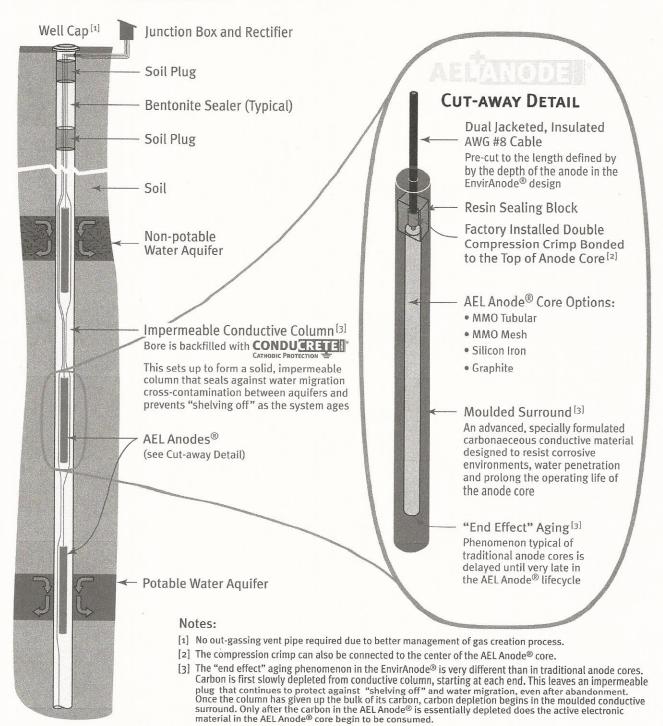
thereby reducing carbon consumption/depletion by nearly half, and extending the life of the anode bed;

- The electronic energy transfer mechanism of the EnvirAnode® gives extremely stable electrical operating behaviour in use, especially when compared to the electrolytic energy transfer utilized in traditional anode beds (see Performance section);
- The large active, low energy density surface area of the EnvirAnode® column causes minute bubbles of gas to be formed
  over the entire surface of the column, where it is easily absorbed into the soil before it can collect into concentrated
  pockets. Thus, by better managing the production and dissipation of out-gassing, vent pipes are not required in
  EnvirAnode® installations and the overall efficiency of the anode bed is increased;
- Once the EnvirAnode® column has set up, it provides an impenetrable barrier to the migration of water, eliminating aquifer cross contamination to help maintain the quality of critical water resources. This impermeable characteristic continues even after the carbon has been depleted from the active areas of the column, eliminating expensive abandonment issues and costs;
- The solid EnvirAnode® column also eliminates the "shelving off" phenomenon inside the bore that degrades the anode bed efficiency and shortens operational lifetimes in traditional coke breeze systems;
- In addition to being an energy transfer material, Conducrete® backfill provides excellent anti-corrosion benefits, protecting
  the AEL Anode® against water penetration and corrosion and further extending the operational lifetime of the anode bed.
  The pre-cast carbonaceous surround material used in the AEL Anode® in turn provides additional anti-corrosion protection
  for the anode core typically a mixed metal oxide (ммо) tube and offers the additional benefit of delaying the onset of
  the aging "end effect" at the core;
- With superior CP energy transfer efficiency, three layers of energy transfer materials (the tertiary design), corrosion,
   "shelving off" and "end effects" either eliminated or delayed, and out-gassing very effectively managed, it's no surprise that the cathodic protection performance and operational life of an EnvirAnode® CPS far exceeds any other solution in the market.



A CP System that can be Safely Installed Through Underground Aquifers

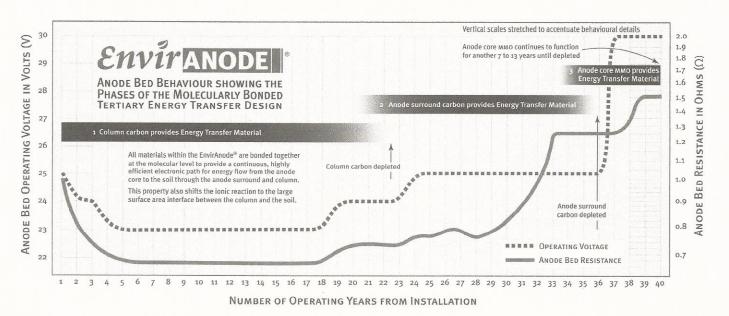
# Envir ANODE CROSS-SECTION



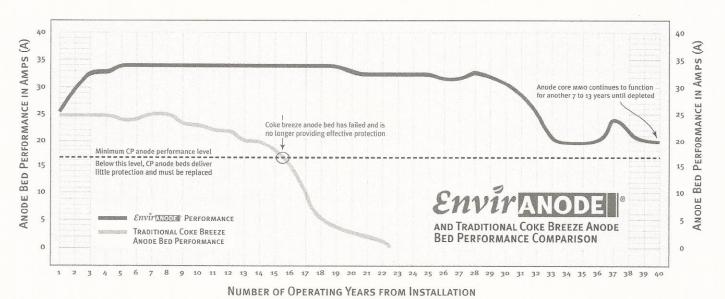


#### **ENVIRANODE® OPERATIONAL PERFORMANCE**

The EnvirAnode® solution offers more reliable and stable electrical performance (and cathodic protective value) over a longer operational lifetime than any other impressed current cathodic protection solutions currently available. The charts below illustrate the behaviour characteristics of a typical 25A EnvirAnode® deep well anode bed, and show its expected performance and lifecycle as compared to a traditional 25A coke breeze anode bed.



EnvirAnode® operating characteristics showing the properties of the Molecularly Bonded Tertiary Energy Transfer Design over time



Comparison of 25A anode bed performance between an EnvirAnode® CP system and a traditional coke breeze system



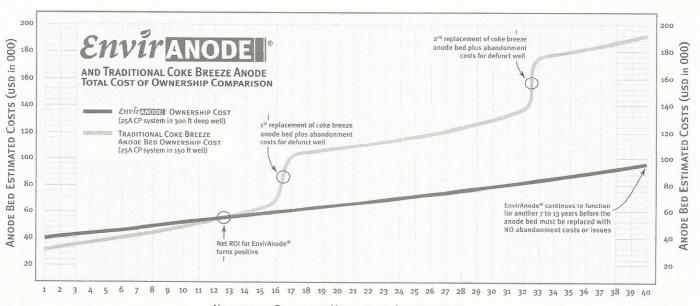
#### THE BUSINESS CASE FOR ENVIRANODE®

The EnvirAnode® solution offers a compelling business case at several distinct levels: as an individual anode bed, as a system-wide CP deployment and as a viable response to increasing stringent environmental regulations and control.

- At the level of individual anode beds, the EnvirAnode® offers a Total Cost of Ownership (TCO) that is less than half the TCO of traditional anode beds (see chart below). When abandonment bond requirements are considered in the financial model (typically usp 50,000 per anode bed), the EnvirAnode® TCO is one third of traditional anode beds, with positive ROI on day one! This financial benefit stems primarily from the longer operating life of the EnvirAnode® and its reduced maintenance costs.
- In a system-wide deployment, the unique operational characteristics and performance of the EnvirAnode® offer a significant reduction in system CAPEX, as fewer EnvirAnode® anode beds are required. For example, along a 150 mile (240 km) pipeline, CP protection can be obtained with three (3) x 300 ft EnvirAnode® anode beds producing a more stable current output, compared with the five (5) x 150 ft traditional coke breeze anode beds required to provide a similar level of CP protection. The CAPEX advantages are even more profound given the fact that virtually no abandonment costs are required with the EnvirAnode® solution.
- Where strict environmental regulations are in force, the EnvirAnode® is often
  the only deep well technology which can be deployed, since the EnvirAnode®
  technology has been approved for use in environmentally sensitive areas by
  regulatory agencies.

Environmental regulatory agencies that have approved the use of the EnvirAnode® in environmentally sensitive areas





NUMBER OF OPERATING YEARS FROM INSTALLATION
Total Cost of Ownership (TCO) comparison between a 25A, 300 ft EnvirAnode® CP system and a 25A, 150 ft traditional coke breeze system



## **ENVIRANODE® PRODUCT ORDERING OPTIONS**

EnvirAnode® CP solutions are available in either as predefined kits built for typical cathodic protection applications, or as custom designed systems tailored to specific client requirements (see www.saeinc.com website for details).

The kits are available for a variety of impressed current capacities. Use the product ordering option codes in the tables below to specify the EKT EnvirAnode® CP kit that meets your technical requirements.

EKT CC	Table B)		
(see Current Rating Options in Table A)	(see Applications Options		
ENVIRANODE® CP KIT CODE	PHYSICAL GEOMETRY OPTIONS CODE		

#### TABLE A: ENVIRANODE® KIT - CURRENT RATING OPTIONS

OPTION CODE (CC)	Total Impressed Current Rating (Amps)				
25	25				
50	50				

## TABLE B: ENVIRANODE® KIT - PHYSICAL GEOMETRY OPTIONS

OPTION CODE	N° OF AEL ANODES®				Bore Hole Geometry				
(ggg)		Mi	ETRES	FEI	ΕT	DIAMETER (INCHES)	DEPTH (METRES)	DEPTH (FEET)	
4.04		46.0	68.9	151	226				
101		50.6	73.5	166	241	10		300	
	10	55.2	78.0	181	256		91.4		
		59.7	82.6	196	271		91.4		
102		64.3	87.2	211	286	12			
		64.3	110.0	211	1 361				
		68.9	114.6	226	376				
301		73.5	119.2	241	391	10			
		78.0	123.7 256 406						
	20	82.6	128.3	271	421		152.4		
	20	87.2	132.9	286	436			152.4	500
		91.7	137.5	301	451				
302		96.3	142.0	316	466	12			
		100.9	146.6	331	481				
		105.5	151.2	346	496				

For more information about our environmentally neutral cathodic protection solutions, products and services, please contact us at:

Toll Free: 1.877.234.2502 eMail: sales@saeinc.com Website: www.saeinc.com

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Kathleen Sebelius, Governor Thomas E. Wright, Chairman Robert E. Krehbiel, Commissioner Michael C. Moffet, Commissioner

July 20, 2007

Mr. Dennis McIntaggart SAE Inc. 19 Churchill Drive Barrie, Ontario L4N 8Z5

Dear Mr. McIntaggant:

Per your request, commission staff has reviewed your request to utilize the EnvirAnode System to comply with cathodic protection regulations under K.A.R. 82-3-700 et seq. The EnvirAnode system is approved for use except in Groundwater Management Districts (GMD) #2 and #5. You must apply directly to the manager of that GMD for approval. The approval is granted with the following conditions:

- The EnvirAnode System may be utilized in aquifer completions as defined in 82-3-700 (d) and 82-3-702 (b) (3).
- For multiple aquifer completions as defined in 82-3-700 (m), the EnvirAnode System may be used upon submission of a written request, and approval by the director, for an exception to K.A.R. 82-3-702 (b) (4).

Sincerely,

Doug Louis, Director

Kansas Corporation Commission

Conservation Division

# Hayse Management Services

PO Box 107, Mullinville, Kansas 67109

October 10, 2013

KCC Conservation Division 130 S. Market – Room 2078 Wichita, KS 67202

Re: Application for Uncased Cathodic Protection Hole

KCC:

Enclosed is the application for the uncased cathodic protection holes in Wichita, Kansas for Kansas Gas Service a Division of OneOk. We will be using mud rotary drilling to place the anodes in an uncased borehole. The intent is to set the entire anode column above the Permian shale. Please note the backfill material is the newly approved EnvirAnode System (see Attachments) and noting the approved exception to 82-3-702 (b) (3) attached, that the EnvirAnode System uses a concrete type grout from bottom to top of the borehole with no surface casing.

Thanks for the assistance! Please contact our office 620-548-2369 if you have any questions.

Sincerely,

Dale Hayse Supv. Hayse Management Services

## CATHODIC PROTECTION BOREHOLE ILLUSTRATION

**Uncased Borehole Construction Features** 

KGS Mulvane, Sedgwick County, Kansas November 1, 2013

