

From: "Clayton, Deena" <Deena.Clayton@encana.com>
To: "losierv@inac.gc.ca" <losierv@inac.gc.ca>
Date: 2004-12-22 11:32:52 AM
Subject: Report of Monitoring at Umiak N16 Sump Site (N7L1-1797)



Vicki,

Please find attached the annual monitoring report for the Umiak N16 sump site. If you have any questions, or would like additional information, please contact me.

I apologize for submitting this report after the December 1st deadline. I had mistakenly thought March 31st was the deadline for the report, as noted in Part B of the license.

Merry Christmas and happy holidays.

Deena

Deena Clayton
Environmental Advisor, Northern Canada
EnCana Corporation
150 9th Ave. SW
Calgary, AB T2P 2S5
Tel 403.645.5736
Fax 403.290.7341
Cell 403.880.7136
<<Water Board Report Umiak N16 Sump 2004.pdf>> <<Water Board Report Umiak N-16 Sump 2004 cover.pdf>>

CC: Sarah Aho <ahos@inac-ainc.gc.ca>, Kevin Glowak <glowak@inac-ainc.gc.ca>





Via Email

December 22, 2004

Northwest Territories Water Board
P.O. Box 1500
2nd Floor Goga Cho Building
Yellowknife, NWT X1A 2R3

Attention: Mr. Gordon Wray
Chair, Northwest Territories Water Board

Dear Mr. Wray:

**Re: Annual Monitoring Report for the Umiak N16 Sump, 2004
Licence N7L1-1797**

Enclosed please find a report of the inspection and monitoring conducted at the Umiak N-16 sump site in 2004. This information is being submitted as required under Conditions Applying to Abandonment and Restoration (Part H) of water license N7L1-1797.

If you have any questions or require additional information, please do not hesitate to contact me.

Regards,

A handwritten signature in blue ink, appearing to read "D. Clayton".

Deena Clayton, Environmental Advisor
EnCana Corporation
150-9th Ave. SW
Calgary, AB T2P 3S5
Tel 403.645.5736
Fax 403-290-7341
Email deena.clayton@encana.com

cc. Kevin Glowa, Inspector
Sarah Aho, Project Officer

REPORT FOR THE ENCANA CORPORATION
UMIAK N-16 SUMP MONITORING PROGRAM

Submitted to: Northwest Territories Water Board
P.O. Box 1500, Goga Cho Building
Yellowknife, NT X1A 2R3

Water License: N7L1-1797

Licensee: EnCana Corporation

Submitted by: Deena Clayton, Environmental Advisor

Year Reported: 2004

The information in this report is as required under *PART H Conditions Applying to Abandonment and Restoration* of the Northwest Territories Water Board License N7L1-1797 for the EnCana Corporation Burnt Lake (Umiak N-16) Drilling Program.

In September 2004, an inspection of the Umiak N16 remote sump site was conducted by Kavik-Axys Inc. The inspection included:

- Visually assessing the sump site;
- Downloading and recording temperature data logged at four thermisters, and;
- Conducting an electromagnetic (EM) survey.

Visual Assessment

Kavik-Axys inspected the Umiak N16 sump on September 6, 2004 to document conditions related to erosion, slumping, water ponding and vegetation.

Overall, the sump appears to be functioning well and there is no evidence of surface water ponding, erosion, stress or tension cracks, or soil slumping. The surface of the sump remains uneven, which reflects the condition of the sump immediately post-construction (i.e., the uneven cap material is frozen in place). The sump surface appears to be becoming more even as the sump surface settles. An uneven sump surface is beneficial to vegetation re-growth, since more microsites are present which help to establish and protect new vegetation. Vegetation re-establishment is characterized as very good, but is patchy in some areas. Photographs of the sump surface, vegetation and thermister placement are provided below.



Plate 1. Sump surface showing vegetation re-growth (photo by Kavik-Axys)



Plate 2. Aerial view of Umiak N16 sump (west end in foreground). Note thermistors down center axis of sump. (photo by Kavik-Axys)

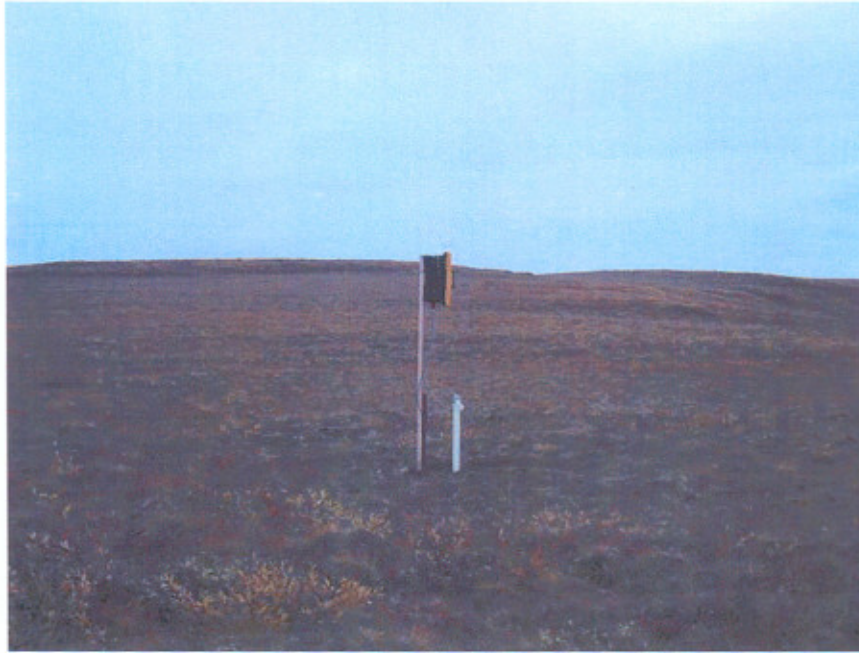


Plate 3. Control thermister adjacent to sump. (photo by Kavik-Axys)



Plate 4. Surface view of sump. (photo by Kavik-Axys)

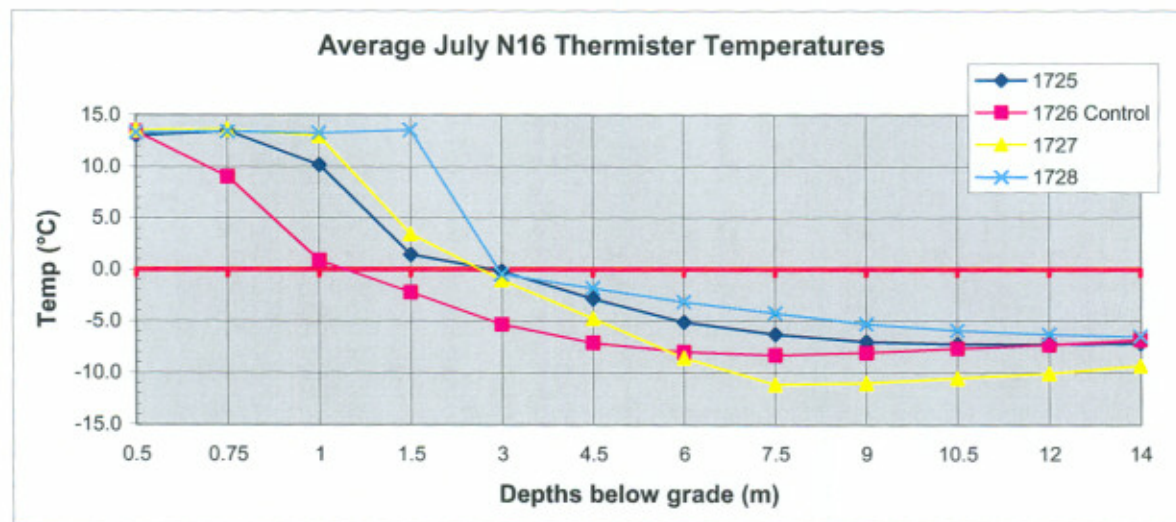
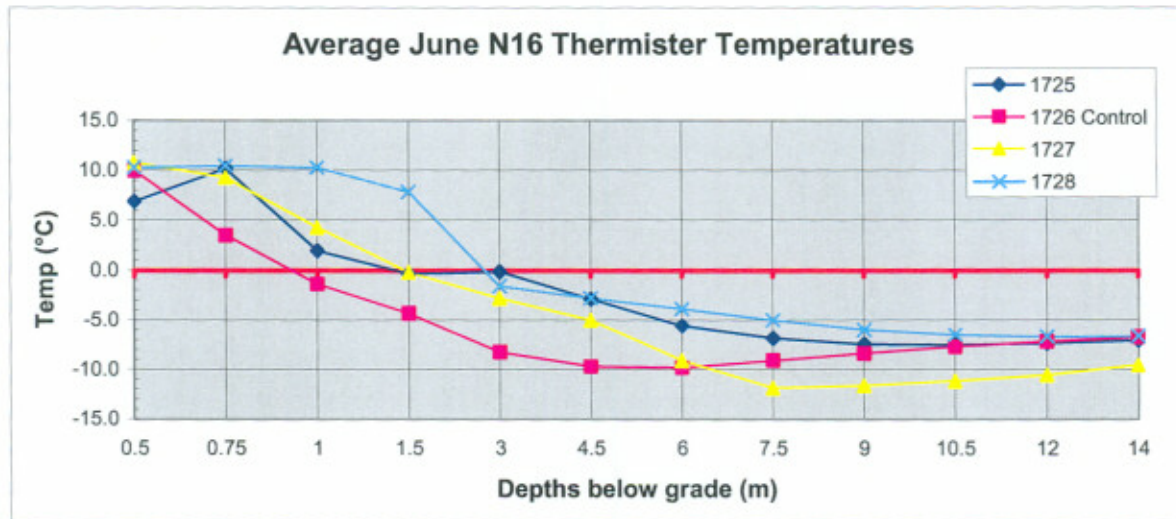
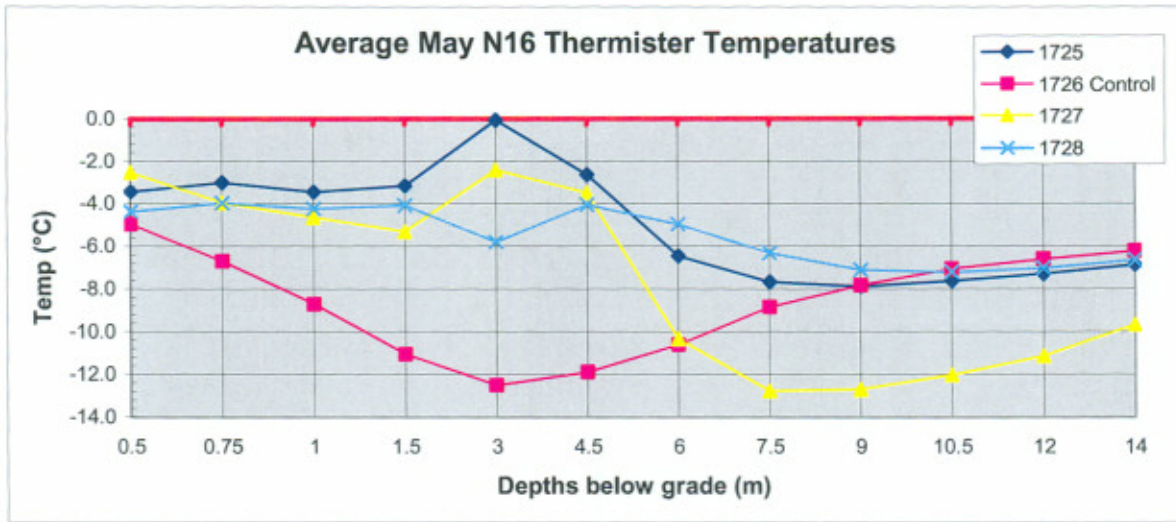
Temperature

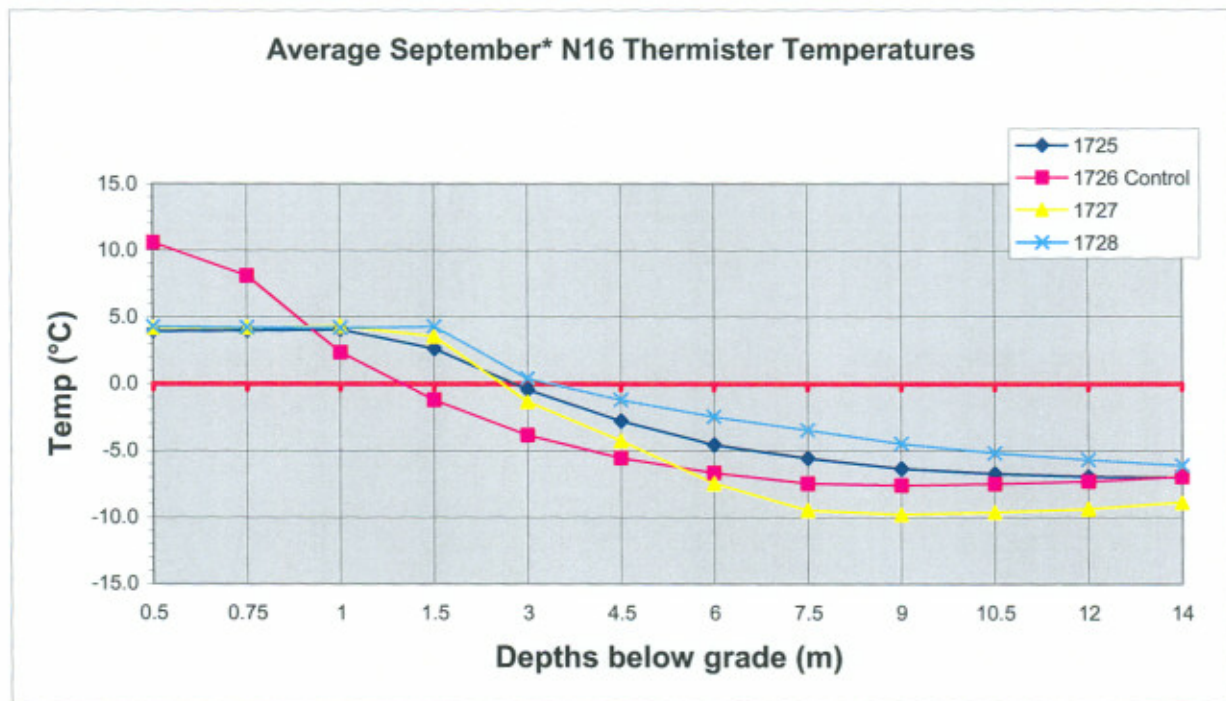
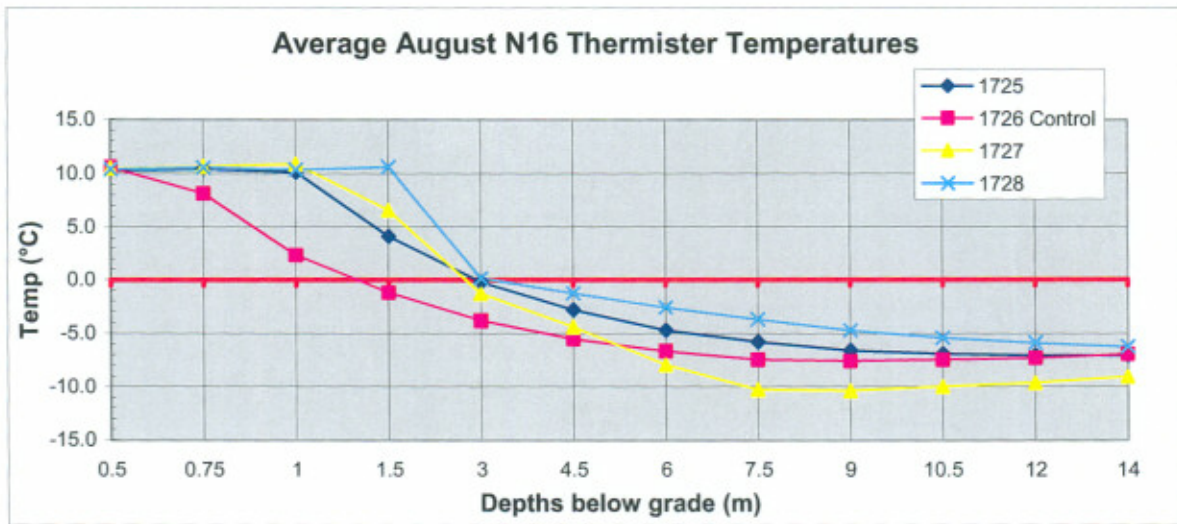
To detect thawing of drilling waste, four thermisters, designed to measure soil temperatures from 0.5 – 14 m depth, were placed in and around the sump on 30 April, 2004. In September, it was noted that data was being logged hourly, and this was limiting battery-life and data storage to approximately six to eight months. Given that inspections occur annually, to avoid any loss of data, the data loggers were re-programmed to record data twice daily which extends battery life and data storage to approximately 18 months.

Visual observations made by Kavik-Axys, on 6 September 2004, indicate the sump surface has settled approximately 0.45 m since the initial sump construction. Support poles for in-sump thermisters were used to estimate the amount of surface settling. As a result of this settling, thermister depth readings must be adjusted – e.g., the thermister bead that originally measured temperatures at the 1 m depth now measures at 0.55 m depth. This should be considered when comparing data with the control thermister. Average monthly temperatures (recorded from 1 May to 6 September 2004) are provided below.

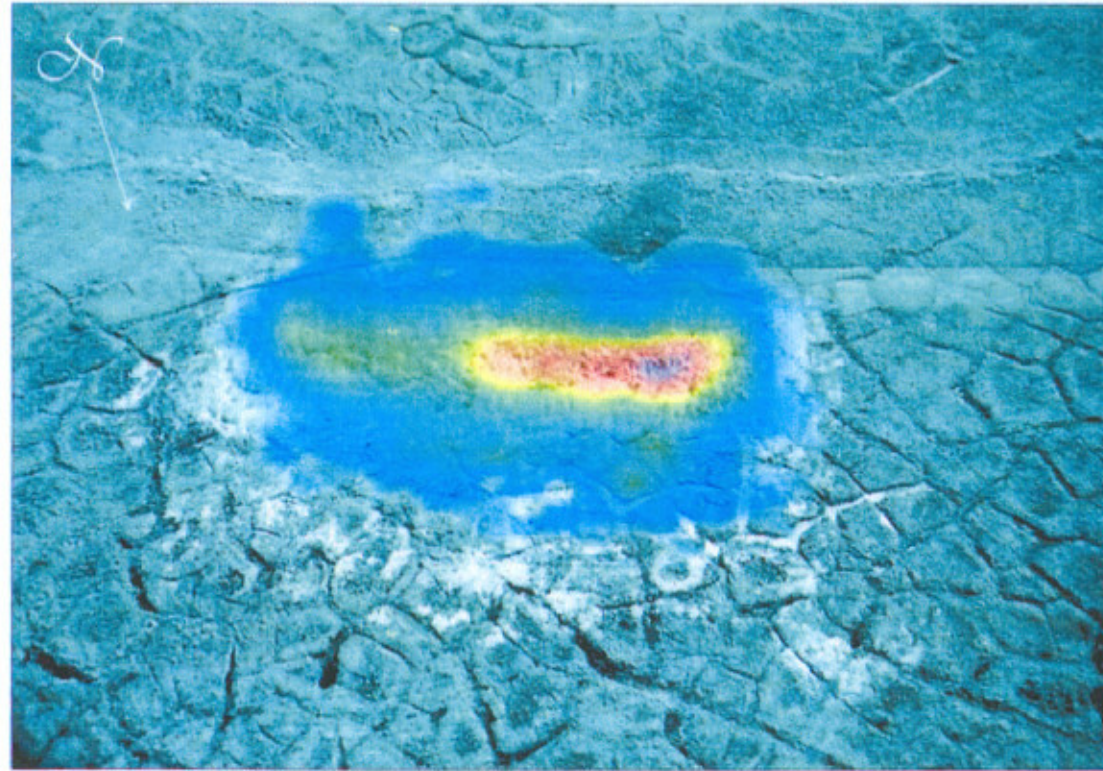
Electromagnetic Survey

On 18 August 2004, an electromagnetic (EM) survey was conducted using a Geonics EM31 to map the lateral extent of ion-contaminated regions using EM inductive forces. The EM31 readings approximated measurements of the initial 5 m of topsoil. Conductivity response trends using the EM31 suggest drilling wastes are concentrated along the central axis of the visible sump area, and there is no indication of lateral movement of sump fluids. An aerial photograph with the EM31 survey overlaid is attached, along with a map showing the lateral conductivity distribution.





*Last temperature reading was September 6, 2004



COMMENTS

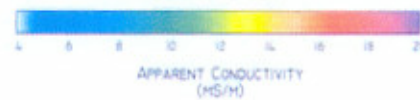
THE OVERLAY ILLUSTRATES THE CORRELATION OF EM RESPONSES TO REGIONAL FEATURES. THE PROCESS OF MERGING EM DATA WITH THE AERIAL PHOTOGRAPH GENERATES FOCAL AND PERSPECTIVE DISTORTION.

TECHNICAL SUMMARY:

GEOPHYSICAL INSTRUMENT: GEONICS EM31
MEASURED QUANTITIES: QUADRATURE IN MS/M

AERIAL PHOTOGRAPH & EM31 OVERLAY

UMIAK N16 SUMP



DATE: AUGUST 2004

AERIAL PHOTOGRAPH #:

JOB NUMBER: 1642

SCALE: VARIABLE, NON-LINEAR

PRODUCED BY:



CLIENT:



SITE LOCATION MAP



CONSENTS
 The following consents have been obtained for the proposed works:
 - [List of consents]

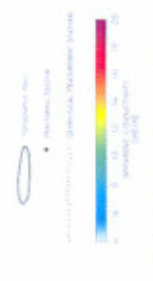
TECHNICAL SUMMARY

PROJECT INFORMATION
 PROJECT NAME: [Name]
 CLIENT: [Name]
 PROJECT ADDRESS: [Address]
 PROJECT REFERENCE: [Reference]

PROJECT LOCATION
 PROJECT COORDINATES: [Coordinates]

PROJECT DESCRIPTION
 [Description of project]

LEGEND

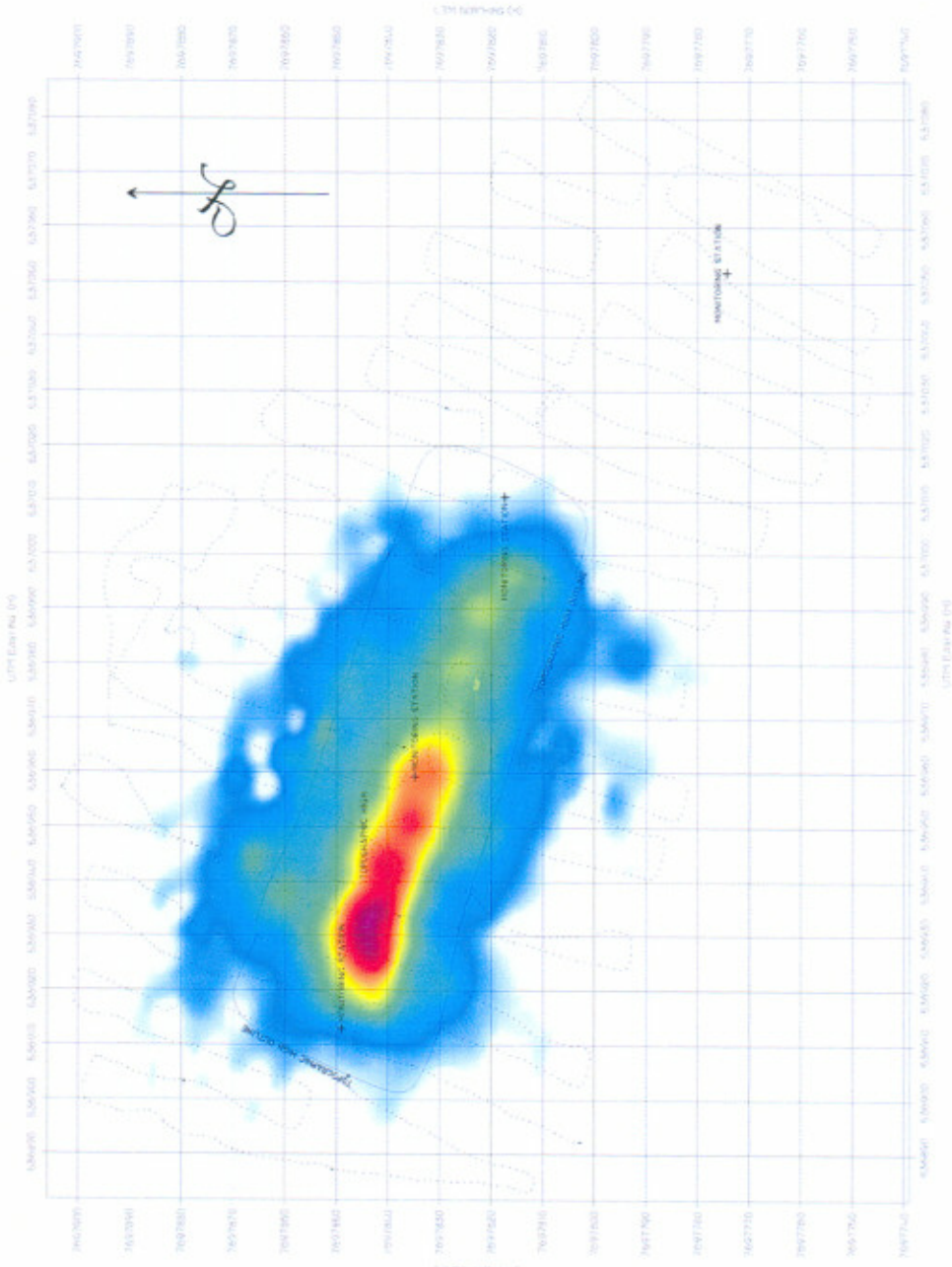


LATERAL CONDUCTIVITY DISTRIBUTION (EH31) & SITE FEATURES
 Linear 100 Year

ENCORA
 Environmental & Geotechnical Engineering
 100 [Address]
 [City], [State] [Zip]

PERMIT TO PRACTICE
 LICENSE NO. [Number]
 STATE OF [State]

PROJECT NUMBER: P-0825
 [Date]
 [Author Name]



UTM NORTHING (N)

UTM EASTING (E)