



AUDIT OF KVANEFJELD REES, U AND ZN PROJECT

Exploration activities 2007-2017.

29 August to 5 September 2017 by DCE and GINR

Scientific Report from DCE – Danish Centre for Environment and Energy

No. 332

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Abstract:	Since 2007, exploration activities have been performed at Kvanefjeld REEs, U and Zn project in Southern Greenland by Greenland Minerals and Energy Limited (GMEL). This is the first audit report for the Kvanefjeld project. A team of Violeta Hansen from the Danish Center for Environment and Energy (DCE), Gert Asmund from (DCE) and Morten Birch Larsen from Greenland Institute of Natural Resources (GINR) audited the Kvanefjeld project from 29 August to 5 September 2017. During the audit, DCE measured the background gamma dose rate in Narsaq town, between Narsaq and Kvanefjeld and at Kvanefjeld. In order to verify some of GMEL's environmental baseline studies, the following environmental samples were collected by DCE and GINR as part of the audit: freshwater from Narsaq River, Taseq River, Kvane River, Lake without name and its outlet and old Risø mine outlet, drinking water from Kukasuk, Napassup Kuva and Landnamselven, fjord water at 0 m (surface water) and at the depth of 30 m from the GMEL proposed discharge point of liquid effluents and biota samples such as lichens, blue mussels, seaweed, arctic char (trout). The report include results of background gamma dose rate (µSv/h) in Narsaq town, between Narsaq and Kvanefjeld and Kvanefjeld, gamma dose rate at available surfaces of containers located at GMEL office in Narsaq and between Narsaq and Kvanefjeld, gamma dose rate at the surface of some of the drill holes from exploration activities, physical-chemical parameters of all collected water samples from Narsaq, and concentration of fluor in all collected water samples from Narsaq. Background gamma dose rate in Narsaq town is not elevated and is comparable with baseline values elsewhere. High levels of fluor are reported in water samples collected from Narsaq.
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1. Summary

Since 2007, exploration activities have been performed at Kvanefjeld REEs, U and Zn project in Southern Greenland by GMEL. This is the first audit report for the Kvanefjeld project.

A team of Violeta Hansen from the Danish Center for Environment and Energy (DCE), Gert Asmund from (DCE) and Morten Birch Larsen from Greenland Institute of Natural Resources (GINR) audited the Kvanefjeld project from 29 August to 5 September 2017.

The team of GMEL at the site was formed by Ib Laursen, Johannes Kyed and Pavia Rohde.

A team from Environmental Agency from Mineral Resources Activities (EAMRA) was present at the site in the first three days of the audit. The EAMRA team was of Najaaraq Demant-Poort (EAMRA), Karen Schleiss (EAMRA) and Jonas Petersen (Ministry of Mineral Resources).

Audit activities by DCE and GINR:

- Inspect the hydrological measurement stations at the site and draw specific recommendations for hydrological baseline measurements.
- Verification of on-site instruments such as handheld gamma dose rate and E- sampler. The E-Sampler is a type of nephelometer which automatically measures and records real-time airborne particulate concentration levels using the principle of forward laser light scatter. The E-Sampler also has a built-in 47 mm filter sampler. The E-Sampler is a low-flow sampler, with 2.0 liter/minute flow (0.012 m³/hr). The E-Sampler has a humidity-controlled heated inlet tube. TSP, PM₁₀ and PM_{2.5} size classes can be measured, depending on inlet. A PM₁₀ sharp cut cy-clone inlet was used.
- Control of containers labelled radioactive and located in Narsaq. Gamma dose rate measurements at available surfaces of containers located at GMEL office in Narsaq and between Narsaq and Kvanefjeld. The results of gamma dose rate at available surfaces of containers are included in Appendix A.
- Control of GMEL work camps at Kvanefjeld and gamma dose rate measurement at the surface of some of the drill holes from exploration activities.
- Environmental control sampling of water, soil, sediments, lichens, mussels, fish and seaweed. Those samples were transported to Denmark for analysis of background levels of radioactive and non-radioactive contaminants. Detailed information on collected samples can be found in Appendix B.
- Analysis of fluor in all water samples except the fjord water. The analysis of fluor was performed by using an YSI Multilab equipped with an ion selective fluoride electrode. The results can be seen in the Appendix C.

- Measurement of physical-chemical parameters of all collected water samples by using an In Situ SmarTroll multimeter. The water physical chemical parameters are included in Appendix D.
- XRF analysis of control solid samples such as sample ore core, ore from previous Risø exploration activities and soils and sediments at the project site.
- Measurement of background gamma levels/(gamma dose rate $\mu\text{Sv/h}$) in Narsaq town, between Narsaq and Kvanefjeld and Kvanefjeld was performed by using Survey Meter Colibri VLD (Very Low Dose). The gamma dose rate results are included in Appendix E.
- Taking pictures to document current status of the site.
- Participation in the public open house organized by EAMRA on 30 of August 2017.
- Answer to questions received by e-mail following the open house in Narsaq. The answers are included in Appendix F.
- DCE and GINR were made aware of a dam that was built in Narsaq River in 2010 by the owner of the farm in Narsaq Valley.

2. Sammenfatning

Siden 2007 er der gennemført efterforskningsaktiviteter i Kvanefjeld-projektet om sjældne jordarter, U og Zn i Sydgrønland af Greenland Minerals and Energy Limited (GMEL). Dette er den første tilsynsrapport fra Nationalt Center for Miljø og Energi (DCE) og Grønlands Naturinstitut (GN) over Kvanefjeld-projektet. Et hold bestående af Violeta Hansen og Gert Asmund fra DCE og Morten Birch Larsen fra GN førte tilsyn på Kvanefjeld-projektet fra 29. august til 5. september 2017.

GMEL's hold på stedet bestod af Ib Laursen, Johannes Kyed og Pavia Rohde.

Holdet fra Miljøstyrelsen for Råstofområdet (MR) var til stede de første tre dage på tilsynet. MR's hold bestod af Najaaraq Demant-Poort (MR), Karen Schleiss (MR) og Jonas Petersen (Departementet for Råstoffer).

DCE og GN's tilsynsaktiviteter:

- Inspicere de hydrologiske målestationer på stedet og udarbejde specifikke anbefalinger til hydrologiske baseline-målinger.
- Verifikation af on-site instrumenter så som håndholdt apparat til måling af gammadosis, E-Sampler. E-Samplern er en slags nefelometer, som automatisk måler og lagrer real-time partikulære luftkoncentrationer efter princippet forward laser light scatter. E-Sample-ren har også indbygget en 47 mm filter-sampler. E-Samplern har lavt flow (2,0 liter / minut (0,12 m³/h)). E-Samplern har et fugtighedsstyret, opvar-met indløbsrør. TSP, PM₁₀ and PM_{2,5} kan måles, afhængigt af indløb. En cyklon med afskæring for PM₁₀ blev brugt.
- Tilsyn med radioaktivt mærkede containere placeret i Narsaq. Gammadosismålinger på tilgængelige overflader af containere placeret ved GMEL's kontor i Narsaq og mellem Narsaq og Kvanefjeld. Resultaterne af gammadosismålinger på tilgængelige overflader af containere er inkluderet i bilag A.
- Tilsyn med GMEL's arbejdslejligheder på Kvanefjeld og gammadosismålinger på overfladen af nogle af borehullerne fra efterforskningsaktiviteterne.
- Miljøtilsyn på vand, jord, sediment, lav, muslinger, fisk og tang. Disse prøver blev transporteret til Danmark til analyse af baggrunds niveauer af radioaktive og ikke-radioaktive stoffer. Detaljeret information om indsamlede prøver kan findes i bilag B.
- Analyse af fluor i alle vandprøver med undtagelse af fjordvand. Analyse af fluor blev udført med YSI Multilab udstyret med en ionselektiv fluorid-elektrode. Resultaterne kan ses i bilag C.
- Målingerne af fysisk-kemiske parametre af alle indsamlede vandprøver ved In Situ SmartTroll multimeter. Fysisk-kemisk vandparametre er inkluderet i bilag D.
- XRF-analyse af faststofprøver såsom prøver af gråbjerg, bjerg fra tidligere Risø-efterforskningsaktiviteter samt på jord og sediment fra projektområdet.

- Tage billeder til dokumentation af nuværende status for området.
- Deltagelse i offentligt åbent hus-arrangement organiseret af MR den 30. august 2017.
- Svar på spørgsmål modtaget på e-mail efter åbent hus-arrangementet i Narsaq. Svar er inkluderet i bilag F.
- DCE and GN blev gjort opmærksom på en dæmning, som blev bygget i Narsaq-floden i 2010, af ejeren af gården i Narsaq-dalen.
- Målinger af baggrundsgammaniveauer/(gammadosis $\mu\text{Sv/h}$) i Narsaq by, mellem Narsaq og Kvanefjeld samt på Kvanefjeld blev udført med Survey Meter Colibri VLD (Very Low Dose). Gammadosisresultater er inkluderet i bilag E.

3. Eqikkaaneq

Aatsitassarsiorfik Greenland Minerals and Energy Limited (GMEL) aatsitassarsiorniarluni misissuinerinik 2007-imiilli ingerlataqarpoq – suliniut Kalaallit Nunaata kujataani aatsitassanik qaqutigootunik, uran-italinnik (U) aammalu zink-imik piiaanissanik siunertaqarpoq. Una nalunaarusiaq DCE-kkormiut Pinngortitaleriffimmeersullu Kuannersuarni nakkutillillutik angalanerannit nalunaarusiaavoq siulleq.

Angalaqatigiit Violeta Hansen Danmarkimi Nationalt Center for Miljø og Energi-miit (DCE), Gert Asmund aamma DCE-mit kiisalu og Morten Birch Larsen Pinngortitaleriffimmeersoq Kuannersuarni 29. augustimiit 5. september 2017 ilanngullugu avatangiisinik nakkutilliinernik suliaqarput.

Nakkutilliinerup ulluini pingasuni siullerni GMEL-kkut peqataatitaraat Ib Laursen, Johannes Kyed aamma Pavia Rohde. Avatangiisinut Naalakksuisoqarfimmiit aallartitaapput Najaaraq Demant-Poort, Karen Schleisskiisalu Jonas Petersen (Aatsitassanut Naalakksuisoqarfik).

DCE-meersut Pinngortitaleriffimmeersullu makku suliaaraat:

Masammik uuttortaaviit misissorneqarnerat aammalu taamaattut uuttortaatiit tigussaasumik aallaavittut inissisimaffissaannik (uuttortakkat kisitsisinngorlugit) tunngassuteqartunik siunnersuineq.

Radiup qinngornerinut gamma-nut, E-Sampler-inut, tigummiinnartarissat pitsaassusiinik misissuinerit. E-samplers tassaapput silaannaap sunik akoqarnera takuniarlugu uuttortaassutit ilaat. Uttortaatiit atortorissaarusorneqarnera peqqutaalluni pujoralaat silaannarmiittut suuneri aammalu mikinerpaamik sannaasa, tassa pujaralaap pineqartup partikel-iisa angissusiat tikillugu uuttuisinnaapput, soorlu makku uuttortarsinnaallugit: TSP, PM10 aamma PM2,5.

Narsami containereq radiup qinngorneranik akoqartunik imaqartutut ilisarnaatitalik nakkutilliinermi ilanngullugu misissorneqarpoq. Suut radiup qinngornerinik akoqarsinnaanerit paasiniarlugu uuttortaatiit ilaat, gammadosismåler, GMEL-ip Narsami allaffiata saavaniittumut containerit ilaasa qaavinut aammalu allat containerit Narsap Kuannersuillu akornanniittut, tikeriaannarniittunullu, qaavinut ilisisoqarpoq. Taakkunannga inernerit takuneqarsinnaapput Ilanngussami A-mi.

GMEL-ip sulisorisami ineqarfiini gamma-uuttortaatinik iliorarsimasaanik aammalu aatsitassarsiorfiulersinnaasumi nunami qilleriffiit putut radiup qinngorneqassusiinik uuttortaanerit nakkutilliisussaataitaneq naapertorlugu ingerlanneqarlutik aamma smisissuiffigineqarput.

Avatangiisit misissuiffigineqarnerinut ilanngullugu imermit, nunamit, uillunit, aalisakkanit aammalu qeqqussanit misissugassanik katersisoqarpoq. Taakku tamarmik Danmarkimi misissugassanngortinneqarlutik nassiunneqarput, paasiniarlugu radiup qinngornerinik pissusissamisorumik akoqassusiat aammalu toqqaannartumik sunnerneqarlutik radiup qinngorneqalersimasinnaanerit qanoq innersoq.

Taakkununga tunngatillugu sukumiisumik allaaserisaq Ilanngussaq B-mi atuarneqarsinnaavoq.

Kangerlummeersup ermup flourimik akoqassusia paasiniaarlugu misissuineq. Atortorissaarut YSI Multilab misissuinernut atorneqarpoq. Taakkunanga inernerit takuneqarsinnaapput Ilanngussaq C-mi.

Ermup akuinik paasisaqarniarluni misissuisoqarpoq In Situ SmarTroll multimeter atorlugu. Taakkunaneersut Ilanngussaq D-mi misissorneqarsinnaapput.

Suliniuteqarfiginiakkap nunataani aammalu Risø-meersut qangaanerusoq misissuiffigisimasaannit qaqqamit aammalu misissuiffigisamit sinneruttunit ujaqqanit sioqqanillu XRF-misissueriaaseq naapertorlugu missuinerit.

Maanna killiffigineqartoq uppernaasersorniarlugu assiliisaqattaarnerit.

Avatangiisinut Naalakkersuisoqarfiup kikkunnut tamanut ataatsimiititsinerani 30. august 2017 peqataaneq.

Narsami ataatsimiititsinermit apeqqutit allaganngorlugit akisassannngortinneqartunik akissuteqarneq. Taanna Ilanngussaq F-mi takuneqarsinnaavoq.

Narsap Qooruani savaatilik nammineerluni Narsap kuuani 2010-mi sapusior-simavoq, tamannalu DCE-meermiunut Pinngortitaleriffimmeersunullu ilisimatitsissutigineqarpoq.

Narsap illoqarfiata, Narsap Kuannersuillu akornata kiisalu Kuannersuit pissusissamisoortumik radiup qinngorneranik gammamik akoqarnerannik Survey Meter Colibri VLD (Very Low Dose)-imik atortoqarluni uuttortaavigineqarnerat. Taakkunanga inernerit Ilanngussaq E-mi atuarneqarsinnaapput.

4. Follow-up actions

4.1 Containers at GMEL offices and containers placed between Narsaq and Kvanefjeld

There are 19 containers disposed at GMEL offices in Narsaq and 14 containers located between Narsaq and Kvanefjeld (Figure 1 and 2).



Figure 1. Containers located at GMEL office in Narsaq.



Figure 2. Containers located between Narsaq and Kvanefjeld.

Most of the containers contain drill core materials from Risø (before 1975) and GMEL exploration activities (2007-2017). Some of the containers contain ore material that was crushed and grinded to less than 2 mm (fine powder ore) and there are three containers containing tailings and chemical residues generated in Finland 2015. It was mentioned, that the containers containing tailings and chemical residues may be transported to Perth, Australia, but GMEL has not yet taken a decision for temporary (in Narsaq) either final (Perth) disposal. Ib Laursen mentioned that it is the plan, however, to place all the containers from the GMEL office at the location between Narsaq and Kvanefjeld. The containers located at the GMEL office and between Narsaq and Kvanefjeld are labelled as radioactive materials. It was agreed at the site, that

an up-to-date inventory list including type of materials and mass of each material in all the containers will be forwarded to DCE and GINR via EAMRA.

4.1.1 Follow-up actions

Due to corrosion some of the containers need to be repaired (Figure 3):



Figure 3. Containers in Narsaq at GMEL office.

Container number 9 located between Narsaq and Kvanefjeld has holes on the roof and in the main container door, and rain can enter the container (Figure 4) as can be seen from the photo below.

Figure 4. Container 9 located between Narsaq and Kvanefjeld.



Containers at the GMEL office and those placed between Narsaq and Kvanefjeld are marked as radioactive materials. GMEL is currently updating the inventory (kind of materials and mass in each container). DCE and GINR will later recommend which kind of labelling is required for each container. The recommendation will be based on the updated inventory list, on previously submitted information by GMEL to EAMRA regarding the specific activity of

the materials of each container, on gamma dose levels at the available surfaces of each container, and on EU and other international recommendations.

4.1.2 Deadline for corrective action

DCE and GINR recommend that GMEL transfers the drill cores from container number 9 located between Narsaq and Kvanefjeld to a watertight container (maybe container 11 at the same location since this container was empty) no later than 12 November 2017.

Further, DCE and GINR recommend that GMEL no later than 12 November 2017 shall inform EAMRA when containers that need repair will be repaired. All containers shall be watertight.

If the deadline (12 November 2017) cannot be met, then it is recommended that GMEL submit to EAMRA a working plan with a deadline that can be met by GMEL. **This recommendation have been implemented (See Ref. 1).**

4.2 Calibration of on site instruments

- Most of E-samplers operating in cold climate (e.g. Canada) have specific challenges. GMEL employee in Narsaq - Pavia Rohde calibrates the Kvanefjeld E-sampler located in Narsaq town every week and fill in a calibration form as included in Appendix G.
- There were no calibrated handhold gamma dose meters at the site. GMEL expressed interest in purchasing a new gamma dose meter.
- The radon passive detectors installed at the site are not currently used.

4.2.1 Deadline for corrective action

DCE and GINR recommend that GMEL indicates no later than 12th of November 2017 if they will calibrate the existing gamma dose meter rate at the site, or whether they decide to purchase a new instrument and how a new instrument will be calibrated in the future. **This recommendation have been implemented (See Ref. 1).**

4.3 GMEL work camp at Kvanefjeld

GMEL has a work camp on the top of Kvanefjeld. The camp consists of two tents containing a kitchen, shower, washing machines etc.

In general, the condition of the camp is characterized by the fact, that it has not been used since the last drilling campaign in 2011. Pieces of wood are lying around the camp, the tents are worn, the former pipeline for waste water is broken and the platforms for the former accommodation tents are still present.

There is no fuel or any chemicals stored in the camp.

The equipment in the camps is owned by LNS Greenland. There seem to be disagreement between GMEL and LNS about the demobilization of the camp. It seems unlikely that the camp will be used again.

The gamma dose measured in one of the two tents was 0.3 µSv/h. This value is similar to the gamma dose measured at the farm in Narsaq town.

During the audit of the work camps at Kvanefjeld, gamma dose rate was measured at the surface of drilling holes from exploration activities. Gamma dose rate at the surface of selected control drilling holes vary from 0.9 to 10.0 $\mu\text{Sv/h}$.

4.3.1 Corrective action

DCE and GINR recommend EAMRA that GMEL shall submit a plan with a deadline for the demobilization of the camp. **This recommendation have been implemented (See Ref. 1).**

DCE and GINR recommend that GMEL submits to EAMRA a map with all existing drilling holes from explorations activities undertaken from 2007 to the present. **This recommendation have not been implemented and hence is still a pending issue.**

5. References

1. GMEL Reply to Site Audit Recommendations, MEMO on 11/11/17 by GM/Ib Laursen

Appendix A

Gamma dose rate at the surface of GMEL containers located in Narsaq

Table 1. Gamma dose rate at the surface of GMEL containers placed at GMEL office in Narsaq (Coordinates: 60,9168N; - 46,0512E)

Container	Average ($\mu\text{Sv/h}$)
Container Tailings and Chemical Residue from Finland 1 Front	2 ± 0.1
Container Tailings and Chemical Residue from Finland 1 Side	6.3 ± 0.2
Container Tailings and Chemical Residue from Finland 2 Front	1.5 ± 0.01
Container Tailings and Chemical Residue from Finland 3 Side	0.8 ± 0.01
Container Tailings and Chemical Residue from Finland 3 Front	0.8 ± 0.02
Container 4 (close to Tailings and Chemical Residue) Front	0.2 ± 0.03
Container 4 (close to Tailings and Chemical Residue) Back	0.4 ± 0.02
Container 4 (close to Tailings and Chemical Residue) Side 1	1.0 ± 0.02
Container 4 (close to Tailings and Chemical Residue) Side 2	1 ± 0.04
Container 30 Front	0.5 ± 0.01
Container 30 Back	0.6 ± 0.01
Container 30 Side	0.4 ± 0.04
Container 31 Front	0.7 ± 0.01
Container 31 Back	0.8 ± 0.02
Container 32 Front	0.6 ± 0.01
Container 32 Back	0.9 ± 0.02
Container 33 Front	1.1 ± 0.05
Container 33 Back	0.7 ± 0.01
Container 33 Side	0.6 ± 0.02
Container 20 Front	0.4 ± 0.03
Container 20 Back	0.7 ± 0.01
Container 20 Side	1.0 ± 0.05
Container 21 Front	0.6 ± 0.22
Container 21 Back	1.0 ± 0.02
Container 22 Front	0.6 ± 0.01
Container 22 Back	0.8 ± 0.01
Container 23 Front	1.2 ± 0.1
Container 23 Back	1.2 ± 0.01
Container 24 Front	0.6 ± 0.01
Container 24 Back	1.2 ± 0.2
Container 25 Front	0.5 ± 0.004
Container 25 Back	0.5 ± 0.01
Container 25 Side	1.2 ± 0.1
Container 28 Front	0.3 ± 0.003
Container 28 Side	1.1 ± 0.02
Container 28 Back	1.2 ± 0.1
Container next to container 28 Front	0.2 ± 0.01
Container next to container 28 Back	0.3 ± 0.01
Container next to container 28 Side	0.2 ± 0.001
Green container between container 25 and container 27 Front	0.2 ± 0.003

Container 27 Front	0.4 ± 0.01
Container 27 Back	1.5 ± 0.02
Container 27 Side	1 ± 0.05
Container 26 Front	0.5 ± 0.001
Container 26 Back	0.7 ± 0.02
Container 26 Side	0.9 ± 0.002
Background GMEL Office	0.3 ± 0.004

Tabel 2. Gamma dose rate at the surface of GMEL containers located between Narsaq and Kvanefjeld.

Container	Average (µSv/h)
Container 1 Front	0.6 ± 0.01
Container 1 Back	0.8 ± 0.01
Container 1 Side available	0.6 ± 0.01
Container 2 Front	0.6 ± 0.01
Container 2 Back	0.7 ± 0.01
Container 3 Front	0.6 ± 0.01
Container 3 Back	1.2 ± 0.01
Container 4 Front	0.5 ± 0.01
Container 4 Back	0.5 ± 0.02
Container 5 Front	0.6 ± 0.01
Container 5 Back	1.1 ± 0.01
Container 6 Front	0.4 ± 0.002
Container 6 Back	0.6 ± 0.01
Container 7 Front	0.6 ± 0.003
Container 7 Back	0.7 ± 0.01
Container 8 Front	0.7 ± 0.01
Container 8 Back	0.6 ± 0.01
Container 9 Front	0.3 ± 0.01
Container 9 Back	0.2 ± 0.01
Container 10 Front	1.3 ± 0.02
Container 10 Back	0.9 ± 0.01
Container 11 Front	0.4 ± 0.01
Container 11 Back	0.5 ± 0.01
Container 11 Side available	0.5 ± 0.003
Two containers with work camp rests	0.2 ± 0.01
Background	0.4 ± 0.04

Appendix B

Environmental control samples for Kvanefjeld audit

Table 1. Soils and sediments samples collected from Narsaq for Kvanefjeld audit

Sample ID	Sampling date	Sampling location	Sample type	Coordinates	Coordinates
60168	02-09-2017	Ilua fjord	Beach sand	60.93535	46.04546
60169	02-09-2017	Ilua fjord	Beach sand	60.935354	46.04546
60170	02-09-2017	Ilua fjord	Beach sand	60.935964	46.047367
60171	02-09-2017	Ilua fjord	Beach sand	60.935964	46.047367
60172	03-09-2017	Close to dam in Narsaq River	Sediment	60.952992	46.014466
60135	01-09-2017	Kvanefjeld old Risø ore	Soil	60.965391	45.989641
60149	01-09-2017	Kvanefjeld old Risø ore	Ore	60.965391	45.989641

Other soils and sediments are currently transported from Narsaq to Roskilde, DK. Those are not yet registered

Table 2. Lichens samples collected from Narsaq for Kvanefjeld audit.

Sample ID	Sampling date	Sample type	Coordinates	Coordinates
60128	01-09-2017	Lichens Flavocetraria N	60.9884	45.999816
60129	01-09-2017	Lichens Flavocetraria N	60.971352	45.99649
60130	01-09-2017	Lichens Flavocetraria N	60.973687	46.000494
60131	01-09-2017	Lichens Flavocetraria N	60.970242	46.001175
60132	01-09-2017	Lichens Flavocetraria N	60.966541	46.003904
60136	01-09-2017	Lichens Flavocetraria N	60.965342	45.98884
60137	01-09-2017	Lichens Flavocetraria N	60.935833	46.044877
60141	01-09-2017	Lichens Flavocetraria N		
60142	30-08-2017	Lichens Flavocetraria N	60.948393	46.016623
60143	30-08-2017	Lichens Flavocetraria N	60.97164	45.979754
60144	29-08-2017	Lichens Flavocetraria N	60.90765	46.032383
60145	29-08-2017	Lichens Flavocetraria N	60.9095	46.0234167
60146	29-08-2017	Lichens Flavocetraria N	60.90903333	46.036233
60147	01-09-2017	Lichens Flavocetraria N	60.971923	46.04082
60159	30-08-2017	Lichens Flavocetraria N	60.91015	46.035467
60160	30-08-2017	Lichens Flavocetraria N	60.91161667	46.038517
60161	30-08-2017	Lichens Flavocetraria N	60.91031667	46.0348
60162	30-08-2017	Lichens Flavocetraria N	60.9102	46.035183
60163	30-08-2017	Lichens Flavocetraria N	60.91216667	46.038567
60164	30-08-2017	Lichens Flavocetraria N	60.91255	46.0371
60165	30-08-2017	Lichens Flavocetraria N	60.91138333	46.035283
60166	30-08-2017	Lichens Flavocetraria N	60.9106	46.034033
60167	30-08-2017	Lichens Flavocetraria N	60.91086667	46.045967
60173	03-09-2017	Lichens Flavocetraria N	60.948173	46.015525
60174	03-09-2017	Lichens Flavocetraria N	60.947407	46.02668
60175	03-09-2017	Lichens Flavocetraria N	60.961575	45.99348
60176	03-09-2017	Lichens Flavocetraria N	60.957611	46.000843
60177	03-09-2017	Lichens Flavocetraria N	60.94852	46.020336
60178	03-09-2017	Lichens Flavocetraria N	60.963537	45.98852
60179	05-09-2017	Lichens Flavocetraria N	61.166016	45.405755

Table 3. Seaweed samples collected from Narsaq for Kvanefjeld audit.

Sample ID	Sampling date	Sampling location	Sample type	Coordinates	Coordinates
60150	02-09-2017	Ilua fjord near elv	Fucus Vesiculosus	60.9353	46.04546
60151	02-09-2017	Ilua fjord near elv	Fucus Vesiculosus	60.935354	46.04546
60152	02-09-2017	Ilua fjord near elv	Fucus Disticus	60.935354	46.04546

Table 4. Fish samples collected from Narsaq for Kvanefjeld audit.

Sample ID	Sampling date	Sampling location	Sample type	Coordinates	Coordinates
60138	02-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60139	02-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60181	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60182	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60183	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60184	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60185	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60186	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60187	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60188	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60189	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60190	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60191	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466
60192	03-09-2017	Narsaq River	Arctic char (fjeld ørred)	60.952992	46.014466

Table 5. Blue Mussels samples collected from Narsaq for Kvanefjeld audit.

Sample ID	Sampling date	Sampling location	Sample type	Coordinates	Coordinates
60153	02-09-2017	Ilua	Blue Mussels	60.935354	46.04546
60154	02-09-2017	Ilua	Blue Mussels	60.935354	46.04546
60155	02-09-2017	Ilua	Blue Mussels	60.935354	46.04546
60156	02-09-2017	Ilua	Blue Mussels	60.535964	46.047367
60157	02-09-2017	Ilua	Blue Mussels	60.535964	46.047367
60158	02-09-2017	Ilua	Blue Mussels	60.535964	46.047367

Appendix C

Environmental water samples and fluoride concentrations

Table 1. Environmental water samples and fluoride concentrations – Kvanefjeld audit

Sample ID	Location	Sampling date	Sample type	Sample size	Coordinates	Coordinates	F (ppm) mg/L
60101	Kukasuk 1A	30-08-2017	Drinking water	1A*5L; 1B*5L	60.913404	46.039161	0.7
60102	Kukasuk 2A	30-08-2017	Drinking water	2A*5L; 2B*5L	60.913404	46.039161	0.7
60103	Kukasuk 3A	30-08-2017	Drinking water	3A*5L; 3B*5L	60.913404	46.039161	0.7
60104	Napassap Kuva 1A	30-08-2017	Drinking water	1A*5L; 1B*5L	60.928105	46.034894	0.7
60105	Napassap Kuva 2A	30-08-2017	Drinking water	2A*5L; 2B*5L	60.928105	46.034894	0.7
60106	Napassap Kuva 3A	30-08-2017	Drinking water	3A*5L; 3B*5L	60.928105	46.034894	0.7
60107	Landnamselven L1A	30-08-2017	Drinking water	1A*5L; 1B*5L	60.907065	46.031015	0.2
60108	Landnamselven L2A	30-08-2017	Drinking water	2A*5L; 2B*5L	60.907065	46.031015	
60109	Landnamselven L3A	30-08-2017	Drinking water	3A*5L; 3B*5L	60.907065	46.031015	0.2
60110	Taseq River 1A	30-08-2017	River	1A*5L; 1B*5L	60.948493	46.016623	1.5
60111	Taseq River 2A	30-08-2017	River	2A*5L; 2B*5L	60.948493	46.016623	1.4
60112	Taseq River 3A	30-08-2017	River	3A*5L; 3B*5L	60.948493	46.016623	1.5
60113	Kvane River 1A	30-08-2017	River	1A*5L; 1B*5L	60.953395	46.014511	3.5
60114	Kvane River 2A	30-08-2017	River	2A*5L; 2B*5L	60.953395	46.014511	3.5
60115	Kvane River 3A	30-08-2017	River	3A*5L; 3B*5L	60.953395	46.014511	3.5
60116	Narsaq River 1A	30-08-2017	River	1A*5L; 1B*5L	60.952976	46.014962	4
60117	Narsaq River 2A	30-08-2017	River	2A*5L; 2B*5L	60.952976	46.014962	4
60118	Narsaq River 3A	30-08-2017	River	3A*5L; 3B*5L	60.952976	46.014962	4

60119	Raw Water Dam 1A	30-08-2017	Dam	1A*5L	60.973249	45.975674	1.2
60120	Raw Water Dam 2A	30-08-2017	Dam	2A*5L	60.973249	45.975674	1.2
60121	No Name Lake 1 outlet	31-08-2017	River	1*5L	60.98535	46.03745	0.2
60122	No Name Lake 2 outlet	31-08-2017	River	1*5L	60.98535	46.03745	0.2
60123	No Name Lake 3 outlet	31-08-2017	River	1*5L	60.98535	46.03745	0.2
60124	No Name Lake 4 outlet	31-08-2017	River	1*5L	60.98535	46.03745	0.2
60125	Bredefjord Discharge point 2 (0m)	31-08-2017	fjord	fl9:1*5L; fl10:1*5L;	60.9984	45.9901	
				fl11:1*5L; fl12:1*5L			
				fl1:1*5L; fl2:1*5L;			
60126	Bredefjord Discharge point2 fl1 (30m)	31-08-2017	fjord	fl3:1*5L; fl4:1*5L	60.9984	45.9901	
				fl5:1*5L; fl6:1*5L;			
60127	Bredefjord Discharge point2 fl5 (30m)	31-08-2017	fjord	fl7:1*5L; fl8:1*5L	60.99842	45.9901	
	Drinking water from a house in Narsaq						0.7
60134	Old Risø mine outlet	01-09-2017	Mine outlet	1*5L	60.96988	45.99278	25
60140	No Name Lake	01-09-2017	River	A: 1*5L, B: 1*5L,	60.971923	46.04082	0.3

Appendix D

Physicochemical parameters of water collected for Kvanefjeld audit

Table 1. Physicochemical parameters of drinking water collected from Kukasuk.

Date Time	Pressure (psi)	Depth (m)	Actual Conductivity ($\mu\text{S}/\text{cm}$)	Temperature ($^{\circ}\text{C}$)	Specific Conductivity ($\mu\text{S}/\text{cm}$)	Salinity (PSU)	Total Dissolved Solids (ppt)	Resistivity ($\Omega\cdot\text{cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentration (mg/L)	RDO Saturation (%Sat)
05-06-2017 09:47	-0.2	0.1	35	13	45	0.02	0.03	28907	1	8	-76	95	10	96
05-06-2017 09:47	-0.2	0.1	35	12	46	0.02	0.03	28915	1	8	-70	83	10	98
05-06-2017 09:47	-0.2	0.1	34	12	46	0.02	0.03	28996	1	7	-63	76	11	98
05-06-2017 09:47	-0.2	0.1	35	11	47	0.02	0.03	28980	1	7	-55	70	11	100
05-06-2017 09:48	-0.2	0.1	34	11	47	0.02	0.03	29003	1	7	-46	65	11	100
05-06-2017 09:48	-0.2	0.1	35	10	48	0.02	0.03	28965	1	7	-38	62	11	100
05-06-2017 09:48	-0.2	0.1	34	10	48	0.02	0.03	29033	1	7	-32	59	11	101
05-06-2017 09:48	-0.2	0.1	34	10	49	0.02	0.03	29011	1	7	-28	58	11	101
05-06-2017 09:48	-0.2	0.1	34	9	49	0.02	0.03	29007	1	7	-26	56	12	102
05-06-2017 09:48	-0.2	0.1	34	9	49	0.02	0.03	29036	1	7	-25	55	12	102
05-06-2017 09:49	-0.2	0.1	34	9	49	0.02	0.03	29058	1	7	-25	53	12	102
05-06-2017 09:49	-0.2	0.1	34	9	50	0.02	0.03	29017	1	7	-25	52	12	102
05-06-2017 09:49	-0.2	0.1	34	9	50	0.02	0.03	29045	1	7	-25	51	12	102
05-06-2017 09:49	-0.2	0.1	34	9	50	0.02	0.03	28990	1	7	-26	51	12	102
05-06-2017 09:49	-0.2	0.1	34	9	50	0.02	0.03	29018	1	7	-27	50	12	102
05-06-2017 09:49	-0.2	0.1	34	9	50	0.02	0.03	29041	1	7	-28	49	12	102
05-06-2017 09:50	-0.2	0.1	34	9	50	0.02	0.03	29056	1	7	-30	49	12	103
05-06-2017 09:50	-0.2	0.1	34	8	50	0.02	0.03	29030	1	7	-31	48	12	103
05-06-2017 09:50	-0.2	0.1	34	8	50	0.02	0.03	29043	1	7	-32	48	12	103
05-06-2017 09:50	-0.2	0.1	34	8	50	0.02	0.03	29020	1	7	-33	48	12	103
05-06-2017 09:50	-0.2	0.1	34	8	50	0.02	0.03	29029	1	7	-34	47	12	103
05-06-2017 09:50	-0.2	0.1	34	8	51	0.02	0.03	29000	1	7	-35	47	12	103

05-06-2017 09:51	-0.2	0.1	34	8	51	0.02	0.03	29034	1	7	-35	47	12	103
05-06-2017 09:51	-0.2	0.1	34	8	51	0.02	0.03	29018	1	7	-36	46	12	103
05-06-2017 09:51	-0.2	0.1	34	8	51	0.02	0.03	29023	1	7	-38	46	12	103

05-06-2017 09:51	-0.2	0.1	34	8	51	0.02	0.03	29048	1	7	-38	46	12	103
05-06-2017 09:51	-0.2	0.1	34	8	51	0.02	0.03	29019	1	7	-38	46	12	103
05-06-2017 09:51	-0.2	0.1	34	8	51	0.02	0.03	29029	1	7	-39	45	12	103
05-06-2017 09:52	-0.2	0.1	34	8	51	0.02	0.03	28994	1	7	-39	45	12	103
05-06-2017 09:52	-0.2	0.1	34	8	51	0.02	0.03	29041	1	7	-40	45	12	103
05-06-2017 09:52	-0.2	0.1	34	8	51	0.02	0.03	29004	1	7	-41	45	12	103
05-06-2017 09:52	-0.2	0.1	34	8	51	0.02	0.03	29027	1	7	-41	45	12	103
05-06-2017 09:52	-0.2	0.1	34	8	51	0.02	0.03	29026	1	7	-42	45	12	103
05-06-2017 09:52	-0.2	0.1	34	8	51	0.02	0.03	29031	1	7	-43	44	12	103
05-06-2017 09:53	-0.2	0.1	34	8	51	0.02	0.03	29040	1	7	-43	44	12	103
05-06-2017 09:53	-0.2	0.1	34	8	51	0.02	0.03	29007	1	7	-43	45	12	103
05-06-2017 09:53	-0.2	0.1	35	8	51	0.02	0.03	28977	1	7	-44	44	12	103
05-06-2017 09:53	-0.2	0.1	34	8	51	0.02	0.03	29013	1	7	-44	44	12	103
05-06-2017 09:53	-0.2	0.1	34	8	51	0.02	0.03	29038	1	7	-44	44	12	103
05-06-2017 09:53	-0.2	0.1	34	8	51	0.02	0.03	29005	1	7	-44	44	12	103
05-06-2017 09:54	-0.2	0.1	34	8	51	0.02	0.03	29040	1	7	-45	44	12	103
05-06-2017 09:54	-0.2	0.1	34	8	51	0.02	0.03	29014	1	7	-45	44	12	103
05-06-2017 09:54	-0.2	0.1	34	8	51	0.02	0.03	29002	1	7	-45	44	12	103
05-06-2017 09:54	-0.2	0.1	34	8	51	0.02	0.03	28995	1	7	-46	43	12	103
05-06-2017 09:54	-0.2	0.1	34	8	51	0.02	0.03	29014	1	7	-46	44	12	103
05-06-2017 09:54	-0.2	0.1	34	8	51	0.02	0.03	29016	1	7	-46	44	12	103
05-06-2017 09:55	-0.2	0.1	34	8	51	0.02	0.03	29044	1	7	-46	44	12	103
05-06-2017 09:55	-0.2	0.1	34	8	51	0.02	0.03	29013	1	7	-47	43	12	103
05-06-2017 09:55	-0.2	0.1	35	8	51	0.02	0.03	28981	1	7	-48	43	12	103
05-06-2017 09:55	-0.2	0.1	34	8	51	0.02	0.03	29031	1	7	-47	43	12	103
05-06-2017 09:55	-0.2	0.1	34	8	51	0.02	0.03	29008	1	7	-48	43	12	103
05-06-2017 09:55	-0.2	0.1	35	8	51	0.02	0.03	28989	1	7	-48	43	12	103
05-06-2017 09:56	-0.2	0.1	34	8	51	0.02	0.03	29006	1	7	-48	43	12	103
05-06-2017 09:56	-0.2	0.1	34	8	51	0.02	0.03	28995	1	7	-48	43	12	103
05-06-2017 09:56	-0.2	0.1	35	8	51	0.02	0.03	28968	1	7	-48	43	12	103

05-06-2017 09:56	-0.2	0.1	34	8	51	0.02	0.03	28999	1	7	-49	43	12	103
05-06-2017 09:56	-0.2	0.1	34	8	51	0.02	0.03	29014	1	7	-49	43	12	103
05-06-2017 09:56	-0.2	0.1	35	8	51	0.02	0.03	28985	1	7	-49	43	12	103
05-06-2017 09:57	-0.2	0.1	34	8	51	0.02	0.03	28996	1	7	-50	43	12	103
05-06-2017 09:57	-0.2	0.1	35	8	51	0.02	0.03	28982	1	7	-49	43	12	103
05-06-2017 09:57	-0.2	0.1	34	8	51	0.02	0.03	29021	1	7	-49	43	12	103
05-06-2017 09:57	-0.2	0.1	34	8	51	0.02	0.03	28997	1	7	-50	43	12	103
05-06-2017 09:57	-0.2	0.1	35	8	51	0.02	0.03	28976	1	7	-50	42	12	103
05-06-2017 09:57	-0.2	0.1	35	8	51	0.02	0.03	28980	1	7	-50	42	12	103
05-06-2017 09:58	-0.2	0.1	35	8	51	0.02	0.03	28984	1	7	-50	43	12	103
05-06-2017 09:58	-0.2	0.1	35	8	51	0.02	0.03	28954	1	7	-50	42	12	103
05-06-2017 09:58	-0.2	0.1	35	8	51	0.02	0.03	28957	1	7	-51	42	12	103
05-06-2017 09:58	-0.2	0.1	34	8	51	0.02	0.03	28993	1	7	-51	43	12	103
05-06-2017 09:58	-0.2	0.1	35	8	51	0.02	0.03	28936	1	7	-51	42	12	103
05-06-2017 09:58	-0.2	0.1	35	8	51	0.02	0.03	28987	1	7	-51	42	12	103
05-06-2017 09:59	-0.2	0.1	34	8	51	0.02	0.03	28995	1	7	-51	42	12	103
05-06-2017 09:59	-0.2	0.1	35	8	51	0.02	0.03	28976	1	7	-51	42	12	103
05-06-2017 09:59	-0.2	0.1	35	8	51	0.02	0.03	28968	1	7	-51	42	12	103
05-06-2017 09:59	-0.2	0.1	35	8	51	0.02	0.03	28964	1	7	-52	42	12	103
05-06-2017 09:59	-0.2	0.1	35	8	51	0.02	0.03	28963	1	7	-51	42	12	103
05-06-2017 09:59	-0.2	0.1	35	8	51	0.02	0.03	28962	1	7	-52	42	12	103
05-06-2017 10:00	-0.2	0.1	35	8	51	0.02	0.03	28945	1	7	-52	42	12	103
05-06-2017 10:00	-0.2	0.1	35	8	51	0.02	0.03	28958	1	7	-52	42	12	103
05-06-2017 10:00	-0.2	0.1	35	8	51	0.02	0.03	28961	1	7	-52	42	12	103
05-06-2017 10:00	-0.2	0.1	35	8	51	0.02	0.03	28930	1	7	-53	42	12	103
05-06-2017 10:00	-0.2	0.1	35	8	51	0.02	0.03	28963	1	7	-53	42	12	103
05-06-2017 10:00	-0.2	0.1	35	8	51	0.02	0.03	28941	1	7	-52	42	12	103
05-06-2017 10:01	-0.2	0.1	35	8	51	0.02	0.03	28962	1	7	-53	42	12	103
05-06-2017 10:01	-0.2	0.1	35	8	51	0.02	0.03	28912	1	7	-52	42	12	103
05-06-2017 10:01	-0.2	0.1	35	8	51	0.02	0.03	28938	1	7	-53	41	12	103

05-06-2017 10:01	-0.2	0.1	35	8	51	0.02	0.03	28932	1	7	-53	42	12	103
05-06-2017 10:01	-0.2	0.1	35	8	51	0.02	0.03	28938	1	7	-53	42	12	103
05-06-2017 10:01	-0.2	0.1	35	8	51	0.02	0.03	28905	1	7	-53	42	12	103
05-06-2017 10:02	-0.2	0.1	35	8	51	0.02	0.03	28935	1	7	-53	41	12	103
05-06-2017 10:02	-0.2	0.1	35	8	51	0.02	0.03	28940	1	7	-53	42	12	103
05-06-2017 10:02	-0.2	0.1	35	8	51	0.02	0.03	28939	1	7	-53	42	12	103
05-06-2017 10:02	-0.2	0.1	35	8	51	0.02	0.03	28930	1	7	-53	42	12	103
05-06-2017 10:02	-0.2	0.1	35	8	51	0.02	0.03	28935	1	7	-53	42	12	103
05-06-2017 10:02	-0.2	0.1	35	8	51	0.02	0.03	28939	1	7	-53	41	12	103
05-06-2017 10:03	-0.2	0.1	35	8	51	0.02	0.03	28931	1	7	-55	40	12	103
05-06-2017 10:03	-0.2	0.1	35	8	51	0.02	0.03	28940	1	7	-54	41	12	103
05-06-2017 10:03	-0.2	0.1	35	8	51	0.02	0.03	28929	1	7	-54	41	12	103
05-06-2017 10:03	-0.2	0.1	35	8	51	0.02	0.03	28913	1	7	-54	41	12	103
05-06-2017 10:03	-0.2	0.1	35	8	51	0.02	0.03	28881	1	7	-54	41	12	103
05-06-2017 10:03	-0.2	0.1	35	8	51	0.02	0.03	28934	1	7	-54	41	12	103
05-06-2017 10:04	-0.2	0.1	35	8	51	0.02	0.03	28925	1	7	-55	41	12	103
05-06-2017 10:04	-0.2	0.1	35	8	51	0.02	0.03	28929	1	7	-54	42	12	103
05-06-2017 10:04	-0.2	0.1	35	8	51	0.02	0.03	28906	1	7	-54	41	12	103
05-06-2017 10:04	-0.2	0.1	35	8	51	0.02	0.03	28902	1	7	-54	42	12	103
05-06-2017 10:04	-0.2	0.1	35	8	51	0.02	0.03	28937	1	7	-54	41	12	103
05-06-2017 10:04	-0.2	0.1	35	8	51	0.02	0.03	28922	1	7	-55	41	12	103
05-06-2017 10:05	-0.2	0.1	35	8	51	0.02	0.03	28915	1	7	-55	41	12	103
05-06-2017 10:05	-0.2	0.1	35	8	51	0.02	0.03	28938	1	7	-55	41	12	103
05-06-2017 10:05	-0.2	0.1	35	8	51	0.02	0.03	28932	1	7	-54	41	12	103
05-06-2017 10:05	-0.2	0.1	35	8	51	0.02	0.03	28936	1	7	-55	41	12	103
05-06-2017 10:05	-0.2	0.1	35	8	51	0.02	0.03	28951	1	7	-55	41	12	103
05-06-2017 10:05	-0.2	0.1	35	8	51	0.02	0.03	28945	1	7	-55	41	12	103
05-06-2017 10:06	-0.2	0.1	35	8	51	0.02	0.03	28956	1	7	-55	41	12	103
05-06-2017 10:06	-0.2	0.1	35	8	51	0.02	0.03	28952	1	7	-55	41	12	103
05-06-2017 10:06	-0.2	0.1	35	8	51	0.02	0.03	28967	1	7	-55	41	12	103

Table 2. Physicochemical parameters of drinking water collected from Napassup Kuva

Date Time	Pressure (psi)	Depth (m)	Actual Conductivity ($\mu\text{S}/\text{cm}$)	Temperature ($^{\circ}\text{C}$)	Specific Conductivity ($\mu\text{S}/\text{cm}$)	Salinity (PSU)	Total Dissolved Solids (ppt)	Resistivity ($\Omega\cdot\text{cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentra- tion (mg/L)	RDO Saturation (%Sat)
05-06-2017 10:26	-0.2	0.1	26	9	37	0.02	0.02	38280	1	7	-47	55	11	99
05-06-2017 10:26	-0.2	0.1	26	9	38	0.02	0.02	38368	1	7	-48	53	12	99
05-06-2017 10:26	-0.2	0.1	26	9	38	0.02	0.02	38378	1	7	-47	51	12	99
05-06-2017 10:27	-0.2	0.1	26	9	38	0.02	0.02	38370	1	7	-48	49	12	100
05-06-2017 10:27	-0.2	0.1	26	8	38	0.02	0.02	38351	1	7	-49	48	12	100
05-06-2017 10:27	-0.3	0.1	26	8	39	0.02	0.03	38281	1	7	-52	44	12	100
05-06-2017 10:27	-0.2	0.1	26	8	39	0.02	0.03	38274	1	7	-50	46	12	100
05-06-2017 10:27	-0.2	0.1	26	8	39	0.02	0.03	38325	1	7	-50	45	12	101
05-06-2017 10:27	-0.2	0.1	26	8	39	0.02	0.03	38259	1	7	-51	44	12	101
05-06-2017 10:28	-0.1	0.1	26	8	39	0.02	0.03	38223	1	7	-51	44	12	101
05-06-2017 10:28	-0.2	0.1	26	8	39	0.02	0.03	38229	1	7	-51	44	12	101
05-06-2017 10:28	-0.2	0.1	26	8	39	0.02	0.03	38215	1	7	-51	43	12	101
05-06-2017 10:28	-0.2	0.1	26	8	39	0.02	0.03	38237	1	7	-51	43	12	101
05-06-2017 10:28	-0.2	0.1	26	8	39	0.02	0.03	38346	1	7	-51	43	12	101
05-06-2017 10:28	-0.2	0.1	26	8	39	0.02	0.03	38265	1	7	-52	42	12	101
05-06-2017 10:29	-0.2	0.1	26	8	39	0.02	0.03	38208	1	7	-52	42	12	101
05-06-2017 10:29	-0.2	0.1	26	8	39	0.02	0.03	38249	1	7	-52	41	12	101
05-06-2017 10:29	-0.2	0.1	26	8	39	0.02	0.03	38218	1	7	-53	41	12	101
05-06-2017 10:29	-0.2	0.1	26	8	39	0.02	0.03	38258	1	7	-53	41	12	101
05-06-2017 10:29	-0.2	0.1	26	8	39	0.02	0.03	38182	1	7	-53	41	12	101
05-06-2017 10:29	-0.2	0.1	26	8	39	0.02	0.03	38239	1	7	-53	41	12	101
05-06-2017 10:30	-0.2	0.1	26	8	39	0.02	0.03	38353	1	7	-53	40	12	101
05-06-2017 10:30	-0.2	0.1	26	8	39	0.02	0.03	38284	1	7	-53	40	12	101
05-06-2017 10:30	-0.2	0.1	26	8	39	0.02	0.03	38307	1	7	-53	40	12	101
05-06-2017 10:30	-0.2	0.1	26	8	39	0.02	0.03	38281	1	7	-53	40	12	101

05-06-2017 10:30	-0.2	0.1	26	8	39	0.02	0.03	38260	1	7	-53	40	12	101
05-06-2017 10:30	-0.1	0.1	26	8	39	0.02	0.03	38292	1	7	-53	40	12	101
05-06-2017 10:31	-0.2	0.1	26	8	39	0.02	0.03	38296	1	7	-54	40	12	101
05-06-2017 10:31	-0.1	0.1	26	8	39	0.02	0.03	38287	1	7	-54	40	12	101
05-06-2017 10:31	-0.2	0.1	26	8	39	0.02	0.03	38294	1	7	-54	40	12	101
05-06-2017 10:31	-0.1	0.1	26	8	39	0.02	0.03	38251	1	7	-54	40	12	101
05-06-2017 10:31	-0.2	0.1	26	8	39	0.02	0.03	38326	1	7	-54	40	12	101
05-06-2017 10:31	-0.1	0.1	26	8	39	0.02	0.03	38265	1	7	-54	40	12	101
05-06-2017 10:32	-0.2	0.1	26	8	39	0.02	0.03	38269	1	7	-54	40	12	101
05-06-2017 10:32	-0.1	0.1	26	8	39	0.02	0.03	38278	1	7	-54	40	12	101
05-06-2017 10:32	-0.1	0.1	26	8	39	0.02	0.03	38311	1	7	-54	40	12	101
05-06-2017 10:32	-0.1	0.1	26	8	39	0.02	0.03	38327	1	7	-54	40	12	101
05-06-2017 10:32	-0.1	0.1	26	8	39	0.02	0.03	38351	1	7	-54	40	12	101
05-06-2017 10:32	-0.1	0.1	26	7	39	0.02	0.03	38263	1	7	-54	40	12	101
05-06-2017 10:33	-0.1	0.1	26	8	39	0.02	0.03	38254	1	7	-54	40	12	101
05-06-2017 10:33	-0.1	0.1	26	7	39	0.02	0.03	38247	1	7	-54	39	12	101
05-06-2017 10:33	-0.1	0.1	26	7	39	0.02	0.03	38260	1	7	-54	40	12	101
05-06-2017 10:33	-0.1	0.1	26	7	39	0.02	0.03	38239	1	7	-55	40	12	101
05-06-2017 10:33	-0.1	0.1	26	7	39	0.02	0.03	38279	1	7	-55	39	12	101
05-06-2017 10:33	-0.1	0.1	26	7	39	0.02	0.03	38263	1	7	-55	39	12	101
05-06-2017 10:34	-0.1	0.1	26	7	39	0.02	0.03	38252	1	7	-55	39	12	101
05-06-2017 10:34	-0.1	0.1	26	7	39	0.02	0.03	38281	1	7	-55	39	12	101
05-06-2017 10:34	-0.1	0.1	26	7	39	0.02	0.03	38220	1	7	-55	39	12	101
05-06-2017 10:34	-0.1	0.1	26	7	39	0.02	0.03	38286	1	7	-55	40	12	101
05-06-2017 10:34	-0.1	0.1	26	7	39	0.02	0.03	38308	1	7	-55	39	12	101
05-06-2017 10:34	-0.1	0.1	26	7	39	0.02	0.03	38251	1	7	-55	39	12	101
05-06-2017 10:35	-0.1	0.1	26	7	39	0.02	0.03	38255	1	7	-55	39	12	101
05-06-2017 10:35	-0.1	0.1	26	7	39	0.02	0.03	38252	1	7	-55	40	12	101
05-06-2017 10:35	-0.1	0.1	26	7	39	0.02	0.03	38240	1	7	-54	40	12	101
05-06-2017 10:35	-0.1	0.1	26	7	39	0.02	0.03	38258	1	7	-55	39	12	101

05-06-2017 10:35	-0.1	0.1	26	7	39	0.02	0.03	38279	1	7	-55	39	12	101
05-06-2017 10:35	-0.1	0.1	26	7	39	0.02	0.03	38277	1	7	-55	39	12	101
05-06-2017 10:36	-0.1	0.1	26	7	39	0.02	0.03	38295	1	7	-55	39	12	101
05-06-2017 10:36	-0.1	0.1	26	7	39	0.02	0.03	38315	1	7	-55	39	12	101
05-06-2017 10:36	-0.1	0.1	26	7	39	0.02	0.03	38283	1	7	-55	39	12	101
05-06-2017 10:36	-0.1	0.1	26	7	39	0.02	0.03	38251	1	7	-55	39	12	101
05-06-2017 10:36	-0.1	0.1	26	7	39	0.02	0.03	38250	1	7	-55	39	12	101
05-06-2017 10:36	-0.1	0.1	26	7	39	0.02	0.03	38219	1	7	-55	39	12	101
05-06-2017 10:37	-0.1	0.1	26	7	39	0.02	0.03	38260	1	7	-55	39	12	101
05-06-2017 10:37	-0.1	0.1	26	7	39	0.02	0.03	38289	1	7	-55	39	12	101
05-06-2017 10:37	-0.1	0.1	26	7	39	0.02	0.03	38274	1	7	-55	39	12	101
05-06-2017 10:37	-0.1	0.1	26	7	39	0.02	0.03	38244	1	7	-56	39	12	101
05-06-2017 10:37	-0.1	0.1	26	7	39	0.02	0.03	38266	1	7	-55	39	12	101
05-06-2017 10:37	-0.1	0.1	26	7	39	0.02	0.03	38267	1	7	-55	39	12	101
05-06-2017 10:38	-0.1	0.1	26	7	39	0.02	0.03	38239	1	7	-55	39	12	101
05-06-2017 10:38	-0.1	0.1	26	7	39	0.02	0.03	38210	1	7	-55	39	12	101
05-06-2017 10:38	-0.1	0.1	26	7	39	0.02	0.03	38227	1	7	-55	39	12	101
05-06-2017 10:38	-0.1	0.1	26	7	39	0.02	0.03	38263	1	7	-55	39	12	101
05-06-2017 10:38	-0.1	0.1	26	7	39	0.02	0.03	38269	1	7	-56	39	12	101
05-06-2017 10:38	-0.1	0.1	26	7	39	0.02	0.03	38247	1	7	-55	39	12	101
05-06-2017 10:39	-0.1	0.1	26	7	39	0.02	0.03	38278	1	7	-55	39	12	101
05-06-2017 10:39	-0.1	0.1	26	7	39	0.02	0.03	38251	1	7	-55	39	12	101
05-06-2017 10:39	-0.1	0.1	26	7	39	0.02	0.03	38282	1	7	-55	39	12	101
05-06-2017 10:39	-0.1	0.1	26	7	39	0.02	0.03	38305	1	7	-55	39	12	101
05-06-2017 10:39	-0.1	0.1	26	7	39	0.02	0.03	38259	1	7	-55	39	12	101
05-06-2017 10:39	-0.1	0.1	26	7	39	0.02	0.03	38234	1	7	-55	39	12	101
05-06-2017 10:40	-0.1	0.1	26	7	39	0.02	0.03	38231	1	7	-55	39	12	101
05-06-2017 10:40	-0.1	0.1	26	7	39	0.02	0.03	38262	1	7	-55	39	12	101
05-06-2017 10:40	-0.1	0.1	26	7	39	0.02	0.03	38178	1	7	-55	39	12	101

05-06-2017 10:40	-0.1	0.1	26	7	39	0.02	0.03	38268	1	7	-55	39	12	101
05-06-2017 10:40	-0.1	0.1	26	7	39	0.02	0.03	38214	1	7	-55	39	12	101
05-06-2017 10:40	-0.1	0.1	26	7	39	0.02	0.03	38279	1	7	-55	39	12	101
05-06-2017 10:41	-0.1	0.1	26	7	39	0.02	0.03	38199	1	7	-55	39	12	101
05-06-2017 10:41	-0.1	0.1	26	7	39	0.02	0.03	38241	1	7	-55	39	12	101
05-06-2017 10:41	-0.1	0.1	26	7	39	0.02	0.03	38244	1	7	-55	39	12	101
05-06-2017 10:41	-0.1	0.1	26	7	39	0.02	0.03	38231	1	7	-56	39	12	101
05-06-2017 10:41	-0.1	0.1	26	7	39	0.02	0.03	38281	1	7	-55	39	12	101
05-06-2017 10:41	-0.1	0.1	26	7	39	0.02	0.03	38234	1	7	-55	39	12	101
05-06-2017 10:42	-0.1	0.1	26	8	39	0.02	0.03	38244	1	7	-55	39	12	101
05-06-2017 10:42	-0.1	0.1	26	8	39	0.02	0.03	38218	1	7	-56	39	12	101
05-06-2017 10:42	-0.1	0.1	26	8	39	0.02	0.03	38242	1	7	-56	39	12	101
05-06-2017 10:42	-0.1	0.1	26	8	39	0.02	0.03	38259	1	7	-56	39	12	101
05-06-2017 10:42	-0.1	0.1	26	8	39	0.02	0.03	38220	1	7	-56	39	12	101
05-06-2017 10:42	-0.1	0.1	26	8	39	0.02	0.03	38219	1	7	-56	39	12	101
05-06-2017 10:43	-0.1	0.1	26	8	39	0.02	0.03	38257	1	7	-56	39	12	101
05-06-2017 10:43	-0.1	0.1	26	8	39	0.02	0.03	38254	1	7	-55	39	12	101
05-06-2017 10:43	-0.1	0.1	26	8	39	0.02	0.03	38224	1	7	-55	39	12	101
05-06-2017 10:43	-0.1	0.1	26	8	39	0.02	0.03	38209	1	7	-55	39	12	101
05-06-2017 10:43	-0.1	0.1	26	8	39	0.02	0.03	38203	1	7	-56	39	12	101

Table 3. Physicochemical parameters of drinking water collected from Landnamselven.

Date Time	Pressure (psi)	Depth (m)	Actual Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Specific Conductivity ($\mu\text{S/cm}$)	Salinity (PSU)	Total Dissolved Solids (ppt)	Resistivity ($\Omega\cdot\text{cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentration (mg/L)	RDO Saturation (%Sat)
05-06-2017 11:13	0.1	0.3	34	13	45	0.02	0.03	29070	1	7	-50	46	11	106
05-06-2017 11:14	0.1	0.3	34	13	45	0.02	0.03	29029	1	7	-50	45	11	106
05-06-2017 11:14	0.1	0.3	34	13	45	0.02	0.03	29063	1	7	-50	44	11	106
05-06-2017 11:14	0.1	0.3	34	13	45	0.02	0.03	29055	1	7	-50	43	11	106
05-06-2017 11:14	0.1	0.3	34	13	45	0.02	0.03	29046	1	7	-50	42	11	106
05-06-2017 11:14	0.1	0.3	34	13	45	0.02	0.03	29057	1	7	-50	42	11	106
05-06-2017 11:14	0.1	0.3	34	13	45	0.02	0.03	29048	1	7	-50	41	11	106
05-06-2017 11:15	0.1	0.3	34	13	45	0.02	0.03	29064	1	7	-50	41	11	106
05-06-2017 11:15	0.1	0.3	34	13	45	0.02	0.03	29063	1	7	-51	41	11	106
05-06-2017 11:15	0.1	0.3	34	13	45	0.02	0.03	29049	1	7	-51	40	11	106
05-06-2017 11:15	0.1	0.3	34	13	45	0.02	0.03	29024	1	7	-51	40	11	106
05-06-2017 11:15	0.1	0.3	34	13	45	0.02	0.03	29042	1	7	-51	40	11	106
05-06-2017 11:15	0.1	0.3	34	13	45	0.02	0.03	29055	1	7	-51	40	11	106
05-06-2017 11:16	0.1	0.3	34	13	45	0.02	0.03	29021	1	7	-51	40	11	106
05-06-2017 11:16	0.1	0.3	35	13	45	0.02	0.03	28988	1	7	-51	39	11	106
05-06-2017 11:16	0.1	0.3	34	13	45	0.02	0.03	29028	1	7	-51	39	11	106
05-06-2017 11:16	0.1	0.3	34	13	45	0.02	0.03	29030	1	7	-51	39	11	106
05-06-2017 11:16	0.1	0.3	34	13	45	0.02	0.03	29037	1	7	-51	39	11	106
05-06-2017 11:16	0.1	0.3	34	13	45	0.02	0.03	29033	1	7	-51	38	11	106
05-06-2017 11:17	0.1	0.3	35	13	45	0.02	0.03	28985	1	7	-51	37	11	106
05-06-2017 11:17	0.1	0.3	34	13	45	0.02	0.03	29032	1	7	-51	36	11	106
05-06-2017 11:17	0.1	0.3	34	13	45	0.02	0.03	29017	1	7	-51	35	11	106
05-06-2017 11:17	0.1	0.3	34	13	45	0.02	0.03	29042	1	7	-51	34	11	106
05-06-2017 11:17	0.1	0.3	34	13	45	0.02	0.03	28990	1	7	-51	33	11	106
05-06-2017 11:17	0.1	0.3	34	13	45	0.02	0.03	28999	1	7	-51	33	11	106

05-06-2017 11:18	0.1	0.3	34	13	45	0.02	0.03	29012	1	7	-51	34	11	106
05-06-2017 11:18	0.1	0.3	34	13	45	0.02	0.03	28999	1	7	-51	34	11	106
05-06-2017 11:18	0.1	0.3	34	13	45	0.02	0.03	28999	1	7	-51	34	11	106
05-06-2017 11:18	0.1	0.3	35	13	45	0.02	0.03	28986	1	7	-51	34	11	106
05-06-2017 11:18	0.1	0.3	34	13	45	0.02	0.03	28991	1	7	-52	33	11	106
05-06-2017 11:18	0.1	0.3	34	13	45	0.02	0.03	29006	1	7	-52	33	11	106
05-06-2017 11:19	0.1	0.3	35	13	45	0.02	0.03	28961	1	7	-52	33	11	106
05-06-2017 11:19	0.1	0.3	35	13	45	0.02	0.03	28951	1	7	-52	33	11	106
05-06-2017 11:19	0.1	0.3	35	13	45	0.02	0.03	28952	1	7	-52	33	11	106
05-06-2017 11:19	0.1	0.3	35	13	45	0.02	0.03	28925	1	7	-52	33	11	106
05-06-2017 11:19	0.1	0.3	35	13	45	0.02	0.03	28940	1	7	-52	33	11	106
05-06-2017 11:19	0.1	0.3	35	13	45	0.02	0.03	28942	1	7	-52	33	11	106
05-06-2017 11:20	0.1	0.3	35	13	45	0.02	0.03	28960	1	7	-52	33	11	106
05-06-2017 11:20	0.1	0.3	35	13	45	0.02	0.03	28948	1	7	-52	33	11	106
05-06-2017 11:20	0.1	0.3	35	13	45	0.02	0.03	28973	1	7	-52	33	11	106
05-06-2017 11:20	0.1	0.3	35	13	45	0.02	0.03	28981	1	7	-52	33	11	106
05-06-2017 11:20	0.1	0.3	35	13	45	0.02	0.03	28983	1	7	-52	33	11	106
05-06-2017 11:20	0.1	0.3	35	13	45	0.02	0.03	28971	1	7	-52	33	11	106
05-06-2017 11:21	0.1	0.3	35	13	45	0.02	0.03	28988	1	7	-52	33	11	106
05-06-2017 11:21	0.1	0.3	35	13	45	0.02	0.03	28988	1	7	-52	33	11	106
05-06-2017 11:21	0.1	0.3	35	13	45	0.02	0.03	28961	1	7	-52	33	11	106
05-06-2017 11:21	0.1	0.3	35	13	45	0.02	0.03	28973	1	7	-51	33	11	106
05-06-2017 11:21	0.1	0.3	35	13	45	0.02	0.03	28974	1	7	-51	33	11	106
05-06-2017 11:21	0.1	0.3	34	13	45	0.02	0.03	28999	1	7	-51	32	11	106
05-06-2017 11:22	0.1	0.3	35	13	45	0.02	0.03	28964	1	7	-51	33	11	106
05-06-2017 11:22	0.1	0.3	34	13	45	0.02	0.03	28990	1	7	-51	33	11	106
05-06-2017 11:22	0.1	0.3	35	13	45	0.02	0.03	28963	1	7	-52	33	11	106
05-06-2017 11:22	0.1	0.3	35	13	45	0.02	0.03	28976	1	7	-52	34	11	106
05-06-2017 11:22	0.1	0.3	35	13	45	0.02	0.03	28962	1	7	-52	34	11	106
05-06-2017 11:22	0.1	0.3	34	13	45	0.02	0.03	28992	1	7	-52	34	11	106

05-06-2017 11:23	0.1	0.3	35	13	45	0.02	0.03	28962	1	7	-52	34	11	106
05-06-2017 11:23	0.1	0.3	35	13	45	0.02	0.03	28968	1	7	-51	34	11	106
05-06-2017 11:23	0.1	0.3	35	13	45	0.02	0.03	28984	1	7	-51	35	11	106
05-06-2017 11:23	0.1	0.3	34	13	45	0.02	0.03	29015	1	7	-51	35	11	106
05-06-2017 11:23	0.1	0.3	35	13	45	0.02	0.03	28986	1	7	-51	35	11	106
05-06-2017 11:23	0.1	0.3	34	13	45	0.02	0.03	29002	1	7	-52	36	11	106
05-06-2017 11:24	0.1	0.3	35	13	45	0.02	0.03	28944	1	7	-52	36	11	106
05-06-2017 11:24	0.1	0.3	35	13	45	0.02	0.03	28962	1	7	-52	37	11	106
05-06-2017 11:24	0.1	0.3	35	13	45	0.02	0.03	28982	1	7	-52	36	11	106
05-06-2017 11:24	0.1	0.3	35	13	45	0.02	0.03	28985	1	7	-52	36	11	106
05-06-2017 11:24	0.1	0.3	35	13	45	0.02	0.03	28975	1	7	-52	36	11	106
05-06-2017 11:24	0.1	0.3	35	13	45	0.02	0.03	28981	1	7	-52	36	11	106
05-06-2017 11:25	0.1	0.3	35	13	45	0.02	0.03	28967	1	7	-52	36	11	106
05-06-2017 11:25	0.1	0.3	34	13	45	0.02	0.03	28997	1	7	-53	36	11	106
05-06-2017 11:25	0.1	0.3	35	13	45	0.02	0.03	28983	1	7	-53	36	11	106
05-06-2017 11:25	0.1	0.3	35	13	45	0.02	0.03	28971	1	7	-53	36	11	106
05-06-2017 11:25	0.1	0.3	35	13	45	0.02	0.03	28958	1	7	-53	36	11	106
05-06-2017 11:25	0.1	0.3	35	13	45	0.02	0.03	28962	1	7	-53	36	11	106
05-06-2017 11:26	0.1	0.3	35	13	45	0.02	0.03	28972	1	7	-53	35	11	106
05-06-2017 11:26	0.1	0.3	35	13	45	0.02	0.03	28942	1	7	-53	34	11	106
05-06-2017 11:26	0.1	0.3	35	13	45	0.02	0.03	28952	1	7	-53	33	11	106
05-06-2017 11:26	0.1	0.3	35	13	45	0.02	0.03	28948	1	7	-53	32	11	106
05-06-2017 11:26	0.1	0.3	35	13	45	0.02	0.03	28943	1	7	-54	31	11	106
05-06-2017 11:26	0.1	0.3	35	13	45	0.02	0.03	28978	1	7	-54	30	11	106
05-06-2017 11:27	0.1	0.3	35	13	45	0.02	0.03	28943	1	7	-54	29	11	106
05-06-2017 11:27	0.1	0.3	35	13	45	0.02	0.03	28947	1	7	-54	28	11	106
05-06-2017 11:27	0.1	0.3	35	13	45	0.02	0.03	28960	1	7	-54	27	11	106
05-06-2017 11:27	0.1	0.3	35	13	45	0.02	0.03	28959	1	7	-54	27	11	106
05-06-2017 11:27	0.1	0.3	35	13	45	0.02	0.03	28956	1	7	-54	27	11	106
05-06-2017 11:27	0.1	0.3	35	13	45	0.02	0.03	28931	1	7	-54	27	11	106

05-06-2017 11:28	0.1	0.3	35	13	45	0.02	0.03	28931	1	7	-54	27	11	106
05-06-2017 11:28	0.1	0.3	35	13	45	0.02	0.03	28928	1	7	-54	27	11	106
05-06-2017 11:28	0.1	0.3	35	13	45	0.02	0.03	28918	1	7	-54	27	11	106
05-06-2017 11:28	0.1	0.3	35	13	45	0.02	0.03	28906	1	7	-54	27	11	106
05-06-2017 11:28	0.1	0.3	35	13	45	0.02	0.03	28831	1	7	-54	27	11	106
05-06-2017 11:28	0.1	0.3	35	13	45	0.02	0.03	28706	1	7	-54	27	11	106
05-06-2017 11:29	0.1	0.3	35	13	45	0.02	0.03	28715	1	7	-54	27	11	106
05-06-2017 11:29	0.1	0.3	35	13	45	0.02	0.03	28702	1	7	-54	26	11	106
05-06-2017 11:29	0.1	0.3	35	13	45	0.02	0.03	28685	1	7	-54	26	11	106
05-06-2017 11:29	0.1	0.3	35	13	45	0.02	0.03	28699	1	7	-54	26	11	106
05-06-2017 11:29	0.1	0.3	35	13	45	0.02	0.03	28695	1	7	-54	26	11	106
05-06-2017 11:29	0.1	0.3	35	13	45	0.02	0.03	28655	1	7	-54	26	11	106
05-06-2017 11:30	0.1	0.3	35	13	45	0.02	0.03	28697	1	7	-54	27	11	106
05-06-2017 11:30	0.1	0.3	35	13	45	0.02	0.03	28704	1	7	-54	27	11	106
05-06-2017 11:30	0.1	0.3	35	13	45	0.02	0.03	28701	1	7	-54	27	11	106
05-06-2017 11:30	0.1	0.3	35	13	45	0.02	0.03	28668	1	7	-54	27	11	106
05-06-2017 11:30	0.1	0.3	35	13	45	0.02	0.03	28674	1	7	-53	26	11	106

Table 4. Physicochemical parameters of water collected from Taseq River

Date Time	Pressure (psi)	Depth (m)	Actual Conductivity ($\mu\text{S}/\text{cm}$)	Tempera- ture ($^{\circ}\text{C}$)	Specific Conductivity ($\mu\text{S}/\text{cm}$)	Salinity (PSU)	Total Dissolved Solids (ppt)	Resistivity ($\Omega\text{-cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentra- tion (mg/L)	RDO Saturation (%Sat)
05-06-2017 13:08	0.3	0.4	35	11	48	0.02	0.03	28370	1	8	-70	57	11	101
05-06-2017 13:08	0.3	0.4	35	11	48	0.02	0.03	28500	1	8	-69	55	11	101
05-06-2017 13:08	0.3	0.4	35	11	48	0.02	0.03	28554	1	8	-69	52	11	102
05-06-2017 13:08	0.3	0.4	35	10	49	0.02	0.03	28214	1	8	-68	51	11	101
05-06-2017 13:08	0.3	0.4	35	10	49	0.02	0.03	28578	1	8	-68	48	11	101
05-06-2017 13:08	0.3	0.4	35	10	49	0.02	0.03	28513	1	8	-68	47	11	101
05-06-2017 13:09	0.3	0.4	35	10	49	0.02	0.03	28614	1	7	-68	45	11	101
05-06-2017 13:09	0.3	0.4	35	10	49	0.02	0.03	28606	1	7	-67	44	11	102
05-06-2017 13:09	0.3	0.4	35	10	49	0.02	0.03	28612	1	7	-67	43	11	102
05-06-2017 13:09	0.3	0.4	35	10	49	0.02	0.03	28638	1	7	-66	43	11	102
05-06-2017 13:09	0.3	0.4	35	10	49	0.02	0.03	28624	1	7	-66	42	11	102
05-06-2017 13:09	0.3	0.4	35	10	49	0.02	0.03	28623	1	7	-65	42	11	102
05-06-2017 13:10	0.3	0.4	35	10	49	0.02	0.03	28587	1	7	-65	41	11	102
05-06-2017 13:10	0.3	0.4	35	10	49	0.02	0.03	28577	1	7	-65	40	11	102
05-06-2017 13:10	0.3	0.4	35	10	49	0.02	0.03	28598	1	7	-65	40	11	102
05-06-2017 13:10	0.3	0.4	35	10	49	0.02	0.03	28602	1	7	-65	40	11	102
05-06-2017 13:10	0.3	0.4	35	10	49	0.02	0.03	28581	1	7	-64	39	11	102
05-06-2017 13:10	0.3	0.4	35	10	49	0.02	0.03	28589	1	7	-64	39	11	102
05-06-2017 13:11	0.3	0.4	35	10	49	0.02	0.03	28590	1	7	-64	39	11	102
05-06-2017 13:11	0.3	0.4	35	10	49	0.02	0.03	28596	1	7	-64	39	11	102
05-06-2017 13:11	0.3	0.4	35	10	49	0.02	0.03	28576	1	7	-64	38	11	102
05-06-2017 13:11	0.3	0.4	35	10	49	0.02	0.03	28588	1	7	-63	38	11	102
05-06-2017 13:11	0.3	0.4	35	10	49	0.02	0.03	28518	1	7	-63	38	11	102
05-06-2017 13:11	0.3	0.4	35	10	49	0.02	0.03	28546	1	7	-63	38	11	102
05-06-2017 13:12	0.3	0.4	35	10	49	0.02	0.03	28484	1	7	-63	38	11	102

05-06-2017 13:12	0.3	0.4	35	10	50	0.02	0.03	28253	1	7	-63	38	11	102
05-06-2017 13:12	0.3	0.4	35	10	50	0.02	0.03	28226	1	7	-62	39	11	100
05-06-2017 13:12	0.3	0.4	36	9	51	0.02	0.03	28005	1	7	-62	39	11	100
05-06-2017 13:12	0.3	0.4	35	10	50	0.02	0.03	28472	1	7	-62	38	11	100
05-06-2017 13:12	0.3	0.4	35	10	50	0.02	0.03	28504	1	7	-63	37	11	100
05-06-2017 13:13	0.3	0.4	35	10	49	0.02	0.03	28541	1	7	-63	36	11	100
05-06-2017 13:13	0.3	0.4	35	10	49	0.02	0.03	28543	1	7	-63	36	11	102
05-06-2017 13:13	0.3	0.4	35	10	49	0.02	0.03	28565	1	7	-63	36	11	102
05-06-2017 13:13	0.3	0.4	35	10	49	0.02	0.03	28608	1	7	-63	37	11	102
05-06-2017 13:13	0.3	0.4	35	10	49	0.02	0.03	28629	1	7	-63	36	11	102
05-06-2017 13:13	0.3	0.4	35	10	49	0.02	0.03	28634	1	7	-63	36	11	102
05-06-2017 13:14	0.3	0.4	35	10	49	0.02	0.03	28602	1	7	-63	36	11	102
05-06-2017 13:14	0.3	0.4	35	10	49	0.02	0.03	28611	1	7	-63	36	11	102
05-06-2017 13:14	0.3	0.4	35	10	49	0.02	0.03	28629	1	7	-63	36	11	102
05-06-2017 13:14	0.3	0.4	35	10	49	0.02	0.03	28601	1	7	-63	37	11	102
05-06-2017 13:14	0.3	0.4	35	10	49	0.02	0.03	28598	1	7	-62	37	11	102
05-06-2017 13:14	0.3	0.4	35	10	49	0.02	0.03	28607	1	7	-62	37	11	102
05-06-2017 13:15	0.3	0.4	35	10	49	0.02	0.03	28641	1	7	-62	36	11	102
05-06-2017 13:15	0.3	0.4	35	10	49	0.02	0.03	28569	1	7	-62	36	11	102
05-06-2017 13:15	0.3	0.4	35	10	49	0.02	0.03	28537	1	7	-63	36	11	102
05-06-2017 13:15	0.3	0.4	35	10	49	0.02	0.03	28607	1	7	-62	37	11	102
05-06-2017 13:15	0.3	0.4	35	10	49	0.02	0.03	28560	1	7	-62	37	11	102
05-06-2017 13:15	0.3	0.4	35	10	49	0.02	0.03	28570	1	7	-62	37	11	102
05-06-2017 13:16	0.3	0.4	35	10	49	0.02	0.03	28554	1	7	-63	36	11	102
05-06-2017 13:16	0.3	0.4	35	10	49	0.02	0.03	28562	1	7	-64	36	11	102
05-06-2017 13:16	0.3	0.4	35	10	49	0.02	0.03	28532	1	7	-63	36	11	102
05-06-2017 13:16	0.3	0.4	35	10	49	0.02	0.03	28554	1	7	-63	36	11	102
05-06-2017 13:16	0.3	0.4	35	10	49	0.02	0.03	28580	1	7	-63	36	11	102
05-06-2017 13:16	0.3	0.4	35	10	49	0.02	0.03	28573	1	7	-62	36	11	102
05-06-2017 13:17	0.3	0.4	35	10	49	0.02	0.03	28575	1	7	-63	36	11	102

05-06-2017 13:17	0.3	0.4	35	10	49	0.02	0.03	28586	1	7	-63	36	11	102
05-06-2017 13:17	0.3	0.4	35	10	49	0.02	0.03	28584	1	7	-63	36	11	102
05-06-2017 13:17	0.3	0.4	35	10	49	0.02	0.03	28550	1	7	-63	36	11	102
05-06-2017 13:17	0.3	0.4	35	10	49	0.02	0.03	28574	1	7	-63	36	11	102
05-06-2017 13:17	0.3	0.4	35	10	49	0.02	0.03	28579	1	7	-63	36	11	102
05-06-2017 13:18	0.3	0.4	35	10	49	0.02	0.03	28576	1	7	-63	36	11	102
05-06-2017 13:18	0.3	0.4	35	10	49	0.02	0.03	28579	1	7	-63	36	11	102
05-06-2017 13:18	0.3	0.4	35	10	49	0.02	0.03	28573	1	7	-63	36	11	102
05-06-2017 13:18	0.3	0.4	35	10	49	0.02	0.03	28581	1	7	-63	36	11	102
05-06-2017 13:18	0.3	0.4	35	10	49	0.02	0.03	28578	1	7	-63	36	11	102
05-06-2017 13:18	0.3	0.4	35	10	49	0.02	0.03	28552	1	7	-63	36	11	102
05-06-2017 13:19	0.3	0.4	35	10	49	0.02	0.03	28530	1	7	-63	36	11	102
05-06-2017 13:19	0.3	0.4	35	10	49	0.02	0.03	28568	1	7	-64	35	11	102
05-06-2017 13:19	0.3	0.4	35	10	49	0.02	0.03	28591	1	7	-64	36	11	102
05-06-2017 13:19	0.3	0.4	35	10	49	0.02	0.03	28558	1	7	-63	36	11	102
05-06-2017 13:19	0.3	0.4	35	10	49	0.02	0.03	28573	1	7	-63	36	11	102
05-06-2017 13:19	0.3	0.4	35	10	49	0.02	0.03	28544	1	7	-63	36	11	102
05-06-2017 13:20	0.3	0.4	35	10	49	0.02	0.03	28558	1	7	-64	35	11	102
05-06-2017 13:20	0.3	0.4	35	10	49	0.02	0.03	28544	1	7	-64	36	11	102
05-06-2017 13:20	0.3	0.4	35	10	49	0.02	0.03	28559	1	7	-63	36	11	102

Table 5. Physicochemical parameters of water collected from Narsaq River

Date Time	Pressure (psi)	Depth (m)	Actual Con- ductivity ($\mu\text{S}/\text{cm}$)	Tempera- ture ($^{\circ}\text{C}$)	Specific Con- ductivity ($\mu\text{S}/\text{cm}$)	Salini- ty (PSU)	Total Dis- solved So- lids (ppt)	Resistivity ($\Omega\text{-cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentra- tion (mg/L)	RDO Saturation (%Sat)
05-06-2017 14:26	0.2	0.3	41	8	60	0.03	0.04	24291	1	8	-70	66	12	103
05-06-2017 14:26	0.2	0.4	41	8	60	0.03	0.04	24282	1	8	-70	62	12	103
05-06-2017 14:27	0.2	0.3	41	8	61	0.03	0.04	24281	1	8	-70	58	12	103
05-06-2017 14:27	0.2	0.4	41	8	61	0.03	0.04	24270	1	8	-70	55	12	103
05-06-2017 14:27	0.2	0.4	41	8	61	0.03	0.04	24261	1	8	-71	52	12	103
05-06-2017 14:31	0.2	0.3	41	8	61	0.03	0.04	24295	1	8	-75	62	12	103
05-06-2017 14:31	0.2	0.3	41	8	61	0.03	0.04	24287	1	8	-75	58	12	103
05-06-2017 14:31	0.2	0.3	41	8	61	0.03	0.04	24285	1	8	-75	53	12	103
05-06-2017 14:32	0.1	0.3	41	8	61	0.03	0.04	24296	1	8	-75	50	12	103
05-06-2017 14:32	0.1	0.3	41	8	61	0.03	0.04	24295	1	8	-76	46	12	103
05-06-2017 14:32	0.1	0.2	41	8	61	0.03	0.04	24264	1	8	-78	43	12	103
05-06-2017 14:32	0.02	0.2	41	8	61	0.03	0.04	24262	1	8	-79	42	12	103
05-06-2017 14:32	0.02	0.2	41	8	61	0.03	0.04	24257	1	8	-79	40	12	103
05-06-2017 14:32	0.02	0.2	41	8	61	0.03	0.04	24270	1	8	-78	40	12	103
05-06-2017 14:33	0.02	0.2	41	8	61	0.03	0.04	24269	1	8	-79	38	12	103
05-06-2017 14:33	0.03	0.2	41	8	61	0.03	0.04	24296	1	8	-78	39	12	103
05-06-2017 14:33	0.01	0.2	41	8	61	0.03	0.04	24279	1	8	-78	38	12	103
05-06-2017 14:33	0.03	0.2	41	8	61	0.03	0.04	24284	1	8	-79	37	12	103
05-06-2017 14:33	0.01	0.2	41	8	61	0.03	0.04	24272	1	8	-80	37	12	103
05-06-2017 14:33	0.02	0.2	41	8	61	0.03	0.04	24280	1	8	-80	36	12	103
05-06-2017 14:34	0.01	0.2	41	8	61	0.03	0.04	24216	1	8	-79	36	12	103
05-06-2017 14:34	0.03	0.2	41	8	61	0.03	0.04	24292	1	8	-79	35	12	103
05-06-2017 14:34	0.02	0.2	41	8	61	0.03	0.04	24265	1	8	-79	36	12	103
05-06-2017 14:34	0.01	0.2	41	8	61	0.03	0.04	24279	1	8	-79	35	12	103
05-06-2017 14:34	0.01	0.2	41	8	61	0.03	0.04	24271	1	8	-80	35	12	103

05-06-2017 14:34	0.01	0.2	41	8	61	0.03	0.04	24214	1	8	-80	35	12	103
05-06-2017 14:35	0.01	0.2	41	8	61	0.03	0.04	24285	1	8	-79	35	12	103
05-06-2017 14:35	0.02	0.2	41	8	61	0.03	0.04	24244	1	8	-80	35	12	103
05-06-2017 14:35	0.01	0.2	41	8	61	0.03	0.04	24283	1	8	-80	34	12	103
05-06-2017 14:35	0.01	0.2	41	8	61	0.03	0.04	24292	1	8	-80	34	12	103

Table 6. Physicochemical parameters of water collected from Kvane River

Date Time	Pressure (psi)	Depth (m)	Actual Con- ductivity ($\mu\text{S}/\text{cm}$)	Temperature ($^{\circ}\text{C}$)	Specific Conductivity ($\mu\text{S}/\text{cm}$)	Salinity (PSU)	Total Dissolved Solids (ppt)	Resistivity ($\Omega\text{-cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentration (mg/L)	RDO Saturation (%Sat)
05-06-2017 14:40	0.02	0.2	41	9	59	0.03	0.04	24689	1	7	-67	38	12	102
05-06-2017 14:40	0.02	0.2	41	9	60	0.03	0.04	24301	1	8	-69	37	12	102
05-06-2017 14:41	0.02	0.2	40	9	58	0.03	0.04	25033	1	7	-67	37	12	102
05-06-2017 14:41	-0.01	0.2	43	9	63	0.03	0.04	23203	1	8	-69	37	12	102
05-06-2017 14:41	0.02	0.2	43	9	62	0.03	0.04	23407	1	8	-69	36	12	102
05-06-2017 14:41	-0.01	0.2	42	9	60	0.03	0.04	24025	1	8	-70	36	12	102
05-06-2017 14:41	0.01	0.2	40	9	58	0.03	0.04	24894	1	8	-69	36	12	102
05-06-2017 14:41	0.01	0.2	40	9	58	0.03	0.04	25056	1	8	-69	35	12	102
05-06-2017 14:42	-0.01	0.2	42	9	60	0.03	0.04	24045	1	8	-70	35	12	102
05-06-2017 14:42	0.01	0.2	41	9	60	0.03	0.04	24383	1	8	-70	35	12	102
05-06-2017 14:42	0.01	0.2	41	9	59	0.03	0.04	24428	1	8	-70	35	12	102
05-06-2017 14:42	-0.01	0.2	41	9	59	0.03	0.04	24560	1	8	-70	35	12	102
05-06-2017 14:42	0.01	0.2	43	9	63	0.03	0.04	23162	1	8	-69	35	12	102
05-06-2017 14:42	0.01	0.2	46	9	67	0.03	0.04	21552	1	8	-72	35	12	102
05-06-2017 14:43	0.01	0.2	43	9	63	0.03	0.04	23070	1	8	-72	35	12	102
05-06-2017 14:43	0.02	0.2	41	9	59	0.03	0.04	24470	1	8	-70	35	12	102
05-06-2017 14:43	0.01	0.2	46	9	66	0.03	0.04	21962	1	8	-72	35	12	102
05-06-2017 14:43	0.01	0.2	43	9	63	0.03	0.04	23084	1	8	-72	35	12	102
05-06-2017 14:43	0.03	0.2	42	9	61	0.03	0.04	23785	1	8	-71	34	12	102
05-06-2017 14:43	0.02	0.2	51	9	73	0.03	0.04	19791	1	8	-71	35	12	102
05-06-2017 14:44	0.01	0.2	43	9	62	0.03	0.04	23404	1	8	-71	35	12	102
05-06-2017 14:44	0.01	0.2	44	9	64	0.03	0.04	22752	1	8	-69	35	12	102
05-06-2017 14:44	-0.01	0.2	44	9	64	0.03	0.04	22521	1	8	-72	35	12	102
05-06-2017 14:44	0.02	0.2	45	9	65	0.03	0.04	22356	1	8	-71	34	12	102
05-06-2017 14:44	0.01	0.2	42	9	61	0.03	0.04	23867	1	8	-71	35	12	102

05-06-2017 14:44	0.01	0.2	45	9	66	0.03	0.04	22086	1	8	-71	35	12	102
05-06-2017 14:45	0.01	0.2	44	9	64	0.03	0.04	22506	1	8	-71	35	12	102
05-06-2017 14:45	0.01	0.2	42	9	61	0.03	0.04	23767	1	8	-69	34	12	102
05-06-2017 14:45	0.01	0.2	40	9	58	0.03	0.04	24846	1	8	-71	35	12	103
05-06-2017 14:45	0.01	0.2	44	9	64	0.03	0.04	22582	1	8	-71	35	12	102
05-06-2017 14:45	0.02	0.2	45	9	66	0.03	0.04	22136	1	8	-71	35	12	102
05-06-2017 14:45	0.02	0.2	44	9	64	0.03	0.04	22494	1	8	-71	35	12	102
05-06-2017 14:46	0.02	0.2	43	9	63	0.03	0.04	23197	1	8	-70	35	12	102

Table 7. Physicochemical parameters of water collected from proposed discharge point at Bredefjord

B	Pressure (psi)	Depth (m)	Actual Conductivity ($\mu\text{S/cm}$)	Temperature ($^{\circ}\text{C}$)	Specific Conductivity ($\mu\text{S/cm}$)	Salinity (PSU)	Total Dis- solved Sol- ids (ppt)	Resistivity ($\Omega\cdot\text{cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentration (mg/L)	RDO Saturation (%Sat)
06-06-2017 11:57	71	50	28473	3	49729	31	32	35	1	9	-138	66	10	95
06-06-2017 11:57	71	50	28499	3	49769	31	32	35	1	9	-136	62	11	95
06-06-2017 11:57	71	50	28459	2	49954	31	32	35	1	9	-135	58	11	96
06-06-2017 11:57	71	50	28452	2	50533	31	33	35	1	9	-133	55	11	96
06-06-2017 11:57	71	50	28436	2	50660	31	33	35	1	9	-132	53	11	96
06-06-2017 11:57	71	50	28443	2	50814	31	33	35	1	9	-130	50	11	96
06-06-2017 11:58	71	50	28428	2	50867	31	33	35	1	9	-129	48	11	96
06-06-2017 11:58	71	50	28426	2	50958	31	33	35	1	9	-128	47	11	96
06-06-2017 11:58	71	50	28456	2	51073	32	33	35	1	9	-127	45	11	97
06-06-2017 11:58	71	50	28455	2	51136	32	33	35	1	9	-126	43	11	97
06-06-2017 11:58	71	50	28442	2	51253	32	33	35	1	9	-125	42	11	97
06-06-2017 11:58	71	50	28424	2	51323	32	33	35	1	9	-124	41	11	97
06-06-2017 11:59	71	50	28425	2	51506	32	33	35	1	9	-123	40	11	97
06-06-2017 11:59	71	50	28451	2	51557	32	34	35	1	9	-122	39	11	97
06-06-2017 11:59	71	50	28414	2	51489	32	33	35	1	9	-121	38	11	97
06-06-2017 11:59	71	50	28419	2	51549	32	34	35	1	9	-120	38	11	97
06-06-2017 11:59	71	50	28412	1	51582	32	34	35	1	9	-120	37	11	97
06-06-2017 11:59	71	50	28439	1	51667	32	34	35	1	9	-119	37	11	97
06-06-2017 12:00	71	50	28421	1	51691	32	34	35	1	8	-118	36	11	97
06-06-2017 12:00	71	50	28423	1	51679	32	34	35	1	8	-118	36	11	97
06-06-2017 12:00	71	50	28457	1	51762	32	34	35	1	8	-117	35	11	97
06-06-2017 12:00	71	50	28469	1	51783	32	34	35	1	8	-116	35	11	97
06-06-2017 12:00	71	50	28489	1	51818	32	34	35	1	8	-116	34	11	97
06-06-2017 12:00	71	50	28511	1	51854	32	34	35	1	8	-115	34	11	97
06-06-2017 12:01	71	50	28519	1	51870	32	34	35	1	8	-114	34	11	97

06-06-2017 12:01	71	50	28504	1	51837	32	34	35	1	8	-114	34	11	96
06-06-2017 12:01	71	50	28518	1	51839	32	34	35	1	8	-113	33	11	97
06-06-2017 12:01	71	50	28529	1	51869	32	34	35	1	8	-113	33	11	96
06-06-2017 12:01	71	50	28523	1	51861	32	34	35	1	8	-112	33	11	96
06-06-2017 12:01	71	50	28511	1	51826	32	34	35	1	8	-112	33	11	96
06-06-2017 12:02	71	50	28490	1	51811	32	34	35	1	8	-111	32	11	96
06-06-2017 12:02	71	50	28534	1	51894	32	34	35	1	8	-111	32	11	96
06-06-2017 12:02	67	47	28411	1	51770	32	34	35	1	8	-111	32	11	97
06-06-2017 12:02	63	44	28439	1	51724	32	34	35	1	8	-110	32	11	96
06-06-2017 12:02	63	45	28462	1	51765	32	34	35	1	8	-110	32	11	96
06-06-2017 12:02	63	45	28462	1	51732	32	34	35	1	8	-109	32	11	96
06-06-2017 12:03	63	45	28470	1	51712	32	34	35	1	8	-109	32	11	96
06-06-2017 12:03	63	44	28465	1	51689	32	34	35	1	8	-109	31	11	96
06-06-2017 12:03	63	44	28493	1	51731	32	34	35	1	8	-108	31	11	96
06-06-2017 12:03	63	44	28443	1	51637	32	34	35	1	8	-108	31	11	96
06-06-2017 12:03	63	44	28465	1	51676	32	34	35	1	8	-108	31	11	96
06-06-2017 12:03	63	44	28470	1	51691	32	34	35	1	8	-107	31	11	96
06-06-2017 12:04	63	44	28479	1	51701	32	34	35	1	8	-107	31	11	96
06-06-2017 12:04	63	44	28463	1	51673	32	34	35	1	8	-107	31	11	96
06-06-2017 12:04	63	44	28498	1	51740	32	34	35	1	8	-106	31	11	96
06-06-2017 12:04	63	44	28445	1	51642	32	34	35	1	8	-106	31	11	96
06-06-2017 12:04	63	44	28485	1	51715	32	34	35	1	8	-106	31	11	96
06-06-2017 12:04	63	44	28459	1	51664	32	34	35	1	8	-106	31	11	96
06-06-2017 12:05	63	44	28469	1	51688	32	34	35	1	8	-105	31	11	96
06-06-2017 12:05	63	44	28477	1	51699	32	34	35	1	8	-105	31	11	96
06-06-2017 12:05	63	44	28466	1	51679	32	34	35	1	8	-105	31	11	96
06-06-2017 12:05	63	44	28474	1	51696	32	34	35	1	8	-105	31	11	96
06-06-2017 12:05	63	44	28446	1	51647	32	34	35	1	8	-105	30	11	96
06-06-2017 12:05	63	44	28468	1	51685	32	34	35	1	8	-104	30	11	96
06-06-2017 12:06	63	44	28448	1	51655	32	34	35	1	8	-104	30	11	96

06-06-2017 12:06	63	44	28458	1	51667	32	34	35	1	8	-104	30	11	96
06-06-2017 12:06	63	44	28465	1	51679	32	34	35	1	8	-104	30	11	96
06-06-2017 12:06	63	44	28481	1	51708	32	34	35	1	8	-103	30	11	96
06-06-2017 12:06	63	44	28438	1	51632	32	34	35	1	8	-103	30	11	96
06-06-2017 12:06	63	44	28454	1	51657	32	34	35	1	8	-103	30	11	96
06-06-2017 12:07	63	44	28466	1	51681	32	34	35	1	8	-103	30	11	96
06-06-2017 12:07	63	44	28468	1	51682	32	34	35	1	8	-103	30	11	96
06-06-2017 12:07	63	44	28466	1	51684	32	34	35	1	8	-103	30	11	96
06-06-2017 12:07	63	44	28474	1	51700	32	34	35	1	8	-102	30	11	96
06-06-2017 12:07	63	44	28451	1	51659	32	34	35	1	8	-102	30	11	96
06-06-2017 12:07	63	44	28479	1	51703	32	34	35	1	8	-102	30	11	96
06-06-2017 12:08	63	44	28485	1	51712	32	34	35	1	8	-102	30	11	96
06-06-2017 12:08	63	44	28447	1	51654	32	34	35	1	8	-102	30	11	96
06-06-2017 12:08	63	44	28439	1	51639	32	34	35	1	8	-102	30	11	96
06-06-2017 12:08	63	44	28470	1	51704	32	34	35	1	8	-102	30	11	96
06-06-2017 12:08	63	44	28456	1	51696	32	34	35	1	8	-101	30	11	96
06-06-2017 12:08	63	44	28473	1	51721	32	34	35	1	8	-101	30	11	96
06-06-2017 12:09	63	44	28487	1	51752	32	34	35	1	8	-101	30	11	96
06-06-2017 12:09	63	44	28451	1	51687	32	34	35	1	8	-101	30	11	96
06-06-2017 12:09	63	44	28449	1	51693	32	34	35	1	8	-101	30	11	96
06-06-2017 12:09	63	44	28477	1	51750	32	34	35	1	8	-101	30	11	96
06-06-2017 12:09	63	44	28437	1	51691	32	34	35	1	8	-101	30	11	96
06-06-2017 12:09	63	44	28494	1	51789	32	34	35	1	8	-101	30	11	96
06-06-2017 12:10	63	44	28462	1	51737	32	34	35	1	8	-100	30	11	96
06-06-2017 12:10	61	43	28384	1	51626	32	34	35	1	8	-100	29	11	95
06-06-2017 12:10	54	38	28203	1	51419	32	33	35	1	8	-101	29	11	96
06-06-2017 12:10	55	39	28212	1	51497	32	33	35	1	8	-101	29	11	95
06-06-2017 12:10	55	39	28185	1	51450	32	33	35	1	8	-100	29	11	96
06-06-2017 12:10	56	40	28292	1	51640	32	34	35	1	8	-100	29	11	96
06-06-2017 12:11	56	40	28252	1	51557	32	34	35	1	8	-100	29	11	96

06-06-2017 12:11	56	40	28262	1	51577	32	34	35	1	8	-100	29	11	96
06-06-2017 12:11	56	40	28289	1	51636	32	34	35	1	8	-100	29	11	96
06-06-2017 12:11	56	40	28255	1	51579	32	34	35	1	8	-100	29	11	96
06-06-2017 12:11	56	40	28257	1	51582	32	34	35	1	8	-100	29	11	96
06-06-2017 12:11	56	40	28263	1	51593	32	34	35	1	8	-100	29	11	96
06-06-2017 12:12	56	40	28276	1	51624	32	34	35	1	8	-100	29	11	96
06-06-2017 12:12	56	40	28248	1	51583	32	34	35	1	8	-100	29	11	96
06-06-2017 12:12	56	40	28283	1	51665	32	34	35	1	8	-99	29	11	96
06-06-2017 12:12	56	40	28274	1	51648	32	34	35	1	8	-99	29	11	96
06-06-2017 12:12	56	40	28265	1	51618	32	34	35	1	8	-99	29	11	96
06-06-2017 12:12	56	40	28255	1	51621	32	34	35	1	8	-99	29	11	96
06-06-2017 12:13	56	40	28230	1	51581	32	34	35	1	8	-99	29	11	96
06-06-2017 12:13	56	40	28259	1	51637	32	34	35	1	8	-99	29	11	96
06-06-2017 12:13	56	40	28271	1	51663	32	34	35	1	8	-99	29	11	96
06-06-2017 12:13	56	40	28275	1	51672	32	34	35	1	8	-99	29	11	96
06-06-2017 12:13	56	40	28256	1	51639	32	34	35	1	8	-99	29	11	96
06-06-2017 12:13	56	40	28269	1	51654	32	34	35	1	8	-99	29	11	96
06-06-2017 12:14	56	40	28235	1	51617	32	34	35	1	8	-99	29	11	96
06-06-2017 12:14	56	40	28289	1	51714	32	34	35	1	8	-99	29	11	96
06-06-2017 12:14	56	40	28274	1	51680	32	34	35	1	8	-98	29	11	96
06-06-2017 12:14	56	40	28286	1	51700	32	34	35	1	8	-98	29	11	96
06-06-2017 12:14	56	40	28280	1	51695	32	34	35	1	8	-98	29	11	96
06-06-2017 12:14	56	40	28295	1	51716	32	34	35	1	8	-98	29	11	96
06-06-2017 12:15	56	40	28317	1	51766	32	34	35	1	8	-98	29	11	96
06-06-2017 12:15	56	40	28255	1	51644	32	34	35	1	8	-98	29	11	96
06-06-2017 12:15	56	40	28293	1	51713	32	34	35	1	8	-98	29	11	96
06-06-2017 12:15	56	40	28293	1	51705	32	34	35	1	8	-98	29	11	96
06-06-2017 12:15	56	40	28280	1	51700	32	34	35	1	8	-98	29	11	96
06-06-2017 12:15	56	40	28317	1	51750	32	34	35	1	8	-98	29	11	96
06-06-2017 12:16	56	40	28295	1	51705	32	34	35	1	8	-98	29	11	96

06-06-2017 12:16	56	40	28266	1	51646	32	34	35	1	8	-98	29	11	96
06-06-2017 12:16	56	40	28303	1	51723	32	34	35	1	8	-98	29	11	96
06-06-2017 12:16	56	40	28274	1	51663	32	34	35	1	8	-98	29	11	96
06-06-2017 12:16	56	40	28289	1	51688	32	34	35	1	8	-98	29	11	96
06-06-2017 12:16	56	40	28280	1	51676	32	34	35	1	8	-98	29	11	96
06-06-2017 12:17	56	40	28269	1	51650	32	34	35	1	8	-98	29	11	96
06-06-2017 12:17	56	40	28291	1	51690	32	34	35	1	8	-98	29	11	96
06-06-2017 12:17	56	40	28291	1	51693	32	34	35	1	8	-97	29	11	96
06-06-2017 12:17	56	40	28295	1	51699	32	34	35	1	8	-97	29	11	96
06-06-2017 12:17	56	40	28314	1	51737	32	34	35	1	8	-97	29	11	96
06-06-2017 12:17	56	39	28298	1	51698	32	34	35	1	8	-97	29	11	96
06-06-2017 12:18	55	38	28269	1	51643	32	34	35	1	8	-97	29	11	96
06-06-2017 12:18	49	34	27995	1	51198	31	33	36	1	8	-97	29	11	96
06-06-2017 12:18	50	35	28089	1	51466	32	33	36	1	8	-97	29	11	96
06-06-2017 12:18	50	35	28099	1	51386	32	33	36	1	8	-97	29	11	96
06-06-2017 12:18	49	35	28131	1	51447	32	33	36	1	8	-97	29	11	96
06-06-2017 12:18	49	35	28108	1	51405	32	33	36	1	8	-97	29	11	96
06-06-2017 12:19	49	35	28103	1	51398	32	33	36	1	8	-97	29	11	96
06-06-2017 12:19	49	35	28121	1	51430	32	33	36	1	8	-97	29	11	96
06-06-2017 12:19	49	35	28109	1	51404	32	33	36	1	8	-97	29	11	96
06-06-2017 12:19	49	35	28070	1	51337	32	33	36	1	8	-97	29	11	96
06-06-2017 12:19	49	35	28093	1	51381	32	33	36	1	8	-97	29	11	96
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06-06-2017 12:52	21	15	26633	1	49623	30	32	38	1	8	-100	28	12	106
06-06-2017 12:52	21	15	26628	1	49614	30	32	38	1	8	-100	28	12	106
06-06-2017 12:52	21	15	26618	1	49597	30	32	38	1	8	-100	28	12	106
06-06-2017 12:52	21	15	26629	1	49616	30	32	38	1	8	-100	28	12	106
06-06-2017 12:53	21	15	26644	1	49641	30	32	38	1	8	-100	28	12	106
06-06-2017 12:53	21	15	26648	1	49653	30	32	38	1	8	-100	28	12	106
06-06-2017 12:53	21	15	26620	1	49602	30	32	38	1	8	-100	28	12	106
06-06-2017 12:53	21	15	26643	1	49640	30	32	38	1	8	-100	28	12	106
06-06-2017 12:53	21	15	26662	1	49676	30	32	38	1	8	-100	28	12	106
06-06-2017 12:53	21	15	26644	1	49641	30	32	38	1	8	-100	28	12	106
06-06-2017 12:54	21	15	26652	1	49660	30	32	38	1	8	-100	28	12	106
06-06-2017 12:54	21	15	26660	1	49672	30	32	38	1	8	-100	28	12	106
06-06-2017 12:54	21	15	26634	1	49628	30	32	38	1	8	-100	28	12	106
06-06-2017 12:54	21	15	26659	1	49669	30	32	38	1	8	-100	28	12	106
06-06-2017 12:54	21	15	26643	1	49643	30	32	38	1	8	-100	28	12	106
06-06-2017 12:54	21	15	26648	1	49650	30	32	38	1	8	-100	28	12	106
06-06-2017 12:55	21	15	26638	1	49634	30	32	38	1	8	-100	28	12	106
06-06-2017 12:55	21	15	26606	1	49589	30	32	38	1	8	-100	28	12	106
06-06-2017 12:55	21	15	26603	1	49572	30	32	38	1	8	-100	28	12	106
06-06-2017 12:55	21	15	26618	1	49612	30	32	38	1	8	-100	28	12	106
06-06-2017 12:55	21	15	26661	1	49681	30	32	38	1	8	-100	28	12	106

06-06-2017 12:55	21	15	26699	1	49750	30	32	37	1	8	-100	28	12	106
06-06-2017 12:56	21	15	26676	1	49702	30	32	37	1	8	-100	28	12	106
06-06-2017 12:56	21	15	26674	1	49698	30	32	37	1	8	-100	28	12	106
06-06-2017 12:56	20	14	26500	1	49374	30	32	38	1	8	-101	26	12	107
06-06-2017 12:56	14	10	26160	1	48773	30	32	38	1	8	-105	25	13	115
06-06-2017 12:56	14	10	26106	1	48722	30	32	38	1	8	-106	26	14	119
06-06-2017 12:56	14	10	26092	1	48706	30	32	38	1	8	-107	26	14	122
06-06-2017 12:57	14	10	26079	1	48683	30	32	38	1	8	-107	26	14	123
06-06-2017 12:57	14	10	26066	1	48674	30	32	38	1	8	-108	26	14	124
06-06-2017 12:57	14	10	26060	1	48676	30	32	38	1	8	-108	27	15	125
06-06-2017 12:57	14	10	26067	1	48708	30	32	38	1	8	-108	27	15	125
06-06-2017 12:57	14	10	26099	1	48776	30	32	38	1	8	-108	27	15	126
06-06-2017 12:57	14	10	26070	1	48744	30	32	38	1	8	-108	27	15	126
06-06-2017 12:58	14	10	26070	1	48756	30	32	38	1	8	-108	27	15	126
06-06-2017 12:58	14	10	26050	1	48718	30	32	38	1	8	-109	27	15	126
06-06-2017 12:58	14	10	26068	1	48754	30	32	38	1	8	-109	27	15	126
06-06-2017 12:58	14	10	26066	1	48752	30	32	38	1	8	-109	27	15	126
06-06-2017 12:58	14	10	26085	1	48788	30	32	38	1	8	-109	28	15	127
06-06-2017 12:58	14	10	26096	1	48803	30	32	38	1	8	-109	28	15	127
06-06-2017 12:59	14	10	26109	1	48834	30	32	38	1	8	-109	28	15	127
06-06-2017 12:59	14	10	26085	1	48787	30	32	38	1	8	-109	28	15	127
06-06-2017 12:59	14	10	26084	1	48788	30	32	38	1	8	-109	27	15	127
6-06-2017 12:59	7	5	25297	1	47306	29	31	40	1	8	-110	27	15	128
06-06-2017 12:59	7	5	25180	1	47092	29	31	40	1	8	-111	27	15	128
06-06-2017 12:59	7	5	25176	1	47083	29	31	40	1	8	-111	27	15	128
06-06-2017 13:00	7	5	25145	1	47031	29	31	40	1	8	-111	27	15	128
06-06-2017 13:00	7	5	25171	1	47078	29	31	40	1	8	-111	27	15	129
06-06-2017 13:00	7	5	25158	1	47055	29	31	40	1	8	-111	27	15	128
06-06-2017 13:00	7	5	25161	1	47058	29	31	40	1	8	-111	27	15	128
06-06-2017 13:00	7	5	25184	1	47101	29	31	40	1	8	-111	27	15	128

06-06-2017 13:00	7	5	25153	1	47047	29	31	40	1	8	-111	27	15	128
06-06-2017 13:01	7	5	25152	1	47041	29	31	40	1	8	-111	27	15	128
06-06-2017 13:01	7	5	25145	1	47036	29	31	40	1	8	-111	27	15	128
06-06-2017 13:01	7	5	25163	1	47080	29	31	40	1	8	-111	28	15	129
06-06-2017 13:01	7	5	25157	1	47109	29	31	40	1	8	-111	28	15	128
06-06-2017 13:01	7	5	25159	1	47133	29	31	40	1	8	-111	28	15	128
06-06-2017 13:01	7	5	25164	1	47147	29	31	40	1	8	-111	28	15	128
06-06-2017 13:02	7	5	25157	1	47137	29	31	40	1	8	-111	28	15	128
06-06-2017 13:02	7	5	25152	1	47131	29	31	40	1	8	-111	28	15	128
06-06-2017 13:02	7	5	25141	1	47111	29	31	40	1	8	-111	28	15	128
06-06-2017 13:02	7	5	25134	1	47100	29	31	40	1	8	-111	28	15	128
06-06-2017 13:02	7	5	25125	1	47087	29	31	40	1	8	-111	28	15	128
06-06-2017 13:02	7	5	25143	1	47114	29	31	40	1	8	-111	28	15	128
06-06-2017 13:03	7	5	25157	1	47139	29	31	40	1	8	-111	28	15	128
06-06-2017 13:03	7	5	25146	1	47122	29	31	40	1	8	-111	28	15	128
06-06-2017 13:03	7	5	25137	1	47103	29	31	40	1	8	-111	28	15	128
06-06-2017 13:03	7	5	25156	1	47136	29	31	40	1	8	-111	28	15	128
06-06-2017 13:03	7	5	25145	1	47117	29	31	40	1	8	-111	28	15	129
06-06-2017 13:03	7	5	25140	1	47108	29	31	40	1	8	-111	28	15	129
06-06-2017 13:04	7	5	25164	1	47151	29	31	40	1	8	-111	28	15	129
06-06-2017 13:04	2	2	22140	1	41440	25	27	45	1	8	-115	24	16	132
06-06-2017 13:04	-0.05	0	19624	2	35118	21	23	51	1	8	-113	25	15	123
06-06-2017 13:04	-0.05	0	19774	2	34952	21	23	51	1	8	-112	25	14	117
06-06-2017 13:04	-0.05	0	19757	2	34720	21	23	51	1	8	-111	26	13	114
06-06-2017 13:04	-0.06	0	19831	3	34584	21	22	50	1	8	-111	26	13	112
06-06-2017 13:05	-0.05	0	19850	3	34422	21	22	50	1	8	-110	26	13	111
06-06-2017 13:05	-0.05	0	19861	3	34210	21	22	50	1	8	-110	27	13	111
06-06-2017 13:05	-0.04	0	19862	3	34091	20	22	50	1	8	-110	27	13	110
06-06-2017 13:05	-0.05	0	19872	3	34000	20	22	50	1	8	-110	27	13	110
06-06-2017 13:05	-0.05	0	19892	3	33891	20	22	50	1	8	-110	27	13	110

06-06-2017 13:05	-0.04	0	19895	4	33760	20	22	50	1	8	-109	27	13	110
06-06-2017 13:06	-0.05	0	19954	4	33763	20	22	50	1	8	-109	27	13	110
06-06-2017 13:06	-0.06	0	19976	4	33703	20	22	50	1	8	-109	27	13	111
06-06-2017 13:06	-0.06	0	19972	4	33613	20	22	50	1	8	-109	27	13	111
06-06-2017 13:06	-0.06	0	19991	4	33538	20	22	50	1	8	-109	27	13	110
06-06-2017 13:06	-0.05	0	19976	4	33457	20	22	50	1	8	-109	28	13	110
06-06-2017 13:06	-0.05	0	20012	4	33414	20	22	50	1	8	-109	28	13	111
06-06-2017 13:07	-0.06	0	20059	4	33409	20	22	50	1	8	-109	28	13	112
06-06-2017 13:07	-0.05	0	20078	4	33306	20	22	50	1	8	-109	28	13	113
06-06-2017 13:07	-0.05	0	20069	4	33199	20	22	50	1	8	-109	28	13	112
06-06-2017 13:07	-0.06	0	20122	4	33219	20	22	50	1	8	-109	28	13	113
06-06-2017 13:07	-0.07	0	20062	4	33101	20	22	50	1	8	-109	28	13	111
06-06-2017 13:07	-0.05	0	20060	4	33080	20	22	50	1	8	-109	28	13	111
06-06-2017 13:08	-0.05	0	20062	4	33076	20	22	50	1	8	-109	28	13	111
06-06-2017 13:08	-0.05	0	20112	4	33100	20	22	50	1	8	-108	28	13	111
06-06-2017 13:08	-0.06	0	20109	4	33064	20	21	50	1	8	-108	28	13	111
06-06-2017 13:08	-0.06	0	20140	5	33051	20	21	50	1	8	-108	28	13	111
06-06-2017 13:08	-0.05	0	20136	5	33033	20	21	50	1	8	-108	28	13	111

Table 8. Physicochemical parameters of water collected from Lake with no name

Date Time	Pressure (psi)	Depth (m)	Actual Conductiv- ity (μS/cm)	Temperature (°C)	Specific Conductivity (μS/cm)	Salinity (PSU)	Total Dissolved Solids (ppt)	Resistivity (Ω·cm)	Density (g/cm³)	pH	pH (mV)	ORP (mV)	RDO Concentration (mg/L)	RDO Saturation (%Sat)
07-06-2017 10:08	0.5	1	29	16	35	0.02	0.02	34193	1	10	-188	67	9	102
07-06-2017 10:08	0.5	1	28	16	34	0.01	0.02	36004	1	10	-184	64	10	103
07-06-2017 10:08	0.5	1	26	15	32	0.01	0.02	38139	1	10	-180	61	10	103
07-06-2017 10:08	0.5	1	25	15	31	0.01	0.02	40155	1	9	-176	59	10	104
07-06-2017 10:09	0.5	1	24	15	30	0.01	0.02	41702	1	9	-172	57	10	104
07-06-2017 10:09	0.5	1	23	14	29	0.01	0.02	42689	1	9	-169	54	10	104
07-06-2017 10:09	0.5	1	23	14	29	0.01	0.02	42988	1	9	-167	52	10	105
07-06-2017 10:09	0.5	1	23	14	29	0.01	0.02	44076	1	9	-163	50	10	105
07-06-2017 10:09	0.5	1	22	14	28	0.01	0.02	44777	1	9	-156	48	10	106
07-06-2017 10:09	0.5	1	22	14	28	0.01	0.02	45554	1	9	-151	47	10	106
07-06-2017 10:10	0.5	1	22	13	28	0.01	0.02	46409	1	9	-148	46	10	106
07-06-2017 10:10	0.5	1	22	13	28	0.01	0.02	46430	1	9	-146	46	10	106
07-06-2017 10:10	0.5	1	22	13	28	0.01	0.02	46459	1	9	-145	45	10	106
07-06-2017 10:10	0.5	1	21	13	27	0.01	0.02	47192	1	9	-143	45	10	106
07-06-2017 10:10	0.5	1	21	13	27	0.01	0.02	47505	1	9	-142	44	11	106
07-06-2017 10:10	0.5	1	21	13	27	0.01	0.02	47450	1	9	-141	44	11	106
07-06-2017 10:11	0.5	1	21	13	27	0.01	0.02	47761	1	9	-141	43	11	107
07-06-2017 10:11	0.5	1	21	13	27	0.01	0.02	48086	1	9	-140	42	11	107
07-06-2017 10:11	0.5	1	21	13	27	0.01	0.02	48333	1	9	-139	42	11	107
07-06-2017 10:11	0.5	1	21	13	27	0.01	0.02	48467	1	9	-138	41	11	107
07-06-2017 10:11	0.5	1	21	13	27	0.01	0.02	48735	1	9	-137	41	11	107
07-06-2017 10:11	0.5	1	20	13	27	0.01	0.02	49278	1	9	-136	42	11	108
07-06-2017 10:12	0.5	1	20	13	27	0.01	0.02	49473	1	9	-135	41	11	108
07-06-2017 10:12	0.5	1	20	12	26	0.01	0.02	49737	1	9	-134	41	11	108

07-06-2017 10:12	0.5	1	20	12	26	0.01	0.02	49895	1	9	-134	42	11	108
07-06-2017 10:12	0.5	1	20	12	26	0.01	0.02	50234	1	9	-133	42	11	108
07-06-2017 10:12	0.5	1	20	12	26	0.01	0.02	51279	1	9	-132	43	11	108
07-06-2017 10:12	0.5	1	19	12	26	0.01	0.02	51539	1	9	-131	42	11	108
07-06-2017 10:13	0.5	1	19	12	26	0.01	0.02	51645	1	9	-130	41	11	108
07-06-2017 10:13	0.5	1	19	12	26	0.01	0.02	51836	1	9	-130	41	11	108
07-06-2017 10:13	0.5	1	19	12	26	0.01	0.02	51877	1	9	-129	41	11	108
07-06-2017 10:13	0.5	1	19	12	26	0.01	0.02	51683	1	9	-129	40	11	108
07-06-2017 10:13	0.5	1	19	12	26	0.01	0.02	51505	1	9	-128	41	11	108
07-06-2017 10:13	0.5	1	19	12	26	0.01	0.02	51375	1	9	-128	40	11	108
07-06-2017 10:14	0.5	1	20	12	26	0.01	0.02	51222	1	9	-127	40	11	108
07-06-2017 10:14	0.5	1	20	12	26	0.01	0.02	51176	1	9	-126	40	11	107
07-06-2017 10:14	0.5	1	20	12	26	0.01	0.02	51075	1	9	-126	40	11	107
07-06-2017 10:14	0.5	1	20	12	26	0.01	0.02	50993	1	9	-125	40	11	107
07-06-2017 10:14	0.5	1	20	12	26	0.01	0.02	50764	1	9	-125	39	11	107
07-06-2017 10:14	0.5	1	20	12	26	0.01	0.02	50803	1	9	-124	40	11	107
07-06-2017 10:15	0.5	1	20	12	26	0.01	0.02	50826	1	9	-123	40	11	107
07-06-2017 10:15	0.5	1	20	12	26	0.01	0.02	50697	1	9	-123	39	11	107
07-06-2017 10:15	0.5	1	20	12	26	0.01	0.02	50743	1	8	-122	40	11	107
07-06-2017 10:15	0.5	1	20	12	26	0.01	0.02	51016	1	8	-122	40	11	107
07-06-2017 10:15	0.5	1	20	12	26	0.01	0.02	51057	1	8	-122	40	11	107
07-06-2017 10:16	0.5	1	20	12	26	0.01	0.02	50985	1	8	-121	41	11	107
07-06-2017 10:16	0.5	1	20	12	26	0.01	0.02	50917	1	8	-121	41	11	107
07-06-2017 10:16	0.5	1	20	12	26	0.01	0.02	50979	1	8	-121	41	11	107
07-06-2017 10:16	0.5	1	20	12	26	0.01	0.02	50957	1	8	-120	41	11	107
07-06-2017 10:16	0.5	1	20	12	26	0.01	0.02	50854	1	8	-120	41	11	107
07-06-2017 10:17	0.5	1	20	12	26	0.01	0.02	51196	1	8	-118	47	11	107
07-06-2017 10:17	0.5	1	20	12	26	0.01	0.02	51291	1	8	-117	45	11	107
07-06-2017 10:17	0.5	1	19	12	26	0.01	0.02	51372	1	8	-117	44	11	107
07-06-2017 10:18	0.5	1	19	12	26	0.01	0.02	51394	1	8	-117	43	11	107

07-06-2017 10:18	0.5	1	19	12	26	0.01	0.02	51468	1	8	-117	42	11	107
07-06-2017 10:18	0.5	1	19	12	26	0.01	0.02	51615	1	8	-116	41	11	107
07-06-2017 10:18	0.5	1	19	12	26	0.01	0.02	51670	1	8	-116	40	11	107
07-06-2017 10:18	0.5	1	19	12	26	0.01	0.02	51730	1	8	-116	40	11	107
07-06-2017 10:18	0.5	1	19	12	26	0.01	0.02	51795	1	8	-116	40	11	107
07-06-2017 10:19	0.5	1	19	12	26	0.01	0.02	51830	1	8	-115	39	11	107
07-06-2017 10:19	0.5	1	19	12	26	0.01	0.02	51794	1	8	-115	39	11	107
07-06-2017 10:19	0.5	1	19	12	26	0.01	0.02	52106	1	8	-115	39	11	107
07-06-2017 10:19	0.5	1	19	12	26	0.01	0.02	52064	1	8	-115	39	11	107
07-06-2017 10:19	0.5	1	19	12	26	0.01	0.02	52166	1	8	-115	39	11	107
07-06-2017 10:19	0.5	1	19	12	26	0.01	0.02	52143	1	8	-114	39	11	107
07-06-2017 10:20	0.5	1	19	12	26	0.01	0.02	52299	1	8	-114	38	11	107
07-06-2017 10:20	0.5	1	19	12	25	0.01	0.02	52506	1	8	-114	38	11	107
07-06-2017 10:20	0.5	1	19	12	26	0.01	0.02	52421	1	8	-114	38	11	107
07-06-2017 10:20	0.5	1	19	12	25	0.01	0.02	52606	1	8	-114	38	11	107
07-06-2017 10:20	0.5	1	19	12	25	0.01	0.02	52789	1	8	-113	38	11	107
07-06-2017 10:20	0.5	1	19	12	25	0.01	0.02	52831	1	8	-113	38	11	107
07-06-2017 10:21	0.5	1	19	12	25	0.01	0.02	52822	1	8	-113	38	11	107
07-06-2017 10:21	0.5	1	19	12	25	0.01	0.02	53086	1	8	-113	38	11	107
07-06-2017 10:21	0.5	1	19	12	25	0.01	0.02	53067	1	8	-112	38	11	107
07-06-2017 10:21	0.5	1	19	12	25	0.01	0.02	53082	1	8	-112	39	11	107
07-06-2017 10:21	0.5	1	19	12	25	0.01	0.02	53164	1	8	-112	38	11	107
07-06-2017 10:21	0.5	1	19	12	25	0.01	0.02	53165	1	8	-112	38	11	107
07-06-2017 10:22	0.5	1	19	12	25	0.01	0.02	53171	1	8	-112	38	11	107
07-06-2017 10:22	0.5	1	19	12	25	0.01	0.02	53227	1	8	-111	38	11	107
07-06-2017 10:22	0.4	1	19	12	25	0.01	0.02	53244	1	8	-111	38	11	107
07-06-2017 10:22	0.5	1	19	12	25	0.01	0.02	53342	1	8	-111	38	11	107
07-06-2017 10:22	0.5	1	20	12	27	0.01	0.02	50147	1	8	-111	38	11	107
07-06-2017 10:22	0.5	1	20	12	27	0.01	0.02	50281	1	8	-111	38	11	107
07-06-2017 10:23	0.5	1	20	12	27	0.01	0.02	49977	1	8	-110	38	11	107

07-06-2017 10:23	0.5	1	20	12	27	0.01	0.02	49767	1	8	-110	38	11	107
07-06-2017 10:23	0.5	1	20	12	27	0.01	0.02	49230	1	8	-110	38	11	107
07-06-2017 10:23	0.5	1	20	12	27	0.01	0.02	48924	1	8	-110	38	11	107
07-06-2017 10:23	0.5	1	21	12	27	0.01	0.02	48666	1	8	-110	38	11	107
07-06-2017 10:23	0.5	1	21	12	28	0.01	0.02	48186	1	8	-110	38	11	107
07-06-2017 10:24	0.5	1	21	12	28	0.01	0.02	47883	1	8	-110	38	11	107
07-06-2017 10:24	0.5	1	21	12	28	0.01	0.02	47783	1	8	-110	38	11	107
07-06-2017 10:24	0.5	1	21	12	28	0.01	0.02	47900	1	8	-109	38	11	107
07-06-2017 10:24	0.5	1	21	12	28	0.01	0.02	47912	1	8	-109	38	11	107
07-06-2017 10:24	0.5	1	21	12	28	0.01	0.02	47787	1	8	-109	38	11	107
07-06-2017 10:24	0.5	1	21	12	28	0.01	0.02	47808	1	8	-109	38	11	107
07-06-2017 10:25	0.5	1	21	12	28	0.01	0.02	47673	1	8	-109	37	11	107
07-06-2017 10:25	0.5	1	21	12	28	0.01	0.02	47605	1	8	-108	37	11	107
07-06-2017 10:25	0.5	1	21	12	28	0.01	0.02	47428	1	8	-108	37	11	107
07-06-2017 10:25	0.5	1	21	12	28	0.01	0.02	47371	1	8	-108	38	11	107
07-06-2017 10:25	0.5	1	21	12	28	0.01	0.02	47231	1	8	-108	38	11	107
07-06-2017 10:25	0.5	1	21	12	28	0.01	0.02	47118	1	8	-107	38	11	107
07-06-2017 10:26	0.5	1	21	12	28	0.01	0.02	47125	1	8	-107	37	11	107
07-06-2017 10:26	0.5	1	21	12	28	0.01	0.02	47199	1	8	-107	37	11	107
07-06-2017 10:26	0.5	1	21	12	28	0.01	0.02	47279	1	8	-107	37	11	107
07-06-2017 10:26	0.5	1	21	12	28	0.01	0.02	47336	1	8	-107	37	11	107
07-06-2017 10:26	0.5	1	21	12	28	0.01	0.02	47449	1	8	-107	37	11	107
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07-06-2017 10:27	0.5	1	21	12	28	0.01	0.02	47083	1	8	-106	37	11	107
07-06-2017 10:27	0.5	1	21	12	28	0.01	0.02	47062	1	8	-106	37	11	107
07-06-2017 10:27	0.5	1	21	12	28	0.01	0.02	47115	1	8	-106	38	11	107
07-06-2017 10:27	0.5	1	21	12	28	0.01	0.02	47105	1	8	-106	38	11	107
07-06-2017 10:28	0.5	1	21	12	28	0.01	0.02	47002	1	8	-105	38	11	107

07-06-2017 10:28	0.5	1	21	12	29	0.01	0.02	46950	1	8	-105	37	11	107
07-06-2017 10:28	0.5	1	21	12	29	0.01	0.02	46943	1	8	-105	37	11	107
07-06-2017 10:28	0.5	1	21	12	29	0.01	0.02	46938	1	8	-105	37	11	107
07-06-2017 10:28	0.5	1	21	12	28	0.01	0.02	46951	1	8	-105	37	11	107
07-06-2017 10:28	0.5	1	21	12	29	0.01	0.02	46861	1	8	-105	37	11	107
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07-06-2017 10:29	0.5	1	21	12	28	0.01	0.02	46944	1	8	-105	37	11	107
07-06-2017 10:29	0.5	1	21	12	28	0.01	0.02	47124	1	8	-105	37	11	107
07-06-2017 10:29	0.5	1	21	12	28	0.01	0.02	47252	1	8	-105	37	11	107
07-06-2017 10:29	0.5	1	21	12	28	0.01	0.02	47392	1	8	-104	37	11	107
07-06-2017 10:29	0.5	1	21	12	28	0.01	0.02	47595	1	8	-104	37	11	107
07-06-2017 10:30	0.5	1	21	12	28	0.01	0.02	47806	1	8	-104	37	11	107
07-06-2017 10:30	0.5	1	21	12	28	0.01	0.02	48063	1	8	-103	37	11	107
07-06-2017 10:30	0.5	1	21	12	28	0.01	0.02	48063	1	8	-103	37	11	107
07-06-2017 10:30	0.5	1	21	12	28	0.01	0.02	47996	1	8	-103	37	11	107
07-06-2017 10:30	0.5	1	21	12	28	0.01	0.02	48063	1	8	-103	37	11	107
07-06-2017 10:30	0.5	1	21	12	28	0.01	0.02	48076	1	8	-103	37	11	107
07-06-2017 10:31	0.5	1	21	12	28	0.01	0.02	48098	1	8	-103	37	11	107
07-06-2017 10:31	0.5	1	21	12	28	0.01	0.02	47951	1	8	-103	37	11	107
07-06-2017 10:31	0.5	1	21	12	28	0.01	0.02	47948	1	8	-103	37	11	107
07-06-2017 10:31	0.5	1	21	12	28	0.01	0.02	48008	1	8	-103	37	11	107
07-06-2017 10:31	0.5	1	21	12	28	0.01	0.02	48005	1	8	-103	37	11	107
07-06-2017 10:31	0.5	1	21	12	28	0.01	0.02	47932	1	8	-102	37	11	107
07-06-2017 10:32	0.5	1	21	12	28	0.01	0.02	47971	1	8	-102	37	11	107
07-06-2017 10:32	0.5	1	21	12	28	0.01	0.02	47931	1	8	-102	37	11	107
07-06-2017 10:32	0.5	1	21	12	28	0.01	0.02	47943	1	8	-102	37	11	107
07-06-2017 10:32	0.5	1	21	12	28	0.01	0.02	48013	1	8	-102	37	11	107
07-06-2017 10:32	0.5	1	21	12	28	0.01	0.02	48057	1	8	-102	37	11	107
07-06-2017 10:32	0.5	1	21	12	28	0.01	0.02	48113	1	8	-102	37	11	107
07-06-2017 10:33	0.5	1	21	12	28	0.01	0.02	48101	1	8	-102	37	11	107

07-06-2017 10:33	0.5	1	21	12	28	0.01	0.02	48201	1	8	-102	37	11	107
07-06-2017 10:33	0.5	1	21	12	28	0.01	0.02	48248	1	8	-101	37	11	107
07-06-2017 10:33	0.5	1	21	12	28	0.01	0.02	48331	1	8	-101	37	11	107
07-06-2017 10:33	0.5	1	21	12	28	0.01	0.02	48357	1	8	-101	37	11	107
07-06-2017 10:33	0.5	1	21	12	28	0.01	0.02	48415	1	8	-101	37	11	107
07-06-2017 10:34	0.5	1	21	12	28	0.01	0.02	48330	1	8	-101	37	11	107
07-06-2017 10:34	0.5	1	21	12	28	0.01	0.02	48392	1	8	-101	36	11	107
07-06-2017 10:34	0.5	1	21	12	28	0.01	0.02	48437	1	8	-101	36	11	107
07-06-2017 10:34	0.5	1	21	12	28	0.01	0.02	48497	1	8	-102	36	11	107
07-06-2017 10:34	0.5	1	21	12	28	0.01	0.02	48522	1	8	-101	36	11	107
07-06-2017 10:34	0.5	1	21	12	28	0.01	0.02	48635	1	8	-101	36	11	107
07-06-2017 10:35	0.5	1	21	12	27	0.01	0.02	48717	1	8	-101	37	11	107
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07-06-2017 10:35	0.5	1	20	12	27	0.01	0.02	49040	1	8	-100	37	11	107
07-06-2017 10:35	0.5	1	20	12	27	0.01	0.02	49105	1	8	-100	37	11	107
07-06-2017 10:36	0.5	1	20	12	27	0.01	0.02	49292	1	8	-100	37	11	107
07-06-2017 10:36	0.5	1	20	12	27	0.01	0.02	49334	1	8	-100	37	11	107
07-06-2017 10:36	0.5	1	20	12	27	0.01	0.02	49439	1	8	-100	37	11	107
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07-06-2017 10:36	0.5	1	20	12	27	0.01	0.02	49725	1	8	-100	37	11	107
07-06-2017 10:37	0.5	1	20	12	27	0.01	0.02	49737	1	8	-99	37	11	107
07-06-2017 10:37	0.5	1	20	12	27	0.01	0.02	49889	1	8	-99	37	11	107
07-06-2017 10:37	0.5	1	20	12	27	0.01	0.02	49971	1	8	-99	37	11	107
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07-06-2017 10:37	0.5	1	20	12	27	0.01	0.02	50117	1	8	-99	37	11	107
07-06-2017 10:37	0.5	1	20	12	27	0.01	0.02	50145	1	8	-99	37	11	107
07-06-2017 10:38	0.5	1	20	12	27	0.01	0.02	50416	1	8	-99	37	11	107

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07-06-2017 10:38	0.5	1	20	12	26	0.01	0.02	50561	1	8	-99	37	11	107
07-06-2017 10:38	0.5	1	20	12	26	0.01	0.02	50643	1	8	-98	37	11	107
07-06-2017 10:38	0.5	1	20	12	26	0.01	0.02	50727	1	8	-98	37	11	107
07-06-2017 10:38	0.5	1	20	12	26	0.01	0.02	50816	1	8	-98	37	11	107
07-06-2017 10:39	0.5	1	20	12	26	0.01	0.02	50909	1	8	-98	37	11	107
07-06-2017 10:39	0.5	1	20	12	26	0.01	0.02	50937	1	8	-98	37	11	107
07-06-2017 10:39	0.5	1	20	12	26	0.01	0.02	51017	1	8	-98	37	11	107
07-06-2017 10:39	0.5	1	20	12	26	0.01	0.02	51175	1	8	-98	37	11	107
07-06-2017 10:39	0.5	1	20	12	26	0.01	0.02	51231	1	8	-98	36	11	107
07-06-2017 10:39	0.5	1	20	12	26	0.01	0.02	51279	1	8	-98	36	11	107
07-06-2017 10:40	0.5	1	19	12	26	0.01	0.02	51336	1	8	-98	36	11	107
07-06-2017 10:40	0.5	1	20	12	26	0.01	0.02	51265	1	8	-98	37	11	107
07-06-2017 10:40	0.5	1	19	12	26	0.01	0.02	51331	1	8	-97	37	11	107
07-06-2017 10:40	0.5	1	19	12	26	0.01	0.02	51535	1	8	-97	37	11	107
07-06-2017 10:40	0.5	1	19	12	26	0.01	0.02	51651	1	8	-97	37	11	107
07-06-2017 10:40	0.5	1	19	12	26	0.01	0.02	51716	1	8	-97	37	11	107
07-06-2017 10:41	0.5	1	19	12	26	0.01	0.02	51821	1	8	-97	37	11	107
07-06-2017 10:41	0.5	1	19	12	26	0.01	0.02	51957	1	8	-97	37	11	107
07-06-2017 10:41	0.5	1	19	12	26	0.01	0.02	52058	1	8	-97	37	11	107
07-06-2017 10:41	0.5	1	19	12	26	0.01	0.02	52175	1	8	-97	37	11	107
07-06-2017 10:41	0.5	1	19	12	26	0.01	0.02	52305	1	8	-97	36	11	107
07-06-2017 10:41	0.5	1	19	12	25	0.01	0.02	52535	1	8	-97	36	11	107
07-06-2017 10:42	0.5	1	19	12	25	0.01	0.02	52651	1	8	-97	36	11	107
07-06-2017 10:42	0.5	1	19	12	25	0.01	0.02	52763	1	8	-97	36	11	107
07-06-2017 10:42	0.5	1	19	12	25	0.01	0.02	52668	1	8	-97	36	11	107
07-06-2017 10:42	0.5	1	19	12	25	0.01	0.02	52751	1	8	-97	36	11	107
07-06-2017 10:42	0.5	1	19	12	25	0.01	0.02	52775	1	8	-97	36	11	107
07-06-2017 10:42	0.5	1	19	12	25	0.01	0.02	52879	1	8	-97	37	11	107
07-06-2017 10:43	0.5	1	19	12	25	0.01	0.02	52996	1	8	-97	36	11	107

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07-06-2017 10:43	0.5	1	19	12	25	0.01	0.02	53229	1	8	-97	36	11	107
07-06-2017 10:43	0.5	1	19	12	25	0.01	0.02	53299	1	8	-96	36	11	107
07-06-2017 10:43	0.5	1	19	12	25	0.01	0.02	53463	1	8	-96	36	11	107
07-06-2017 10:43	0.5	1	19	12	25	0.01	0.02	53543	1	8	-96	36	11	107
07-06-2017 10:43	0.5	1	19	12	25	0.01	0.02	53618	1	8	-96	36	11	107
07-06-2017 10:44	0.5	1	19	12	25	0.01	0.02	53716	1	8	-96	36	11	107
07-06-2017 10:44	0.5	1	19	12	25	0.01	0.02	53808	1	8	-96	36	11	107
07-06-2017 10:44	0.5	1	19	12	25	0.01	0.02	53730	1	8	-96	36	11	107
07-06-2017 10:44	0.5	1	19	12	25	0.01	0.02	53746	1	8	-96	36	11	107
07-06-2017 10:44	0.5	1	19	12	25	0.01	0.02	53779	1	8	-96	36	11	107
07-06-2017 10:44	0.5	1	19	12	25	0.01	0.02	53771	1	8	-96	36	11	107

Table 9. Physicochemical parameters of water collected from previous Risø mine (hutlet)

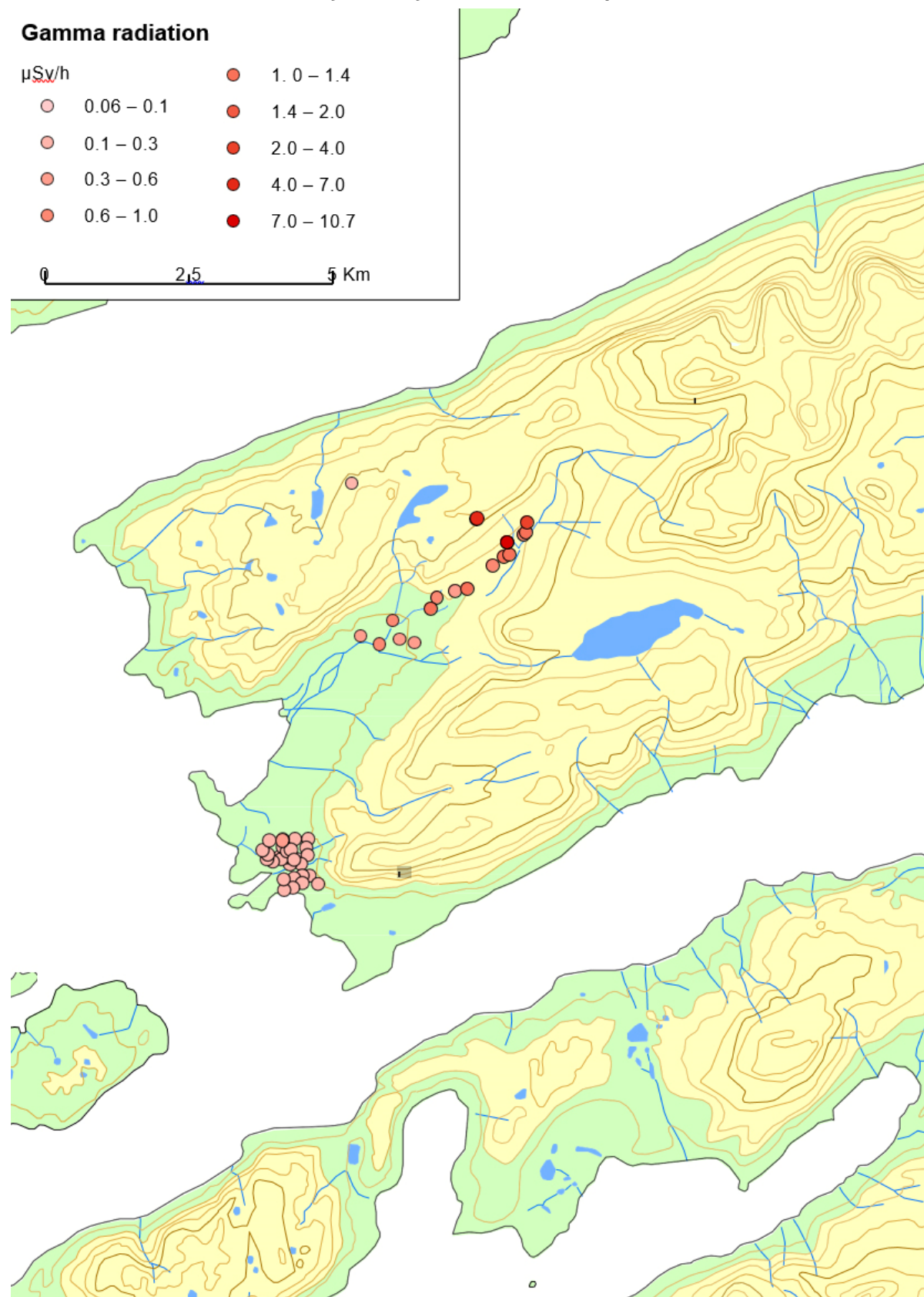
Date Time	Pressure (psi)	Depth (m)	Actual Conductivity ($\mu\text{S}/\text{cm}$)	Temperature ($^{\circ}\text{C}$)	Specific Conductivity ($\mu\text{S}/\text{cm}$)	Salinity (PSU)	Total Dis- solved Sol- ids (ppt)	Resistivity ($\Omega\cdot\text{cm}$)	Density (g/cm^3)	pH	pH (mV)	ORP (mV)	RDO Concentration (mg/L)	RDO Saturation (%Sat)
07-06-2017 14:25	-0.3	-0.01	155	3	267	0.1	0.2	6445	1	11	-262	27	14	111
07-06-2017 14:25	-0.3	-0.001	155	3	267	0.1	0.2	6441	1	11	-262	27	14	111
07-06-2017 14:25	-0.3	-0.01	154	3	266	0.1	0.2	6477	1	11	-262	26	14	112
07-06-2017 14:25	-0.3	-0.01	155	3	267	0.1	0.2	6452	1	11	-262	25	14	112
07-06-2017 14:25	-0.3	-0.01	155	3	268	0.1	0.2	6435	1	11	-262	25	14	111
07-06-2017 14:25	-0.3	-0.01	155	3	267	0.1	0.2	6459	1	11	-262	25	14	111
07-06-2017 14:26	-0.3	-0.01	155	3	268	0.1	0.2	6455	1	11	-262	24	14	111
07-06-2017 14:26	-0.3	-0.001	155	3	268	0.1	0.2	6447	1	11	-262	24	14	111
07-06-2017 14:26	-0.3	-0.003	155	3	268	0.1	0.2	6460	1	11	-262	24	14	111
07-06-2017 14:26	-0.3	-0.01	155	3	268	0.1	0.2	6457	1	11	-262	24	14	111
07-06-2017 14:26	-0.3	-0.002	154	3	267	0.1	0.2	6486	1	11	-262	23	14	111
07-06-2017 14:26	-0.3	-0.0003	155	3	269	0.1	0.2	6435	1	11	-262	23	14	111
07-06-2017 14:27	-0.3	-0.002	154	3	267	0.1	0.2	6484	1	11	-262	23	14	111
07-06-2017 14:27	-0.3	-0.01	155	3	269	0.1	0.2	6442	1	11	-262	23	14	111
07-06-2017 14:27	-0.3	-0.01	151	3	262	0.1	0.2	6624	1	11	-263	23	14	111
07-06-2017 14:27	-0.3	-0.003	154	3	267	0.1	0.2	6491	1	11	-263	23	14	111
07-06-2017 14:27	-0.3	-0.01	155	3	269	0.1	0.2	6445	1	11	-263	23	14	110
07-06-2017 14:27	-0.3	0.01	154	3	268	0.1	0.2	6480	1	11	-263	23	14	111
07-06-2017 14:28	-0.3	-0.004	154	3	268	0.1	0.2	6479	1	11	-263	23	14	110
07-06-2017 14:28	-0.3	-0.001	155	3	268	0.1	0.2	6469	1	11	-263	23	14	110
07-06-2017 14:28	-0.3	-0.01	155	3	268	0.1	0.2	6470	1	11	-263	22	14	110
07-06-2017 14:28	-0.3	-0.005	156	3	270	0.1	0.2	6424	1	11	-263	22	14	110
07-06-2017 14:28	-0.3	0.002	154	3	267	0.1	0.2	6485	1	11	-263	22	14	110
07-06-2017 14:28	-0.3	0.001	156	3	270	0.1	0.2	6427	1	11	-263	22	14	109
07-06-2017 14:29	-0.3	-0.002	156	3	270	0.1	0.2	6425	1	11	-263	22	14	109

07-06-2017 14:29	-0.3	0.001	155	3	269	0.1	0.2	6459	1	11	-263	22	14	109
07-06-2017 14:29	-0.3	-0.001	155	3	270	0.1	0.2	6435	1	11	-263	22	14	110
07-06-2017 14:29	-0.3	0.001	156	3	271	0.1	0.2	6415	1	11	-262	22	14	109
07-06-2017 14:29	-0.3	0.0002	155	3	269	0.1	0.2	6469	1	11	-263	22	14	109
07-06-2017 14:29	-0.3	-0.003	156	3	270	0.1	0.2	6429	1	11	-263	22	14	109
07-06-2017 14:30	-0.3	-0.003	156	3	270	0.1	0.2	6426	1	11	-263	22	14	109
07-06-2017 14:30	-0.3	-0.004	156	3	270	0.1	0.2	6428	1	11	-263	22	14	109
07-06-2017 14:30	-0.3	-0.0002	156	3	270	0.1	0.2	6429	1	11	-263	22	14	108
07-06-2017 14:30	-0.3	-0.001	156	3	271	0.1	0.2	6421	1	11	-263	22	14	108
07-06-2017 14:30	-0.3	0.0001	155	3	269	0.1	0.2	6459	1	11	-263	22	14	108
07-06-2017 14:30	-0.3	0.01	156	3	270	0.1	0.2	6430	1	11	-263	22	14	108
07-06-2017 14:31	-0.3	-0.004	155	3	269	0.1	0.2	6456	1	11	-262	22	14	108
07-06-2017 14:31	-0.3	0.001	155	3	269	0.1	0.2	6458	1	11	-263	22	14	108
07-06-2017 14:31	-0.3	0.002	154	3	268	0.1	0.2	6485	1	11	-263	22	14	108
07-06-2017 14:31	-0.3	0.01	155	3	270	0.1	0.2	6451	1	11	-263	22	14	108
07-06-2017 14:31	-0.3	0.01	156	3	271	0.1	0.2	6407	1	11	-263	22	14	108
07-06-2017 14:31	-0.3	-0.003	155	3	270	0.1	0.2	6444	1	11	-263	22	14	108
07-06-2017 14:32	-0.3	0.01	156	3	272	0.1	0.2	6401	1	11	-263	22	14	108
07-06-2017 14:32	-0.3	0.01	156	3	271	0.1	0.2	6416	1	11	-263	22	14	108
07-06-2017 14:32	-0.3	0.003	155	3	270	0.1	0.2	6438	1	11	-263	22	14	108
07-06-2017 14:32	-0.3	0.0003	156	3	271	0.1	0.2	6429	1	11	-263	22	14	108
07-06-2017 14:32	-0.3	0.01	156	3	272	0.1	0.2	6408	1	11	-263	22	14	108
07-06-2017 14:32	-0.3	0.001	156	3	272	0.1	0.2	6407	1	11	-263	22	14	108
07-06-2017 14:33	-0.3	0.01	155	3	270	0.1	0.2	6450	1	11	-263	22	14	108
07-06-2017 14:33	-0.3	0.01	156	3	271	0.1	0.2	6415	1	11	-263	22	14	108
07-06-2017 14:33	-0.3	-0.003	156	3	271	0.1	0.2	6416	1	11	-263	22	14	107
07-06-2017 14:33	-0.3	0.004	155	3	270	0.1	0.2	6454	1	11	-263	22	14	107
07-06-2017 14:33	-0.3	0.01	156	3	271	0.1	0.2	6426	1	11	-262	22	14	107
07-06-2017 14:33	-0.3	0.01	156	3	271	0.1	0.2	6430	1	11	-263	22	14	107
07-06-2017 14:34	-0.3	0.01	156	3	272	0.1	0.2	6403	1	11	-263	22	14	107

07-06-2017 14:34	-0.3	-0.001	155	3	270	0.1	0.2	6443	1	11	-263	22	14	107
07-06-2017 14:34	-0.3	0.01	155	3	271	0.1	0.2	6431	1	11	-263	22	14	107
07-06-2017 14:34	-0.3	-0.001	154	3	268	0.1	0.2	6502	1	11	-263	21	14	107
07-06-2017 14:34	-0.3	0.01	155	3	270	0.1	0.2	6443	1	11	-263	22	14	107
07-06-2017 14:34	-0.3	0.01	156	3	272	0.1	0.2	6396	1	11	-263	22	14	107
07-06-2017 14:35	-0.3	0.02	155	3	270	0.1	0.2	6457	1	11	-262	22	14	107
07-06-2017 14:35	-0.3	0.005	156	3	272	0.1	0.2	6398	1	11	-263	21	14	107
07-06-2017 14:35	-0.3	0.01	155	3	270	0.1	0.2	6459	1	11	-262	21	13	107
07-06-2017 14:35	-0.3	0.01	156	3	272	0.1	0.2	6394	1	11	-262	21	14	107
07-06-2017 14:35	-0.3	0.02	0	3	0	0,0	0,0	10000000	1	11	-264	5	13	107

Appendix E

Background gamma levels, September 2017



Appendix F

Questions from Narsaq

Questions from Narsaq from Mariane Paviasen Anguteq Jensen following the open house on 30 August 2017

Questions:

-----Original Message-----

From: Mariane Paviasen Anguteq Jensen [<mailto:akkamaat@greenet.gl>]

Sent: 4. september 2017 12:00

To: Violeta Hansen; Gert Asmund

Subject: Spørgsmål

Hej Violetta og Gert

Hvis jeg havde tid kom jeg selv og spørge jer men min tid er begrænset derfor får I spørgsmålet på mail.

Under mødet i forsamlingshuset spurgte jeg:

Jo flere miner med uran, betyder det at vore ilt atmosfære bliver mere og mere radioaktivt?

Denne ville I ikke svare på men efter lidt forvirring svarede I at stråling kommer fra alt også fra rummet, og at der er stråling i alting.

I fik det til at lyde at stråling ikke er farligt.

Hvorfor ville I ikke svare på spørgsmålet?

Er det rigtigt at stråling ikke er farligt da vi nu har den overalt?? Mvh

Mariane Paviasen Urani Naamik

Answers:

-----Original Message----- From: Violeta Hansen

Sent: 7. september 2017 11:34

To: 'Mariane Paviassen Anguteq Jensen'

Cc: Gert Asmund; Peter Aastrup; 'Najaaraq Demant-Poort'

Subject: RE: Spørgsmål

Kære Mariane, Tak for din e-mail.

1) Du spørger "om stråling ikke er farligt, da vi nu har den overalt".

Det er rigtigt, at der findes stråling overalt – men det afgørende er hvor kraftig strålingen er. Strålingens styrke måles i Sievert (Sv). Det stråling mennesker udsættes for, er normalt meget lav og angives i enheden millisievert (mSv). 1 sievert (Sv) = 1000 millisievert (mSv). Internationale normer giver en ide om strålingens farlighed. Ifølge internationale anbefalinger må befolkningen ikke udsættes for mere end 1 mSv/år fra en mine, som indeholder radioaktive stoffer som uran og/eller thorium. I gennemsnit modtager hver dansker årligt omkring 3 mSv fra den naturligt forekommende baggrundsstråling.

Der skal ikke herske tvivl om, at stråling med en styrke over et vist niveau er farlig. Vi er alle udsat for stråling, men under naturlige normale forhold er den af så lav styrke, at den ikke er farlig.

I det følgende har jeg forsøgt at beskrive kilderne til 'naturlig stråling - baggrundsstråling' lidt mere detaljeret:

1) Stråling i flyvemaskinen oppe i 10.000 m som vi kalder kosmisk stråling: Stråling i 10.000 m højde kalder vi kosmisk stråling. Den stammer fra solen og vores galakse. Jordens atmosfære svækker den kosmiske stråling - jo tættere på jorden – jo mere falder strålingen. I en flyvemaskine i 10.000 meters højde er den kosmiske stråling omtrent 20 gange større end den er i Narsaq og 2 gange større end på Kvanefjeld. Som et tænkt eksempel ville en pilot, der fløj 900 timer om året mellem København og Grønland, få en strålingsmængde svarende til 5 mSv/år som følge af stråling fra verdensrummet – altså 5 gange mere end den tilladte mængde fra en mine efter internationale retningslinjer.

Intensiteten af den kosmiske stråling er afhængig af solpletaktiviteten. Jo større solpletaktivitet, jo mere intens er den kosmiske stråling. Jeg har målt stråling i Narsaq og i min (Violeta) have i Danmark, og strålingen er 2.5 gange højere i Narsaq end i min have. Både i Narsaq og i min have er der så et lavt niveau af stråling, at det ikke er farligt.

2) Radon

Radon er en radioaktiv gas, som dannes i jordskorpen. Radon siver fra jordskorpen ud i luften. Radon koncentrerer i bygninger, hvor det trænger ind via utætheder i fundamenter og gulvkonstruktioner. Radonniveauet er normalt

højest i kælder- og stueplan, hvor der er direkte kontakt mellem gulv og jord. Radonniveauet i huset er meget afhængigt af, hvor man bor og tiden på året. I mit (Violeta) hus har jeg radon i vinteren mere end 300 Bq/m³ og i Narsaq har GEUS målet en gennemsnit på 170 Bq/m³.

3) Jordskorpen

Jordskorpen indeholder udover radon små mængder af andre radioaktive stoffer. Disse radioaktive stoffer var til stede, da jorden blev dannet, og de bidrager stadig til den naturlige stråling. Indholdet af radioaktive stoffer afhænger af jordskorpen. Der er relativt lavt uranindhold overalt, det er et naturligt grundstof. Jordens skorpe indeholder en gennemsnit uran på 2.8 ppm (gram per ton) og i havvand findes der 0,003 ppm uran – d.v.s. det er meget lavt niveau, og det er ikke farligt.

4) Fødevarer

Fødevarer har et naturligt indhold af radioaktive stoffer. Når planter optager næringsstoffer og vand fra jorden og atmosfæren, følger små mængder af radioaktive stoffer med. De radioaktive stoffer passerer igennem fødekæden og bliver en del af menneskets kost. Også drikkevand indeholder små mængder af radioaktive stoffer. Fra kosten optages stofferne i kroppen, hvor de efter en tid igen udskilles som en del af stofskiftet. For eksempel har vi 0,0035 ppm uran i brød og fisk. Det er meget lavt.

II) Du spørger, om atmosfæren bliver mere og mere radioaktiv hvis der bliver minedrift. Hvis man ikke sørger for at begrænse udslippet af radon og støv, der giver anledning til stråling, vil der i området omkring minen kunne ske en stigning i radon og/eller støv, som kan indeholde uran, thorium etc. Derfor er det vigtigt i forbindelse med planlægning og myndighedernes godkendelse af minen, at det sikres, at der tages hensyn til miljø, befolkning og medarbejdere i mineområdet, ikke blot mens udvindingen finder sted, men også efter minen er lukket. Derfor bør myndighederne stille krav til affaldsdeponering, begrænsning af støv og radon, begrænsning af udslip af radioaktive og ikke-radioaktive stoffer til omgivelserne, stråledoser pr. år til befolkningen, medarbejdere m.m.

Hvis man tager hensyn til miljø og sundhed, bliver atmosfæren ikke mere radioaktiv, når en eller flere uranminer bliver åbnet.

Vi havde håbet at kunne have mulighed at tale mere med dig, og gennem samtale give en bedre besvarelse end man kan opnå gennem e-mails. Men måske bliver der en mulighed en anden gang.

Mange hilsener - det var rart at møde dig.

Gert og Violeta

Appendix G

E-Sampler Calibration Form

Kvanefjeld E-Sampler Calibration Form

Station name: <u>NARSARUOK TOUO</u>	Date: <u>20-05-2017</u>
Station ID: <u>1004</u>	Starting time: <u>11:19</u>
E-Sampler s/n: <u>M 5754</u>	Ending time: <u>11:42</u>
deltaCal s/n:	Filter ID before test: <u>191</u>
Person making test: <u>PHILIP</u>	Test Filter ID: <u>TEST FILTER</u>
Reviewed by:	Filter ID after test: <u>191</u>

1. CLOCK CHECK	E-Sampler (	Reference clock	Difference
	<u>11:20</u>	<u>11:21</u>	<u>0:01</u>

2. LEAK TEST	Pass ☒ Fail ☐
--------------	---

3. INITIAL AUDIT	E-SAM	deltaCal	Difference	Allowed	Result
Temperature (AT)	<u>9.7</u> °C	Tf: <u>8.8</u> °C	<u>0.9</u> °C	± 1.0°C	Pass ☒ Fail ☐
Barom. press. (BP)	<u>1004.66</u> Pa	BP: <u>1005</u> mb	<u>0.34</u> mb	± 5 mb	Pass ☒ Fail ☐
Flow rate (Qa)	2.0 LPM	Qa: <u>2.1</u> LPM	<u>0.01</u> LPM	± 0.1 LPM	Pass ☒ Fail ☐

4. CALIBRATION	initial E-SAM	deltaCal REF	final E-SAM	final deltaCal
Temperature (AT)	°C	Tf: °C	°C	Tf: °C
Barom. press. (BP)	Pa	BP: mb	Pa	BP: mb
Flow rate (Qa)	LPM	Qa: LPM	LPM	Qa: LPM

5. FINAL AUDIT	E-SAM	deltaCal	Difference	Allowed	Result
Temperature (AT)	<u>10.2</u> °C	Tf: <u>10.8</u> °C	<u>0.6</u> °C	± 1.0°C	Pass ☒ Fail ☐
Barom. press. (BP)	<u>1004.66</u> Pa	BP: <u>1005</u> mb	<u>0.34</u> mb	± 5 mb	Pass ☒ Fail ☐
Flow rate (Qa)	2.0 LPM	Qa: <u>2.1</u> LPM	<u>0.1</u> LPM	± 0.1 LPM	Pass ☒ Fail ☐

Notes:

Kvanefjeld E-Sampler Calibration Form

Station name: <u>NARSIAQ Point</u>	Date: <u>09-11-12</u>
Station ID: <u>1003</u>	Starting time: <u>10:44</u> WGST WGT
E-Sampler s/n: <u>M5755</u>	Ending time: <u>11:13</u> WGST WGT
deltaCal s/n: <u>M7615</u>	Person making test: <u>Paula</u>

1. CLOCK CHECK	E-Sampler clock	Reference clock	Difference
Always WGT	<u>10:49</u> WGT	<u>10:45</u> WGT	<u>4 min</u>

2. WIND SPEED BEARING	Pass ☒ Fail ☐	Comment:
WIND DIRECTION BEARING	Pass ☒ Fail ☐	Comment:

3. WIND DIRECTION	Adjustment Times	E SAM WD	Measured WD	Difference	Allowed
Initial Audit	Begin: WGT	180°	°	°	± 5°
Alignment	End: WGT	180°	°	°	± 5°
Method, comment					

4. INSERT TEST FILTER	Sampling Filter ID	Test Filter ID	STOP SAMPLE time
	<u>Greenland 58</u>	<u>test filter</u>	<u>10:46</u> WGT

5. LEAK TEST	Pass ☒ Fail ☐	Comment:
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6. INITIAL AUDIT	E-SAM	deltaCal	Difference	Allowed	Result
Temperature (AT)	<u>0.9</u> °C	Tf: <u>1.3</u> °C	<u>0.4</u> °C	± 1.0°C	Pass ☒ Fail ☐
Barom. press. (BP)	<u>1014.43</u> Pa	BP: <u>1014</u> mb	<u>0.43</u> mb	± 5 mb	Pass ☒ Fail ☐
Flow rate (Qa)	<u>2.0</u> LPM	Qa: <u>1.64</u> LPM	<u>0.36</u> LPM	± 0.1 LPM	Pass ☐ Fail ☒

7. CALIBRATION	initial E-SAM	deltaCal REF	final E-SAM	final deltaCal
Temperature (AT)	<u>1.1</u> °C	Tf: <u>1.2</u> °C	<u>1.0</u> °C	Tf: <u>1.0</u> °C
Barom. press. (BP)	<u>1014.43</u> Pa	BP: <u>1014</u> mb	<u>1014.43</u> Pa	BP: <u>1014</u> mb
Flow rate (Qa)	<u>2.0</u> LPM	Qa: <u>2.16</u> LPM	<u>2.0</u> LPM	Qa: <u>1.96</u> LPM

8. FINAL AUDIT	E-SAM	deltaCal	Difference	Allowed	Result
Temperature (AT)	<u>1.2</u> °C	Tf: <u>1.3</u> °C	<u>0.1</u> °C	± 0.5°C	Pass ☒ Fail ☐
Barom. press. (BP)	<u>1014.04</u> Pa	BP: <u>1014</u> mb	<u>0.04</u> mb	± 1 mb	Pass ☒ Fail ☐
Flow rate (Qa)	<u>2.0</u> LPM	Qa: <u>1.97</u> LPM	<u>0.03</u> LPM	± 0.05 LPM	Pass ☒ Fail ☐

9. REPLACE SAMPLE FILTER	Sampling Filter ID	START SAMPLE time
	<u>test filter</u>	<u>11:12</u> WGT

Notes:

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AUDIT OF KVANEFJELD REES, U AND ZN PROJECT

Exploration activities 2007-2017.

29 August to 5 September 2017 by DCE and GINR

Since 2007, exploration activities have been performed at Kvanefjeld REEs, U and Zn project in Southern Greenland by Greenland Minerals and Energy Limited (GMEL). This is the first audit report for the Kvanefjeld project. A team of Violeta Hansen from the Danish Center for Environment and Energy (DCE), Gert Asmund from (DCE) and Morten Birch Larsen from Greenland Institute of Natural Resources (GINR) audited the Kvanefjeld project from 29 August to 5 September 2017. During the audit, DCE measured the background gamma dose rate in Narsaq town, between Narsaq and Kvanefjeld and at Kvanefjeld. In order to verify some of GMEL's environmental baseline studies, the following environmental samples were collected by DCE and GINR as part of the audit: freshwater from Narsaq River, Taseq River, Kvane River, Lake without name and its outlet and old Risø mine outlet, drinking water from Kukasuk, Napassup Kuva and Landnamselven, fjord water at 0 m (surface water) and at the depth of 30 m from the GMEL proposed discharge point of liquid effluents and biota samples such as lichens, blue mussels, seaweed, arctic char (trout). The report include results of background gamma dose rate ($\mu\text{Sv/h}$) in Narsaq town, between Narsaq and Kvanefjeld and Kvanefjeld, gamma dose rate at available surfaces of containers located at GMEL office in Narsaq and between Narsaq and Kvanefjeld, gamma dose rate at the surface of some of the drill holes from exploration activities, physical-chemical parameters of all collected water samples from Narsaq, and concentration of fluor in all collected water samples from Narsaq. Background gamma dose rate in Narsaq town is not elevated and is comparable with baseline values elsewhere. High levels of fluor are reported in water samples collected from Narsaq.

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