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REPORT

# NOA Krafla, Environmental Site Investigation Report. Near Shore – Samnanger

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CLIENT

Aker BP

SUBJECT

Environmental Site Investigation Report. Near shore – Samnanger

DATE: / REVISION: October 15, 2021 / 01

DOCUMENT CODE: 10221656-05-RIGm-REP-001

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## REPORT

PROJECT	NOA Krafla Power from shore	DOCUMENT CODE	10221656-05-RIGm-REP-001
SUBJECT	<b>Environmental Site Investigation Report. Near Shore – Samnanger</b>	ACCESSIBILITY	Open
CLIENT	Aker BP	PROJECT MANAGER	Trond Haug
CONTACT	Dines Haslund	PREPARED BY	Lars Tveit Christiansen
		RESPONSIBLE UNIT	Multiconsult Norge AS

## SUMMARY

Multiconsult has carried out an environmental near-shore site investigation on behalf of Aker BP for the “power from shore” feasibility and concept study in Samnanger and Årskog.

Multiconsult performed environmental near-shore investigations in Samnanger in July 2021, where the main objective was to provide necessary information regarding the condition and contamination situation of the seabed to improve cost estimates for establishing landfall at the site and further planning. This report presents the results from environmental site investigations near shore at Barmen and Ospeviki in Samnanger Municipality.

The investigation has included sampling of the top sediments (1-7 cm) in three stations at Barmen and three stations in Ospeviki. Due to coarse material, no material was collected in one of the stations at Barmen. In total five samples, two from Barmen and three from Ospeviki, were sent to an external laboratory for chemical analyses of eight inorganic compounds (As, Cd, Cu, Cr, Hg, Ni, Pb, Zn), and the organic compounds PAH16, PCB7, and TBT.

Barmen is characterized by sloping bedrock with a limited thickness of sediment deposits. The results from the environmental survey show that the sediments mainly consist of coarse sand, gravel and shells at Barmen. In Ospeviki a river runs out near the shore and create a shelf just off the shore before the seabed falls towards the north. The sediments consist of fine sand, and organic material towards the shore. The content of organic carbon (TOC) varies from 0.36 to 1.07 % at Barmen and 0.62 to 4.23 % in Ospeviki.

The chemical analyses results show contamination above Tier 1 limit values in one of two sample locations at Barmen. The highest contamination level is condition class IV (poor) for several polycyclic aromatic hydrocarbon compounds. No compounds show concentrations above Tier 1 limit value in the samples from Ospeviki, and this site is therefore considered clean.

A landfall is planned in the investigated site area. Due to the detection of contaminated sediments, an application for permission to the planned work must be sent to the County Governor of Vestland.

01	15.10.2021	Issued for information	Lars Christiansen	A. Wyspianska	THa
REV.	DATE	DESCRIPTION	PREPARED BY	CHECKED BY	APPROVED BY

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- 10221656-RIGm-TEG-001 Plan of environmental sediment sampling – Barmen
- 10221656-RIGm-TEG-002 Plan of environmental sediment sampling – Ospeviki

**Enclosures**

- Enclosure A Analysis report from ALS Global AS

## 1 Introduction

Multiconsult has carried out an environmental near-shore site investigation on behalf of Aker BP for the “Power from shore” feasibility and concept study in Samnanger and Årskog.

Aker BP and Equinor is planning for full electrification of the new oil field NOA Krafla. The field is located between Oseberg and Alvheim in the North Sea. The current plans for the development consist of processing platforms in the south of the area and an unmanned platform in the north. Several minor platforms and subsea installations will ensure that all resources in the area are covered.

Multiconsult has been contracted by Aker BP to perform studies for landfalls, substations and on shore power lines for various cases:

- Sjovika: Power from Gismarvik (Tysvær) by overhead line and sea cable to Sjovika (Karmøy).
- Samnanger: Power from Børdalen (Samnanger) by transmission line to substation at Barmen and Ospeviki (Samnanger) and intermediate landfall at Leirpollneset (Fitjar)
- Utsira: Power from Gismarvik (Tysvær) by sea cable to Utsira.

This report presents the results from environmental site investigations at near shore at Ospeviki and Barmen in Samnanger Municipality. The scope of work covered by this report comprises of factual presentations of data acquisition, processing, and presentation of data from the executed soil investigations and laboratory analyses.

### 1.1 Objective

The main objective of the environmental site investigation is to provide the necessary information regarding the condition and contamination situation of the seabed to improve cost estimates for establishing landfall at the site and further planning. Contaminated sediments will impact how dredging and backfill will be performed. It will also set the foundation for mitigating measures required to limit or prevent risk of spread of contamination during construction.

### 1.2 Limitations

Multiconsult has prepared this report for the sole and exclusive use of Aker BP in response to specific agreements. Other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded. The information presented in this report is based on information provided by Aker BP, the top sediment conditions encountered with sediment sampling, together with the results of the laboratory test results. Multiconsult assumes that information provided by third parties is reliable but assumes no responsibility for the accuracy of this information.

Multiconsult assumes no responsibility for conditions which have not been revealed by the sediment sampling, or which occur between the investigated locations.

## 2 Site Description

The localities Barmen and Ospeviki are located on the south side of the Samnanger fjord, 1.5 and 2.4 km west of Tysse, respectively (see Figure 2-1 and Figure 2-2). The survey area at Barmen is located near an old boathouse and associated tractor road. The survey area at Ospeviki is located near a

beach. Aerial photos from 2018 shows a landfill along Fv. 48, where mineral fill masses have been deposited from the construction of the Tysse Tunnel, not far from Ospeviki. The same area has been used as rig area during the construction period. These masses are assumed to be clean.

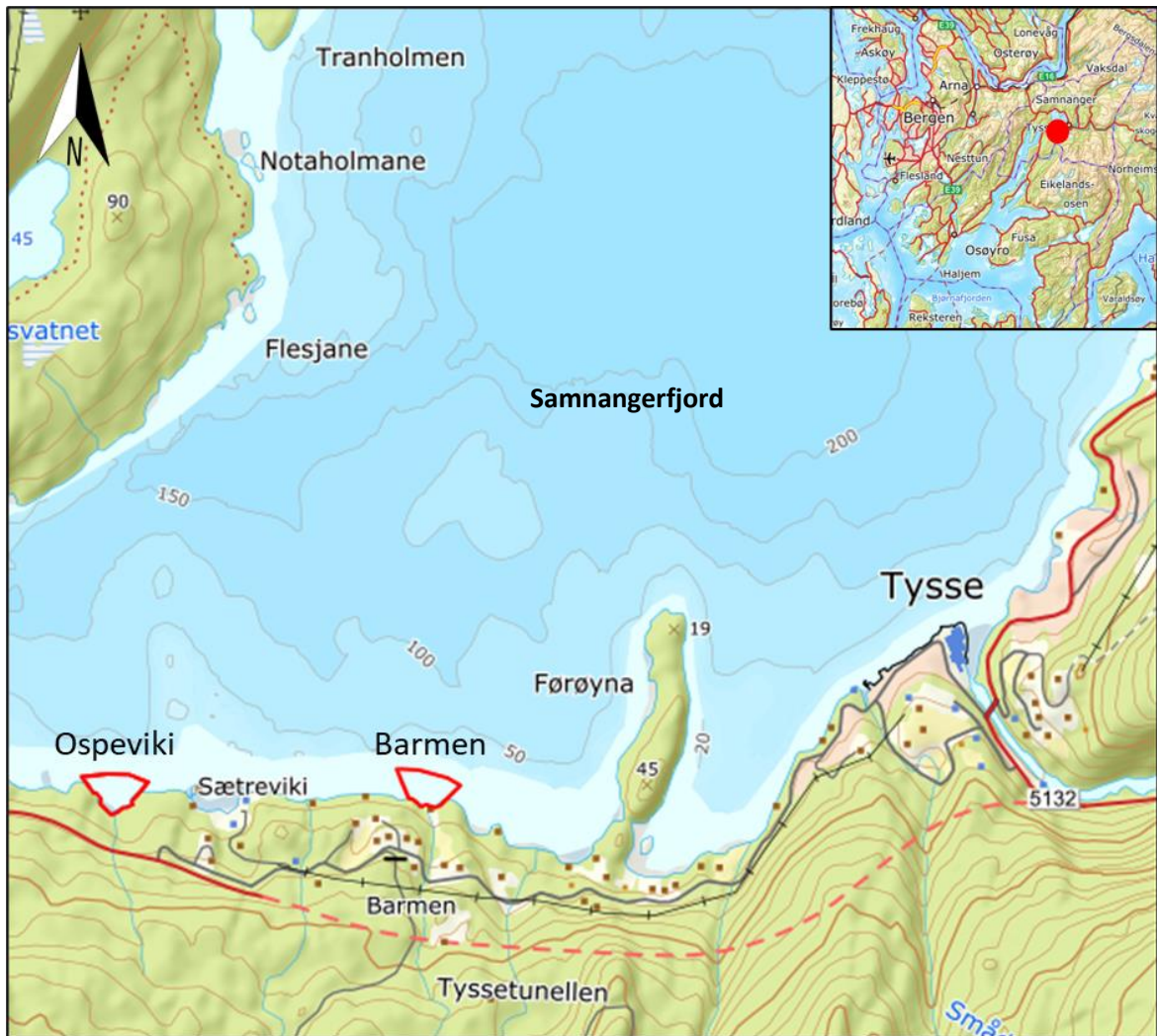


Figure 2-1: Overview map of the investigated sites ([www.norgeskart.no](http://www.norgeskart.no)). The red lines indicate the investigated sites Ospeviki and Barmen

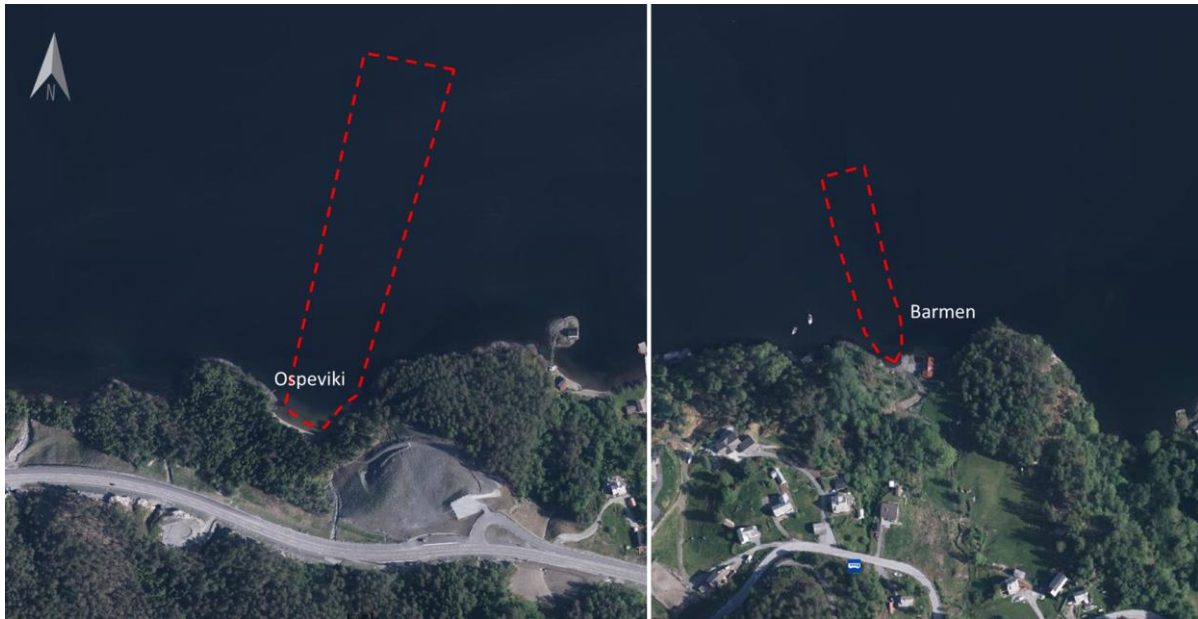


Figure 2-2: Aerial photo of the investigated sites Ospeviki and Barmen ([www.norgeskart.no](http://www.norgeskart.no)). The red lines indicate the investigated areas at each site.

## 2.1 Biodiversity

The Samnanger fjord (inner part; 0260050801-C) is classified with moderate ecological condition. The point sources of pollution are from diffuse run-off from wastewater ([www.vann-nett.no](http://www.vann-nett.no)).

According to The Norwegian Environmental Agency's "Naturbase Kart" the area around the localities is registered as a locally important spawning ground for cod. In Setervika, in between the two localities, there have been observations of bird species of national management interest (endangered). There are no important nature types, nor marine or terrestrial in the neighborhood ([www.kart.naturbase.no](http://www.kart.naturbase.no)).

## 3 Executed Investigations

### 3.1 Previous Investigations

No previous environmental site investigations are known from the area, but Multiconsult has previously performed geotechnical soil investigations at Barmen. 16<sup>th</sup> of April 2021, Multiconsult performed an On-site inspection of the landfall at Barmen (see 10221656-03-RIG-REP-004). The results from the site investigation show in general between 4.9–9.7 m of sediments above bedrock. The sediments consist of a soft top layer with thickness between 1.4 – 4.0 m. Above bedrock there is in general a firm layer of assumed moraine.

No site investigation, environmental nor geotechnical, is known from the survey area in Ospeviki.

### 3.2 Site Investigations

The environmental sediment sampling was carried out on 8<sup>th</sup> July 2021 from boat under the command of skipper Stian Veseth. The sediments were collected with a van Veen-grab, executed by environmental geologists Ingeborg Solvang and Lars Tveit Christiansen from Multiconsult.

Samples were collected from the upper 1–7 cm of the sea bottom, from 20 m depth and towards the shore. There was a total of 6 sampling stations, 3 at Barmen and 3 in Ospeviki. Four to seven grab throws were executed at all sampling locations, Due to less than 10 cm of material in all grab

samples, material was collected with a hand shovel from the grab and mixed into one composite sample from each station. All samples were visually described, bagged in air- and diffusion tight bags, and frozen until they were sent to an accredited laboratory for chemical analysis.

### ***Barmen***

The environmental site investigation included sediment sampling in 3 stations (MPR-S-1, MPR-S-2 and MPR-S-3), however due to little or no fine sediments on the sea bottom around station MPR-S-3 (16 m water depth), no sediment was collected in the grab on this site. The total area of the site at Barmen was approximately 1 600 m<sup>2</sup>. The sample stations MPR-S-2 and MPR-S-1 were collected at depths of 11.3 and 4.3 m respectively.

### ***Ospeviki***

In Ospeviki samples were collected in 3 stations (MPR-S-4, MPR-S-5, and MPR-S-6), at water depths of 3.9, 9.5 and 20 m respectively. The total area of the site in Ospeviki was about 3 100 m<sup>2</sup>.

Sampling positions on sea were identified using a GPS-equipment of model Raymarine Axiom 9 with position service SBAS, which gives an accuracy of +/- 5 m in the XYZ directions. Seabed elevations are adjusted for tidal variations with reference to NN2000.

Sampling and analysis are carried out according to procedures given in guidelines from the Norwegian Environmental Agency<sup>1,2</sup>, and Norwegian standard for sampling on marine sediments<sup>3</sup>, as well as internal Multiconsult procedures.

## **3.3 Laboratory Investigations**

Two samples from Barmen and three samples from Ospeviki were sent to ALS Laboratory Group Norway AS for chemical analyses of polycyclic aromatic hydrocarbons ( $\Sigma$ PAH<sub>16</sub>), polychlorinated biphenyls ( $\Sigma$ PCB<sub>7</sub>), tributyltin (TBT), and the inorganic compounds arsenic (As), lead (Pb), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickel (Ni) and zinc (Zn). In addition, the content of dry matter, total organic carbon (TOC), and fines (< 2  $\mu$ m and < 63  $\mu$ m) were determined. The analysis program is specified according to recommendations in the Norwegian Environmental Agency's guideline M-350|2015.

## **4 Results**

The position of the environmental sampling stations is presented at drawing 10221656-05-RIGm-TEG-001 and in Figure 4-1.



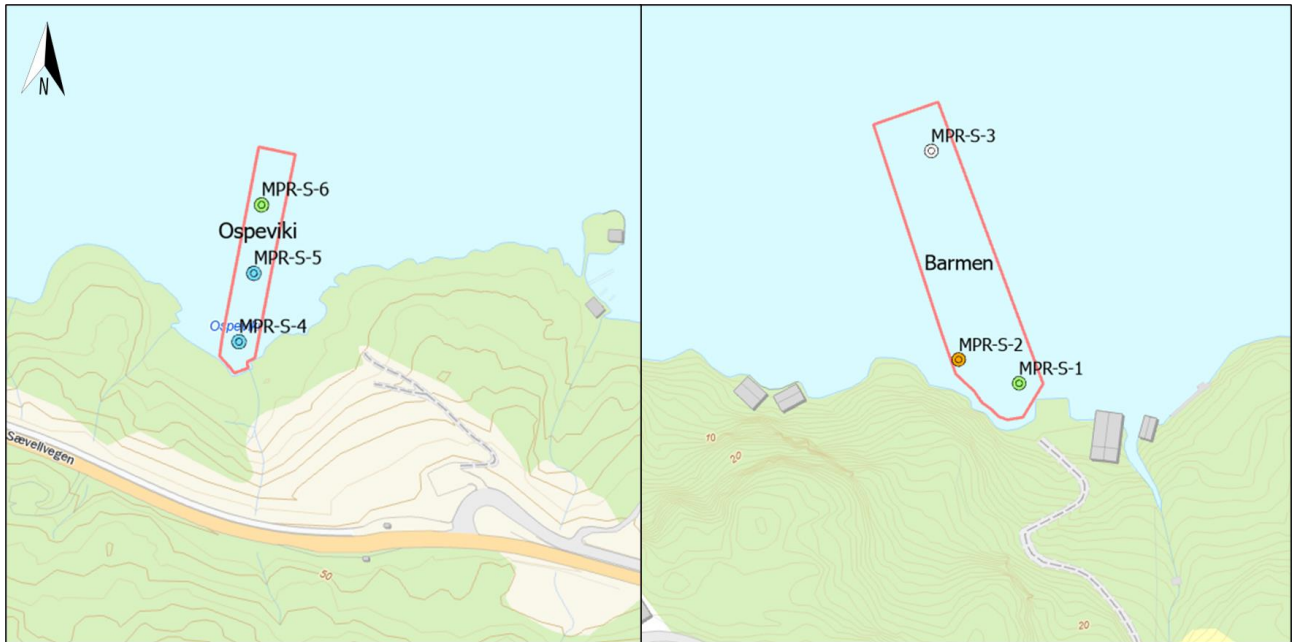


Figure 4-1: Positions and results of the samples from Barmen and Ospeviki. The colour of the samples represents the condition classes described in table 4-3.

#### 4.1 Sediment Condition and Field Observations

##### **Barmen**

The registered water depths in the sampling locations increase from 4.3 m at station MPR-S-1, to 11.3 m in MPR-S-2 and until 16 m in MPR-S-3. The seabed falls steeply towards north at Barmen.

The result of sampling showed coarse sand, gravel and rocks with a varying content of bottom fauna such as mussels and shells, and seaweed in the sediments at Barmen (figure 4-1). The sediments had a light brown and grey colour.

No sediment was collected by the grab in MPR-S-3 at barmen. A small ROV was sent down and showed coarse rocks and boulders and vegetation. When the ROV hit bottom, there was no cloud from fine material, but a hard landing.

##### **Ospeviki**

The registered water depths in the sampling stations in Ospeviki are 3.9 m in MPR-S-4, 9.5 m in MPR-S-5 and 20 m in MPR-S-6. A river runs out near the beach and sediments create a shelf just off the shore before the seabed falls steeply towards north and the middle of Samnangerfjorden.

The result of the environmental survey shows a higher content of fine material in the samples in Ospeviki, compared to the samples stations at Barmen. The sample material consisted of sand and silt (MPR-S-5) and a high content of organic material (spruce needles) in MPR-S-4, near the shore. In MPR-S-6 the material consisted of coarse sand and gravel. Due to the organic material, the sediments in Ospeviki had a dark grey colour.

Table 4-1: Field observations from the environmental sampling at Barmen and Ospeviki

Sample	Time (hh:mm)	Number of throws	Water depth (m)	Elevation (NN2000)	Observations
<b>Barmen</b>					
MPR-S-1	09:50	6 (2 empty)	4.3	-4.1	Sand, gravel, organic material.
MPR-S-2	09:15	7 (4 empty)	11.3	-11.2	Shell, rocks, sand and silt. Some organic material from land
MPR-S-3	10:10	7 (5 empty)	16.0	-15.8	Only rocks and vegetation in the grab. ROV shows vegetation and coarse material on the seabed.
<b>Ospeviki</b>					
MPR-S-4	11:10	6 (1 empty)	3.9	-3.7	Organic material, silt/clay-fraction. Pine needles from nearby trees on shore.
MPR-S-5	10:50	4 (2 empty)	9.5	-9.3	Fine sand and silt
MPR-S-6	10:35	5 (4 empty)	20.0	-19.8	Coarse sand and gravel

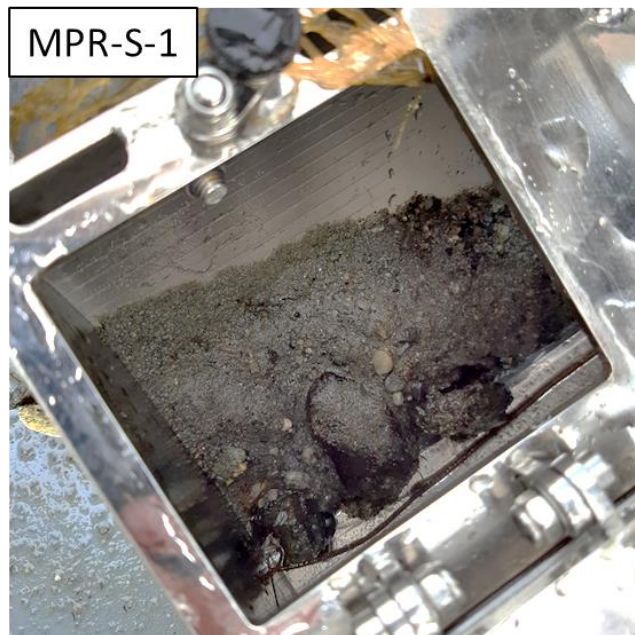




Figure 4-2: Photos of samples from MPR-S-1, MPR-S-4 and MPR-S-5, representing the seabed sediments in the investigated area. The sediments in MPR-S-1 at Barmen had a light grey colour and had more coarse grained material than the sediments in Ospeviki. The sediments in MPR-S-4 in Ospeviki had a high content of pine needles from the pine forest near the shore. MPR-S-5 in Ospeviki contained fine sand and silt, with shell parts inside the material.

The laboratory results show a slightly greater content of sand (>64  $\mu\text{m}$ ) in the sediments from Barmen than in Ospeviki. The samples from Barmen contains 97.8–98.3 % of sand, while the samples from Ospeviki contains 88.8–96 %. The content of clay (<2  $\mu\text{m}$ ) is below 1 % in both areas.

The content of total organic carbon (TOC) is 0.4–1.1 % at Barmen, and 0.6–4.2 % in the sediments in Ospeviki (Table 4-2).

Table 4-2: Results of dry matter, sand, silt, clay and total organic carbon in Samnanger.

Sample	Dry matter	Sand (>63 $\mu\text{m}$ )	Grain size 2-63 $\mu\text{m}$ (silt)	Grain size < 2 $\mu\text{m}$ (clay)	TOC
	%				
<b>Barmen</b>					
MPR-S-1	81.8	98.3	1.7	<0.1	0.36
MPR-S-2	78.7	97.8	2.2	<0.1	1.07
<b>Ospeviki</b>					
MPR-S-4	58.2	88.8	11.2	<0.1	4.23
MPR-S-5	79.8	96	4	<0.1	0.62
MPR-S-6	69	95.5	4.5	<0.1	n.a.

## 4.2 Chemical Analyses of Sediments

The analytical results are presented in Table 4-4. The complete laboratory report with detection limits and methods can be found in enclosure A. The results have been classified according to The Norwegian Environment Agency's guideline M-608 | 2016 *Quality standards for water, sediments, and*

*biota*. The classification system grades sediments according to five classes for environmental condition, from background levels to very poor environmental condition depending on the contamination level. The associated colour coding for the condition classes are given in Table 4-3. The results are also compared to risk assessment tier 1 limit values given in the guideline M-409|2015 *Guidelines for risk assessment of contaminated sediments* published by the Norwegian Environment Agency.

There are no condition classes for  $\Sigma\text{PAH}_{16}$  in M-608|2016. According to the Norwegian Environment Agency the limit values given in TA-2229|2007 *Classification of condition for contaminated sites* should be used. In addition, there are only given effect-based condition classes for TBT. Also, here The Norwegian Environment Agency has recommended to use the administrative condition classes given in TA-2229|2007.

Table 4-3: Environmental condition classes given in M-608|2016

<b>I Background</b>	<b>II Good</b>	<b>III Moderate</b>	<b>IV Poor</b>	<b>V Very poor</b>
Background levels	No toxic effects	Chronical effects with long time exposure	Immediate toxic effects with short time exposure	Extensive immediate toxic effect

Tabell 4-4: Results from the chemical analysis classified in environmental condition classes according to the guideline M-608|2016. The concentrations are also compared to tier 1 quality values from guideline M-409|2015

ELEMENT	SAMPLE	Samnanger		Ospeviki			Risk assessment, Tier 1
		MPR-S-1	MPR-S-2	MPR-S-4	MPR-S-5	MPR-S-6	
As (Arsenic)	mg/kg TS	2	4	4	3	2	18
Pb (Lead)	mg/kg TS	6	9	13	5	6	150
Cu (Copper)	mg/kg TS	6	7	12	4	4	84
Cr (Chrome)	mg/kg TS	25	26	18	16	10	620
Cd (Cadmium)	mg/kg TS	<0.1	<0.1	<0.1	<0.1	<0.1	2.5
Hg (Mercury)	mg/kg TS	<0.2 <sup>1</sup>	<0.2 <sup>1</sup>	<0.2 <sup>1</sup>	<0.2 <sup>1</sup>	<0.2 <sup>1</sup>	0.52
Ni (Nickel)	mg/kg TS	14	16	14	10	6	42
Zn (Zinc)	mg/kg TS	31	42	41	31	19	139
Naphthalene	µg/kg TS	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	27
Acenaphthylene	µg/kg TS	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	33
Acenaphthen	µg/kg TS	<10 <sup>1</sup>	49	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	96
Fluoren	µg/kg TS	<10 <sup>1</sup>	41	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	150
Phenanthrene	µg/kg TS	13	410	<10 <sup>1</sup>	<10 <sup>1</sup>	<12 <sup>2</sup>	780
Anthracene	µg/kg TS	<4 <sup>1</sup>	110	<4 <sup>1</sup>	<4 <sup>1</sup>	<12 <sup>2</sup>	4.8
Fluoranthene	µg/kg TS	36	550	<10 <sup>1</sup>	<10 <sup>1</sup>	10	400
Pyrene	µg/kg TS	31	445	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	84
Benzo(a)anthracene <sup>^</sup>	µg/kg TS	19	231	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	60
Chrysene <sup>^</sup>	µg/kg TS	21	251	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	280
Benzo(b+j)fluoranthene <sup>^</sup>	µg/kg TS	29	198	21	<10	<10	140
Benzo(k)fluoranthene <sup>^</sup>	µg/kg TS	25	202	12	<10	<10	135
Benzo(a)pyren <sup>^</sup>	µg/kg TS	22	231	<10 <sup>1</sup>	<10 <sup>1</sup>	<10 <sup>1</sup>	183
Dibenso(ah)anthracene <sup>^</sup>	µg/kg TS	<10	26	<10	<10	<10	27
Benzo(ghi)perylene	µg/kg TS	24	139	14	<10	<10	84
Indeno(123cd)pyrene <sup>^</sup>	µg/kg TS	23	163	15	<10	<10	63
Sum PAH-16	µg/kg TS	243	3050	62	<77	10	2000
Sum PCB-7	µg/kg TS	<2 <sup>1</sup>	<2 <sup>1</sup>	<2 <sup>1</sup>	<2 <sup>1</sup>	<2 <sup>1</sup>	4.1
Tributyltin cation	µg/kg TS	<1	<1	<1	<1	n.a.	35

< = less than the detection limit

n.a. = not analyzed

<sup>1</sup> Light green colour represents concentrations that is below detection limit, and where detection limit is higher than the limit value between II and I. The sample is there for classified as II even if the concentration might as well could be I.

<sup>2</sup> Detection limit is higher than limit value between class II and III. Samples where concentrations above 10 µg/kg are not detected, are not classified, because it is not known if the actual concentration is class I, II or III.

### 4.3 Description of Contamination levels

Except of TBT (Tributyltin cation), the Tier 1 limit values correspond to the upper limit of class II (good). The Tier 1 limit value for TBT lies in class III (moderate).

#### Barmen

In MPR-S-2 at Barmen several of the polycyclic aromatic hydrocarbons (PAH)-compounds are found in concentrations corresponding to class III and IV (moderate to poor), in MPR-S-1, no compounds show concentrations above Tier 1 limit values.

#### Ospeviki

In the samples from Ospeviki, most analyzed compounds correspond to condition class I, except fluoranthene in MPR-S-6 and Chrysene in MPR-S-4, which both correspond to condition class II. Several of the analyzed PAH-compounds have a higher detection limit than the limit value between condition class I and II. These compounds are thus classified as condition class II, although concentrations may as well be condition class I (background).

Except for Anthracene in MPR-S-6 no sediment samples from Ospeviki show concentrations above Tier 1 limit values. However, anthracene is classified as above Tier 1 limit value only due to high detection limit. The true concentration might be below. The site at Ospeviki can therefore be considered clean.

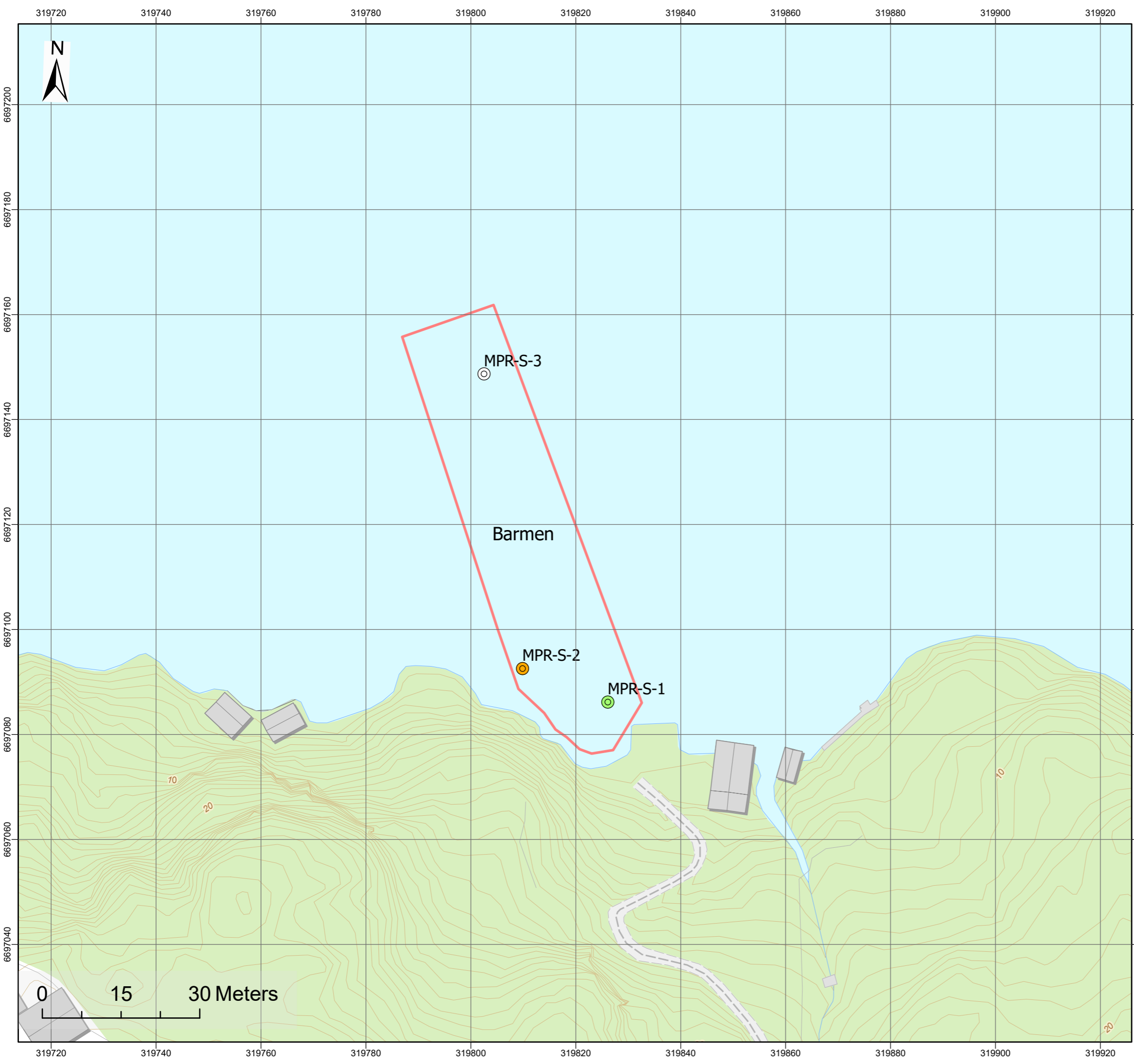
#### 4.4 Evaluation of the Data Quality

The investigated site at Barmen comprises an area of approximately 1 600 m<sup>2</sup>, of which the total area has a water depth less than 20 m. Ospeviki comprises an area of approximately 3 100 m<sup>2</sup>. Also, here the investigated area has a water depth from 20 m and less. The guideline M-409|2015 requires at least 5 sampling stations from an investigation area, where each station can only represent a maximum area of 10 000 m<sup>2</sup> for water depths less than 20 m and up to 40 000 m<sup>2</sup> for water depths over 20 m. This survey includes five samples from areas with water depths under 20 m, and so the number of samples is considered sufficient. It is assumed that the environmental investigation of the six stations is representative for the sediments in the whole site area, both at Barmen and in Ospeviki.

The sediments at Barmen consist mainly of coarse sand with little fine-grained material. In Ospeviki the content of fine material is higher. The executed survey is expected to give a good overview of the contamination level of the seabed sediments in the investigated area, but the investigation is based on spot sampling, and higher concentrations within the site area cannot be ruled out.

## 5 Conclusion

The conducted environmental survey has proven contaminated sediments in one of the stations of the site area. Contamination above tier 1 limit values is found in one of two samples at Barmen, and nowhere in the three samples in Ospeviki. Ospeviki is therefore considered clean. The highest concentration level is condition IV (poor), found in MPR-S-2 at Barmen.



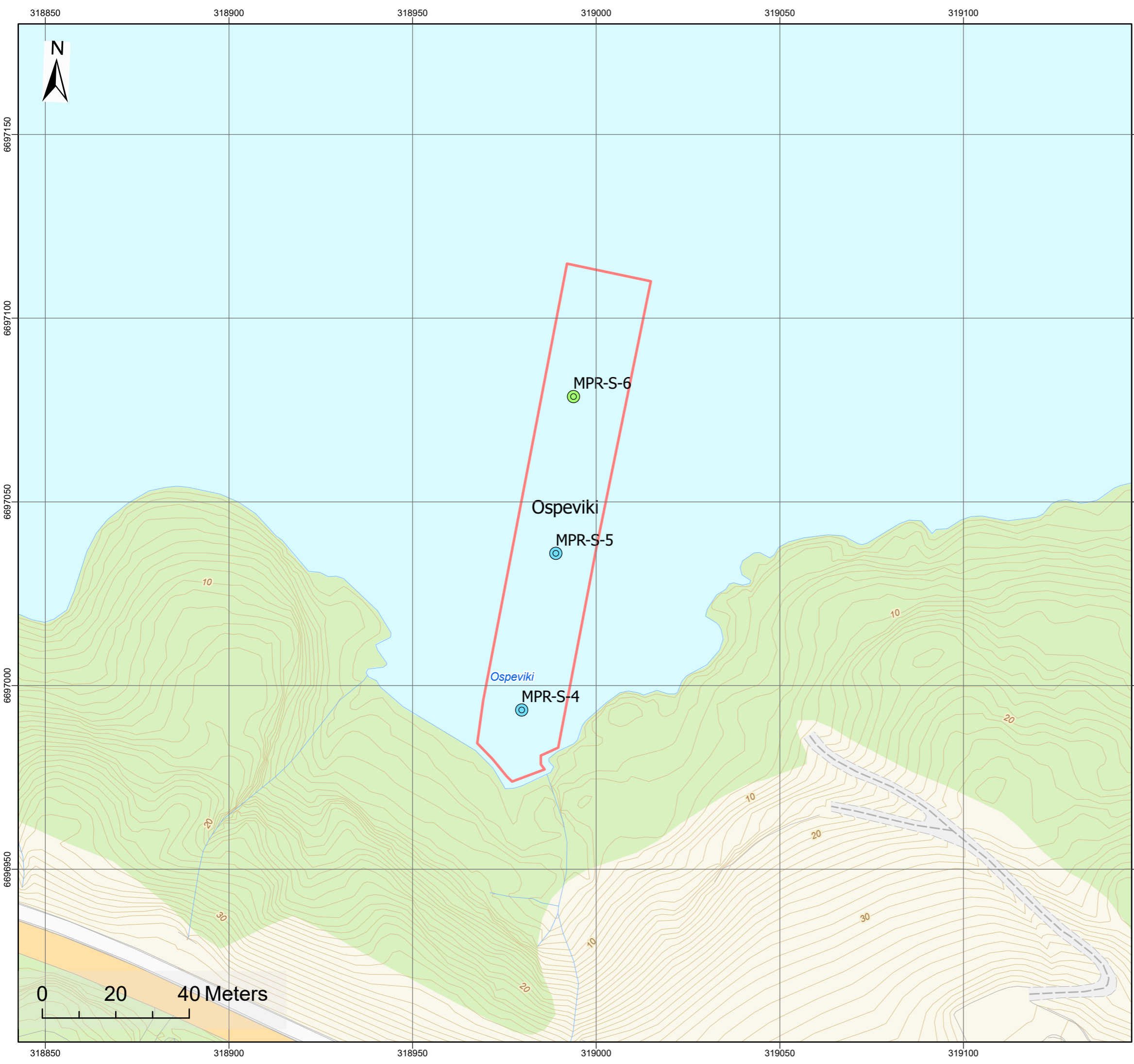
## Legend

- Investigation site
- Not analysed
- Condition class 1/Norm values
- Condition class 2 - Good
- Condition class 3 - Moderate
- Condition class 4 - poor
- Condition class 5 - Very poor

CLASSIFICATION FOR HEAVY METALS, ALIPHATIC COMPOUNDS, THC, BENZENE, PAH, AND PCB. CLASSIFIED IN ACCORDANCE WITH GUIDELINE TA-2553/2009.

Coordinate system: ETRS 1989 UTM Zone 32N

Description: PLAN OF ENVIRONMENTAL SEDIMENT SAMPLING		Format: A3	Speciality: RIGm
		Date: 15.10.2021	
AKER BP NOA KRAFLA - POWER FROM SHORE Environmental site survey - Samnanger		Grunnlag: Kartverket, Geovekst, kommuner og OSM - Geodata AS	Scale: 1:700
<b>Multiconsult</b>	Proj. no. 10221656-05	Status: LTC	Constr. ADW
		Contr. THa	Approved THa
	Dwg no. RIGm-TEG-002		Rev. 00



### Legend

- Investigation site
- Not analysed
- Condition class 1/Norm values
- Condition class 2 - Good
- Condition class 3 - Moderate
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		Scale: 1:1 000	
<b>Multiconsult</b>	Proj. no. 10221656-05	Status: LTC	Constr. ADW
		Conr. THa	Approved THa
	Dwg no. RIGm-TEG-002		Rev. 00





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## ANALYSERAPPORT

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Ordrenummer	: NO2111525	Side	: 1 av 16
Kunde	: Multiconsult Norge AS	Prosjekt	: NOKKA Power from shore
Kontakt	: Silje Marie Vasstein	Prosjektnummer	: 10221656-05
Adresse	: Postboks 198 Skøyen 0213 Oslo Norge	Prøvetaker	: ----
Epost	: silje.marie.vasstein@multiconsult.no	Sted	: ----
Telefon	: ----	Dato prøvemottak	: 2021-07-12 10:45
COC nummer	: ----	Analysedato	: 2021-07-15
Tilbuds- nummer	: OF180420	Dokumentdato	: 2021-07-30 13:36
		Antall prøver mottatt	: 9
		Antall prøver til analyse	: 9

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### Om rapporten

Forklaring til resultatene er gitt på slutten av rapporten.

Denne rapporten erstatter enhver foreløpig rapport med denne referansen. Resultater gjelder innleverte prøver slik de var ved innleveringstidspunktet. Alle sider på rapporten har blitt kontrollert og godkjent før utsendelse.

Denne rapporten får kun gjengis i sin helhet, om ikke utførende laboratorium på forhånd har skriftlig godkjent annet. Resultater gjelder bare de analyserte prøvene.

Hvis prøvetakingstidspunktet ikke er angitt, prøvetakingstidspunktet vil bli default 00:00 på prøvetakingsdatoen. Hvis datoen ikke er angitt, blir default dato satt til dato for prøvemottak angitt i klammer uten tidspunkt.

### Kommentarer

Prøve(r) NO2111525/001,009, metode S-SMIGMS01- Rapporteringene økt på grunn av matriksinterferens.

Prøver NO2111525/002-006,008, metode S-METAXAC - syreoppløsning ble brukt på originalt våtmateriale.

Prøver NO2111525/007, metode S-METAXAC - syreoppløsning ble brukt på originalt våtmateriale.

Prøven for metod S-TOC1-IR er tørket ved 105 grader og pulverisert før analyse.

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Underskrivere	Posisjon
Torgeir Rødsand	DAGLIG LEDER

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Laboratorium	: ALS Laboratory Group avd. Oslo	Nettside	: www.alsglobal.no
Adresse	: Drammensveien 264 0283 Oslo Norge	Epost	: info.on@alsglobal.com
		Telefon	: ----



## Analyseresultater

Submatriks: **SEDIMENT**

Kundes prøvenavn

**MPR-A-4**

Prøvenummer lab

NO2111525001

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	81.5	± 4.92	%	0.10	2021-07-28	S-DRY-GRCI	PR	a ulev
<b>Polysykliske hydrokarboner (PAH)</b>								
Sum andre PAH (M1)	<0.058	----	mg/kg TS	0.045	2021-07-27	S-SMIGMS01	PR	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	1.88	± 0.38	mg/kg TS	0.50	2021-07-28	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-28	S-METAXAC1	PR	a ulev
Cr (Krom)	10.0	± 2.01	mg/kg TS	0.25	2021-07-28	S-METAXAC1	PR	a ulev
Cu (Kopper)	1.41	± 0.28	mg/kg TS	0.10	2021-07-28	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-28	S-METAXAC1	PR	a ulev
Ni (Nikkel)	2.9	± 0.60	mg/kg TS	1.0	2021-07-28	S-METAXAC1	PR	a ulev
Pb (Bly)	3.4	± 0.70	mg/kg TS	1.0	2021-07-28	S-METAXAC1	PR	a ulev
Zn (Sink)	19.4	± 3.90	mg/kg TS	5.0	2021-07-28	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-27	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<12	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Acenaftylen	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Fenantren	<15	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Antracen	<29	----	µg/kg TS	4	2021-07-27	S-SMIGMS01	PR	a ulev
Fluoranten	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Pyren	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev



Submatris: SEDIMENT

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

MPR-A-4

NO2111525001

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Polyaromatiske hydrokarboner (PAH) - Fortsetter</b>								
Indeno(123cd)pyren^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	<93	----	µg/kg TS	80	2021-07-27	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene^	<35	----	µg/kg TS	35	2021-07-27	S-SMIGMS01	PR	a ulev
<b>Fysikalsk</b>								
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-30	S-TEXT-ANL	CS	a ulev
Silt (2-63 µm)	<0.1	----	%	0.1	2021-07-30	S-TEXT-ANL	CS	a ulev
Sand (> 63 µm)	100	± 10.00	%	0.1	2021-07-30	S-TEXT-ANL	CS	a ulev

Submatris: SEDIMENT

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

MPR-A-1

NO2111525002

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	87.5	± 5.28	%	0.10	2021-07-21	S-DRY-GRCI	PR	a ulev
<b>Prøvepreparering</b>								
Ekstraksjon	Yes	----	-	-	2021-07-15	S-P46	LE	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	0.52	± 0.10	mg/kg TS	0.50	2021-07-22	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Cr (Krom)	9.35	± 1.87	mg/kg TS	0.25	2021-07-22	S-METAXAC1	PR	a ulev
Cu (Kopper)	1.30	± 0.26	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-22	S-METAXAC1	PR	a ulev
Ni (Nikkel)	2.7	± 0.50	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Pb (Bly)	1.3	± 0.30	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Zn (Sink)	18.1	± 3.60	mg/kg TS	5.0	2021-07-22	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaftylen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fenantren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Antracen	<4	----	µg/kg TS	4	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoranten	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev



Submatris: SEDIMENT

Kundes prøvenavn

MPR-A-1

Prøvenummer lab

NO2111525002

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Polyaromatiske hydrokarboner (PAH) - Fortsetter</b>								
Pyren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	<77	----	µg/kg TS	80	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene <sup>^</sup>	<35	----	µg/kg TS	35	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Organometaller</b>								
Monobutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Dibutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Tributyltinn	<1	----	µg/kg TS	1.0	2021-07-15	S-GC-46	LE	a ulev
<b>Fysikalsk</b>								
Fraksjon < 0,002 mm	<0.01	----	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,002-0,004 mm	0.02	± 0.002	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,004-0,008 mm	0.06	± 0.006	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,008-0,016 mm	0.16	± 0.02	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Silt (2-63 µm)	0.8	± 0.08	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,016-0,032 mm	0.27	± 0.03	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Sand (> 63 µm)	99.1	± 9.90	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,032-0,063 mm	0.29	± 0.03	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,063-0,125 mm	0.91	± 0.09	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,125-0,25 mm	4.04	± 0.40	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,25-0,5 mm	13.0	± 1.30	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,5-1 mm	48.0	± 4.80	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 1-2 mm	27.9	± 2.79	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon >2 mm	5.30	± 0.53	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
<b>Andre analyser</b>								
Totalt organisk karbon (TOC)	0.26	± 0.05	% tørrvekt	0.10	2021-07-22	S-TOC1-IR	CS	a ulev

Submatris: SEDIMENT

Kundes prøvenavn

MPR-A-5

Prøvenummer lab

NO2111525003

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	71.0	± 4.29	%	0.10	2021-07-21	S-DRY-GRCI	PR	a ulev
<b>Prøvepreparering</b>								



Submatris: SEDIMENT

Kundes prøvenavn

MPR-A-5

Prøvenummer lab

NO2111525003

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Prøvepreparering - Fortsetter</b>								
Ekstraksjon	Yes	----	-	-	2021-07-15	S-P46	LE	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	1.38	± 0.28	mg/kg TS	0.50	2021-07-22	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Cr (Krom)	8.20	± 1.64	mg/kg TS	0.25	2021-07-22	S-METAXAC1	PR	a ulev
Cu (Kopper)	4.17	± 0.83	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-22	S-METAXAC1	PR	a ulev
Ni (Nikkel)	3.5	± 0.70	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Pb (Bly)	5.3	± 1.10	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Zn (Sink)	25.8	± 5.20	mg/kg TS	5.0	2021-07-22	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaftylene	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fenantren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Antracen	<4	----	µg/kg TS	4	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoranten	22	± 6.66	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Pyren	19	± 5.66	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	12	± 3.49	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	13	± 3.85	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	15	± 4.64	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	12	± 3.69	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	12	± 3.58	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren <sup>^</sup>	10	± 3.11	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	115	----	µg/kg TS	80	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene <sup>^</sup>	74	----	µg/kg TS	35	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Organometaller</b>								
Monobutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Dibutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev



Submatris: **SEDIMENT**

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

**MPR-A-5**

NO2111525003

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Organometaller - Fortsetter</b>								
Tributyltinn	<1	----	µg/kg TS	1.0	2021-07-15	S-GC-46	LE	a ulev
<b>Fysikalsk</b>								
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Silt (2-63 µm)	4.2	± 0.40	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Sand (> 63 µm)	95.8	± 9.60	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
<b>Andre analyser</b>								
Totalt organisk karbon (TOC)	1.61	± 0.24	% tørrvekt	0.10	2021-07-22	S-TOC1-IR	CS	a ulev

Submatris: **SEDIMENT**

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

**MPR-A-6**

NO2111525004

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	81.5	± 4.92	%	0.10	2021-07-21	S-DRY-GRCI	PR	a ulev
<b>Prøvepreparering</b>								
Ekstraksjon	Yes	----	-	-	2021-07-15	S-P46	LE	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	<0.50	----	mg/kg TS	0.50	2021-07-22	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Cr (Krom)	7.90	± 1.58	mg/kg TS	0.25	2021-07-22	S-METAXAC1	PR	a ulev
Cu (Kopper)	1.84	± 0.37	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-22	S-METAXAC1	PR	a ulev
Ni (Nikkel)	3.1	± 0.60	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Pb (Bly)	3.4	± 0.70	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Zn (Sink)	14.8	± 3.00	mg/kg TS	5.0	2021-07-22	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaftylene	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fenantren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Antracen	<4	----	µg/kg TS	4	2021-07-22	S-SMIGMS01	PR	a ulev



Submatriks: **SEDIMENT**

Kundes prøvenavn

**MPR-A-6**

Prøvenummer lab

NO2111525004

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Polyaromatiske hydrokarboner (PAH) - Fortsetter</b>								
Fluoranten	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Pyren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	<77	----	µg/kg TS	80	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene <sup>^</sup>	<35	----	µg/kg TS	35	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Organometaller</b>								
Monobutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Dibutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Tributyltinn	<1	----	µg/kg TS	1.0	2021-07-15	S-GC-46	LE	a ulev
<b>Fysikalsk</b>								
Fraksjon < 0,002 mm	<b>0.02</b>	± 0.002	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,002-0,004 mm	<b>0.16</b>	± 0.02	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,004-0,008 mm	<b>0.54</b>	± 0.05	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,008-0,016 mm	<b>1.11</b>	± 0.11	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Silt (2-63 µm)	<b>5.9</b>	± 0.60	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,016-0,032 mm	<b>1.59</b>	± 0.16	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Sand (> 63 µm)	<b>94.1</b>	± 9.40	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,032-0,063 mm	<b>2.41</b>	± 0.24	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,063-0,125 mm	<b>18.0</b>	± 1.80	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,125-0,25 mm	<b>39.9</b>	± 3.99	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,25-0,5 mm	<b>24.2</b>	± 2.42	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,5-1 mm	<b>10.9</b>	± 1.09	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 1-2 mm	<b>0.11</b>	± 0.01	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon >2 mm	<b>0.99</b>	± 0.10	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
<b>Andre analyser</b>								
Totalt organisk karbon (TOC)	<b>0.61</b>	± 0.09	% tørrvekt	0.10	2021-07-22	S-TOC1-IR	CS	a ulev

Submatriks: **SEDIMENT**

Kundes prøvenavn

**MPR-S-4**

Prøvenummer lab

NO2111525005

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								



Submatriks: **SEDIMENT**

Kundes prøvenavn

**MPR-S-4**

Prøvenummer lab

NO2111525005

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff - Fortsetter</b>								
Tørrstoff ved 105 grader	58.2	± 3.52	%	0.10	2021-07-21	S-DRY-GRCI	PR	a ulev
<b>Prøvepreparering</b>								
Ekstraksjon	Yes	----	-	-	2021-07-15	S-P46	LE	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	4.22	± 0.84	mg/kg TS	0.50	2021-07-22	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Cr (Krom)	17.9	± 3.59	mg/kg TS	0.25	2021-07-22	S-METAXAC1	PR	a ulev
Cu (Kopper)	11.8	± 2.36	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-22	S-METAXAC1	PR	a ulev
Ni (Nikkel)	14.0	± 2.80	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Pb (Bly)	13.3	± 2.60	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Zn (Sink)	40.5	± 8.10	mg/kg TS	5.0	2021-07-22	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaftylen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fenantren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Antracen	<4	----	µg/kg TS	4	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoranten	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Pyren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	21	± 6.43	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	12	± 3.54	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	14	± 4.38	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren <sup>^</sup>	15	± 4.61	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	62	----	µg/kg TS	80	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene <sup>^</sup>	48	----	µg/kg TS	35	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Organometaller</b>								





Submatris: **SEDIMENT**

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

**MPR-S-4**

NO2111525005

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Organometaller - Fortsetter</b>								
Monobutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Dibutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Tributyltinn	<1	----	µg/kg TS	1.0	2021-07-15	S-GC-46	LE	a ulev
<b>Fysikalsk</b>								
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Silt (2-63 µm)	11.2	± 1.10	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Sand (> 63 µm)	88.8	± 8.90	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
<b>Andre analyser</b>								
Totalt organisk karbon (TOC)	4.23	± 0.64	% tørrvekt	0.10	2021-07-22	S-TOC1-IR	CS	a ulev

Submatris: **SEDIMENT**

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

**MPR-S-5**

NO2111525006

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	79.8	± 4.82	%	0.10	2021-07-21	S-DRY-GRCI	PR	a ulev
<b>Prøvepreparering</b>								
Ekstraksjon	Yes	----	-	-	2021-07-15	S-P46	LE	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	2.73	± 0.55	mg/kg TS	0.50	2021-07-22	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Cr (Krom)	15.6	± 3.12	mg/kg TS	0.25	2021-07-22	S-METAXAC1	PR	a ulev
Cu (Kopper)	3.89	± 0.78	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-22	S-METAXAC1	PR	a ulev
Ni (Nikkel)	10.0	± 2.00	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Pb (Bly)	5.4	± 1.10	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Zn (Sink)	31.0	± 6.20	mg/kg TS	5.0	2021-07-22	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaftylen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev

Dokumentdato : 2021-07-30 13:36  
 Side : 10 av 16  
 Ordnummer : NO2111525  
 Kunde : Multiconsult Norge AS



Submatris: SEDIMENT

Kundes prøvenavn

MPR-S-5

Prøvenummer lab

NO2111525006

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Polyaromatiske hydrokarboner (PAH) - Fortsetter</b>								
Fenantren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Antracen	<4	----	µg/kg TS	4	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoranten	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Pyren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	<77	----	µg/kg TS	80	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene <sup>^</sup>	<35	----	µg/kg TS	35	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Organometaller</b>								
Monobutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Dibutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Tributyltinn	<1	----	µg/kg TS	1.0	2021-07-15	S-GC-46	LE	a ulev
<b>Fysikalsk</b>								
Fraksjon < 0,002 mm	0.02	± 0.002	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,002-0,004 mm	0.11	± 0.01	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,004-0,008 mm	0.33	± 0.03	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,008-0,016 mm	0.64	± 0.06	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Silt (2-63 µm)	4.0	± 0.40	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,016-0,032 mm	1.04	± 0.10	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Sand (> 63 µm)	96.0	± 9.60	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,032-0,063 mm	1.58	± 0.16	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,063-0,125 mm	14.2	± 1.42	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,125-0,25 mm	30.1	± 3.01	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,25-0,5 mm	23.3	± 2.33	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,5-1 mm	16.6	± 1.66	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 1-2 mm	5.57	± 0.56	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon >2 mm	6.50	± 0.65	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
<b>Andre analyser</b>								
Totalt organisk karbon (TOC)	0.62	± 0.10	% tørrvekt	0.10	2021-07-22	S-TOC1-IR	CS	a ulev

Dokumentdato : 2021-07-30 13:36  
 Side : 11 av 16  
 Ordrenummer : NO2111525  
 Kunde : Multiconsult Norge AS



Submatris: **SEDIMENT**

Kundes prøvenavn

**MPR-S-2**

Prøvenummer lab

NO2111525007

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	78.7	± 4.75	%	0.10	2021-07-21	S-DRY-GRCI	PR	a ulev
<b>Prøvepreparering</b>								
Ekstraksjon	Yes	----	-	-	2021-07-15	S-P46	LE	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	4.01	± 0.80	mg/kg TS	0.50	2021-07-21	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-21	S-METAXAC1	PR	a ulev
Cr (Krom)	26.3	± 5.27	mg/kg TS	0.25	2021-07-21	S-METAXAC1	PR	a ulev
Cu (Kopper)	6.53	± 1.31	mg/kg TS	0.10	2021-07-21	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-21	S-METAXAC1	PR	a ulev
Ni (Nikkel)	16.3	± 3.30	mg/kg TS	1.0	2021-07-21	S-METAXAC1	PR	a ulev
Pb (Bly)	9.1	± 1.80	mg/kg TS	1.0	2021-07-21	S-METAXAC1	PR	a ulev
Zn (Sink)	41.6	± 8.30	mg/kg TS	5.0	2021-07-21	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaftylen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaften	49	± 14.60	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoren	41	± 12.20	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fenantren	410	± 123.00	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Antracen	110	± 33.10	µg/kg TS	4	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoranten	550	± 165.00	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Pyren	445	± 134.00	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	231	± 69.30	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	251	± 75.20	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	198	± 59.40	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	202	± 60.70	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	231	± 69.30	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	26	± 7.66	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(ghi)perylen	139	± 41.70	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren <sup>^</sup>	163	± 49.00	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	3050	----	µg/kg TS	80	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene <sup>^</sup>	1300	----	µg/kg TS	35	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Organometaller</b>								



Submatris: **SEDIMENT**

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

**MPR-S-2**

NO2111525007

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Organometaller - Fortsetter</b>								
Monobutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Dibutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Tributyltinn	<1	----	µg/kg TS	1.0	2021-07-15	S-GC-46	LE	a ulev
<b>Fysikalsk</b>								
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Silt (2-63 µm)	<b>2.2</b>	± 0.20	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Sand (> 63 µm)	<b>97.8</b>	± 9.80	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
<b>Andre analyser</b>								
Totalt organisk karbon (TOC)	<b>1.07</b>	± 0.16	% tørrvekt	0.10	2021-07-22	S-TOC1-IR	CS	a ulev

Submatris: **SEDIMENT**

Kundes prøvenavn  
 Prøvenummer lab  
 Kundes prøvetakingsdato

**MPR-S-1**

NO2111525008

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	<b>81.8</b>	± 4.94	%	0.10	2021-07-21	S-DRY-GRCI	PR	a ulev
<b>Prøvepreparering</b>								
Ekstraksjon	<b>Yes</b>	----	-	-	2021-07-15	S-P46	LE	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	<b>1.93</b>	± 0.38	mg/kg TS	0.50	2021-07-22	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Cr (Krom)	<b>24.8</b>	± 4.97	mg/kg TS	0.25	2021-07-22	S-METAXAC1	PR	a ulev
Cu (Kopper)	<b>5.54</b>	± 1.11	mg/kg TS	0.10	2021-07-22	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-22	S-METAXAC1	PR	a ulev
Ni (Nikkel)	<b>13.6</b>	± 2.70	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Pb (Bly)	<b>5.7</b>	± 1.10	mg/kg TS	1.0	2021-07-22	S-METAXAC1	PR	a ulev
Zn (Sink)	<b>31.0</b>	± 6.20	mg/kg TS	5.0	2021-07-22	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaftylen	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev



Submatris: **SEDIMENT**

Kundes prøvenavn

**MPR-S-1**

Prøvenummer lab

NO2111525008

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Polyaromatiske hydrokarboner (PAH) - Fortsetter</b>								
Fenantren	13	± 4.01	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Antracen	<4	----	µg/kg TS	4	2021-07-22	S-SMIGMS01	PR	a ulev
Fluoranten	36	± 10.80	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Pyren	31	± 9.21	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)antracen <sup>^</sup>	19	± 5.65	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Krysen <sup>^</sup>	21	± 6.38	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten <sup>^</sup>	29	± 8.79	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten <sup>^</sup>	25	± 7.64	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(a)pyren <sup>^</sup>	22	± 6.55	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracen <sup>^</sup>	<10	----	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	24	± 7.22	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren <sup>^</sup>	23	± 7.00	µg/kg TS	10	2021-07-22	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	243	----	µg/kg TS	80	2021-07-22	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene <sup>^</sup>	139	----	µg/kg TS	35	2021-07-22	S-SMIGMS01	PR	a ulev
<b>Organometaller</b>								
Monobutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Dibutyltinn	<1	----	µg/kg TS	1	2021-07-15	S-GC-46	LE	a ulev
Tributyltinn	<1	----	µg/kg TS	1.0	2021-07-15	S-GC-46	LE	a ulev
<b>Fysikalsk</b>								
Fraksjon < 0,002 mm	<0.01	----	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,002-0,004 mm	0.03	± 0.003	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,004-0,008 mm	0.09	± 0.009	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,008-0,016 mm	0.20	± 0.02	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Silt (2-63 µm)	1.7	± 0.20	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,016-0,032 mm	0.40	± 0.04	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Sand (> 63 µm)	98.3	± 9.80	%	0.1	2021-07-23	S-TEXT-ANL	CS	a ulev
Fraksjon 0,032-0,063 mm	0.46	± 0.05	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,063-0,125 mm	2.48	± 0.25	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,125-0,25 mm	12.1	± 1.21	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,25-0,5 mm	22.0	± 2.20	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 0,5-1 mm	18.8	± 1.88	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon 1-2 mm	14.2	± 1.42	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
Fraksjon >2 mm	29.2	± 2.92	%	0.01	2021-07-23	S-GSAT-GR	CS	a ulev
<b>Andre analyser</b>								
Totalt organisk karbon (TOC)	0.36	± 0.06	% tørrvekt	0.10	2021-07-22	S-TOC1-IR	CS	a ulev



Submatriks: **SEDIMENT**

Kundes prøvenavn

Prøvenummer lab

Kundes prøvetakingsdato

**MPR-S-6**

NO2111525009

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Tørrstoff</b>								
Tørrstoff ved 105 grader	69.0	± 4.17	%	0.10	2021-07-28	S-DRY-GRCI	PR	a ulev
<b>Totale elementer/metaller</b>								
As (Arsen)	2.19	± 0.44	mg/kg TS	0.50	2021-07-28	S-METAXAC1	PR	a ulev
Cd (Kadmium)	<0.10	----	mg/kg TS	0.10	2021-07-28	S-METAXAC1	PR	a ulev
Cr (Krom)	10.2	± 2.04	mg/kg TS	0.25	2021-07-28	S-METAXAC1	PR	a ulev
Cu (Kopper)	4.29	± 0.86	mg/kg TS	0.10	2021-07-28	S-METAXAC1	PR	a ulev
Hg (Kvikksølv)	<0.20	----	mg/kg TS	0.20	2021-07-28	S-METAXAC1	PR	a ulev
Ni (Nikkel)	6.3	± 1.20	mg/kg TS	1.0	2021-07-28	S-METAXAC1	PR	a ulev
Pb (Bly)	6.0	± 1.20	mg/kg TS	1.0	2021-07-28	S-METAXAC1	PR	a ulev
Zn (Sink)	19.0	± 3.80	mg/kg TS	5.0	2021-07-28	S-METAXAC1	PR	a ulev
<b>PCB</b>								
PCB 28	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 52	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 101	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 118	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 138	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 153	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
PCB 180	<0.00070	----	mg/kg TS	0.00070	2021-07-27	S-SMIGMS01	PR	a ulev
Sum PCB-7	<0.00245	----	mg/kg TS	0.00245	2021-07-27	S-SMIGMS01	PR	a ulev
<b>Polyaromatiske hydrokarboner (PAH)</b>								
Naftalen	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Acenaftylene	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Acenaften	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Fluoren	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Fenantren	<12	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Antracen	<12	----	µg/kg TS	4	2021-07-27	S-SMIGMS01	PR	a ulev
Fluoranten	10	± 3.14	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Pyren	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(a)antracene^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Krysen^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(b)fluoranten^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(k)fluoranten^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(a)pyren^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Dibenso(ah)antracene^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Benso(ghi)perylene	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Indeno(123cd)pyren^	<10	----	µg/kg TS	10	2021-07-27	S-SMIGMS01	PR	a ulev
Sum of 16 PAH (M1)	10	----	µg/kg TS	80	2021-07-27	S-SMIGMS01	PR	a ulev
Sum PAH carcinogene^	<35	----	µg/kg TS	35	2021-07-27	S-SMIGMS01	PR	a ulev
<b>Fysikalsk</b>								
Kornstørrelse <2 µm	<0.1	----	%	0.1	2021-07-30	S-TEXT-ANL	CS	a ulev
Silt (2-63 µm)	4.5	± 0.40	%	0.1	2021-07-30	S-TEXT-ANL	CS	a ulev



Submatriks: **SEDIMENT**

Kundes prøvenavn

**MPR-S-6**

Prøvenummer lab

NO2111525009

Kundes prøvetakingsdato

2021-07-08 00:00

Parameter	Resultat	MU	Enhet	LOR	Analysedato	Metode	Utf. lab	Acc.Key
<b>Fysikalsk - Fortsetter</b>								
Sand (> 63 µm)	95.5	± 9.50	%	0.1	2021-07-30	S-TEXT-ANL	CS	a ulev

*Dette er slutten av analyseresultatdelen av analysesertifikatet*

## Kort oppsummering av metoder

Analysemetoder	Metodebeskrivelser
S-GC-46	SS-EN ISO 23161:2011
S-P46	SS-EN ISO 23161:2011, ALS method 46
S-GSAT-GR	CZ_SOP_D06_07_120 (BS ISO 11277:2009) Kornstørrelsesanalyse av faste prøver ved bruk av sikting og laserdiffraksjon
S-TEXT-ANL	CZ_SOP_D06_07_120 (BS ISO 11277:2009) Kornstørrelsesanalyse av faste prøver ved bruk av sikting og laserdiffraksjon
S-TOC1-IR	CZ_SOP_D06_07_121.A (CSN ISO 29541, CSN EN ISO 16994, CSN EN ISO 16948, CSN EN 15407, CSN ISO 19579, CSN EN 15408, CSN ISO 10694, CSN EN 13137) Bestemmelse av totalt karbon (TC), totalt organisk karbon (TOC), total svovel og hydrogen ved forbrenningsmetode ved bruk av IR,-bestemmelse av total nitrogen ved forbrenningsmetode ved bruk av TCD og bestemmelse av oksygen ved utregning og totalt uorganisk karbon (TIC) og karbonater ved utregning fra målte verdier.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346, CSN 46 5735) Bestemmelse av tørrstoff gravimetrisk og bestemmelse av vanninnhold ved utregning fra målte verdier.
S-METAXAC1	CZ_SOP_D06_02_001 (US EPA 200.7, ISO 11885, US EPA 6010, SM 3120, prøver opparbeidet i henhold til CZ_SOP_D06_02_J02 (US EPA 3050, CSN EN 13657, ISO 11466) kap. 10.3 to 10.16, 10.17.5, 10.17.6, 10.17.9 to 10.17.14), Bestemmelse av elementer ved AES med ICP og støkiometriske utregninger av konsentrasjonen til aktuelle forbindelser fra målte verdier. Prøven ble homogenisert og mineralisert med salpetersyre i autoklav under høyt trykk og temperatur før analyse.
S-SMIGMS01	CZ_SOP_D06_03_181 (US EPA 429, US EPA 1668, US EPA 3550) Bestemmelse av SVOC ved isotopfortynning ved bruk av GC-metode med MS-deteksjon og kalkulering av semi-sum VOC fra målte verdier

Prepareringsmetoder	Metodebeskrivelser
*S-PPHOM.07	CZ_SOP_D06_07_P01 Prøvepreparering av faste prøver for analyse (knusing, kværning og pulverisering).
*S-PPHOM.03	CZ_SOP_D06_07_P01 Prøvepreparering av faste prøver for analyse (knusing, kværning og pulverisering).

**Noter:** **LOR** = Rapporteringsgrenser representerer standard rapporteringsgrenser for de respektive parameterne for hver metode. Merk at rapporteringsgrensen kan bli påvirket av f.eks nødvendig fortynning grunnet matriksinterferens eller ved for lite prøvemateriale

**MU** = Måleusikkerhet

**a** = A etter utøvende laboratorium angir akkreditert analyse gjort av ALS Laboratory Norway AS

**a ulev** = A ulev etter utøvende laboratorium angir akkreditert analyse gjort av underleverandør

\* = Stjerne før resultat angir ikke-akkreditert analyse.

< betyr mindre enn

> betyr mer enn

n.a. – ikke aktuelt

n.d. – Ikke påvist

### Måleusikkerhet:

**Måleusikkerhet skal være tilgjengelig for akkrediterte metoder. For visse analyser der dette ikke oppgis i rapporten, vil dette oppgis ved henvendelse til laboratoriet.**

**Måleusikkerheten angis som en utvidet måleusikkerhet (etter definisjon i "Evaluation of measurement data - Guide to the expression of uncertainty in measurement", JCGM 100:2008 Corrected version 2010) beregnet med en dekningsfaktor på 2 noe som gir et konfidensintervall på om lag 95%.**

**Måleusikkerhet fra underleverandører angis ofte som en utvidet usikkerhet beregnet med dekningsfaktor 2. For ytterligere informasjon, kontakt laboratoriet.**

Dokumentdato : 2021-07-30 13:36  
Side : 16 av 16  
Ordrenummer : NO2111525  
Kunde : Multiconsult Norge AS



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**Utførende lab**

	<b>Utførende lab</b>
CS	<i>Analysene er utført av:</i> ALS Czech Republic, s.r.o., Bendlova 1687/7 Ceska Lipa 470 01
LE	<i>Analysene er utført av:</i> ALS Scandinavia AB Luleå, Aurorum 10 Luleå Sverige 977 75
PR	<i>Analysene er utført av:</i> ALS Czech Republic, s.r.o., Na Harfe 336/9 Prague 9 - Vysocany 190 00