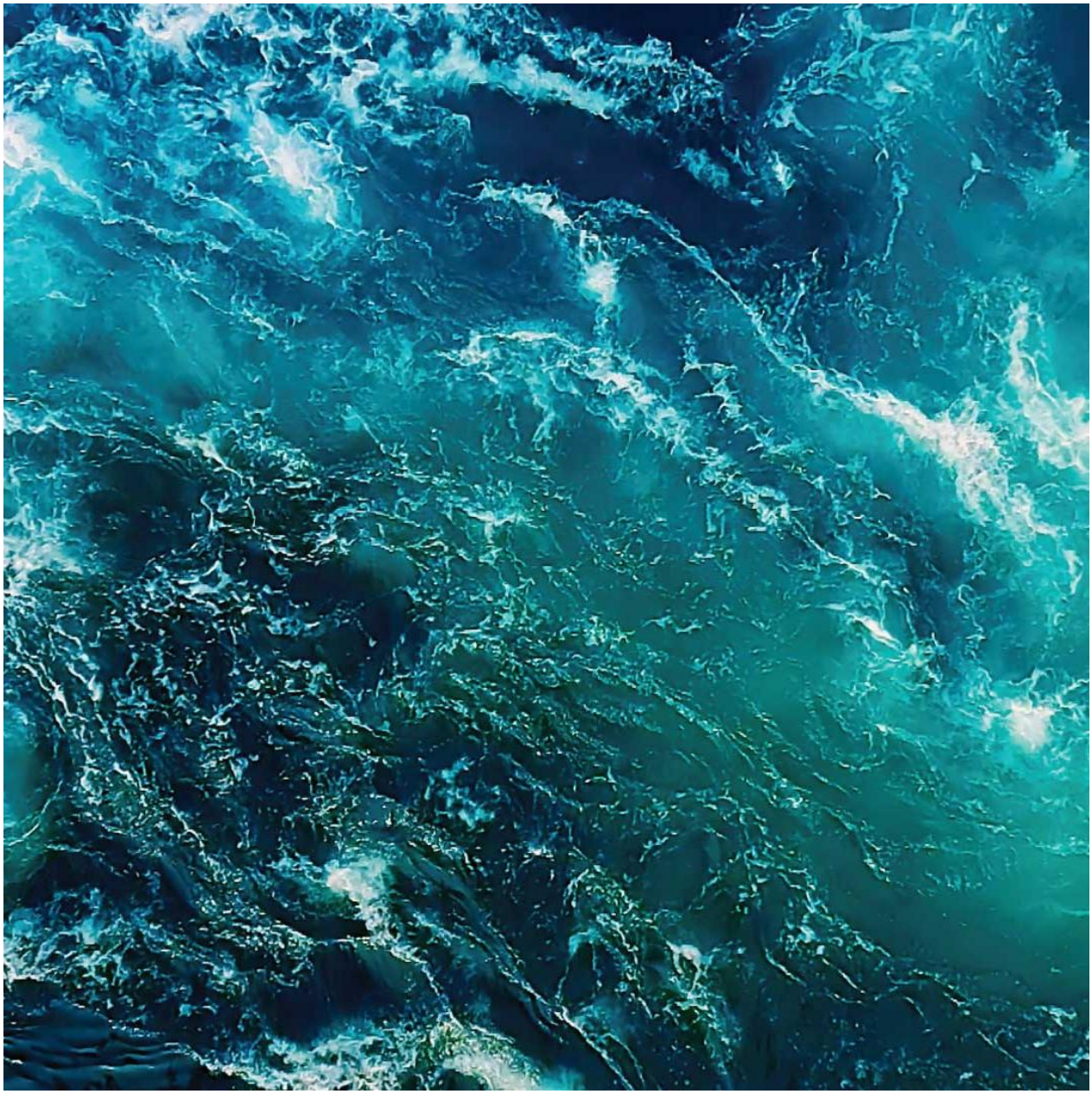
C-survey at Vatneyri (max biomass), 2025

Arnarlax ehf

Akvaplan-niva AS Report: 2025 66911.02



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Arnarlax ehf. C-Survey at Vatneyri (max biomass), 2025.

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Summary

The results from the monitoring at the farming site Vatneyri in October 2025 showed that the sediment was loaded with organic carbon and the copper level in the sediment at C1 was somewhat elevated (43 mg/kg) and is categorized into environmental limit II or "low values". EMB concentration was 270 ng/kg and thus below the defined concentration of 272 ng/kg for stations outside the mixing zone. Accordingly, the station is fulfilling the "good status standard". The phosphorus levels varied between 1200 and 1500 mg/kg. The sediment was fine grained with a pelite share between 73.0 and 85.4 %.

The redox measurements (pH/Eh) gave point 0 acc. Appendix D in NS 9410:2016 for all the sampling stations. The oxygen saturation in September was good in the whole water column with 87 % in the bottom water.

The overall index of nEQR was lower than 0.6 at C1 and C6 and lowest at C1. The nEQR values indicate poor faunal condition at C1, moderate at C6 and good conditions at the other stations. The diversity index H ' was 2.15 at C1 and above 3 at the other stations which ranged from 3.18 to 3.42. The NS 9410:2016-assessment of the community in the local impact zone (C1) showed environmental condition 1 (Very good). A pollution indicator species was the most dominant species at C1 and among the top ten species at C4, but not at the other stations.

The results from the present survey in October 2025 compared to previous C survey which was a pre survey 2024 prior to put out first smolt at site (Mannvik and Gunnarsson, 2024) the diversity index H' has decreased at the station in the impact zone and increased at the other stations. No pollution indicator species were found among the top ten at the stations in 2024 but are now the most dominant species at C1 and among the top ten species at C4.

Approval

Project leader

Digitally signed by Rune Palerud
Date: 2026.01.14 16:34:28 +01'00'

Quality control

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Preface

Akvaplan-niva carried out a type C (NS 9410:2016) environmental survey at the Vatneyri site. It includes pH/redox measurements (Eh), hydrography, geochemical analyses, and analyses of the bottom fauna from six stations at the fish farming site. The following personnel contributed:

Snorri Gunnarsson	Akvaplan-niva	Field work, report, project leader.
Hans-Petter Mannvik	Akvaplan-niva	Identification of bottom fauna (Echinodermata). Report, professional assessments, and interpretations.
Kamila Sztybor	Akvaplan-niva	Identification of bottom fauna (Polychaeta).
Rune Palerud	Akvaplan-niva	Identification of bottom fauna (Crustaceans). Statistics. QA report, professional assessments, and interpretations.
Jesper Hansen	Akvaplan-niva	Identification of bottom fauna (Varia and Mollusca).
Anne Tårånd Aasen	Akvaplan-niva	Hydrographical vertical profiles
Kristine H Sperre	Akvaplan-niva	Coordination of sorting of bottom fauna.
Lisa Torske	Akvaplan-niva	Coordination of geo-chemical analyses.

Akvaplan-niva would like to thank Arnarlax ehf and Silja Baldvinsdóttir for good cooperation.

Accreditation information:

The survey was carried out by Akvaplan-niva AS with ALS Laboratory Group (Czech Republic) as a sub-contractor.

NORSK AKKREDITERING TEST 079

Akvaplan-niva AS is accredited under NS-EN ISO/IEC 17025 by Norwegian Accreditation for field sampling of sediments and fauna, analyses of TOC, TOM, TN, particle size and macrofauna, and for professional evaluations and interpretations. Our Accreditation number is TEST 079.

Czech Accreditation Institute (Lab nr 1163)

ALS Laboratory Group is accredited by the Czech Accreditation Institute (Lab nr 1163) for copper analyses.

Non-accredited services: Analyses of emamectin benzoate, hydrographical measurements and mapping of bottom topography (Olex).

1 Data Summary

Client information			
Report title:	C-Survey at Vatneyri (max biomass), 2025.		
Report nr.	2025 66911.02	Site:	Vatneyri
Municipality:		Map Coordinates (construction):	65°37.692 N 24°04.507 V
MTB permitted:	8,325	Operations manager:	Silja Baldvinsdóttir
Client:	Arnarlax ehf		

Biomass/production status at time of survey (10.10.2025)			
Fish group:	Salmon	Biomass on examination (t):	8,215
Feed input (t):	9,940	Tonnes of produced fish:	8,208
Type/time of survey			
Maximum biomass:	X	Follow up study:	
Fallow (resting period):		New location:	

Results from the C study /NS 9410 (2016) – Main results from soft bottom fauna			
Faunal index nEQR (Miljødirektoratet 2025)		**Diversity index H' (Shannon-Wiener)**	
Fauna C1 (impact zone)	0.372	Fauna C1 (impact zone)	2.15
Fauna C2	0.655	Fauna C2	3.42
Fauna C3	0.606	Fauna C3	3.20
Fauna C4 (deep area)	0.626	Fauna C4 (deep area)	3.42
Fauna C5	0.625	Fauna C5	3.41
Fauna C6	0.592	Fauna C6	3.18
Date fieldwork:	(10.10.2025)	**Date of report:**	14.01 2026
Notes to other results (sediment, pH/Eh, oxygen)			nTOC from 42.1 to 51.1 Copper 43 mg/kg at C1 Eh positive at all stations O_2-conditions were good throughout the water column.

2 Introduction

2.1 Background and aim of the study

On behalf of Arnarlax ehf, Akvaplan-niva completed a survey (type C) for the fish farming site at Vatneyri (Figure 1) with reference to Chapter 5.0 in NS 9410:2016 which follows the methodology for C- study. The survey also fulfils the requirements of the Icelandic authorities for bottom surveys according to ISO 12878 and the requirements for environmental bottom surveys (according to Vöktunaráætlun). A survey (type C) is aimed at studying the environmental conditions of the bottom sediments along a transect sector from the fish farm that extends from the local, to the intermediate and to the regional impact zones. The main emphasis is on the study of the soft bottom fauna which is conducted according to standards ISO 5567-19:2004 and ISO 16665:2014. The obligatory parameters that are included in the survey are described in NS 9410:2016.

A classification or threshold values for this type of survey have not been developed by Icelandic officials, so it is not possible to strictly apply the classification based on Norwegian threshold values to Icelandic conditions. We do however report the results with these same indexes with reference to Norwegian threshold values (national water type G/H 1-3; see chapter 7.1), but it should be emphasized that some of these (such as NSI) are developed according to Norwegian conditions. For further descriptions of these indexes see details in Appendix 7.1 and guidelines from Miljødirektoratet (2025).

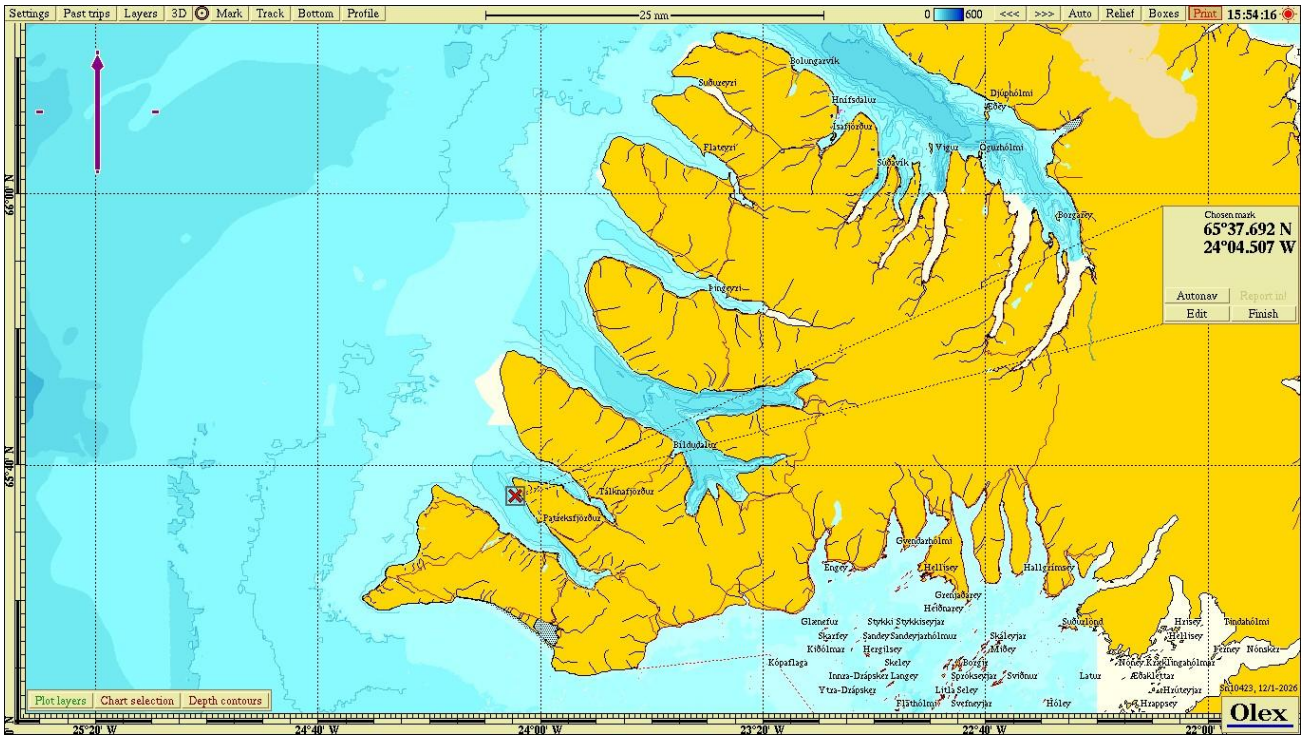

Figure 1 Overview of Patreksfjörður in the Westfjords region with the farming site Vatneyri (red cross). The map coordinates for the midpoint of the farming site are given to the right.

2.2 Site operation and feed use

The Vatneyri site is in outer and northern part of Patreksfjörður about 5.5 km northwest from Patreksfjörður harbour. The cages are lined in a northwest-southeast direction. The depth under cages ranges from about 50-63 m. The fish farm at the site is a 2x8 setup, total 16 cages each with 200 m circumference. 12 out of the 16 cages were used during farming of the current generation. The current generation is the first generation farmed salmon at the site.

In Iceland, the MTB (maximum allowable biomass) is not given a site level as in Norway. The MTB limit determines how much live fish the holder of the permit can have standing in the sea at any time. In Iceland the allowed production is regulated at two levels, site level and company level. For this site the estimated maximal standing biomass for the next generation is 8,325 tonnes, used as MTB here (Silja Baldvinsdóttir, pers. comm).

2.3 Previous surveys

An overview of previous C-surveys carried out at Vatneyri is shown in Table 1.

Table 1: Previous C-surveys at Vatneyri.

Survey date	Report reference (author, year)	Production (tonnes)
08.05 2024	Mannvik and Gunnarsson, 2024	0

3 Materials and methods

3.1 Survey program

The choice of study parameters, placement of sampling stations and other criteria for the study is based on descriptions in NS 9410 (C-surveys). An overview of the planned professional program is given in Table 2.

Akvaplan-niva is accredited for field work, analyses of samples and for the professional evaluation of results in accordance with applicable standards and guidelines ("Veiledere"). For implementation and follow through, the following standards and quality assurance systems were used:

- ISO 5667-19:2004: *Guidance on sampling of marine sediments.*
- ISO 16665:2014. *Water quality – Guidelines for quantitative sampling and sample processing of marine soft-bottom macro fauna.*
- NS 9410:2016. *Miljøovervåking av bunnpåvirkning fra marine oppdrettsanlegg.*
- Internal procedures. *Quality Manual for Akvaplan-niva.*
- Miljødirektoratet (2025). Veileder for klassifisering av miljøtilstand i kyst- og ferskvann.

Table 2: Survey program for the C-survey at Vatneyri, 2025. TOC = total organic carbon. GSA = grain size analysis sediment. TOM = total organic material. TN = total nitrogen. Cu = Copper. P = phosphorous. EMB = emamectin benzoate. pH/Eh = acidity and redox potential.

Station	Type analyses/parameters
C1 (local impact zone)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. Cu. P. pH/Eh.
C2 (transition zone outer)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. pH/Eh.
C3 (transition zone)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. pH/Eh.
C4 (transition zone, deep area)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. EMB. Hydrography/O_2. pH/Eh.
C5 (transition zone)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. pH/Eh.
C6 (transition zone)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. pH/Eh.

Field work was completed on 10.10.2025.

3.2 Placement of stations and local conditions

The number of stations was calculated with reference to the sites estimated maximal standing biomass for the first generation which is 8,325 tonnes (used as MTB here). According to the standard six sampling stations should be examined. Depth and position of the stations are given in Table 3 and shown in Figure 2. The stations were placed in the direction of the main oceanic current direction at 48 m depth (Hermansen, 2020).

Table 3: Depth, distance between the nearest frame of the fish farm and sampling stations and coordinates for C-stations at Vatneyri, 2025.

Station	Depth, m	Distance from frame, m	Position	
			N	W
C1	62	25	65°37.929	24°04.739
C2	67	500	65°38.140	24°05.147
C3	65	144	65°37.966	24°04.931
C4	66	263	65°38.018	24°05.022
C5	67	382	65°38.083	24°05.069
C6	62	65	65°37.697	24°04.748

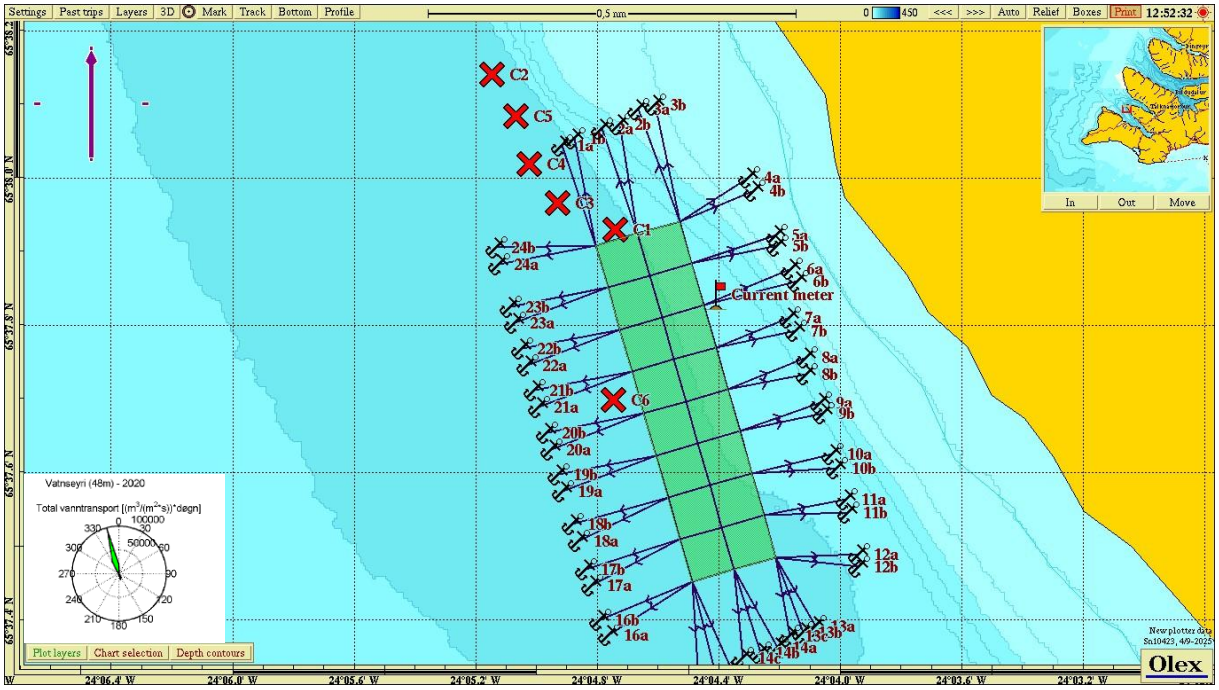

Figure 2. Map showing the sampling stations for the C-survey at Vatneyri, 2025. Current measurements used were from 48 m depth (Hermansen, 2020).

3.3 Hydrography and oxygen

At station C4, hydrographic measurements, salinity, temperature, density, and oxygen saturation were taken for vertical surface to bottom profiles using a Sensordata CTDO 204 probe.

3.4 Soft bottom sampling and analyses

3.4.1 Fieldwork

Sediment samples were collected with a 0.1 m² bottom grab (van Veen). The sample material was collected through inspection openings. Samples for TOC, TN and Cu were taken from the top 1 cm layer of the sediment and for TOM and grain size analyses from the top 5 cm using a hollow pipe. Only samples with an undisturbed surface were used. The samples were frozen prior to further processing in the laboratory.

3.4.2 Total organic material (TOM)

The amount of TOM in sediment was determined by weight loss after combustion at 495 °C. The percent weight loss was calculated. The reproducibility of the TOM analyses is checked during the analyses by using a standard sediment that contains TOM with a known level. Standard calcium carbonate was burned together with the samples as a control of the amount of carbonate that was not burned in the analyses process.

3.4.3 Total nitrogen (TN)

After drying the samples at 40°C, the amount of total nitrogen (TN) was quantified by electrochemical determination using Akvaplan-niva internal method that is based on NS-EN 16168:2012.

3.4.4 Total organic carbon (TOC) and grain size

The proportion of fine material, the fraction less than 63 µm, was determined gravimetrically after wet sieving of the samples. The results are presented as proportion of each fraction on a dry weight basis (Bale & Kenny, 2005).

After drying the samples at 40 °C, the content of total organic carbon (TOC) was determined by NDIR-detection in accordance with NS EN 17505:2022. To classify the environmental conditions based on the content of TOC, the measured concentrations are normalized for the proportion of fine substance (nTOC) using the equation: nTOC = TOC + 18 (1 – F), where TOC and F represent a measured TOC value and the proportion of fine substance (%) in the sample (Aure *et al.,* 1993).

3.4.5 Metal analysis - copper (Cu)

The samples for metal analysis were freeze-dried before being placed in a microwave oven in a sealed Teflon container with concentrated ultrapure nitric acid and hydrogen peroxide. The concentration of copper (Cu) was determined by means of ICP-SFMS. The levels of copper are classified in accordance with Icelandic regulation 769:1999.

3.4.6 Emamectin benzoate (EMB)

The sediments were lyophilized prior to solvent extraction. The actual quantification was determined by high-resolution liquid chromatography coupled to tandem mass spectroscopy (HPLC-MS/MS). The LOD and LOQ are determined in accordance with the guidelines of the EU's reference laboratories for pesticide analyses, SANTE/2020/12830, 24/02/2021. The results are evaluated according to the Scottish Environmental Protection Agency (SEPA) standards (SEPA, 2022 & 2023).

3.4.7 Phosphorus (P)

Following a pre-treatment, the samples were quantified according to ČSN 720116-1 (720116) where phosphoruspentaoxide, P_2O_5 forms a phosphorusmolybden-vanadiumcomplex. The samples for metal analysis were freeze-dried before being placed in a microwave oven in a sealed Teflon container with concentrated ultrapure nitric acid and hydrogen peroxide.

3.4.8 Redox- and pH measurements

At all the stations, a quantitative chemical examination of the sediment was carried out. Acidity (pH) and redox potential (Eh) were measured using electrodes and the YSI Professional Plus instrument. In accordance with the manual of the instrument, 200 mV was added to the measured ORP (the Oxidation Reduction Potential) value.

3.5 Soft bottom fauna investigation

3.5.1 About effect of organic material on bottom fauna

The emission of organic material from fish farms can contribute to the deterioration of conditions for many of the organisms living in the bottom sediment. Negative effects in the bottom fauna can best be assessed through quantitative bottom fauna analyses. Many soft bottom species have low mobility, and the fauna composition will largely reflect the local environmental conditions. Changes in the bottom fauna communities are a good indication of unwanted organic loads. Under natural conditions, the communities typically consist of many species. High number of species (diversity) is, amongst other things, that is dependent on favourable conditions for the fauna. However, moderate increases in organic load can stimulate the fauna and result in an increased number of species found. Larger organic loads can result in less favourable conditions where opportunistic species increase their individual numbers, while the species not suited are knocked out resulting in a reduced diversity of species. Changes in species diversity near emission points of feed and faecal matter can, to a large degree, be attributed to changes in organic content (from the feed and faecal matter) in the sediment.

3.5.2 Sampling and fixation

All the bottom fauna samples were taken with a 0.1 m^2 van Veen grab. Only grab samples where the grab was completely closed and the surface undisturbed were approved. The contents were washed through a 1 mm sieve and the remaining material fixed with 4 % formalin with Bengal Rose dye added and then neutralized with borax. In the laboratory, the animals were sorted from the remaining sediment.

3.5.3 Quantitative bottom fauna analysis

At all stations, two samples (replicates) were collected in accordance with guidelines in NS 9410 (2016). After sorting the sample material was processed quantitatively. The bottom fauna was identified to the lowest taxonomic level possible and quantified by specialists (taxonomists). The quantitative lists of species were statistically analysed. See Appendix 1 for description of analysis methods. The following statistical methods were used to describe community structure and to assess the similarity between different communities:

- Shannon-Wiener diversity index (H')
- Hurlberts diversity index (ES_{100}) – expected number of species pr. 100 individuals
- Pielou's evenness index (J)
- Sensitivities index (Ømfintlighet) (ISI_{2018}), unsuitable at low individual/species number
- Sensitivity index (NSI_{2018})

- Composite index for diversity of species and sensitivity (NQI1)
- Sensitivities index which is included in NQI1 (AMBI)
- Normalized EQR (nEQR)
- Number of species plotted against the number of individuals in geometric classes
- Cluster analyses
- The ten most dominant taxa per station (top-ten)

4 Results

4.1 Hydrography and oxygen

The hydrographical profile for the deep station C4 in October 2025 is presented in Figure 3.

Temperature was around 9.5 °C in the whole water column. Oxygen saturation was 87 % in the whole water column.

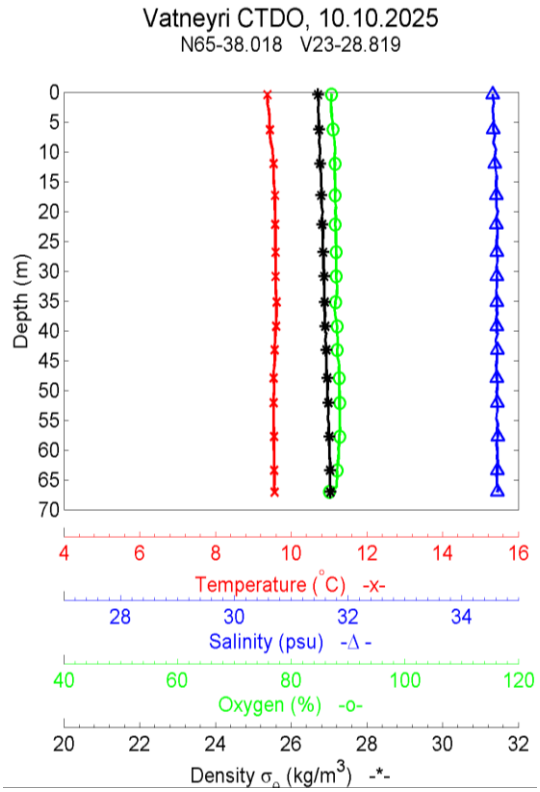

Figure 3. Vertical profiles. Temperature, salinity, density, and oxygen at C4 at Vatneyri, 2025.

4.2 Sediment

4.2.1 TOC, TOM, TN, C/N, grain size and pH/Eh

Levels of total organic material (TOM), total organic carbon (TOC), total nitrogen (TN), C/N-relationship, grain size distribution in sediment (pelite) and pH/Eh in the sediment are presented in Table 4.

TOM-levels varied from 12.6 to 13.5 %. TN-levels were low (3.0 – 3.6 mg/g) while the C/N-ratios were somewhat high at all stations. TOC was high at all stations and nTOC varied 42.1 to 51.1. The bottom sediments grain size was fine with a pelite ratio ranging from 73.0 to 85.4 %.

Redox measurements (pH/Eh) gave a point of 0 for all the sampling stations according to Appendix D in NS 9410:2016.

Table 4. Sediment description, TOM (%), TOC (mg/g), TN (mg/g), C/N, grain size distribution (pelite ratio % <0,063 mm) and pH/Eh. Vatneyri, 2025.

St.	Sediment description	TOM	TOC	nTOC	TN	C/N	Pelite	pH/Eh
C1	Olive green mud and some dead black algae	12.7	47	51.1	3.1	15.3	78.8	7.7/257
C2	Olive green mud	12.6	40	42.1	3.0	13.1	85.4	7.8/308
C3	Olive green mud and some dead black algae	13.2	47	49.8	3.0	15.5	82.5	7.8/283
C4	Olive green mud and some dead black algae	13.5	48	50.9	3.6	13.2	82.3	7.8/254
C5	Olive green mud and some dead black algae	13.3	40	45.2	3.0	13.6	73.0	7.7/281
C6	Olive green mud and some dead black algae	13.0	46	49.9	3.4	13.6	76.8	7.8/258

4.2.2 Copper

Levels of copper in bottom sediment at C1 are shown in Table 5. The level of copper was 43 mg/kg or low (limit II) according to environmental limits in Icelandic regulation nr. 796/199 (Regulation on prevention of water pollution nr. 796/1999).

Table 5. Copper (Cu), mg/kg DS. Vatneyri, 2025.

St.	Cu
C1	43

4.2.3 Emamectin benzoate

Concentration of emamectin benzoate in sediment at C4 is presented in Table 6. Station C4 is located 263 m from the cage edge and is thus placed outside the mixing zone (SEPA 2022).

EMB concentration was 270 ng/kg and thus below the defined concentration of 272 ng/kg for stations outside the mixing zone. Accordingly, the station is fulfilling the "good status standard".

Table 6. Emamectin benzoate in the sediment at C4, ng/kg. Vatneyri, 2025.

St.	Emamectin benzoate
C4	270

4.2.4 Phosphorus

Levels of phosphorus in bottom sediments at Vatneyri are shown in Table 7. The level of phosphorus varied from 1200 mg/kg (C2 and C5) to 1500 mg/kg (C3).

Table 7. Phosphorus (P), mg/kg DS. Vatneyri, 2025.

St.	P
C1	1300
C2	1200
C3	1500
C4	1300
C5	1200
C6	1300

4.3 Soft-bottom fauna

4.3.1 Faunal indices

Results from the quantitative soft bottom faunal analyses at the C-stations are presented in Table 8.

The number of individuals varied from 483 (C3) to 975 (C4) and number of species from 30 (C6) to 44 (C2). The diversity H' varied from 2.15 to 3.42. The overall index of nEQR was lower than 0.6 at C1 and C6 and lowest at C1. The nEQR values indicate poor faunal condition at C1, moderate at C6 and good conditions at the other stations.

J (Pielous evenness index) is a measure of how equally individuals are divided between species and will vary between 0 and 1. A station with low value has a "crooked" individual distribution between the species, indicating a disturbed bottom fauna community. The index varied from 0.49 to 0.69 which indicates a somewhat uneven distribution.

Table 8. Number of species and individuals pr. 0,2 m2. H´ = Shannon-Wiener's diversity index. ES100 = Hurlberts diversity index. NQI1 = overall index (diversity and sensitivity). ISI_{2018} = sensitivity index. NSI = sensitivity index. J = Pielous evenness index. AMBI = AZTI marine biotic index (part of NQI1). nEQR = normalized EQR (excl. DI). C-stations at Vatneyri, 2025.

St.	No. of individuals.	No. of species	H´	ES_{100}	NQI1	ISI_{2018}	NSI	nEQR*	AMBI	J
C1	623	32	2.15	12.0	0.481	3.99	12.85	0.372	4.424	0.49
C2	796	44	3.42	19.8	0.718	5.36	21.68	0.655	1.989	0.67
C3	483	33	3.20	17.5	0.695	4.86	22.22	0.606	2.102	0.68
C4	975	39	3.42	19.8	0.703	4.73	21.75	0.626	2.005	0.69
C5	853	39	3.41	18.6	0.703	5.05	21.11	0.625	2.177	0.67
C6	588	30	3.18	17.8	0.705	4.09	22.93	0.592	1.824	0.69

*) According to Norwegian national water type G/H 1-3 (Miljødirektoratet, 2025).

4.3.2 NS 9410 Evaluation of the bottom fauna at station C1 (local impact zone).

According to NS 9410 the classification of the environmental status in the local impact zone can also be evaluated based on the number of species and their dominance in the bottom faunal community (see Chapter 8.6.2 in NS 9410:2016).

The soft bottom communities were classified to environmental condition 1 "Very good". The criteria for condition 1 are that there are at least 20 species/0.2 m^2 and that none of these are in numbers exceeding 65 % of the individuals (Table 9).

Table 9. Classification of the environmental status of the soft bottom fauna at station C1 at the Vatneyri site 2025.

Station	Site name	Num. species	Dominating taxa	Environmental condition-NS 9410
C1	Vatneyri	32	Capitella capitata – 49 %	1 – Very good

4.3.3 Geometric classes

Figure 4 shows the number of species plotted against the number of individuals, where the number of individuals is divided into geometric classes. For an explanation of the concept of geometric classes is given in Appendix 1.

All curves started relatively low (< 15 species) and stretched out in varying degrees towards higher classes. These did not give any clear indications of fauna condition.

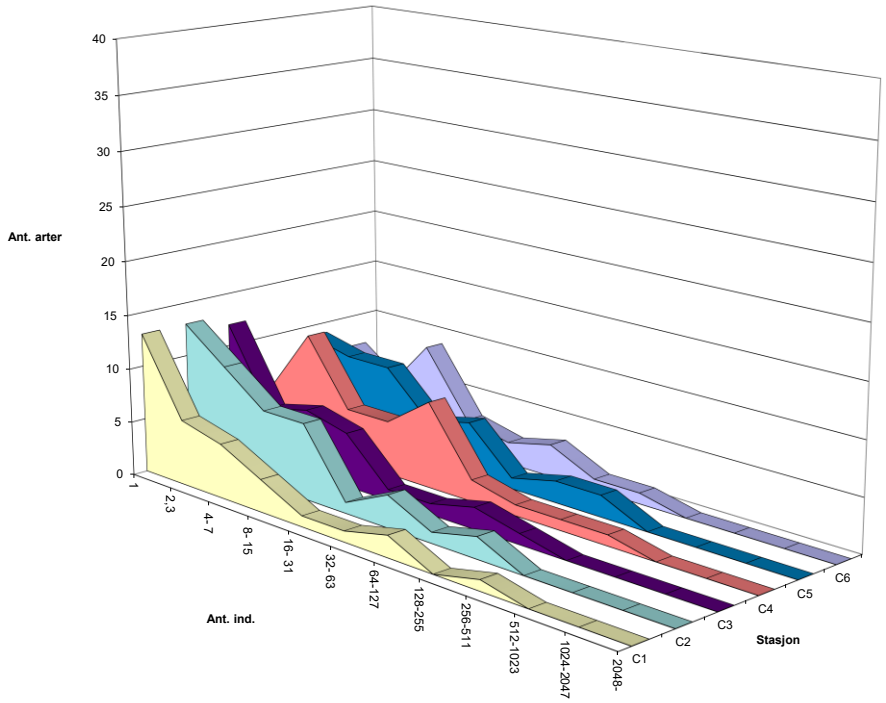

Figure 4. The soft bottom fauna shown as number of species against number of individuals pr. species in geometric classes. Vatneyri, 2025.

4.3.4 Cluster analyses

To investigate the similarity of the faunal composition between the sampling stations, the multivariate technique cluster analysis was used. The results of this are presented in dendrogram in Figure 5.

The fauna composition was more than 69 % similar for all stations in the survey.

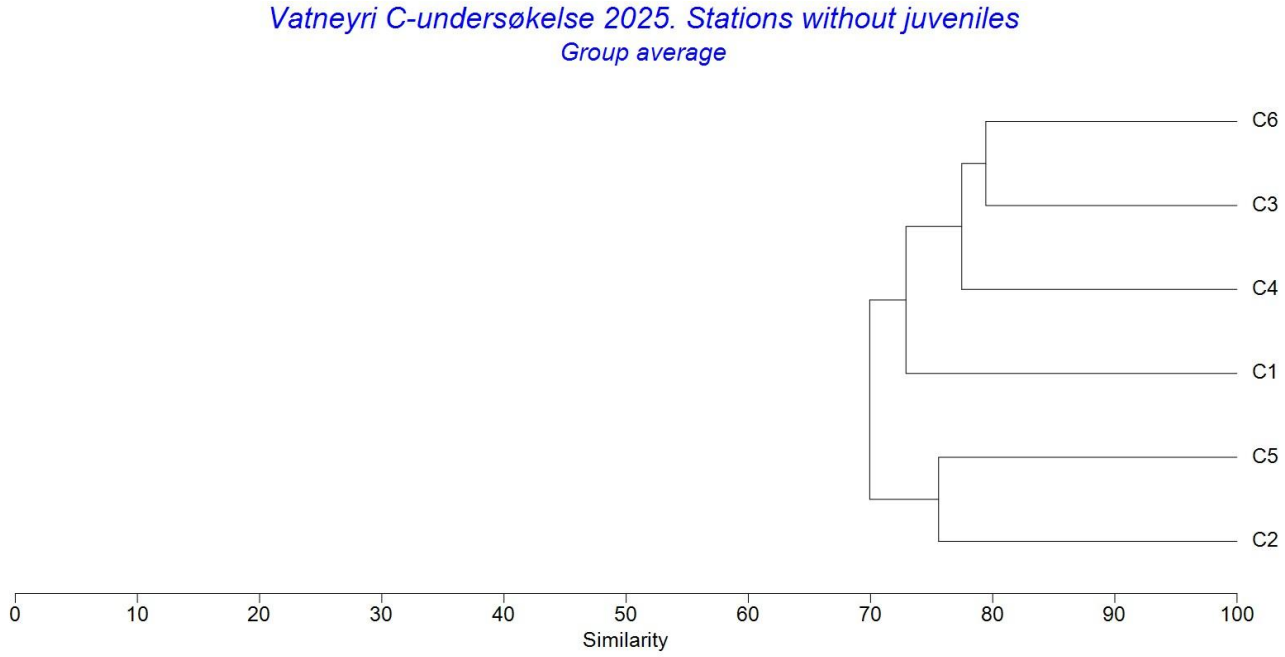

Figure 5. Cluster diagram for the soft bottom fauna at the C- sampling stations at Vatneyri, 2025.

4.3.5 Species composition

The main features of the species composition are shown in the form of a top ten species list from each station in Table 10.

In Borgersen *et al.* (2020) the species are divided into five ecological groups (EG) based on the value of the sensitivity index. These groups run from sensitive species (EG I) to pollution indicators (EG V).

The fauna at C1 was dominated by the pollution indicator species *Capitella capitata* with 49 % of the individuals. The other most dominant species at the station were mainly a mixture of tolerant and opportunistic species.

The fauna at C5 was dominated by the tolerant polychaete *Galathowenia oculata* with 28 % of the individuals. The other most dominant species, with known EG, at the station were tolerant and opportunistic species.

At the other stations the fauna was dominated by the neutral bivalve *Ennucula tenuis* with between 28 and 41 % of the individuals. The other most dominant species at the stations were mainly a mixture of tolerant, and opportunistic species together with a pollution indicator species at C4.

Table 10. Number of individuals, cumulative percentage, and ecological group for the ten most dominant species at the C stations. Vatneyri, 2025.*

C1	EG	Ant. ind.	Kum.
Capitella capitata	V	310	49 %
Lagis koreni	III	92	64 %
Ennucula tenuis	III	88	78 %
Thyasira sarsii	IV	38	84 %
Galathowenia oculata	III	20	87 %
Microphthalmus sczelkowii	Ik	9	89 %
Prionospio steenstrupi	IV	9	90 %
Nuculana pernula	I	8	91 %
Leucon sp.	Ik	5	92 %
Ophiocten affinis	II	5	93 %

C2	EG	Ant. ind.	Kum.
Ennucula tenuis	III	223	28 %
Galathowenia oculata	III	199	52 %
Lagis koreni	III	65	60 %
Thyasira sarsii	IV	52	67 %
Prionospio steenstrupi	IV	46	73 %
Leucon sp.	Ik	32	77 %
Yoldia hyperborea	Ik	31	80 %
Euchone incolor	Ik	15	82 %
Nuculana pernula	I	11	84 %
Cossura longocirrata	IV	10	85 %

C3	EG	Ant. ind.	Kum.
Ennucula tenuis	III	140	29 %
Galathowenia oculata	III	101	50 %
Lagis koreni	III	70	64 %
Thyasira sarsii	IV	54	75 %
Nuculana pernula	I	17	79 %
Yoldia hyperborea	Ik	13	81 %
Pholoe baltica	II	10	83 %
Leucon sp.	Ik	9	85 %
Prionospio steenstrupi	IV	9	87 %
Microphthalmus sczelkowii	Ik	8	89 %

C4	EG	Ant. ind.	Kum.
Ennucula tenuis	III	353	35 %
Galathowenia oculata	III	149	50 %
Thyasira sarsii	IV	67	57 %
Lagis koreni	III	62	63 %
Microphthalmus sczelkowii	Ik	41	67 %
Capitella capitata	V	30	70 %
Yoldia hyperborea	Ik	29	73 %
Prionospio steenstrupi	IV	28	76 %
Euchone incolor	Ik	27	79 %
Caprellidae indet.	Ik	21	81 %

C5	EG	Ant. ind.	Kum.
Galathowenia oculata	III	240	28 %
Ennucula tenuis	III	191	50 %
Lagis koreni	III	79	59 %
Thyasira sarsii	IV	73	68 %
Prionospio steenstrupi	IV	57	74 %
Euchone incolor	Ik	28	78 %
Leucon sp.	Ik	22	80 %
Parougia sp.	Ik	21	83 %
Sternaspis scutata	Ik	18	85 %
Yoldia hyperborea	Ik	17	87 %

C6	EG	Ant. ind.	Kum.
Ennucula tenuis	III	240	41 %
Galathowenia oculata	III	76	53 %
Nuculana pernula	I	44	61 %
Thyasira sarsii	IV	43	68 %
Lagis koreni	III	41	75 %
Microphthalmus sczelkowii	Ik	24	79 %
Yoldia hyperborea	Ik	24	83 %
Parougia sp.	Ik	11	85 %
Eteone flava/longa	III	10	87 %
Macoma calcarea	III	10	88 %

*Ecological groups: EG I = sensitive species. EG II = neutral species. EG III = tolerant species. EG IV = opportunistic species. EG V = pollution indicator species. From Borgersen et al., 2020. Ik = ecological group unknown.

5 Summary

The results from the monitoring at the farming site Vatneyri in October 2025 showed that the sediment was loaded with organic carbon and the copper level in the sediment at C1 was somewhat elevated (43 mg/kg) and is categorized into environmental limit II or "low values". EMB concentration was 270 ng/kg and thus below the defined concentration of 272 ng/kg for stations outside the mixing zone. Accordingly, the station is fulfilling the "good status standard". The phosphorus levels varied between 1200 and 1500 mg/kg. The sediment was fine grained with a pelite share between 73.0 and 85.4 %.

The redox measurements (pH/Eh) gave point 0 acc. Appendix D in NS 9410:2016 for all the sampling stations. The oxygen saturation in September was good in the whole water column with 87 % in the bottom water.

The overall index of nEQR was lower than 0.6 at C1 and C6 and lowest at C1. The nEQR values indicate poor faunal condition at C1, moderate at C6 and good conditions at the other stations. The diversity index H ' was 2.15 at C1 and above 3 at the other stations which ranged from 3.18 to 3.42. The NS 9410:2016-assessment of the community in the local impact zone (C1) showed environmental condition 1 (Very good). A pollution indicator species was the most dominant species at C1 and among the top ten species at C4, but not at the other stations.

5.1 Comparison with previous survey

The results from the present survey in October 2025 compared to previous C survey which was a pre survey 2024 prior to put out first smolt at site (Mannvik and Gunnarsson, 2024) the diversity index H' has decreased at the station in the impact zone and increased at the other stations. No pollution indicator species were found among the top ten at the stations in 2024 but are now the most dominant species at C1 and among the top ten species at C4.

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7 Appendix (in Norwegian)

7.1 Bunndyrsindekser og artslister

Diversitetsmål

Diversitet er et begrep som uttrykker mangfoldet i dyre- og plantesamfunnet på en lokalitet. Det finnes en rekke ulike mål for diversitet. Noen tar mest hensyn til artsrikheten (mål for artsrikheten), andre legger mer vekt på individfordelingen mellom artene (mål for jevnhet og dominans). Ulike mål uttrykker derved forskjellige sider ved dyresamfunnet. Diversitetsmål er "klassiske" i forurensningsundersøkelser fordi miljøforstyrrelser typisk påvirker samfunnets sammensetning. Svakheten ved diversitetsmålene er at de ikke alltid fanger opp endringer i samfunnsstrukturen. Dersom en art blir erstattet med like mange individer av en ny art, vil ikke det gjøre noe utslag på diversitetsindeksene.

Shannon-Wieners indeks (Shannon & Weaver, 1949) er gitt ved formelen:

$$H' = -\sum_{i=1}^{s} \frac{n_i}{N} \log_2 \left(\frac{n_i}{N} \right)$$

der n_i = antall individer av art i i prøven
N = total antall individer
s = antall arter

Indeksen tar hensyn både til antall arter og mengdefordelingen mellom artene, men det synes som indeksen er mest følsom for individfordelingen. En lav verdi indikerer et artsfattig samfunn og/eller et samfunn som er dominert av en eller få arter. En høy verdi indikerer et artsrikt samfunn.

Pielous mål for jevnhet (Pielou, 1966)

har følgende formel, der symbolene er som i Shannon-Wieners indeks

$$J = \frac{H'}{\log_2 s}$$

Hurlberts diversitetskurver

Grafisk kan diversiteten uttrykkes i form av antall arter som funksjon av antall individer. Med utgangspunkt i total antall arter og individer i en prøve søker man å beregne hvor mange arter man ville vente å finne i delprøver med færre individer. Diversitetsmålet blir derved uavhengig av prøvestørrelsen og gjør at lokaliteter med ulik individtetthet kan sammenlignes direkte. Hurlbert (1971) har gitt en metode for å beregne slike diversitetskurver basert på sannsynlighetsberegning.

ES_n er forventet antall arter i en delprøve på n tilfeldig valgte individer fra en prøve som inneholder total N individer og s arter og har følgende formel:

$$ES_n = \sum_{i=1}^{s} \left[1 - \frac{\binom{N-N_i}{n}}{\binom{N}{n}} \right]$$

der N = total antall individ i prøven
N_i = antall individ av art i

n = antall individ i en gitt delprøve (av de N)
s = total antall arter i prøven

Plott av antall arter i forhold til antall individer

Artene deles inn i grupper/klasser etter hvor mange individer som er registrert i en prøve. Det vanlige er å sette klasse I = 1 individ pr. art, klasse II = 2-3 individer, klasse III = 4-7 individer, klasse IV = 8-15 individer, osv., slik at de nedre klassegrensene danner en følge av ledd på formen 2^x, x=0,1,2, ... En slik følge kalles en geometrisk følge, derfor kalles klassene for geometriske klasser. Hvis antall arter innenfor hver klasse plottes mot klasseverdien på en lineær skala, vil det fremkomme en kurve som uttrykker individfordelingen mellom artene i samfunnet. Det har vist seg at i prøver fra upåvirkede samfunn vil det være mange arter med lavt individantall og få arter med høyt individantall, slik at vi får en entoppet, asymmetrisk kurve med lang "hale" mot høye klasseverdier. Denne kurven vil være godt tilpasset en log-normal fordelingskurve.

Ved moderat forurensing forsvinner en del av de individfattige artene, mens noen som blir begunstiget, øker i antall. Slik flater kurven ut, og strekker seg mot høyere klasser eller den får ekstra topper. Under slike forhold mister kurven enhver likhet med den statistiske log-normalfordelingen. Derfor kan avvik fra log-normalfordelingen tolkes som et resultat av en påvirkning/forurensing. Det har vist seg at denne metoden tidlig gir utslag ved miljøforstyrrelse. Ved sterk forurensning blir det bare noen få, men ofte svært tallrike arter tilbake. Log-normalfordelingskurven vil da ofte gjenoppstå, men med en lavere topp og spredt over flere klasser enn for uforstyrrede samfunn.

Faunaens fordelingsmønster (Clusteranalyse)

Variasjoner i faunaens fordelingsmønster over området beskrives ved å sammenligne faunasamfunnet på hver stasjon. Til dette brukes multivariate klassifikasjons- og ordinasjons-analyser.

Analysene i denne undersøkelsen ble utført ved hjelp av programpakken PRIMER. Inngangsdata er individantall pr. art, pr. prøve. Prøvene kan være replikater eller stasjoner. Det tas ikke hensyn til hvilke arter som opptrer. Forut for klassifikasjons- og ordinasjonsanalysene ble artslistene dobbelt kvadratrot-transformert. Dette ble gjort for å redusere avviket mellom høye og lave tetthetsverdier og dermed redusere eventuelle effekter av tallmessig dominans hos noen få arter i datasettet.

For å sammenligne prøvene ble Bray-Curtis ulikhetsindeks benyttet (Bray & Curtis, 1957):

$$d_{ij} = \frac{\sum_{k=1}^{n} \left| X_{ki} - X_{kj} \right|}{\sum_{k=1}^{n} (X_{ki} + X_{kj})}$$

der n = antall arter sammenlignet
X_{ki} = antall individ av art k i prøve nr. i
X_{kj} = antall individ av art k i prøve nr. j

Indeksen avtar med økende likhet. Vi får verdien 1 hvis prøvene er helt ulike, dvs. ikke har noen felles arter. Identiske arts- og individtall vil gi verdien 0. Prøver blir gruppert sammen etter graden av likhet ved å bruke "group-average linkage". Forholdsvis like prøver danner en gruppe (cluster). Resultatet presenteres i et trediagram (dendrogram).

Sensitivitet og tetthet

NSI (Norwegian Sensitivity Index; Rygg og Norling 2013) er utviklet med basis i norske faunadata og innført i 2012 og oppdatert i 2018 (Borgersen *m. fl.*, 2019). Hver art av i alt 583 arter er tilordnet en sensitivitetsverdi).

En prøves NSI-verdi beregnes ved gjennomsnittet av sensitivitetsverdiene av alle individene i prøven. Formelen for utregning er gitt ved:

$$NSI = \sum_{i}^{S} \left[\frac{N_i * NSI_i}{N_{NSI}} \right]$$

ISI_{2018} (Indicator Species Index; Rygg og Norling 2013) en sensitivitetsindeks. Grunnlaget for beregningen av ISI (Rygg 2002) ble utvidet og artsnomenklaturen standardisert i 2012 og oppdatert i 2018 (Borgersen *m. fl.*, 2019). Hver art er tilordnet en ømfintlighetsverdi. ISI er en kvalitativ indeks som tar hensyn til hvilke arter som er til stede, men ikke individtallet av dem. En prøves ISI-verdi beregnes ved gjennomsnittet av sensitivitetsverdiene av artene i prøven hvor ISI_i er ISI_{2018} verdien for arten i og S_{ISI} er antall arter tilordnet sensitivitetsverdier.

$$ISI = \sum_{i}^{S} \left[\frac{ISI_i}{S_{ISI}} \right]$$

AMBI (Azti Marine Biotic Index; Borja m.fl. 2000) er en sensitivitetsindeks (egentlig en toleranseindeks) der artene tilordnes en toleranseklasse (økologisk gruppe, EG). EG I = sensitive arter, EG II = "indifferente" arter, EG III = tolerante arter, EG IV = opportunistiske arter, EG V = forurensningsindikerende arter. I Norge brukes AMBI bare i kombinasjonsindeksen NQI1 og har derfor ingen egen klassifisering. AMBI er en kvantitativ indeks som tar hensyn til individtallet av artene.

AMBI = (0 * EG I) + (1,5 * EG II) + (3 * EG III) + (4,5 * EG IV) + (6 * EG V) hvor EGI er andelen av individer som tilhører gruppe I, etc. Tallene angir toleranseverdiene.

Formelen for beregning av en prøves AMBI-verdi er gitt ved:

$$AMBI = \sum_{i}^{S} \left[\frac{N_i * AMBI_i}{N_{AMBI}} \right]$$

<u>Sammensatt indeks</u>

NQI1 (Norwegian Quality Index; Rygg 2006) inneholder indikatorer som omfatter sensitivitet (AMBI), og artsmangfold (S = antall, N = antall individer) i en prøve. NQI1 er interkalibrert mellom alle land som tilhører NEAGIG. NQI1 er gitt ved formelen:

$$NQI1 = \left[\left(0{,}5 * \left(1 - \frac{AMBI}{7} \right) + 0{,}5 * \left(\frac{\left[\frac{ln\,(S)}{ln(ln(N))} \right]}{2.7} \right) * \left(\frac{N}{N+5} \right) \right) \right]$$

I prøver som har veldig lave individtall (færre enn seks), kan ikke NQI1 brukes. Det er i slike tilfeller mulig å bruke N+2 i stedet for N i formelen for å unngå uriktige indeksverdier (Rygg et al. 2011).

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Økologisk tilstandsklassifisering basert på observert verdi av indeks (Veileder fra Miljødirektoratet (2025), ***vanntype G/H 1-3.***

Indeks	I Svært god "Very good"	II God "Good"	III Moderat "Moderate"	IV Dårlig "Poor"	V Svært dårlig "Bad"
NQI1	0,9-0,72	0,72-0,63	0,63-0,49	0,49-0,31	0,31-0
H´	5,5 - 3,7	3,7 - 2,9	2,9 - 1,8	1,8 - 0,9	0,9 - 0
ES_{100}	46 - 23	23 - 16	16-9	9-5	5 - 0
ISI_{2018}	10,2 - 6,6	6,6 - 6	6 - 4,9	4,9 - 3,6	3,6 - 0
NSI_{2018}	34 - 29	29 - 23	23 - 17	17 - 11	11 - 0
nEQR	1,0 – 0,8	0,8 – 0,6	0,6 – 0,4	0,4 – 0,2	0,2 – 0,0

7.2 Statistical results Vatneyri, 2025

Benthos indices per replicate

st.nr.		C1_01	C1_02	C2_01	C2_02	C3_01	C3_02	C4_01	C4_02	C5_01	C5_02	C6_01	C6_02
no. ind.		281	342	411	385	256	227	581	394	488	365	344	244
no. spe.		10	30	35	33	27	24	31	31	36	32	22	27
Shannon-Wiener:		1,1	3,2	3,5	3,4	3,1	3,3	3,3	3,6	3,3	3,5	2,9	3,5
Pielou		0,34	0,65	0,68	0,67	0,65	0,72	0,66	0,72	0,64	0,70	0,65	0,73
ES100		7	17	20	19	17	18	19	20	18	19	15	20
SN		1,33	1,93	1,98	1,96	1,92	1,88	1,86	1,92	1,97	1,95	1,75	1,93
ISI-2018		3,28	4,70	5,41	5,32	4,76	4,96	4,52	4,93	4,95	5,16	4,17	4,02
AMBI		5,407	3,440	2,120	1,857	1,896	2,308	1,935	2,074	2,128	2,226	1,743	1,905
NQI1		0,36	0,61	0,71	0,73	0,71	0,68	0,70	0,70	0,71	0,70	0,70	0,71
NSI-2018		7,9	17,8	21,4	22,0	22,5	21,9	21,6	21,9	21,6	20,6	23,4	22,4

Geometrical classes

int.	C1	C2	C3	C4	C5	C6
1	13	13	12	5	9	7
2,3	6	10	5	11	8	4
4- 7	5	7	6	5	8	9
8- 15	3	7	5	5	4	3
16- 31	1	1	1	8	5	2
32- 63	1	3	1	2	1	3
64-127	2	1	2	1	2	1
128-255	0	2	1	1	2	1
256-511	1	0	0	1	0	0
512-1023	0	0	0	0	0	0
1024-2047	0	0	0	0	0	0
2048-	0	0	0	0	0	0

7.3 Species lists

Artsliste pr stasjon

Vatneyri C-survey 2025

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
Stasjonsnr.:			C1					
ANNELIDA								
	Polychaeta							
		Orbiniida						
			Aricidea laubieri			1	-	1
		Cossurida						
			Cossura longocirrata		1	1	-	2
		Spionida						
			Chaetozone sp.			1	-	1
			Prionospio steenstrupi			9	-	9
			Spio limicola			1	-	1
		Capitellida						
			Capitella capitata		232	78	-	310
			Mediomastus fragilis			2	-	2
			Praxillella praetermissa			1	-	1
		Opheliida						
			Scalibregma inflatum		1		-	1
		Phyllodocida						
			Eteone flava/longa			4	-	4
			Microphthalmus sczelkowii		7	2	-	9
			Nephtys ciliata			2	-	2
			Pholoe assimilis			2	-	2
			Pholoe baltica			3	-	3
			Syllis hyalina			1	-	1
		Eunicida						
			Parougia sp.			1	-	1
		Sternaspida						
			Sternaspis scutata			5	-	5
		Oweniida						
			Galathowenia oculata			20	-	20
		Terebellida						
			Lagis koreni		12	80	-	92
		Sabellida						
			Euchone incolor			1	-	1
	Oligochaeta							
			Oligochaeta indet.		1		-	1
CRUSTACEA								
	Malacostraca							
		Cumacea						
			Leucon sp.			5	-	5
		Amphipoda						
			Bathymedon obtusifrons			1	-	1
			Oedicerotidae indet.		1	1	-	2
MOLLUSCA								
	Bivalvia							
		Nuculoida						
			Ennucula tenuis		15	73	-	88
			Nuculana pernula			8	-	8
			Yoldia hyperborea			4	-	4
		Veneroida						
			Abra nitida			1	-	1
			Axinopsida orbiculata			1	-	1
			Thyasira gouldii			1	-	1
			Thyasira sarsii		7	31	-	38
ECHINODERMATA								
	Ophiuroidea							
		Ophiurida						
			Ophiocten affinis		4	1	-	5
			Ophiuroidea indet. juv.		2	3	-	5
				Maksverdi:	232	80		310
				Antall arter/taxa:	11	31		33
				Sum antall individ:				628

Rekke	Klasse	Orden	Art/Taxa	Replikat: 01	02	-	Sum
Stasjonsnr.: C2							
ANNELIDA							
	Polychaeta						
		Orbiniida					
			Aricidea laubieri	2		-	2
		Cossurida					
			Cossura longocirrata	7	3	-	10
		Spionida					
			Prionospio steenstrupi	26	20	-	46
			Spio limicola	2	1	-	3
		Capitellida					
			Maldane sarsi	5	5	-	10
			Mediomastus fragilis	3	2	-	5
			Praxillella gracilis	1		-	1
			Praxillella praetermissa	1	1	-	2
		Phyllodocida					
			Eteone flava/longa	6	3	-	9
			Microphthalmus sczelkowii		7	-	7
			Nephtys ciliata	3	5	-	8
			Pholoe assimilis	2		-	2
			Pholoe baltica	3	3	-	6
			Phyllodoce groenlandica	1		-	1
			Polynoidae indet. juv.	1		-	1
			Syllis hyalina	3	1	-	4
		Sternaspida					
			Sternaspis scutata	5	2	-	7
		Oweniida					
			Galathowenia oculata	85	114	-	199
			Myriochele malmgreni/olgae		1	-	1
		Flabelligerida					
			Bradabyssa villosa	1		-	1
		Terebellida					
			Lagis koreni	38	27	-	65
		Sabellida					
			Euchone incolor	10	5	-	15
			Euchone papillosa	2	1	-	3
			Sabellidae indet.	2		-	2
	Oligochaeta						
			Oligochaeta indet.		1	-	1
CRUSTACEA							
	Malacostraca						
		Cumacea					
			Leucon sp.	12	20	-	32
		Amphipoda					
			Caprellidae indet.		1	-	1
			Dulichiidae indet.		2	-	2
			Lysianassidae indet.		9	-	9
			Oedicerotidae indet.		1	-	1
MOLLUSCA							
	Caudofoveata						
			Caudofoveata indet.	2		-	2
	Opistobranchia						
		Cephalaspidea					
			Retusa obtusa	1		-	1
	Bivalvia						
		Nuculoida					
			Ennucula tenuis	125	98	-	223
			Nuculana pernula	4	7	-	11
			Yoldia hyperborea	12	19	-	31
		Mytiloida					
			Crenella decussata		1	-	1
		Veneroida					
			Abra nitida	1	2	-	3
			Astarte crenata		1	-	1
			Axinopsida orbiculata	2	2	-	4
			Ciliatocardium ciliatum	1		-	1
			Macoma calcarea	2	1	-	3
			Thyasira sarsii	34	18	-	52
		Myoida					
			Mya pseudoarenaria	1		-	1
ECHINODERMATA							
	Asteroidea						
		Paxillosida					
			Ctenodiscus crispatus	1		-	1
	Ophiuroidea						
		Ophiurida					
			Ophiocten affinis	5	1	-	6

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
			Ophiuroidea indet. juv.		7	2	-	9
				Maksverdi:	125	114		223
				Antall arter/taxa:	37	34		46
				Sum antall individ:				806
Stasjonsnr.:	C3							
ANNELIDA								
	Polychaeta							
		Cossurida						
			Cossura longocirrata			1	-	1
		Spionida						
			Prionospio steenstrupi		3	6	-	9
			Spio limicola		1	1	-	2
		Capitellida						
			Capitella capitata		1		-	1
			Maldane sarsi			1	-	1
			Mediomastus fragilis		2		-	2
		Phyllodocida						
			Eteone flava/longa		1	3	-	4
			Microphthalmus sczelkowii		2	6	-	8
			Nephtys ciliata		1		-	1
			Nephtys sp.		1	1	-	2
			Pholoe baltica		7	3	-	10
			Syllis hyalina			2	-	2
		Eunicida						
			Parougia sp.		1	6	-	7
		Sternaspida						
			Sternaspis scutata			1	-	1
		Oweniida						
			Galathowenia oculata		66	35	-	101
		Terebellida						
			Ampharete borealis		1		-	1
			Lagis koreni		31	39	-	70
			Terebellidae indet. juv.			1	-	1
		Sabellida						
			Euchone incolor		1	4	-	5
CRUSTACEA								
	Malacostraca							
		Cumacea						
			Eudorella sp.		1		-	1
			Leucon sp.		3	6	-	9
		Amphipoda						
			Bathymedon obtusifrons			1	-	1
			Dulichiidae indet.		1		-	1
			Oedicerotidae indet.		2	1	-	3
MOLLUSCA								
	Gastropoda							
			Melanochlamys diomedea		1		-	1
	Bivalvia							
		Nuculoida						
			Ennucula tenuis		78	62	-	140
			Nuculana pernula		11	6	-	17
			Yoldia hyperborea		10	3	-	13
		Veneroida						
			Abra nitida		3	2	-	5
			Axinopsida orbiculata			1	-	1
			Macoma calcarea		4		-	4
			Thyasira gouldii		1		-	1
			Thyasira sarsii		21	33	-	54
ECHINODERMATA								
	Ophiuroidea							
		Ophiurida						
			Ophiocten affinis		1	3	-	4
			Ophiuroidea indet. juv.			2	-	2
				Maksverdi:	78	62		140
				Antall arter/taxa:	27	26		35
				Sum antall individ:				486
Stasjonsnr.:	C4							
ANNELIDA								
	Polychaeta							
		Orbiniida						
			Aricidea laubieri		2	4	-	6
		Cossurida						

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
			Cossura longocirrata			2	-	2
		Spionida						
			Chaetozone setosa		2		-	2
			Chaetozone sp.			2	-	2
			Prionospio steenstrupi		10	18	-	28
		Capitellida						
			Capitella capitata		30		-	30
			Maldane sarsi		1		-	1
			Mediomastus fragilis		3	5	-	8
		Phyllodocida						
			Eteone flava/longa		15	6	-	21
			Microphthalmus sczelkowii		34	7	-	41
			Nephtys ciliata		4	3	-	7
			Nephtys sp.		2	2	-	4
			Pholoe assimilis		3		-	3
			Pholoe baltica		9	5	-	14
			Polynoidae indet. juv.		2	2	-	4
			Syllis hyalina		6	4	-	10
		Eunicida						
			Parougia sp.		10	2	-	12
		Sternaspida						
			Sternaspis scutata			6	-	6
		Oweniida						
			Galathowenia oculata		81	68	-	149
		Terebellida						
			Ampharete borealis			1	-	1
			Lagis koreni		12	50	-	62
		Sabellida						
			Euchone incolor		7	20	-	27
			Euchone papillosa		1	2	-	3
CRUSTACEA								
	Malacostraca							
		Cumacea						
			Eudorella sp.		2	1	-	3
			Leucon sp.		10	7	-	17
		Amphipoda						
			Caprellidae indet.		21		-	21
			Dulichiidae indet.		2		-	2
			Lysianassidae indet.		1		-	1
			Oedicerotidae indet.			1	-	1
		Decapoda						
			Brachyura indet.		4		-	4
MOLLUSCA								
	Opistobranchia							
		Cephalaspidea						
			Retusa obtusa			1	-	1
	Bivalvia							
		Nuculoida						
			Ennucula tenuis		237	116	-	353
			Nuculana pernula		10	7	-	17
			Yoldia hyperborea		13	16	-	29
		Mytiloida						
			Mytilus edulis juv.		2		-	2
		Veneroida						
			Abra nitida		2	1	-	3
			Axinopsida orbiculata		2	1	-	3
			Macoma calcarea			2	-	2
			Thyasira gouldii			2	-	2
			Thyasira sarsii		44	23	-	67
ECHINODERMATA								
	Asteroidea							
			Asteroidea indet. juv.		1		-	1
	Ophiuroidea							
		Ophiurida						
			Ophiocten affinis		1	9	-	10
			Ophiuroidea indet. juv.			14	-	14
				Maksverdi:	237	116		353
				Antall arter/taxa:	34	33		43
				Sum antall individ:				996

Rekke	Klasse	Orden	Art/Taxa	Replikat: 01	02	-	Sum
Stasjonsnr.: C5							
NEMERTINI							
			Nemertea indet.	2	2	-	4
ANNELIDA							
	Polychaeta						
		Orbiniida					
			Aricidea laubieri	2	1	-	3
		Cossurida					
			Cossura longocirrata	4	5	-	9
		Spionida					
			Chaetozone sp.	1		-	1
			Prionospio steenstrupi	26	31	-	57
			Spio limicola	1	2	-	3
		Capitellida					
			Maldane sarsi	1	11	-	12
			Mediomastus fragilis	2	6	-	8
			Praxillella praetermissa	1	1	-	2
		Phyllodocida					
			Eteone flava/longa	4	2	-	6
			Microphthalmus sczelkowii	2	3	-	5
			Nephtys ciliata	1	4	-	5
			Nephtys sp.		1	-	1
			Pholoe baltica	4		-	4
			Phyllodoce groenlandica	2	1	-	3
			Polynoidae indet. juv.	1	1	-	2
			Syllis hyalina	1	2	-	3
		Eunicida					
			Dorvilleidae indet.		1	-	1
			Parougia sp.	1	20	-	21
		Sternaspida					
			Sternaspis scutata	9	9	-	18
		Oweniida					
			Galathowenia oculata	131	109	-	240
			Owenia sp.	1		-	1
		Terebellida					
			Ampharete borealis		1	-	1
			Lagis koreni	53	26	-	79
			Melinna cristata	1		-	1
		Sabellida					
			Euchone incolor	13	15	-	28
			Euchone papillosa	2	3	-	5
CRUSTACEA							
	Malacostraca						
		Cumacea					
			Eudorella sp.	1		-	1
			Leucon sp.	12	10	-	22
		Amphipoda					
			Dulichiidae indet.	1	1	-	2
			Lysianassidae indet.	4	1	-	5
			Oedicerotidae indet.	3	1	-	4
MOLLUSCA							
	Prosobranchia						
		Mesogastropoda					
			Euspira pallida	1		-	1
	Opistobranchia						
		Cephalaspidea					
			Retusa obtusa	1		-	1
	Bivalvia						
		Nuculoida					
			Ennucula tenuis	124	67	-	191
			Nuculana pernula	9	1	-	10
			Yoldia hyperborea	15	2	-	17
		Veneroida					
			Macoma calcarea	1	1	-	2
			Thyasira sarsii	49	24	-	73
ECHINODERMATA							
	Asteroidea						
			Asteroidea indet. juv.	1		-	1
	Ophiuroidea						
		Ophiurida					
			Ophiocten affinis	2	1	-	3

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
			Ophiuroidea indet. juv.		2	2	-	4
				Maksverdi:	131	109		240
				Antall arter/taxa:	39	34		42
				Sum antall individ:				860

Stasjonsnr.: C6

ANNELIDA							
	Polychaeta						
		Orbiniida					
			Aricidea laubieri	1		-	1
		Cossurida					
			Cossura longocirrata	1	3	-	4
		Spionida					
			Chaetozone setosa	1	1	-	2
			Chaetozone sp.		1	-	1
			Prionospio steenstrupi	3	4	-	7
			Spio limicola		1	-	1
		Capitellida					
			Capitella capitata		1	-	1
			Maldane sarsi		1	-	1
			Mediomastus fragilis	6	1	-	7
		Phyllodocida					
			Eteone flava/longa	8	2	-	10
			Microphthalmus sczelkowii	12	12	-	24
			Nephtys ciliata		3	-	3
			Nephtys sp.	2		-	2
			Pholoe baltica	3	2	-	5
			Syllis hyalina	1	3	-	4
		Eunicida					
			Parougia sp.	4	7	-	11
		Sternaspida					
			Sternaspis scutata	3	3	-	6
		Oweniida					
			Galathowenia oculata	33	43	-	76
		Terebellida					
			Lagis koreni	26	15	-	41
		Sabellida					
			Euchone incolor		4	-	4
	Oligochaeta						
			Oligochaeta indet.		3	-	3
CRUSTACEA							
	Malacostraca						
		Cumacea					
			Leucon sp.	2	4	-	6
		Amphipoda					
			Lysianassidae indet.		1	-	1
MOLLUSCA							
	Bivalvia						
		Nuculoida					
			Ennucula tenuis	161	79	-	240
			Nuculana pernula	31	13	-	44
			Yoldia hyperborea	13	11	-	24
		Veneroida					
			Abra nitida	2	3	-	5
			Axinopsida orbiculata	1		-	1
			Macoma calcarea	8	2	-	10
			Thyasira sarsii	22	21	-	43
ECHINODERMATA							
	Ophiuroidea						
			Ophiuroidea indet. juv.		3	-	3
				Maksverdi:	161	79	240
				Antall arter/taxa:	22	28	31
				Sum antall individ:			591

7.4 Analytical report

Akvaplan niva

NORSK AKKREDITERING TEST 079

ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	2025-12-15
Prosjektnr.:	66911	**Ankomst dato:**	2025-10-15

Lab-id. P250133-02

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C1			66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
TOC	47	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 17505:2023)	±4.7
TNb	3.1	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 16168:2012)	±0.68
nTOC	51.1		2025-11-20	2025-11-20	Miljødirektoratet 2025	
C/N - forhold	*15.3		2025-11-17	2025-11-17	Beregning TOC:TN	
TOM	12.7	% TS	2025-11-17	2025-11-20	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	
Vekt% ≥2 mm	1.0	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	
Vekt% 1 mm - <2 mm	1.4	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	2.4	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	3.3	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.125 mm - <0.250 mm	5.0	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.2
Vekt% 0.063 mm - <0.125 mm	8.1	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.7
Vekt% <0.063 mm	78.8	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±7.8
Pelitt	*78.8	wt% TS	2025-11-17	2025-11-20	Fraksjonen <0.063 mm	±7.8
Sand	*20.2	wt% TS	2025-11-17	2025-11-20	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±1.0
Grus	*1.0	wt% TS	2025-11-17	2025-11-20	Fraksjonen ≥2 mm	
Kobber (Cu) [a]	43	mg/kg TS	2025-11-12	2025-11-12	Intern metode	
P (Fosfor) [a]	1300	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

* = Ikke akkreditert resultat

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ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Lab-id. P250133-05

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C2	ASC2		66911 - Vatneyri ASC/C and B survey 2025	Agglomerering i øverste to siktene i kornfordelingsanalysen.	2025-10-15

Analyseresultat

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
TOC	40	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 17505:2023)	±4.0
TNb	3.0	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 16168:2012)	±0.66
nTOC	42.1		2025-11-20	2025-11-20	Miljødirektoratet 2025	
C/N - forhold	*13.1		2025-11-17	2025-11-17	Beregning TOC:TN	
TOM	12.6	% TS	2025-11-17	2025-11-20	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	
Vekt% ≥2 mm	2.8	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	
Vekt% 1 mm - <2 mm	1.6	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	1.9	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.0
Vekt% 0.250 mm - <0.500 mm	1.7	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.125 mm - <0.250 mm	2.0	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.063 mm - <0.125 mm	4.7	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.4
Vekt% <0.063 mm	85.4	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±8.5
Pelitt	*85.4	wt% TS	2025-11-17	2025-11-20	Fraksjonen <0.063 mm	±8.5
Sand	*11.8	wt% TS	2025-11-17	2025-11-20	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±0.6
Grus	*2.8	wt% TS	2025-11-17	2025-11-20	Fraksjonen ≥2 mm	
Kobber (Cu) [a]	44 45	mg/kg TS	2025-11-12	2025-11-12	Intern metode	
P (Fosfor) [a]	1200	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

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ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Lab-id. P250133-08

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C3	ASC3		66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
TOC	47	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 17505:2023)	±4.7
TNb	3.0	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 16168:2012)	±0.66
nTOC	49.8		2025-11-20	2025-11-20	Miljødirektoratet 2025	
C/N - forhold	*15.5		2025-11-17	2025-11-17	Beregning TOC:TN	
TOM	13.2	% TS	2025-11-17	2025-11-20	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	
Vekt% ≥2 mm	1.5	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	
Vekt% 1 mm - <2 mm	1.9	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	2.4	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	2.6	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.125 mm - <0.250 mm	3.5	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.063 mm - <0.125 mm	5.5	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.5
Vekt% <0.063 mm	82.5	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±8.2
Pelitt	*82.5	wt% TS	2025-11-17	2025-11-20	Fraksjonen <0.063 mm	±8.2
Sand	*16.0	wt% TS	2025-11-17	2025-11-20	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±0.8
Grus	*1.5	wt% TS	2025-11-17	2025-11-20	Fraksjonen ≥2 mm	
Kobber (Cu) [a]	46 32	mg/kg TS	2025-11-12	2025-11-12	Intern metode	
P (Fosfor) [a]	1500	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

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ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Lab-id. P250133-11

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C4	ASC4		66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
TOC	48	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 17505:2023)	±4.8
TNb	3.6	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 16168:2012)	±0.79
nTOC	50.9		2025-11-21	2025-11-21	Miljødirektoratet 2025	
C/N - forhold	*13.2		2025-11-17	2025-11-17	Beregning TOC:TN	
TOM	13.5	% TS	2025-11-17	2025-11-20	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	
Vekt% ≥2 mm	2.5	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	
Vekt% 1 mm - <2 mm	2.8	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	3.2	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	1.9	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.125 mm - <0.250 mm	2.3	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.063 mm - <0.125 mm	5.1	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.4
Vekt% <0.063 mm	82.3	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±8.1
Pelitt	*82.3	wt% TS	2025-11-17	2025-11-20	Fraksjonen <0.063 mm	±8.1
Sand	*15.2	wt% TS	2025-11-17	2025-11-20	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±0.8
Grus	*2.5	wt% TS	2025-11-17	2025-11-20	Fraksjonen ≥2 mm	
Kobber (Cu) [a]	37 42	mg/kg TS	2025-11-12	2025-11-12	Intern metode	
P (Fosfor) [a]	1300	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

Tabellen fortsetter på neste side...

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ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Fortsettelse av tabell fra forrige side.

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
Emamectinbenzoat [b]	*0.27	ng/g TS	2025-10-29	2025-10-29	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group
[b] Prøvingen er utført av eksternt laboratorium, NIVA

Lab-id. P250133-14

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C5	ASC5		66911 - Vatneyri ASC/C and B survey 2025	Agglomerering i øverste to siktene i kornfordelingsanalysen.	2025-10-15

Analyseresultat

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
TOC	40	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 17505:2023)	±4.0
TNb	3.0	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 16168:2012)	±0.65
nTOC	45.2		2025-11-20	2025-11-20	Miljødirektoratet 2025	
C/N - forhold	*13.6		2025-11-17	2025-11-17	Beregning TOC:TN	
TOM	13.3	% TS	2025-11-17	2025-11-20	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	
Vekt% ≥2 mm	1.6	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	
Vekt% 1 mm - <2 mm	2.2	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	4.6	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	5.1	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.2
Vekt% 0.125 mm - <0.250 mm	5.7	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.2
Vekt% 0.063 mm - <0.125 mm	7.9	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±0.7
Vekt% <0.063 mm	73.0	wt% TS	2025-11-17	2025-11-20	Intern metode (Bale/Kenny 2005)	±7.2

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ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Fortsettelse av tabell fra forrige side.

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
Pelitt	*73.0	wt% TS	2025-11-17	2025-11-20	Fraksjonen <0.063 mm	±7.2
Sand	*25.4	wt% TS	2025-11-17	2025-11-20	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±1.3
Grus	*1.6	wt% TS	2025-11-17	2025-11-20	Fraksjonen ≥2 mm	
Kobber (Cu) [a]	38 41	mg/kg TS	2025-11-12	2025-11-12	Intern metode	
P (Fosfor) [a]	1200	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P250133-17

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C6	ASC6		66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
TOC	46	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 17505:2023)	±4.6
TNb	3.4	mg/g TS	2025-10-27	2025-11-10	Intern metode (NS-EN 16168:2012)	±0.74
nTOC	49.9		2025-12-03	2025-12-03	Miljødirektoratet 2025	
C/N - forhold	*13.6		2025-11-17	2025-11-17	Beregning TOC:TN	
TOM	13.0	% TS	2025-11-17	2025-11-20	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	
Vekt% >2 mm	1.4	wt% TS	2025-11-17	2025-11-21	Intern metode (Bale/Kenny 2005)	
Vekt% 1 mm - <2 mm	3.1	wt% TS	2025-11-17	2025-11-21	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	3.8	wt% TS	2025-11-17	2025-11-21	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	3.6	wt% TS	2025-11-17	2025-11-21	Intern metode (Bale/Kenny 2005)	±0.1

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Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Fortsettelse av tabell fra forrige side.

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
Vekt% 0.125 mm - <0.250 mm	4.2	wt% TS	2025-11-17	2025-11-21	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.063 mm - <0.125 mm	7.1	wt% TS	2025-11-17	2025-11-21	Intern metode (Bale/Kenny 2005)	±0.6
Vekt% <0.063 mm	76.8	wt% TS	2025-11-17	2025-11-21	Intern metode (Bale/Kenny 2005)	±7.6
Pelitt	*76.8	wt% TS	2025-11-17	2025-11-21	Fraksjonen <0.063 mm	±7.6
Sand	*21.7	wt% TS	2025-11-17	2025-11-21	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±1.1
Grus	*1.4	wt% TS	2025-11-17	2025-11-21	Fraksjonen ≥2 mm	
P (Fosfor) [a]	1300	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P250133-22

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		ASCref		66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat	Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
Kobber (Cu) [a]	44 49	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

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ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Lab-id. P250133-25

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		Cu ref 1		66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat		Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
Kobber (Cu) [a]	37	36	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P250133-26

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		Cu ref 2		66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat		Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
Kobber (Cu) [a]	42	39	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P250133-27

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		Cu ref 3		66911 - Vatneyri ASC/C and B survey 2025		2025-10-15

Analyseresultat

Parameter	Resultat		Enhet	Analysedato start	Analysedato	Standard	Måleusikkerhet
Kobber (Cu) [a]	41	47	mg/kg TS	2025-11-12	2025-11-12	Intern metode	

[a] Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

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ANALYSERAPPORT

Kunde:	Arnarlax	**Rapport nr.:**	P250133
Kundemerking:	Vatneyri		
Kontaktperson:		**Rapportdato**	**2025-12-15**
Prosjektnr.:	**66911**	**Ankomst dato:**	2025-10-15

Analyseansvarlig:

Oda Sofie Bye Wilhelmsen

Signatur:

Oda Sofie Bye Wilhelmsen

Katrin Bluhm

Underskriftsberettiget:

Signatur:

Katrin Bluhm

Analysene gjelder bare for de prøver som er testet. De oppgitte analyseresultat omfatter ikke feil som måtte følge av prøvetagningen, inhomogenitet eller andre forhold som kan ha påvirket prøven før den ble mottatt av laboratoriet. Rapporten får kun kopieres i sin helhet og uten noen form for endringer. En eventuell klage skal leveres laboratoriet senest en måned etter mottak av analyseresultat. Nærmere informasjon om analysemetodene (måleusikkerhet, metodeprinsipp etc.) fås ved henvendelse til Akvaplan-Niva AS

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