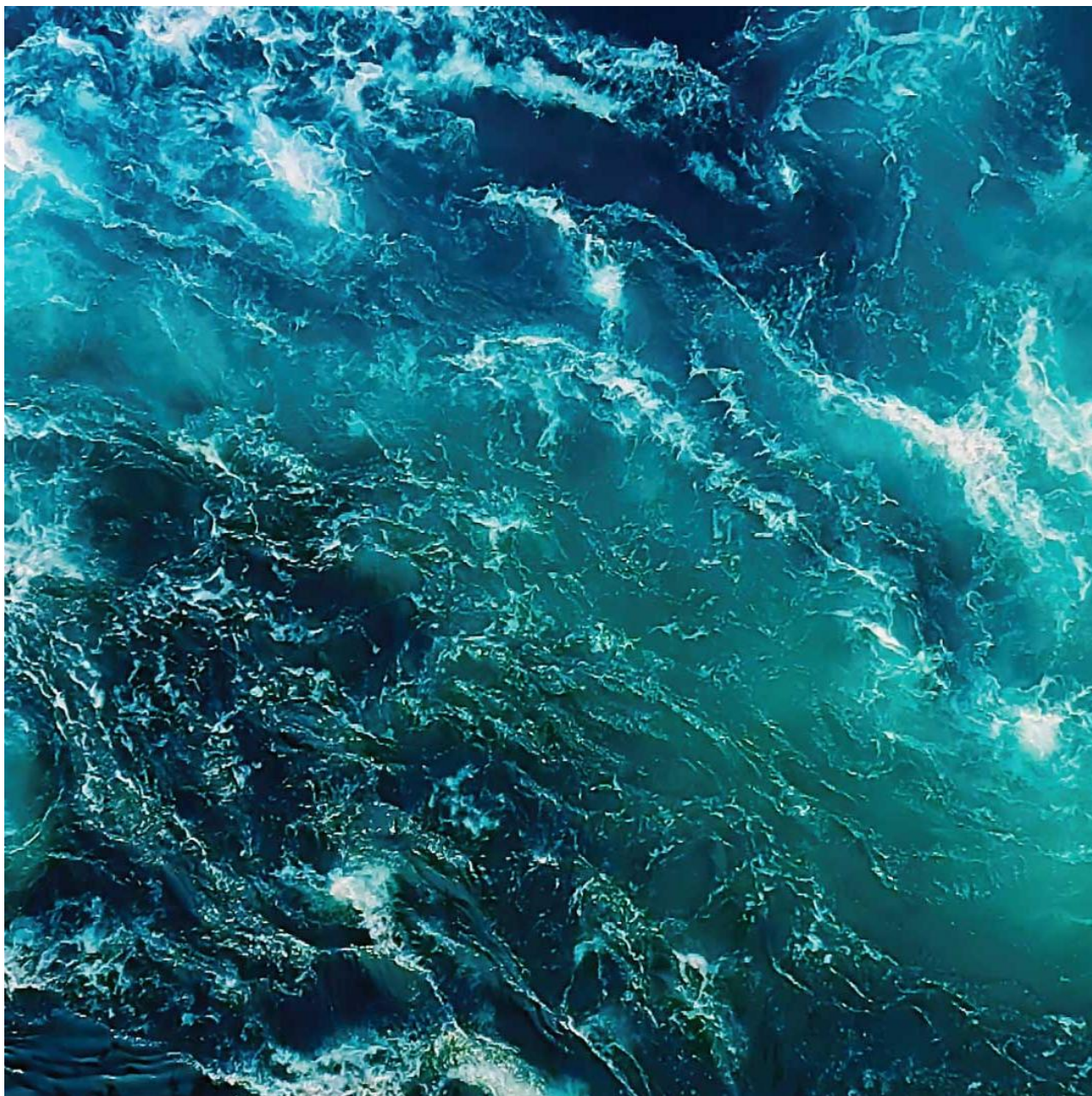


B-survey at Steinanes, 2026 (fallow period), Arnarlax ehf

Akvaplan-niva AS Report:
APN 2026 67410.B01



B survey at Steinanes 2026 (fallow period), Arnarlax ehf

Author(s)	Snorri Gunnarsson
Date	14.04 2026
Report No.	APN 2026 67410.B01
Number of pages	22
Distribution	Through customer
Customer	Arnarlax ehf
Contact person	Kristian Leander Gillebo Sormo

Summary

Sediment was recovered at 18 of the total 19 sampling stations (95% soft bottom). The sediment consisted mainly of mixture of clay, silt in the deeper parts of the farming area and clay and gravel in the shallower areas (NW part of the local impact zone). Fauna was recorded to be present at all the soft sediment stations mainly in the form of polychaetes. There were no signs of out-gassing. Light smell of H₂S was recorded at five stations. The substrate was light/grey colour at six stations and brown/black at twelve stations. Consistency of the sediment was solid at all eighteen soft bottom stations. Grab was $\frac{3}{4}$ full or more at eight stations, $\frac{1}{4}$ - $\frac{3}{4}$ full at four stations and $\frac{1}{4}$ or less full at seven sampling stations.

Based on the classification of sediment chemistry (pH/Eh) and the sensory assessment all eighteen soft bottom stations received status 1 - "Very good". The index score for parameter III (sensory parameters) was higher (0.63) compared with the index score for the parameter II (pH/Eh) (0.00). The status of the soft bottom stations within parameter II (pH/Eh) was all eighteen soft bottom stations with status 1 - "Very good". However, the status of stations within parameter III (sensory) was fifteen stations with status 1 - "Very good" and three stations with status 2 - "Good".

In summary, the site receives the environmental status 1 - "Very good" (average group II-III index =0.31).

Approval



Snorri Gunnarsson
Project Manager



Kari Elisabeth Justad
Quality Control

Key information

Site details and license holder information			
Site name	Steinanes	Site coordinates	65°40.388' N 23°28.123' W
County	Vesturbyggð	Municipality	Vesturbyggð
MTB (estimated max biomass)	6.500 tonnes	Operations Manager / Contact	Kristian Leander Gillebo Sormo
License holder / customer	Arnarlax		

Production status on date of survey			
Biomass at site	0 tonnes	Total feed use	0 tonnes
Farmed species	Salmon	Total biomass produced	0 tonnes
Type/time of survey	Indicated with X	Comments Fallow period started 10.10 2025.	
Maximum organic load cf. chapter 7.9	☐		
Follow-up survey	☐		
Half maximum load	☐		
Pre-stock	☒		
Required by the state administrator - baseline survey	☐		
Other	☐		
Last fallowing period:			

Results from B-survey in accordance with NS 9410:2016 (main results)			
Parameter group and index		Parameter group and status	
Gr. II. pH/Eh	0.00	Gr. II. pH/Eh	1
Gr. III. Sensory	0.63	Gr. III. Sensory	1
GR. II + III	0.31	GR. II+ III	1
Date of fieldwork	10.04 2026	Date of report	14.04 2026
Environmental status (NS 9410:2016):			1

Table of contents

1	INTRODUCTION.....	5
2	METHODS.....	6
3	SITE, PRODUCTION AND SURVEY DESIGN	7
3.1	Site characteristics and production	7
3.2	Current and past surveys.....	7
3.3	Hydrodynamic conditions	7
3.4	Survey design	8
4	RESULTS.....	10
5	SUMMARY	11
6	REFERENCES	12
7	ATTACHMENTS	13
7.1	Form (B.1 and B.2) NS 9410:2016	13
7.2	Images of samples at Steinanes.....	17
7.3	3D-bathymetry	21

1 Introduction

The present survey was conducted by Akvaplan-niva AS on behalf of Arnarlax in connection with the company's fish farming activities at the site Steinanes in Arnarfjörður, Vesturbyggð municipality.

The purpose of a B-survey is to document the environmental status in the near zone of a fish farm by evaluating sediment condition (chemistry, sensory and presence/absence of fauna) in accordance with NS 9410:2016.

The B-survey is a tool for trend monitoring and allows to assess the status of organic enrichment beneath the net pens at different stages of the production cycle.

Figure 1 shows a map of the fjord Arnarfjörður where Steinanes farm is located.

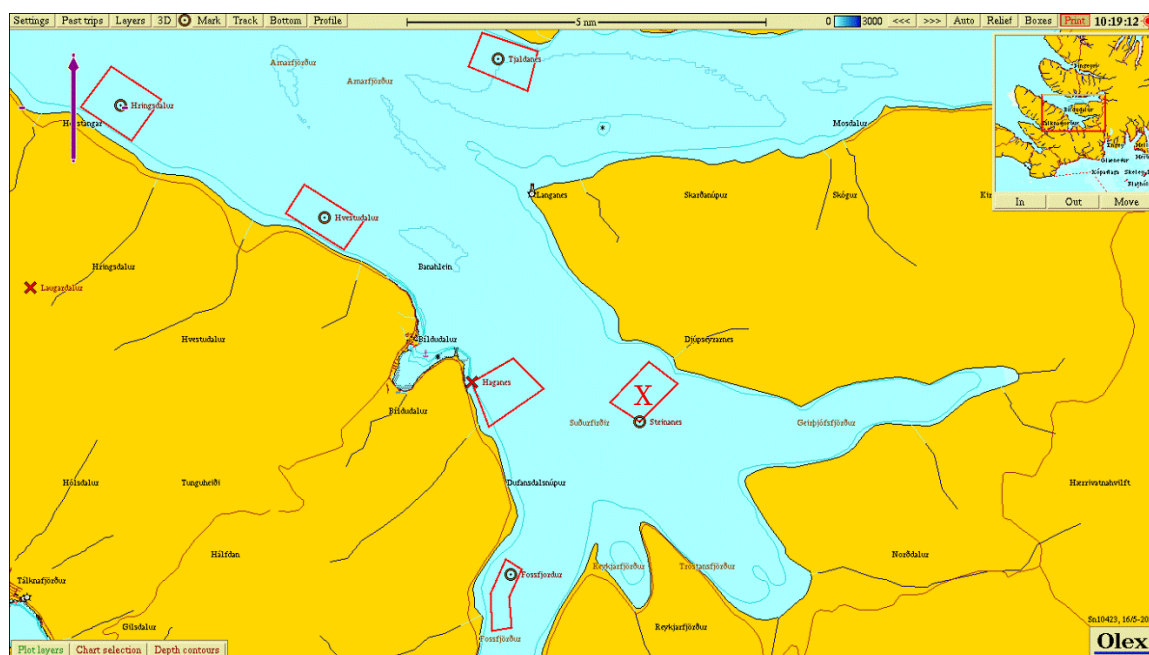


Figure 1. Overview map of Arnarfjörður where Steinanes is marked by red square and a red X. Other fish farming areas in the nearest vicinity (Arnarfjörður) are also shown.

2 Methods

Monitoring of the environmental impact of fish farming activities on the seabed is standardised and regulated. All fish farming sites that are in use must be regularly assessed. This B-survey follows guidelines and methods outlined in NS 9410:2016 and ISO 12878. The Icelandic Environment and Energy Agency (Umhverfis og orkustofnun) can also set specific requirements regarding frequency of surveys for different fish farming sites, which can overrule the above-mentioned standards.

The B survey is a trend monitoring tool with the focus on sediment condition (benthic impact) under and in the immediate vicinity of an aquaculture site. Sediment samples are taken using a grab (min. 250 cm²). Sediment condition for each sample is assessed applying three indicators: sediment chemistry (pH and redox potential), sensory evaluation (gas bubbles; smell, texture, colour of substrate and thickness of deposited sludge) and the presence or absence of fauna. The performance of these indicators against predefined thresholds allows to categorise the site into four different environmental statuses (Table 1), which are used to determine subsequent sampling frequency. The number of sampling stations is based on the site's allocated MTB, here the estimated max biomass of the current generation i.e. 6.500 ton (Personal reference, Kristian Leander Gillebo Sormo, 2026).

Table 1. Frequency of B-survey based on environmental status at site.

Environmental status at maximum organic load (near zone)	Monitoring frequency for B survey
1-very good	At the next maximum load
2-good	Pre-stock and again at maximum load
3-poor	Pre-stock If the survey prior to restocking / end of fallowing provides: Status 1 – survey should be carried out at next maximum load. Status 2 – survey should be carried out at half the maximum load and at the next maximum load. Status 3 – survey should be carried out at half the maximum load and at maximum load. Implementation of measures to reduce impact should be planned for the next production cycle. If any surveys show the environmental status to be 4 – "very poor", the site's environmental capacity has been exceeded.
4- very poor	Environmental capacity at site is exceeded. The authorities decide further measures.

The following equipment was used in this survey:

Grab: Van Veen grab (0.1 m²)

Sieve 1 mm: Akvaplan-niva

pH meter: Electrode, YSI Professional Plus

Redox meter: Electrode, YSI Professional Plus

Position determination – GPS map 62s

Digital camera

3 Site, production and survey design

3.1 Site characteristics and production

The Steinanes site is located in Arnarfjörður Iceland about 5.5 km north-east from Bíldudalur. The cages are lined in a southwest direction from land (227 degrees). The depth under cages ranges from about 62 m closer to land up to about 92 further into the fjord. The shallower area of the farm is at the northernmost part. The fish farm at the site is a one-frame mooring system, with a total of 14 cages, each with 160 m circumference. Twelve of the total fourteen cages (cages nr. 2-3 and 5-14) were used during farming of previous generation.

There have been farmed three generation salmon at the site. The site has been in fallow state since 10.10 2025 or for six months.

Table 2 shows production and feed use for previous generation.

Table 2. Production and feed use for farm site Steinanes. Data provided by customer.

Generation of fish (G)	Production (tonnes)	Feed use (tonnes)
Generation 2017 – 2019	8.964	13.704
Generation 2020- 2022	9.870	12.243
Generation 2023-2025	6.863	7.676

3.2 Current and past surveys

Table 3 provides an overview on results and time of sampling for current and the last B-surveys at site.

Table 3. Present and previously conducted B-surveys at the site.

Date of sampling	Report number	Production status	Location condition
10.04.2026	APN 67410.B01	Fallow period	1
28.08.2025	APN 66876.B02	B survey max biomass	1
18.07.2023	APN 65074.B01	Fallow period	1
12.10.2021	APN 63543.B01	B survey max biomass	3
10.06 2020	APN 62254.B01	Fallow period	1
25.09 2018	APN-60526.B02	B survey max biomass	2
27.06 2017	Pre farming B survey not published	Pre survey new site	1

3.3 Hydrodynamic conditions

Measurement of dispersing current was done at the site in May-June 2020 measurements at 60 m depth (Hermansen, 2020). The dominating current (60 m) is in direction north-west (315 degrees) with a counter current in south-east direction Figure 2. Average current speed is measured to be 4.1 cm/s. Highest current speed is measured to be 14.2 cm/s and 5 % of the measurements are < 1 cm/s.

3.4 Survey design

Sampling stations were placed following an assessment of site configuration and local environmental conditions, i.e. bathymetry and hydrodynamics. An overview of the sampling stations can be found in Figure 2 with coordinates and depth provided in Table 4. The number of sampling stations were 19 according to guidance in ISO 12878 and NS 9410:2016. The placement of the sampling stations gives good coverage of the local impact zone of the fish farm. Sampling stations were placed to represent the environmental conditions within the near zone and cover thus both the deeper and shallower areas. The typical depth in the local impact zone is in the range from 62-92 m. Samples were collected from depths ranging from 64-91 metres. The station placements are considered representative for an environmental survey of the farm's near-zone and in accordance with the requirements outlined in NS 9410:2016.

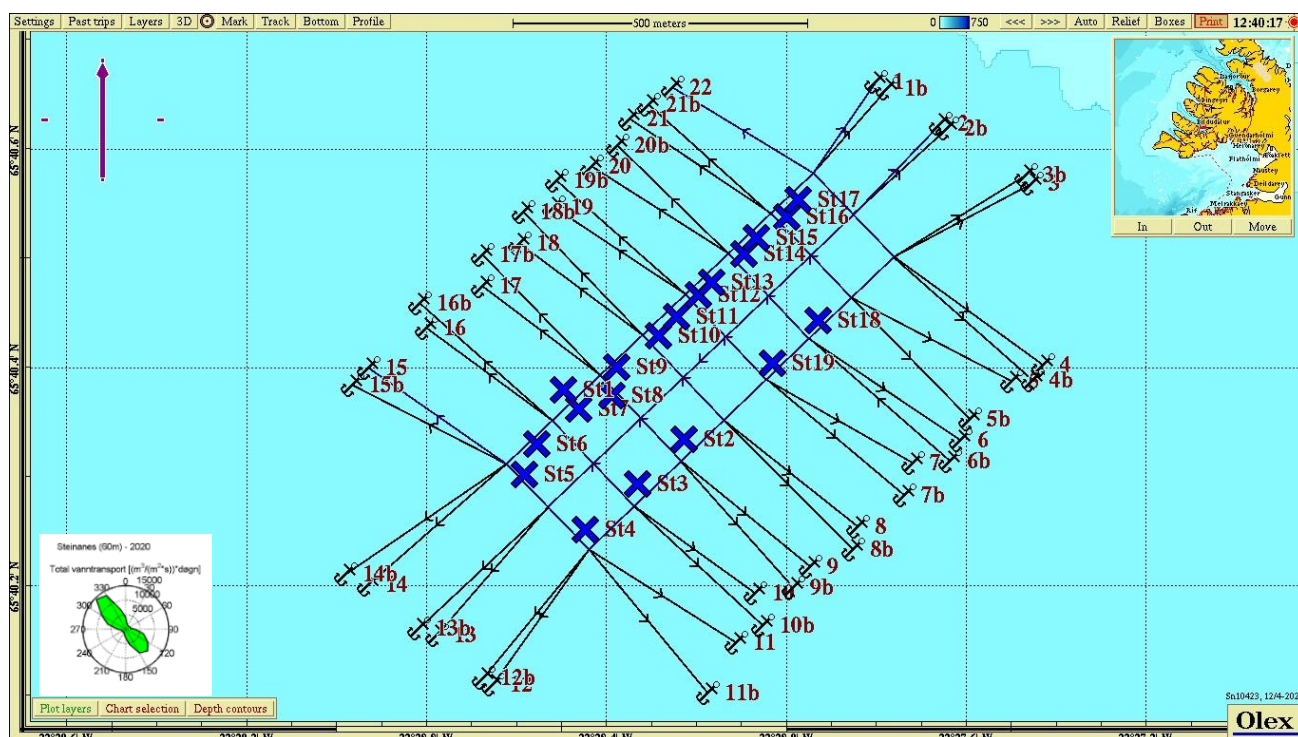


Figure 2. Overview map showing site configuration and local bathymetry at Steinanes. Sampling stations are marked by crosses and colour coded to visualise the environmental status at the respective station following the classification outlined in NS 9410:2016, chapter 7.11 (1 = blue, 2 = green, 3 = yellow, 4 = red). The current rose in the left corner shows the direction of water transport of the dispersal current at 60 m depth (Hermansen, 2020).

Table 4. Position and depth of the sampling stations of this survey.

Station number	Northing	Westing	Depth [m]
St 1	65°40,379	23°28,496	85
St 2	65°40,293	23°28,229	86
St 3	65°40,251	23°28,321	90
St 4	65°40,302	23°28,448	90
St 5	65°40,329	23°28,582	91
St 6	65°40,362	23°28,554	88
St 7	65°40,374	23°28,463	85
St 8	65°40,400	23°28,389	85

Station number	Northing	Westing	Depth [m]
St 9	65°40,429	23°28,377	83
St 10	65°40,445	23°28,284	77
St 11	65°40,466	23°28,244	76
St 12	65°40,478	23°28,195	76
St 13	65°40,504	23°28,166	76
St 14	65°40,518	23°28,095	72
St 15	65°40,538	23°28,067	70
St 16	65°40,553	23°28,000	66
St 17	65°40,443	23°27,973	64
St 18	65°40,404	23°27,930	81
St 19	65°40,379	23°28,031	80

4 Results

Classified survey results for the different parameter categories as well as the assigned environmental status of the site are shown in Table 5. The complete survey assessment form with results and classifications for each station can be found in the attachment.

Table 5. Results from the environmental assessment of the near zone of Steinanes.

Parameter	Status
Group II parameters (pH/Eh)	1
Group III parameters (sensory)	1
Group II + III – parameters (mean)	1
Environmental status (site)	1

Sediment was recovered at 18 of the total 19 sampling stations (95% soft bottom). The sediment consisted mainly of mixture of clay, silt in the deeper parts of the farming area and clay and gravel in the shallower areas (NW part of the local impact zone). Fauna was recorded to be present at all the soft sediment stations mainly in the form of polychaetes. There were no signs of out-gassing. Light smell of H₂S was recorded at five stations. The substrate was light/grey colour at six stations and brown/black at twelve stations. Consistency of the sediment was solid at all eighteen soft bottom stations. Grab was $\frac{3}{4}$ full or more at eight stations, $\frac{1}{4}$ - $\frac{3}{4}$ full at four stations and $\frac{1}{4}$ or less full at seven sampling stations.

Based on the classification of sediment chemistry (pH/Eh) and the sensory assessment all eighteen soft bottom stations received status 1 – "Very good". The index score for parameter III (sensory parameters) was higher (0.63) compared with the index score for the parameter II (pH/Eh) (0.00). The status of the soft bottom stations within parameter II (pH/Eh) was all eighteen soft bottom stations with status 1 – "Very good". However, the status of stations within parameter III (sensory) was fifteen stations with status 1 – "Very good" and three stations with status 2 – "Good".

In summary, the site receives the environmental status 1 - "Very good" (average group II-III index =0.31).

5 Summary

Applying the indicator thresholds and classification outlined in NS 9410:2016 it is shown that the site Steinanes receives overall site status of 1 – "Very good" at the time of this B survey (fallow period). Samples were collected with a Van Veen grab at eighteen stations. One hard bottom station was defined (st. 11) located in mid part of the north-eastern part of the local impact zone. All nineteen stations received status 1 – "Very good". Brown/black sediment (twelve stations) and light sulphur smell at five stations resulted in higher index score for sensory parameters compared to pH/Eh. The three stations with group III status 2 – "Good" were all in the north-eastern part of the local impact zone in line with the main current at the site. Overall, this indicates little organic load in the local impact zone.

In a previous B survey at the time of max biomass in May 2025 (Gunnarsson, 2025) and the one before that in July 2023 at previous fallow period (Gunnarsson, 2023) the overall environmental status was also 1 – "Very good". In the 2023 survey five stations had status 2 or lower (out of total nineteen stations) and in the 2025 survey three stations has status 2 or lower (out of total fourteen stations). So even though there is some indication of organic load in the current survey in 2026 mainly in the form of colour of sediment (brown/black) at twelve stations and light smell at five stations the overall status is trending improving at Steinanes between these three surveys. Like in two previous B surveys, organic load is more evident in the north-western part of the local impact zone in line with main spread current at 60 m at the side.

The site is given environmental status 1 – "Very good" following the criteria outlined in NS 9410:2016.

6 References

Forskrift om drift av akvakulturanlegg (akvakulturdriftsforskriften) §§ 35 og 36.

Gunnarsson, S. 2020a (revised edition). Arnarlax hf, B-undersøkelse, Steinanes (undersøkelse ved maksimal belastning. Akvaplan-niva AS rapport nr. 60526.01.

Gunnarsson, S. 2020b (revised edition). Steinanes Arnarlax hf, B-bottom survey, June 2020 (fallow period). Akvaplan-niva AS report nr. 62254.B01.

Gunnarsson, S. 2021. Steinanes Arnarlax ehf, B-bottom survey, October 2021 (maximum biomass). Akvaplan-niva AS report nr. 63543.B02.

Gunnarsson, S. 2023. Steinanes Arnarlax, B survey (fallow period), July 2023. Akvaplan-niva AS report nr. 65074.B01.

Gunnarsson, S. 2025. B survey Steinanes, August 2025 (max biomass) Arnarlax ehf. Akvaplan-niva AS report nr. 66876.B01.

Hermansen, S. 2020. Arnarlax. Steinanes current measurements, 5, 15 and 60 meters. Akvaplan-niva AS report nr. 62191.04.

ISO 12878:2012. Environmental monitoring of the impacts from marine finfish farms on soft bottom.

ISO 5667-19:2004. Guidance on sampling of marine sediments.

Norsk Standard NS 9410:2016. Miljøovervåking av bunnpåvirkning fra marine akvakulturanlegg.

Personal reference. Kristian Leander Gillebo Sormo, Arnarlax 2026.

Steinanes Miljøundersøkelser type B (pre-survey), by av Akvaplan-niva AS sommer 2017 (not published data).

7 Attachments

7.1 Form (B.1 and B.2) NS 9410:2016

Sample scheme B.1															
Company		Amarlax													
Site:		Steinanes													
Fieldworker:		Snorri Gunnarsson													
Date:		10.04 2026													
Site no.:															
Gr	Parameter	Point	Sample number												
			1	2	3	4	5	6	7	8	9	10			
	Bottom type: S (soft) eller H (hard)		S	S	S	S	S	S	S	S	S	S			
I	Animals > 1mm	Yes (0) No (1)	0	0	0	0	0	0	0	0	0	0			
II	pH	value	7,76	7,76	7,58	7,60	7,85	7,72	7,56	7,45	7,61	7,65			
	Eh (mV)	ORP	58	64	69	53	64	53	54	38	52	64			
		plus ref. verdi	258	264	269	253	264	253	254	238	252	264			
	pH/Eh	from figure	0	0	0	0	0	0	0	0	0	0			
	Status station		1	1	1	1	1	1	1	1	1	1			
	Buffer-temp		11,0 C				Sea temp		2,0 C		Sediment temp				
	pH sea		8,01		ORP sea		117,0 mV		Eh sea		317,0 mV				
	Reference electrode										200,0 mV				
III	Gas bubbles	Yes (4) No (0)	0	0	0	0	0	0	0	0	0	0			
	Colour	Light/grey (0)	0		0	0	0					0			
		Brown/black (2)		2				2	2	2	2				
	Smell	None (0)	0	0	0	0	0			0	0	0			
		Light (2)						2	2						
		Strong (4)													
	Consistency	Solid (0)	0	0	0	0	0	0	0	0	0	0			
		Soft (2)													
		Aqueous (4)													
	Grab volume (v)	v < 1/4 (0)										0			
		1/4 < v < 3/4 (1)							1		1				
		v > 3/4 (2)	2	2	2	2	2	2		2					
	Thickness of sledge (t)	t < 2 cm (0)	0	0	0	0	0	0	0	0	0	0			
		2 < t < 8 cm (1)													
		t > 8 cm (2)													
	Sum		2,0	4,0	2,0	2,0	2,0	6,0	5,0	4,0	3,0	0,0			
	Corrected (*0,22)		0,4	0,9	0,4	0,4	0,4	1,3	1,1	0,9	0,7	0,0			
	Status station		1	1	1	1	1	2	2	1	1	1			
Average group II & III			0,2	0,4	0,2	0,2	0,2	0,7	0,6	0,4	0,3	0,0			
Status station			1	1	1	1	1	1	1	1	1	1			
<table border="1"> <tr> <td>Grab ID</td> <td>K-3</td> </tr> <tr> <td>pH / Eh ID</td> <td>Ysi proff. Plus</td> </tr> </table>												Grab ID	K-3	pH / Eh ID	Ysi proff. Plus
Grab ID	K-3														
pH / Eh ID	Ysi proff. Plus														

page 1 of 4 pages

Sample scheme B.1

Company:	Arnarlax
Site:	Steinanes
Fieldworker:	Snorri Gunnarsson

Date:	10.04 2026
Site no.:	0

Gr	Parameter	Point	Sample number										Index											
			11	12	13	14	15	16	17	18	19	20	S%	H%										
	Bottom type: S (soft) or H (hard)		H	S	S	S	S	S	S	S	S		95	5										
I	Animals > 1mm	Yes (0) No (1)	1	0	0	0	0	0	0	0	0													
II	pH	value		7,47	7,65	7,53	7,59	7,63	7,53	7,87	7,62													
	Eh (mV)	ORP		-35	28	17	-31	48	21	52	43													
		plus ref. verdi		165	228	217	169	248	221	252	243													
	pH/Eh	from figure	0	0	0	0	0	0	0	0	0		0,00											
	Status station		1	1	1	1	1	1	1	1	1													
	Status group II		1	Buffer temp	11,0 C		Sea temp		2,0 C		Sediment temp		2,4 C											
	pH sea	8,01	ORP sea	117 mV		Eh sea		317 mV		Reference electrode		200 mV												
III	Gas bubbles	Yes (4) No (0)	0	0	0	0	0	0	0	0	0													
	Colour	Light/grey (0)	0					0																
		Brown/black (2)		2	2	2	2		2	2	2													
	Smell	None (0)	0	0		0		0	0		0													
		Light (2)			2		2			2														
		Strong (4)																						
	Consistency	Solid (0)	0	0	0	0	0	0	0	0	0													
		Soft (2)																						
		Aqueous (4)																						
	Grab volume (v)	v < 1/4 (0)	0	0			0	0	0	0														
		1/4 < v < 3/4 (1)				1					1													
		v > 3/4 (2)			2																			
	Thickness of sledge (t)	t < 2 cm (0)	0	0	0	0	0	0	0	0	0													
		2 < t < 8 cm (1)																						
		t > 8 cm (2)																						
	Sum		0,0	2,0	6,0	3,0	4,0	0,0	2,0	4,0	3,0													
	Corrected (*0,22)		0,0	0,4	1,3	0,7	0,9	0,0	0,4	0,9	0,7		0,63											
	Status station		1	1	2	1	1	1	1	1	1													
	Status group III		1																					
	Average group II & III		0,0	0,2	0,7	0,3	0,4	0,0	0,2	0,4	0,3		0,31											
	Status station		1	1	1	1	1	1	1	1	1													
	Status group II & III		1																					
	pH/Eh																							
	Corr.sum																							
	Index																							
	Average																							
		< 1,1	1																					
		1,1 - <2,1	2																					
		2,1 - <3,1	3																					
		≥3,1	4																					
	Status site:		1																					

Grab ID	K-3
pH / Eh ID	Ysi proff. Plus

Sample scheme B.2

Company:		Arnarlax									
Site:		Steinanes									
Fieldworker:		Snorri Gunnarsson									

Date:	10.04 2026
Site no.:	0

Sample number	1	2	3	4	5	6	7	8	9	10
Depth (m)	85	86	90	90	91	88	85	85	83	77
Number of trials	2	1	1	1	1	1	1	2	3	4
Gas bubbles (in sample)	No	No	No	No	No	No	No	No	No	No
Sediment type	Clay	X	X	X	X	X	X	X	X	X
	Silt		X	X	X	X	X	X	X	
	Sand									
	Gravel	X		X						X
	Shellsand									
Reef										
Rocky bottom (cobbles, boulders)										
Echinodermata, count										
Crustaceans, count										
Molluscs, count										
Polychaetes, count	>20	>20	>20	>50	>50	>50	>40	>20	>10	2
Other animals, count										
Beggiatoa										
Feed										
Faeces										
Comments	St. 2; 3 and 8. Mud, silt and some shell fractures.									
Grab	Area [m ²]	0,1				Grab ID	K-3			

page 3 of 4 pages

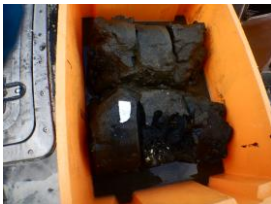
Sample scheme B.2

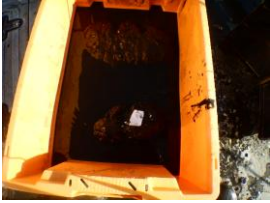
Company:	Arnarlax
Site:	Steinanes
Fieldworker:	Snorri Gunnarsson

Date:	10.04 2026
Site no.:	0

Sample number		11	12	13	14	15	16	17	18	19	20
Depth (m)		76	76	76	72	70	66	64	81	80	
Number of trials		4	1	1	1	2	1	2	1	1	
Gas bubbles (in sample)		No	No	No	No	No	No	No	No	No	
Sediment type	Clay		X	X	X	X	X	X	X	X	
	Silt										
	Sand										
	Gravel		X	X	X	X	X	X			
	Shellsand										
Reef											
Rocky bottom (cobbles, boulders)											
Echinodermata, count											
Crustaceans, count					1						
Molluscs, count								1			
Polychaetes, count			4	5	>10	6	4	>10	>10	>50	
Other animals, count											
Beggiatoa											
Feed											
Faeces											
Comments											
Grab		Area [m ²]	0,1			Grab ID			K-3		
Signature fieldworker:											

7.2 Images of samples at Steinanes

<i>St</i>	<i>Image before sieving</i>	<i>Image after sieving</i>
<i>St 1</i>	NA	
<i>St 2</i>		
<i>St 3</i>		
<i>St 4</i>		
<i>St 5</i>		

St 6		
St 7		
St 8		
St 9		
St 10		

St 11	Hard bottom	Hard bottom
St 12		
St 13	NA	
St 14		
St 15		

St 16		NA
St 17	NA	
St 18		
St 19		

7.3 3D-bathymetry

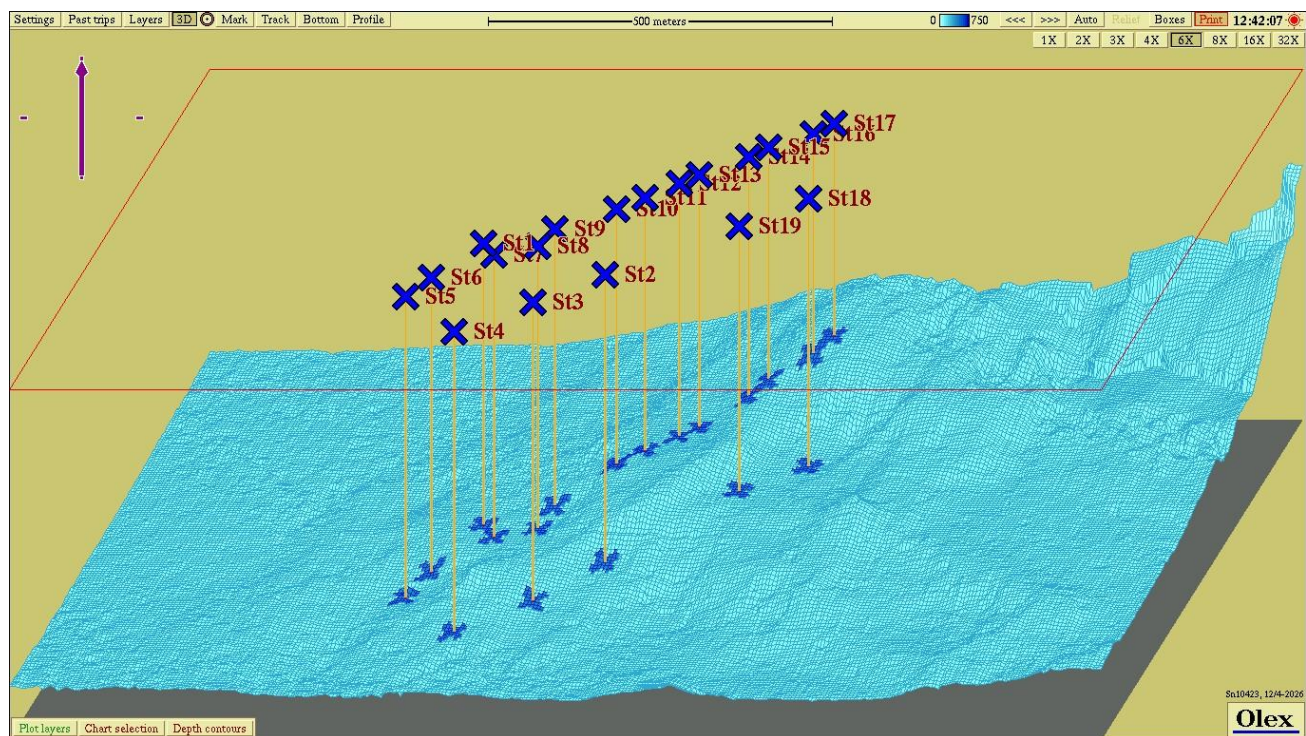


Figure 3. 3D-view of bathymetry at Steinanes with stations as shown in Figure 2 and Table 4. The map is oriented towards the north.