

**Results of ALPS Treated Water Marine Monitoring:
Seawater survey (other related nuclides) (November, 2024)**

1. Outline of survey

(1) Date of sampling

November 12-14, 2024

(2) Sampling points

3 sampling points on the coastal waters in the Fukushima Prefecture.

(3) Detail of the survey

- Measurements of radioactive material concentration (total 54 nuclides consisting of 11 alpha-emitting nuclides such as plutonium 238, 8 beta-emitting nuclides such as carbon 14, and 35 nuclides that emit gamma-ray or are evaluated assuming radioactive equilibrium) in seawater.
 - *1 Rhodium 103m, Rhodium 106, Tellurium 125m, Barium 137m, Praseodymium 144, Praseodymium 144m and Yttrium 90 are nuclides evaluated assuming radioactive equilibrium with the parent nuclides.
 - *2 Plutonium 239 and plutonium 240 are evaluated by the total value of plutonium 239 + 240 because alpha-ray energies are close to each other, and alpha-ray peaks cannot be separated.
 - *3 Americium 243, Curium 243, and Curium 244 are evaluated by total alpha measurement.
- The target lower limits of detection of each nuclide are shown below.

Nuclides	Target lower limits of detection (Bq/L)
Barium 137m	0.001
Other gamma-ray emitting nuclides	- *5
Plutonium 238 Plutonium 239 + 240 Americium 241 Curium 242	0.00002
Americium 243 Curium 243 Curium 244 Uranium 234 Uranium 238 Neptunium 237	0.002
Iron 55	20
Strontium 89	0.005
Yttrium 90	0.001
Technetium 99	0.0004
Cadmium 113m	0.2
Nickel 63	20

Selenium 79	2
Carbon 14	0.0005

*4 A target lower limit of detection means a value that is set for quality control to assure at least the detection up to the value when analysis is conducted. Each actual lower limit of detection differs according to samples, and is equal to or lower than a target lower limit of detection.

*5 The target lower limits of detection of other gamma-ray emitting nuclides are obtained through simultaneous measurements under a condition of satisfying the target lower limits of detection (in parentheses) for the following nuclides:

Ruthenium 106 (<1.2 Bq/L), Antimony 125 (<0.5 Bq/L) and Cobalt 60 (<0.3 Bq/L)

2. Outline of results

(1) Seawater survey (3 sampling points [6 samples])

8 of other related nuclides were detected in the seawater, Carbon 14, Yttrium 90, Barium 137m, Uranium 234, Uranium 238, Plutonium 239 + 240, and Americium 241.

Concentrations of Carbon14 range from 0.0058 Bq/L to 0.0059 Bq/L.

Concentrations of Yttrium 90 range from 0.00062 Bq/L to 0.00088 Bq/L.

Concentrations of Barium 137m range from 0.0026 Bq/L to 0.034 Bq/L.

Concentrations of Uranium 234 range from 0.044 Bq/L to 0.048 Bq/L.

Concentrations of Uranium 238 range from 0.037 Bq/L to 0.042 Bq/L.

Concentrations of Plutonium 239 + 240 range from below the lower limit of detection to 0.0000062 Bq/L.

Concentrations of Americium 241 range from below the lower limit of detection to 0.0000040 Bq/L.

*6 The above results excluding Uranium 234 and Uranium 238 are determined to be within the range of concentration fluctuations prior to the discharge of ALPS-treated water into the sea.

*7 Although it could not be confirmed the concentrations of Uranium 234 and Uranium 238 in seawater close to sampling points of ALPS-treated water into the sea, the results were comparable to the general seawater.

Concentrations of all nuclides other than the 8 nuclides in seawater mentioned above correspond to below the lower limits of detection in all samples.

(Details are attached)
(Maps attached)

Analysis results for other related nuclides in seawater at sampling points
within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration ^{*1*2}		Unit
E-S3	2024/11/12	Surface layer	1.5	Ag-110m	< 0.08		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Ba-137m	0.0026	± 0.00029	Bq/L
E-S3	2024/11/12	Surface layer	1.5	Ba-140	< 0.3		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Cd-115m	< 4		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Ce-141	< 0.1		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Ce-144	< 0.5		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Co-58	< 0.06		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Cs-136	< 0.06		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Eu-152	< 0.2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Eu-154	< 0.3		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Eu-155	< 0.3		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Fe-59	< 0.2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Gd-153	< 0.3		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Mn-54	< 0.07		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Nb-95	< 0.08		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Pm-146	< 0.08		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Pm-148	< 0.3		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Pm-148m	< 0.06		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Pr-144	< 0.5		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Pr-144m	< 0.005		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Rb-86	< 0.7		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Rh-103m	< 0.1		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Rh-106	< 0.6		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Ru-103	< 0.1		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Sb-124	< 0.2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Sn-123	< 20		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Sn-126	< 0.2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Tb-160	< 0.2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Te-123m	< 0.08		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Te-125m	< 0.04		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Te-127	< 5		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Te-129	< 0.7		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Te-129m	< 2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Y-91	< 30		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Zn-65	< 0.2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Pu-238	< 0.000003		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Pu-239+240	< 0.000003		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Am-241	< 0.000004		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Am-243	< 0.002		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Cm-242	< 0.000004		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Cm-243	< 0.002		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Cm-244	< 0.002		Bq/L
E-S3	2024/11/12	Surface layer	1.5	U-234	0.046	± 0.0021	Bq/L
E-S3	2024/11/12	Surface layer	1.5	U-238	0.041	± 0.0019	Bq/L
E-S3	2024/11/12	Surface layer	1.5	Np-237	< 0.0000008		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Fe-55	< 0.8		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Sr-89	< 0.003		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Y-90	0.00072	± 0.00016	Bq/L
E-S3	2024/11/12	Surface layer	1.5	Tc-99	< 0.00004		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Cd-113m	< 0.2		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Ni-63	< 4		Bq/L
E-S3	2024/11/12	Surface layer	1.5	Se-79	< 0.3		Bq/L
E-S3	2024/11/12	Surface layer	1.5	C-14	0.0058	± 0.00010	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value below 10 Bq/L).

Analysis results for other related nuclides in seawater at sampling points
within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration ^{*1*2}	Unit
E-S3	2024/11/12	Bottom layer	7.0	Ag-110m	< 0.08	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Ba-137m	0.0090 ± 0.00074	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Ba-140	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Cd-115m	< 4	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Ce-141	< 0.1	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Ce-144	< 0.5	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Co-58	< 0.06	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Cs-136	< 0.06	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Eu-152	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Eu-154	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Eu-155	< 0.3	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Fe-59	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Gd-153	< 0.3	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Mn-54	< 0.07	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Nb-95	< 0.09	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Pm-146	< 0.08	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Pm-148	< 0.3	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Pm-148m	< 0.07	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Pr-144	< 0.5	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Pr-144m	< 0.005	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Rb-86	< 0.8	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Rh-103m	< 0.06	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Rh-106	< 0.6	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Ru-103	< 0.06	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Sb-124	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Sn-123	< 20	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Sn-126	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Tb-160	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Te-123m	< 0.07	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Te-125m	< 0.04	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Te-127	< 6	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Te-129	< 0.7	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Te-129m	< 2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Y-91	< 30	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Zn-65	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Pu-238	< 0.000004	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Pu-239+240	0.0000049 ± 0.0000012	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Am-241	< 0.000005	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Am-243	< 0.002	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Cm-242	< 0.000005	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Cm-243	< 0.002	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Cm-244	< 0.002	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	U-234	0.044 ± 0.0020	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	U-238	0.037 ± 0.0017	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Np-237	< 0.0000007	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Fe-55	< 0.8	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Sr-89	< 0.003	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Y-90	0.00062 ± 0.00014	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Tc-99	< 0.00004	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Cd-113m	< 0.2	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Ni-63	< 4	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	Se-79	< 0.4	Bq/L
E-S3	2024/11/12	Bottom layer	7.0	C-14	0.0058 ± 0.00010	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard

uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value below 10 Bq/L).

Analysis results for other related nuclides in seawater at sampling points
within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration ^{*1*2}	Unit
E-S10	2024/11/13	Surface layer	1.5	Ag-110m	< 0.09	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Ba-137m	0.0044 ± 0.00040	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Ba-140	< 0.3	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Cd-115m	< 4	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Ce-141	< 0.1	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Ce-144	< 0.5	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Co-58	< 0.07	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Cs-136	< 0.06	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Eu-152	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Eu-154	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Eu-155	< 0.3	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Fe-59	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Gd-153	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Mn-54	< 0.06	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Nb-95	< 0.08	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Pm-146	< 0.08	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Pm-148	< 0.4	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Pm-148m	< 0.07	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Pr-144	< 0.5	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Pr-144m	< 0.005	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Rb-86	< 0.8	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Rh-103m	< 0.1	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Rh-106	< 0.6	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Ru-103	< 0.1	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Sb-124	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Sn-123	< 20	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Sn-126	< 0.3	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Tb-160	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Te-123m	< 0.07	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Te-125m	< 0.04	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Te-127	< 5	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Te-129	< 0.7	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Te-129m	< 2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Y-91	< 40	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Zn-65	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Pu-238	< 0.000004	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Pu-239+240	0.0000026 ± 0.00000083	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Am-241	< 0.000004	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Am-243	< 0.002	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Cm-242	< 0.000004	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Cm-243	< 0.002	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Cm-244	< 0.002	Bq/L
E-S10	2024/11/13	Surface layer	1.5	U-234	0.048 ± 0.0022	Bq/L
E-S10	2024/11/13	Surface layer	1.5	U-238	0.042 ± 0.0020	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Np-237	< 0.000001	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Fe-55	< 0.8	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Sr-89	< 0.003	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Y-90	0.00062 ± 0.00014	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Tc-99	< 0.00004	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Cd-113m	< 0.2	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Ni-63	< 4	Bq/L
E-S10	2024/11/13	Surface layer	1.5	Se-79	< 0.3	Bq/L
E-S10	2024/11/13	Surface layer	1.5	C-14	0.0058 ± 0.00010	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard

uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value below 10 Bq/L).

Analysis results for other related nuclides in seawater at sampling points
within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration ^{*1*2}		Unit
E-S10	2024/11/13	Bottom layer	12.9	Ag-110m	< 0.09		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Ba-137m	0.0071	± 0.00060	Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Ba-140	< 0.3		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Cd-115m	< 4		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Ce-141	< 0.09		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Ce-144	< 0.4		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Co-58	< 0.07		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Cs-136	< 0.06		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Eu-152	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Eu-154	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Eu-155	< 0.3		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Fe-59	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Gd-153	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Mn-54	< 0.06		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Nb-95	< 0.08		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Pm-146	< 0.08		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Pm-148	< 0.4		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Pm-148m	< 0.07		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Pr-144	< 0.4		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Pr-144m	< 0.005		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Rb-86	< 0.8		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Rh-103m	< 0.06		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Rh-106	< 0.6		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Ru-103	< 0.06		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Sb-124	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Sn-123	< 10		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Sn-126	< 0.3		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Tb-160	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Te-123m	< 0.07		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Te-125m	< 0.04		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Te-127	< 6		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Te-129	< 0.7		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Te-129m	< 3		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Y-91	< 30		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Zn-65	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Pu-238	< 0.000004		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Pu-239+240	0.0000051	± 0.0000012	Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Am-241	< 0.000004		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Am-243	< 0.002		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Cm-242	< 0.000003		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Cm-243	< 0.002		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Cm-244	< 0.002		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	U-234	0.045	± 0.0019	Bq/L
E-S10	2024/11/13	Bottom layer	12.9	U-238	0.039	± 0.0017	Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Np-237	< 0.0000007		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Fe-55	< 0.8		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Sr-89	< 0.003		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Y-90	0.00078	± 0.00016	Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Tc-99	< 0.00004		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Cd-113m	< 0.2		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Ni-63	< 4		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	Se-79	< 0.3		Bq/L
E-S10	2024/11/13	Bottom layer	12.9	C-14	0.0058	± 0.00010	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard

uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value below 10 Bq/L).

Analysis results for other related nuclides in seawater at sampling points
within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration ^{*1*2}		Unit
E-S15	2024/11/14	Surface layer	1.5	Ag-110m	< 0.08		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Ba-137m	0.0098	± 0.00079	Bq/L
E-S15	2024/11/14	Surface layer	1.5	Ba-140	< 0.3		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Cd-115m	< 4		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Ce-141	< 0.1		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Ce-144	< 0.4		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Co-58	< 0.06		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Cs-136	< 0.06		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Eu-152	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Eu-154	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Eu-155	< 0.3		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Fe-59	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Gd-153	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Mn-54	< 0.07		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Nb-95	< 0.08		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Pm-146	< 0.09		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Pm-148	< 0.3		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Pm-148m	< 0.06		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Pr-144	< 0.4		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Pr-144m	< 0.005		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Rb-86	< 0.8		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Rh-103m	< 0.06		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Rh-106	< 0.6		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Ru-103	< 0.06		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Sb-124	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Sn-123	< 20		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Sn-126	< 0.3		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Tb-160	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Te-123m	< 0.07		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Te-125m	< 0.04		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Te-127	< 5		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Te-129	< 0.8		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Te-129m	< 2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Y-91	< 30		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Zn-65	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Pu-238	< 0.000004		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Pu-239+240	0.0000047	± 0.0000011	Bq/L
E-S15	2024/11/14	Surface layer	1.5	Am-241	< 0.000004		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Am-243	< 0.002		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Cm-242	< 0.000004		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Cm-243	< 0.002		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Cm-244	< 0.002		Bq/L
E-S15	2024/11/14	Surface layer	1.5	U-234	0.046	± 0.0021	Bq/L
E-S15	2024/11/14	Surface layer	1.5	U-238	0.041	± 0.0019	Bq/L
E-S15	2024/11/14	Surface layer	1.5	Np-237	< 0.000002		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Fe-55	< 0.8		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Sr-89	< 0.003		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Y-90	0.00088	± 0.00016	Bq/L
E-S15	2024/11/14	Surface layer	1.5	Tc-99	< 0.00004		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Cd-113m	< 0.2		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Ni-63	< 4		Bq/L
E-S15	2024/11/14	Surface layer	1.5	Se-79	< 0.3		Bq/L
E-S15	2024/11/14	Surface layer	1.5	C-14	0.0058	± 0.00010	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard

uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value below 10 Bq/L).

Analysis results for other related nuclides in seawater at sampling points
within 3 km of the discharge outlet

Sampling point	Sampling date (yyyy/mm/dd)	Sampling layer	Sampling depth (m)	Nuclide	Radioactivity concentration ^{*1*2}		Unit
E-S15	2024/11/14	Bottom layer	6.0	Ag-110m	< 0.09		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Ba-137m	0.034	± 0.0026	Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Ba-140	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Cd-115m	< 4		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Ce-141	< 0.09		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Ce-144	< 0.4		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Co-58	< 0.06		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Cs-136	< 0.06		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Eu-152	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Eu-154	< 0.3		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Eu-155	< 0.3		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Fe-59	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Gd-153	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Mn-54	< 0.07		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Nb-95	< 0.08		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Pm-146	< 0.09		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Pm-148	< 0.3		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Pm-148m	< 0.07		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Pr-144	< 0.4		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Pr-144m	< 0.005		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Rb-86	< 0.8		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Rh-103m	< 0.06		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Rh-106	< 0.6		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Ru-103	< 0.06		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Sb-124	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Sn-123	< 20		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Sn-126	< 0.3		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Tb-160	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Te-123m	< 0.07		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Te-125m	< 0.04		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Te-127	< 5		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Te-129	< 0.7		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Te-129m	< 2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Y-91	< 30		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Zn-65	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Pu-238	< 0.000004		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Pu-239+240	0.0000062	± 0.0000013	Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Am-241	0.0000040	± 0.0000012	Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Am-243	< 0.002		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Cm-242	< 0.000003		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Cm-243	< 0.002		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Cm-244	< 0.002		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	U-234	0.045	± 0.0021	Bq/L
E-S15	2024/11/14	Bottom layer	6.0	U-238	0.040	± 0.0020	Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Np-237	< 0.0000006		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Fe-55	< 0.8		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Sr-89	< 0.003		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Y-90	0.00067	± 0.00014	Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Tc-99	< 0.00004		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Cd-113m	< 0.2		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Ni-63	< 4		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	Se-79	< 0.3		Bq/L
E-S15	2024/11/14	Bottom layer	6.0	C-14	0.0059	± 0.00010	Bq/L

*1 Radioactivity concentrations are presented as radioactivity concentration ± combined standard uncertainty.

*2 Values below detection limit are shown by lower limit of detection (e.g., “<10 Bq/L” indicates a value below 10 Bq/L).

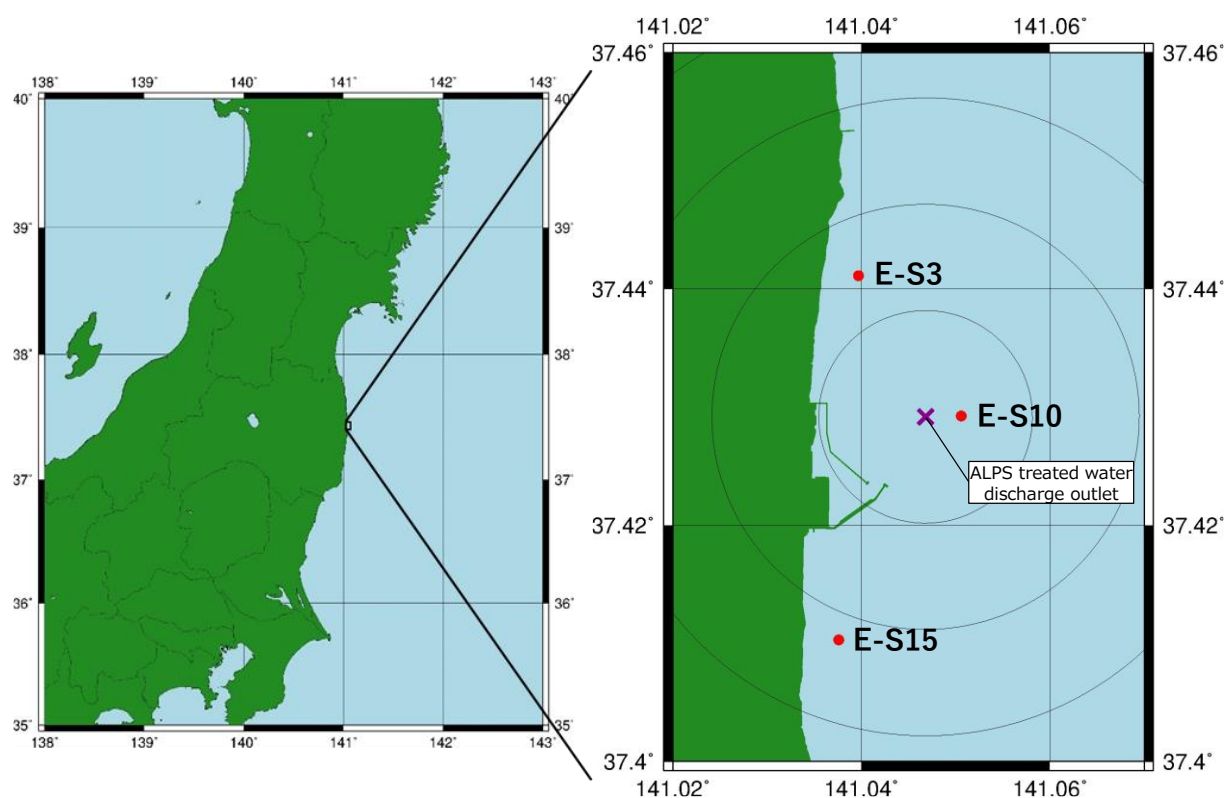


Fig. 1 Sampling points within 3 km of the proposed location of the ALPS treated water discharge outlet