ALPS Treated Water Discharge Status Update

March 28, 2024

TEPCO

Tokyo Electric Power Company Holdings, Inc.

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3. Sea area dispersion simulation

4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

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(Reference 2) Sea area monitoring history after the commencement of discharge

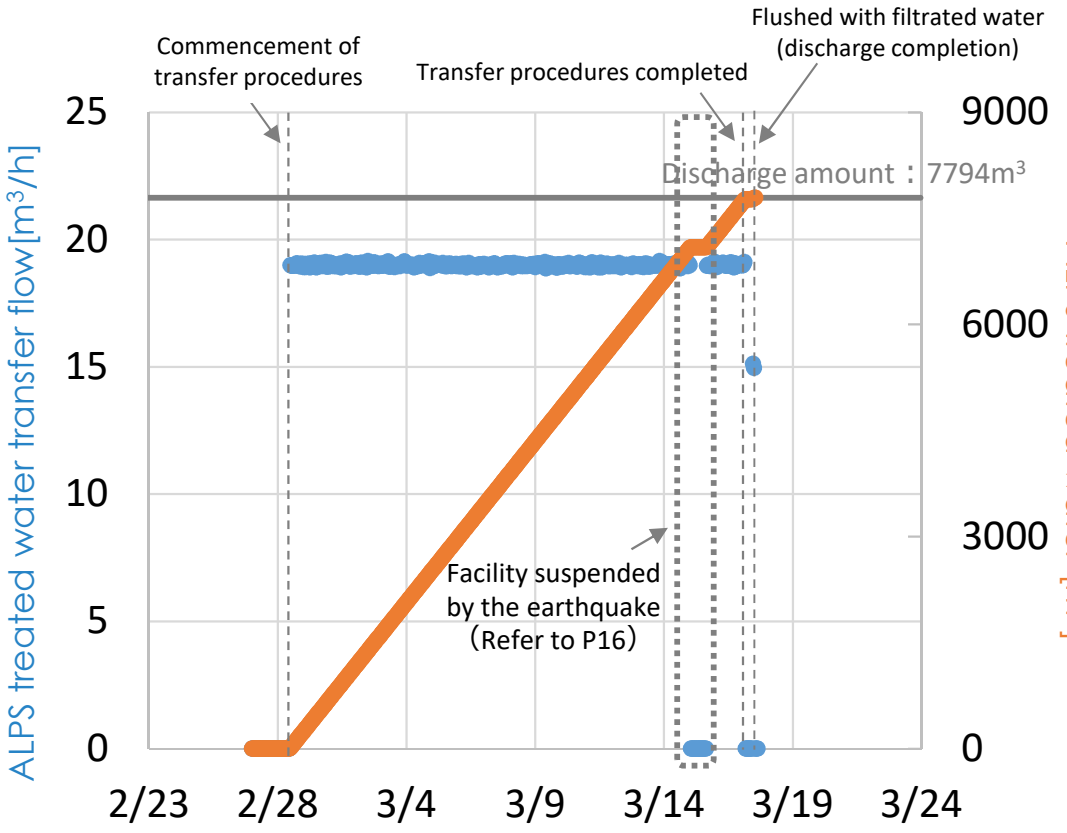
1. Overview

- We conducted the fourth discharge of ALPS treated water as follows.
- In this report, we will explain that there was no abnormality in parameters and sea area monitoring.

Tank group	Tritium concentration	Commenced	Completed	Amount of discharge	Amount of tritium radioactivity
Group B	170,000 Bq/liter	February 28, 2024	March 17, 2024	7,794m^3	Approx. 1.3 trillion Bq

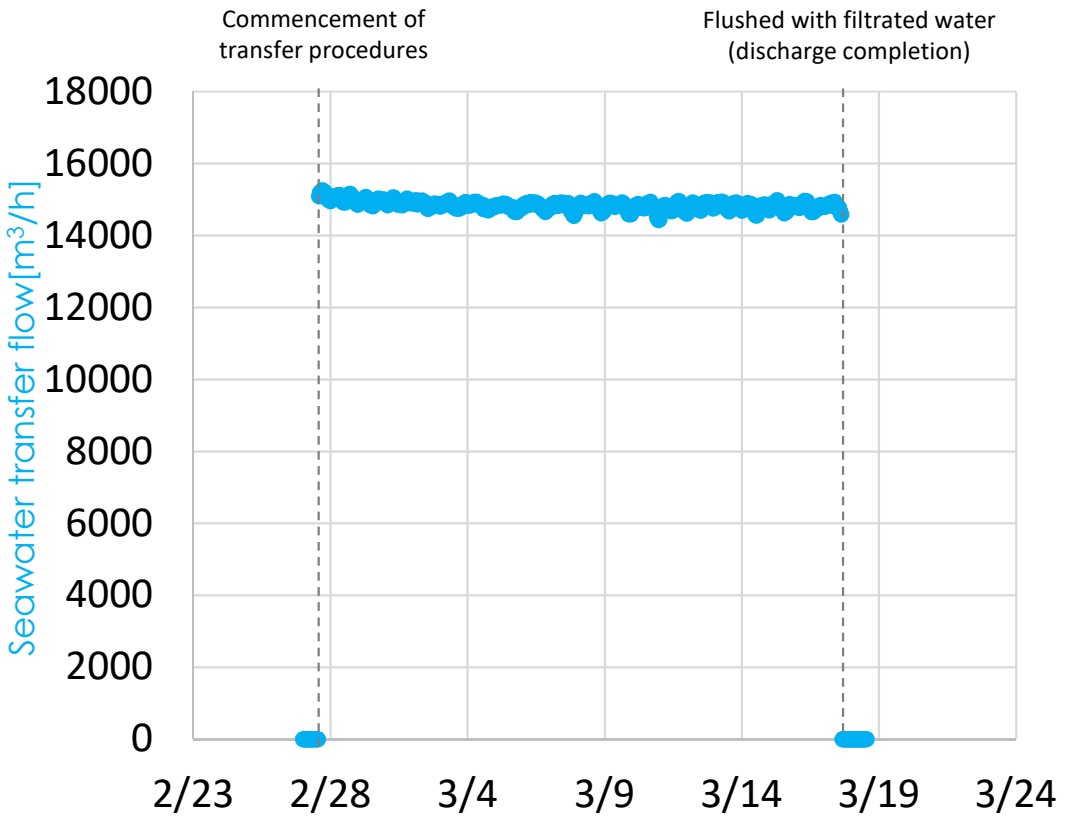
1-1. Operating parameter records during the discharge (1/3)

- We were able to operate ALPS treated water transfer systems and seawater systems without issue.



ALPS treated water transfer flow and total transfer volume of ALPS treated water

- ALPS treated water transfer flow*1
- Total transfer volume of ALPS treated water



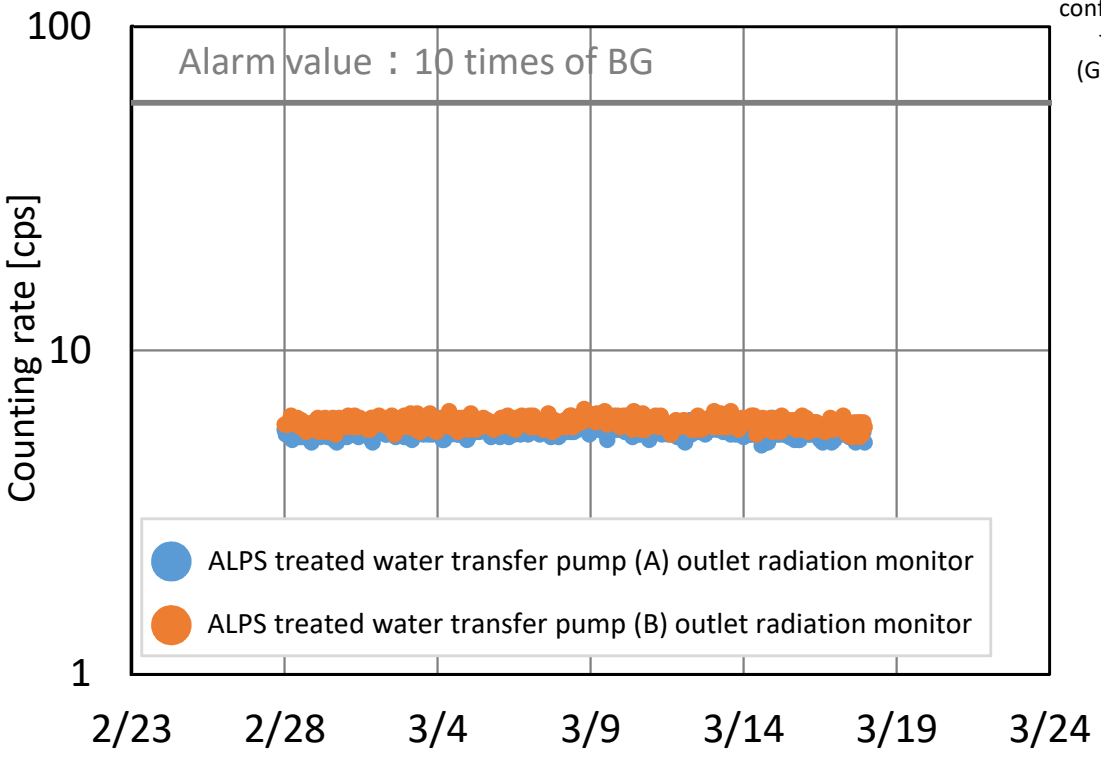
Seawater transfer flow

- Seawater transfer flow*2

*1： The flowmeters are reduplicate, so the higher of the figures from both meters was used.
*2： Total for systems A and B

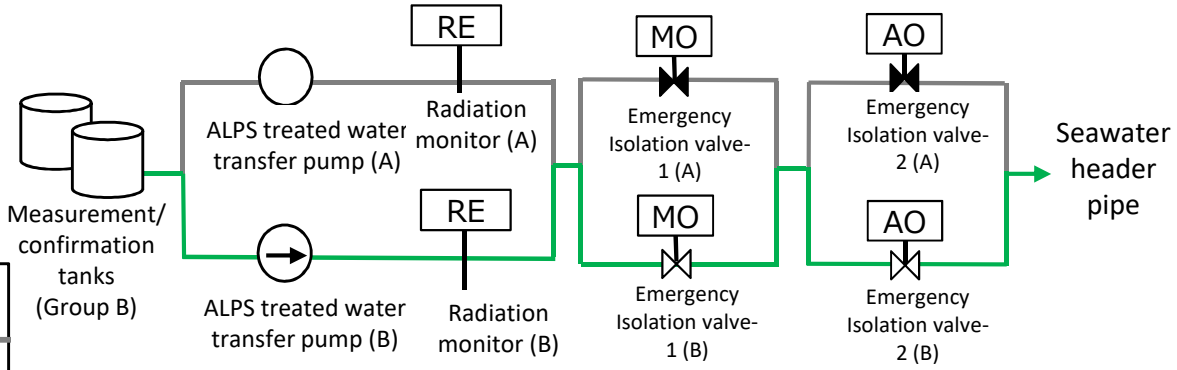
1-1. Operating parameter records during the discharge (2/3)

- No abnormalities were seen in the figures from the ALPS treated water transfer pump outlet radiation monitor.

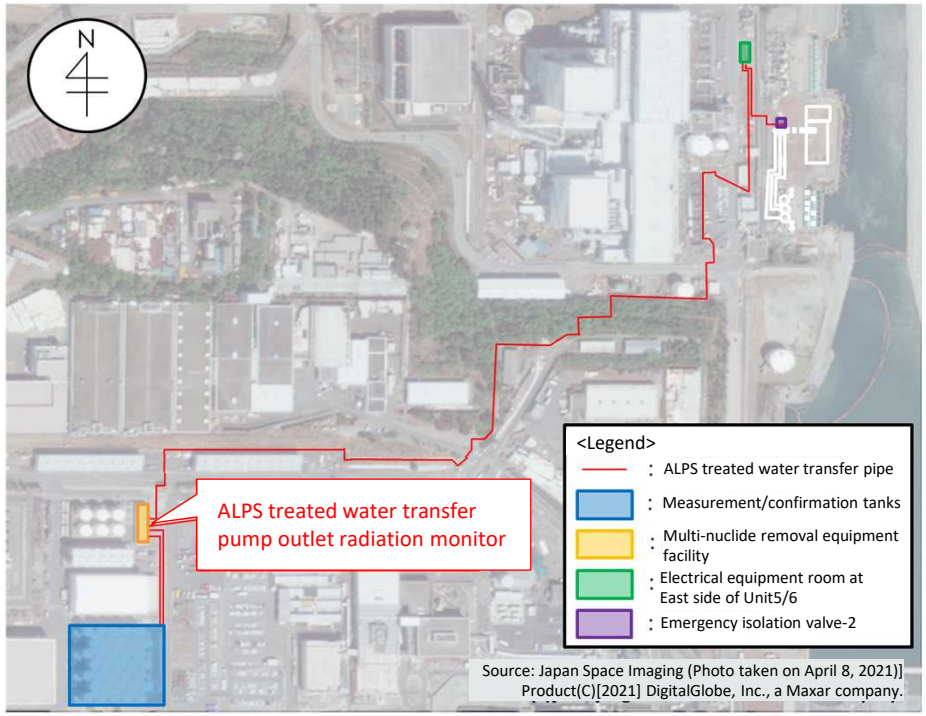


Figures of ALPS treated water transfer pump outlet radiation monitor※

※： As shown in the schematic on the upper right, during the third discharge, ALPS treated water was passed through System B.
(System A was filled with filtrated water)



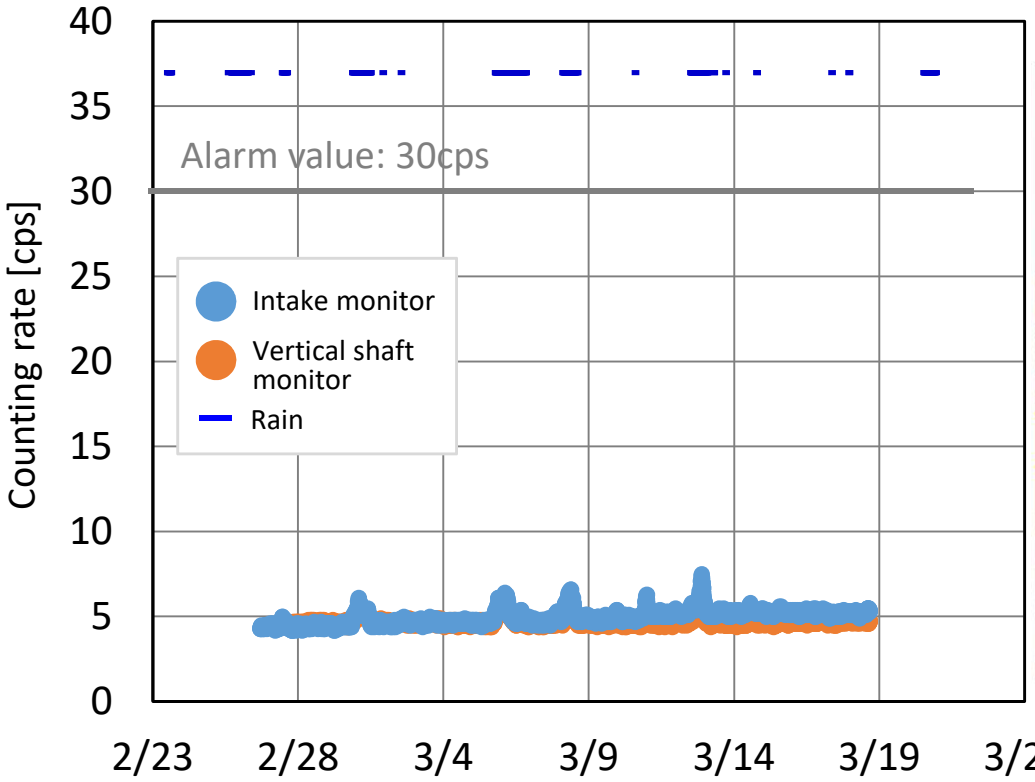
ALPS treated water transfer system schematic



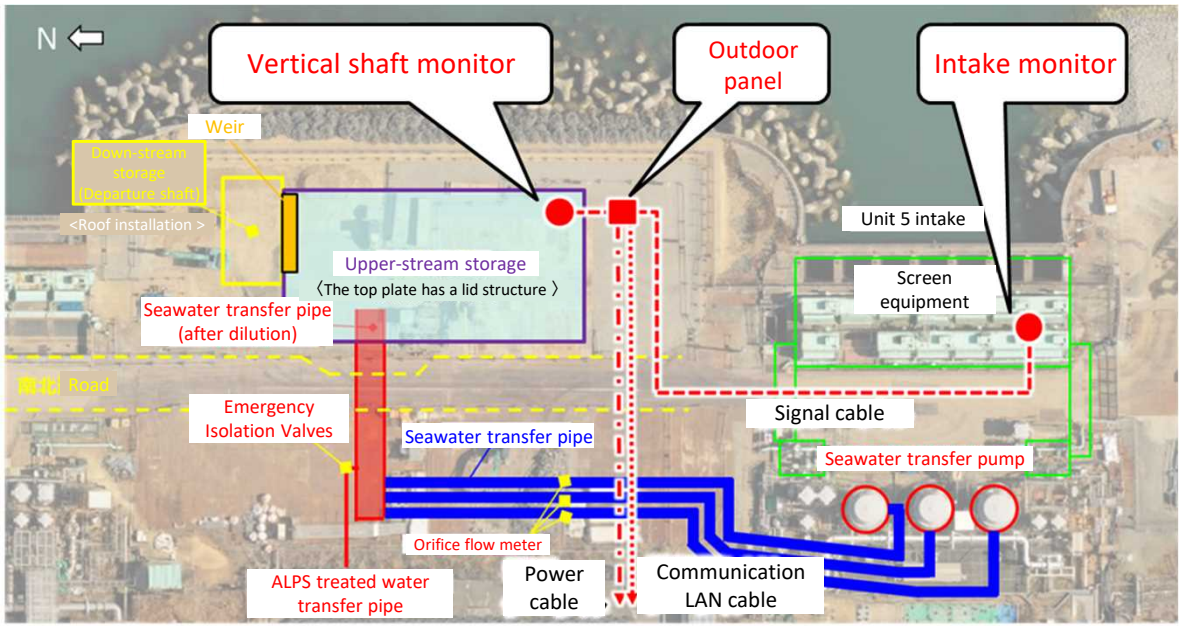
Overview of ALPS treated water dilution/discharge facility

1-1. Operating parameter records during the discharge (3/3)

- A temporary spike assumed to be caused by rainfall was seen in the figures from the intake monitor, but there were no abnormal fluctuations.



Figures of Intake/Vertical shaft monitor

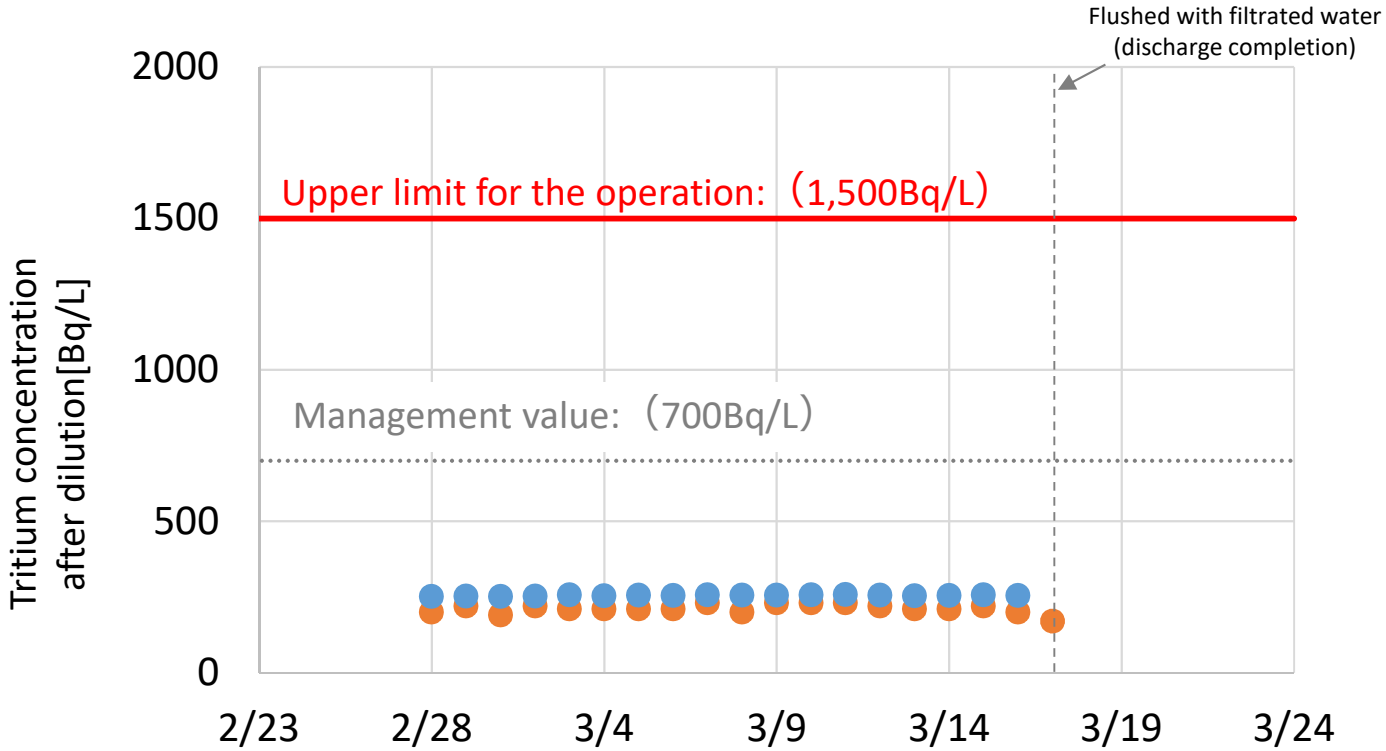


Overview of Intake/Vertical shaft monitor

※It is believed that during rainfall, the concentration of radioactive materials in seawater increases due to the fallout runoff from onshore areas and precipitation of natural radionuclides (such as daughter nuclide of radon, etc.). The intake monitor is showing increase due to soil that adheres to the sensor and Cs-137 contained in marine organisms.

1-2. Tritium concentrations after dilution during the discharge

- During the discharge period, water was sampled daily from the seawater pipe to analyze tritium concentrations.
  ⇒Confirmed to be less than the upper limit for the operation: 1,500Bq/liter



Tritium concentrations after dilution（calculated values and analysis values）

Calculated values※1

Analysis values(Detected values)

Analysis values (below the detection limit)

※1：Calculated using the following formula
（Uncertainty has been considered for each parameter）

$$\text{Tritium concentrations after dilution (Calculated values)} = \frac{\text{Tritium concentrations in ALPS treated water}^{※2} \times \text{ALPS treated water transfer flow}}{\text{Seawater transfer flow} + \text{ALPS treated water transfer flow}}$$

※2：Analysis values at measurement/confirmation tanks

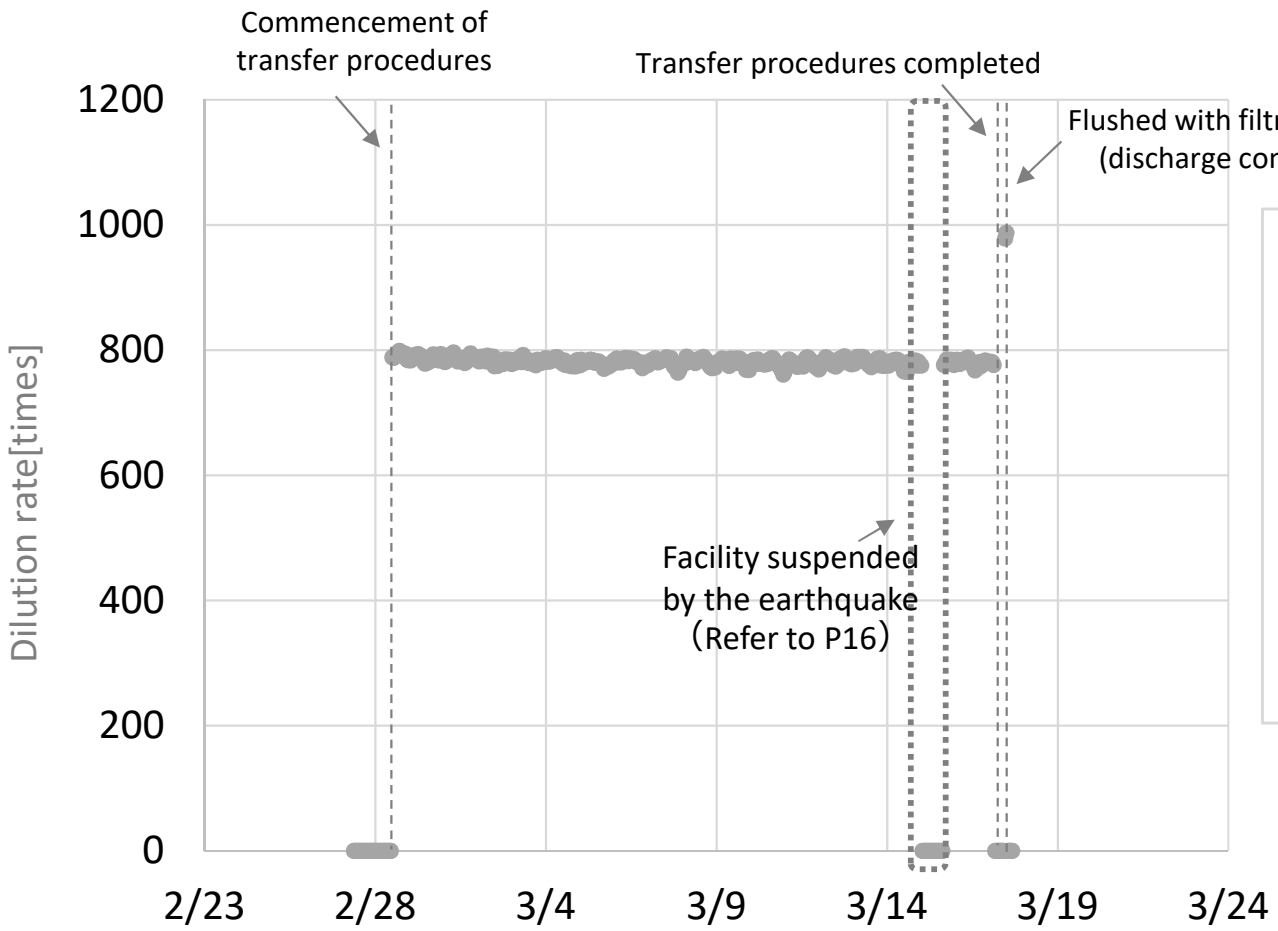
	2/28	2/9～3/14,3/16	3/15※4	3/17
Calculated value: Time of data acquisition	15:00	7:00	17:00	－
Analysis value: Time of specimen sampling	14:52	7:00～10:00	17:02	11:09

※3：No calculated values since the pipes were flushed out with filtrated water.

※4：Sampled after resuming the discharge after suspending/inspecting facilities due to the earthquake.

[Reference] Dilution rate of ALPS treated water

- The dilution rate has always been kept at over 100 times during the discharge.



Dilution rate of ALPS treated water

Dilution rate※1

※1：Calculated using the following formula

$$\text{Dilution rate} = {}^{+}\frac{\text{Seawater flow rate}^{※2}}{\text{ALPS treated water flow rate}^{※3}} \Big/ \text{ALPS treated water flow rate}^{※3}$$

※2： Total for systems A and B
※3： The flowmeters are reduplicate, so the higher of the figures from both meters was used for calculation

[Reference] Total radioactivity of nuclides to be measured and assessed (29 nuclides)

- The following chart shows the total radioactivity (bq) for nuclides to be measured and assessed (29 nuclides) during the fourth discharge (Group B). (Calculated from analysis values※1 (Bq/liter) and discharge volume (7,794m³) for each nuclide)

  ※1: It was confirmed that the sum of the ratios of legally required concentrations of the nuclides targeted for measurement/assessment is 0.34 and less than 1.

- The total radioactivity from nuclides for which analysis values were below detection limit (ND) have not been included.

Nuclide	Analysis value [Bq/L]	Total radioactivity [Bq]	Nuclide	Analysis value [Bq/L]	Total radioactivity [Bq]	Nuclide	Analysis value [Bq/L]	Total radioactivity [Bq]
C-14	1.4E+01	1.1E+08	Sb-125	1.1E-01	8.6E+05	U-234※3	<2.5E-02	–
Mn-54	<2.4E-02	–	Te-125m※2	4.0E-02	3.1E+05	U-238※3	<2.5E-02	–
Fe-55	<1.4E+01	–	I-129	2.5E+00	1.9E+07	Np-237※3	<2.5E-02	–
Co-60	3.4E-01	2.6E+06	Cs-134	<3.4E-02	–	Pu-238※3	<2.5E-02	–
Ni-63	<9.7E+00	–	Cs-137	5.0E-01	3.9E+06	Pu-239※3	<2.5E-02	–
Se-79	<1.1E+00	–	Ce-144	<3.7E-01	–	Pu-240※3	<2.5E-02	–
Sr-90	3.1E-01	2.4E+06	Pm-147※2	<3.3E-01	–	Pu-241※2	<7.0E-01	–
Y-90※2	3.1E-02	2.4E+06	Sm-151※2	<1.3E-02	–	Am-241※3	<2.5E-02	–
Tc-99	3.4E+00	2.6E+07	Eu-154	<7.4E-02	–	Cm-244※3	<2.5E-02	–
Ru-106	<2.5E-01	–	Eu-155	<2.0E-01	–			

※2 Analysis values were assessed with radioactive equilibrium

※3 Gross Alpha measurements

1-3. Sea area monitoring history（1/2）

○ Measurement results of tritium concentrations in water sampled in the vicinity of the discharge outlet (within 3km of the power station) and outside of the vicinity of the discharge outlet (within a 10km square in front of the power station) since the commencement of the first discharge on August 24, 2023, were all below indices (discharge suspension level and investigation level).

○ For quick tritium measurements taken in the vicinity of the discharge outlet, since December 26, 2023, we have changed its frequency so that it focuses during the discharge period.

(Unit：Bq/L)

	Sampling location	Frequency	February, 2024		March, 2024									
			28	29	1	1 Normal *2	2	3	4	4 Normal *2,3	5	6	7	8
In the vicinity of the discharge outlet	T-1	Twice a week*	—*1	<6.9	<9.3	being measured	—	—	<7.4	being measured	—	—	<8.1	<7.2
	T-2	Twice a week*	—*1	<6.8	<9.2	being measured	—	—	<7.4	being measured	—	—	<8.1	<7.4
	T-0-1	Once a day*	—*1	—*1	<6.5	being measured	—*1	<7.3	<9.0	being measured	<7.9	—*1	—*1	—*1
	T-0-1A	Once a day*	—*1	—*1	<6.4	being measured	—*1	12	<6.9	being measured	16	—*1	—*1	—*1
	T-0-2	Once a day*	—*1	—*1	<9.5	being measured	—*1	<7.8	<9.0	being measured	<8.0	—*1	—*1	—*1
	T-0-3A	Twice a week*	—*1	—*1	<8.2	being measured	—	—	<9.0	being measured	—	—	—*1	—*1
	T-0-3	Twice a week*	—*1	—*1	<6.6	being measured	—	—	<9.1	being measured	—	—	—*1	—*1
	T-A1	Twice a week*	—*1	—*1	<7.8	being measured	—	—	<6.8	being measured	—	—	—*1	—*1
	T-A2	Once a day*	—*1	—*1	<7.8	being measured	—*1	<8.2	<6.9	being measured	<7.9	—*1	—*1	—*1
	T-A3	Twice a week*	—*1	—*1	<7.8	being measured	—	—	<6.9	being measured	—	—	—*1	—*1
Outside the vicinity of the discharge outlet	T-D5	Once a week	—*1	—	—*1	—*1	—	—	<8.8	being measured	—	—	—	—
	T-S3	Once a month	—	—	—	—	—	—	<6.8	being measured	—	—	—	—
	T-S4	Once a month	—	—	—	—	—	—	<6.9	being measured	—	—	—	—
	T-S8	Once a month	—	—	—	—	—	—	<9.1	being measured	—	—	—	—

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1：Sampled after the commencement of discharge at 3PM　*2：Detection limit 0.4 Bq/liter　*3：Detection limit 0.1 Bq/liter

：Term of discharge of ALPS treated water (Group B)

*：Monitored daily for the time being after the commencement of discharge

*：Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet (T-0-1, T-0-1A, T-0-2, T-A2)：Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations (T-1, T-2, T-0-3A, T-0-3, T-A1, T-A3)：Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

1-3. Sea area monitoring history（2/2）

（Unit：Bq/L）

	Sampling location	Frequency	March 2024											
			9	10	11	11 Normal *2	12	13	14	15 *3	16	17 *4	18	19
In the vicinity of the discharge outlet	T-1	Twice a week*	<6.7	<6.4	<6.1	being measured	–	–	<8.0	–	–	–	–*1	<6.7
	T-2	Twice a week*	<6.7	<6.3	<6.1	being measured	–	–	<8.0	–	–	–	–*1	<6.8
	T-0-1	Once a day*	–*1	–*1	<6.8	being measured	<8.8	–*1	<7.1	<6.6	<7.1	<6.2	–*1	<5.8
	T-0-1A	Once a day*	–*1	–*1	9.5	being measured	<7.5	–*1	<6.9	<6.1	<7.2	<7.7	–*1	<5.9
	T-0-2	Once a day*	–*1	–*1	<6.1	being measured	<7.6	–*1	<6.9	<6.1	<7.3	<7.7	–*1	<5.7
	T-0-3A	Twice a week*	–	–*1	<6.8	being measured	–	–	<8.3	–	–	–	–*1	<5.9
	T-0-3	Twice a week*	–	–*1	<6.9	being measured	–	–	<7.0	–	–	–	–*1	<5.9
	T-A1	Twice a week*	–	–*1	<7.1	being measured	–	–	<8.4	–	–	–	–*1	<7.6
	T-A2	Once a day*	–*1	–*1	<7.0	being measured	<7.5	–*1	<8.4	<6.1	<7.3	<7.6	–*1	<7.5
	T-A3	Twice a week*	–	–*1	<6.9	being measured	–	–	<8.3	–	–	–	–*1	<7.5
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	<6.9	being measured	–	–	–	–	–	–	–*1	<6.9
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

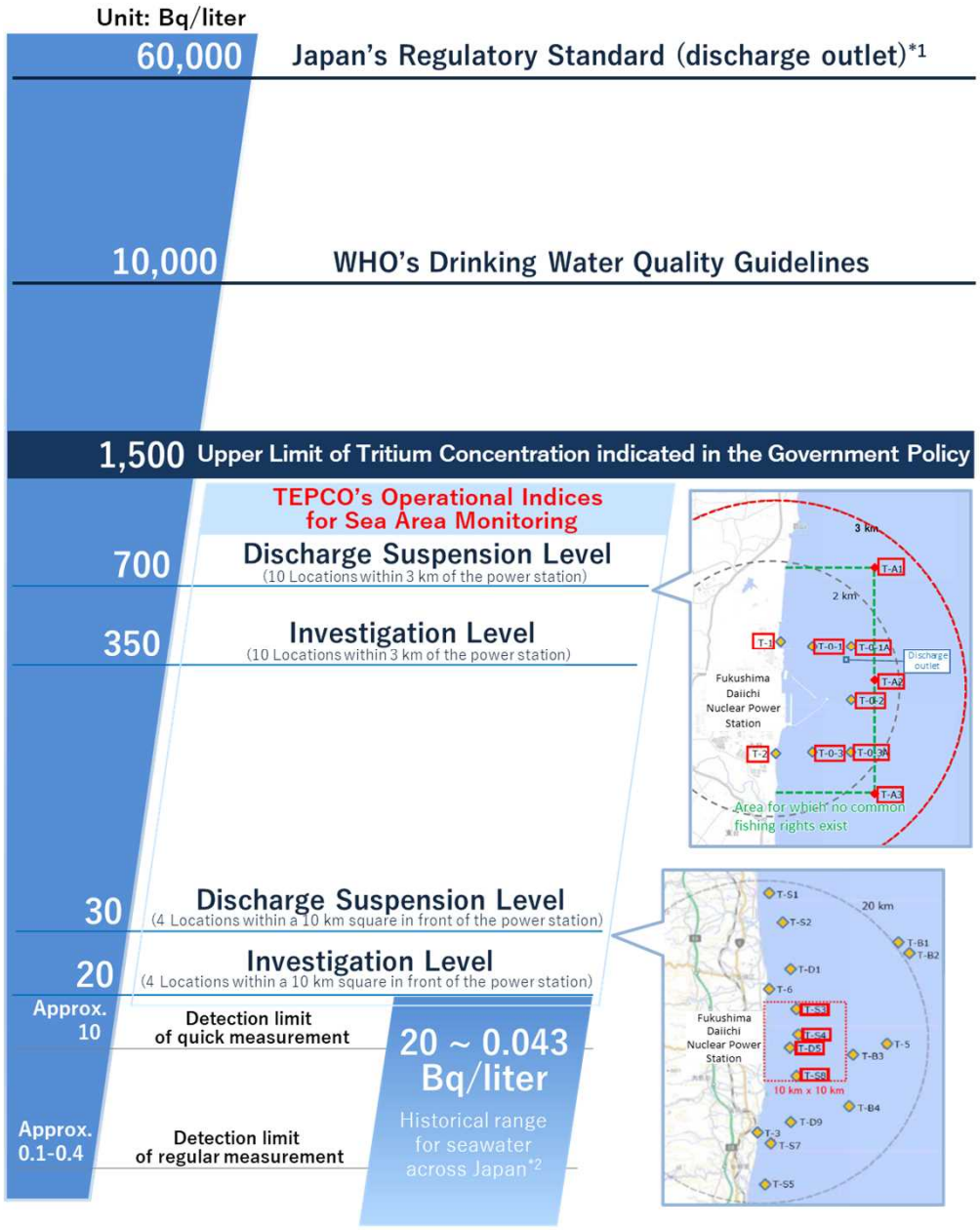
：Term of discharge of ALPS treated water (Group B)

*1：Sampling suspended due to bad weather condition
*2：Detection limit 0.1 Bq/liter
*3：Sampled during the discharge suspension due to the earthquake
*4：Sampled before the completion of discharge at 8AM

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet (T-0-1, T-0-1A, T-0-2, T-A2) ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations (T-1, T-2, T-0-3A, T-0-3, T-A1, T-A3)： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

[Reference] Comparison of tritium concentration in seawater

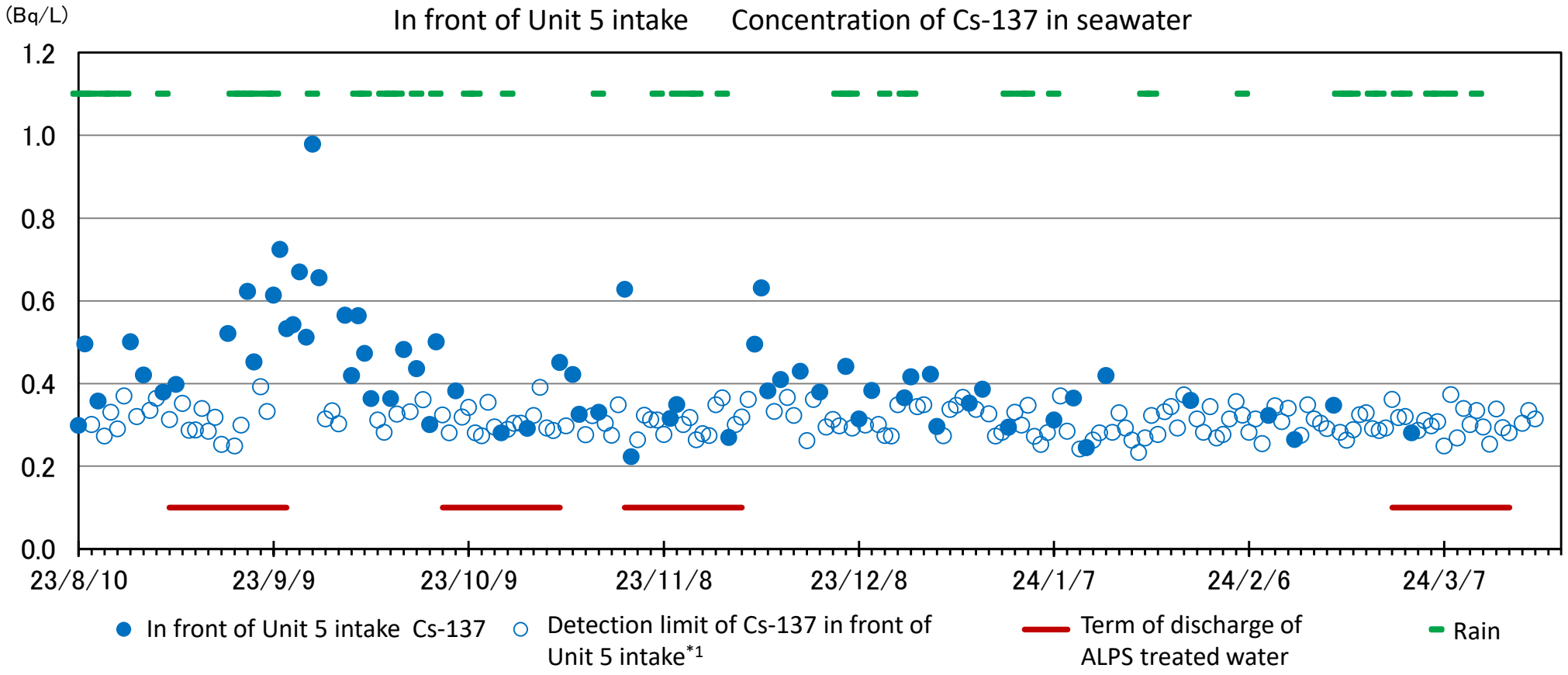
- Tritium concentrations measured during sea area monitoring after the commencement of discharge are within the range of fluctuation identified through past seawater monitoring performed throughout the entirety of Japan.
- In the future, it is possible that concentrations of tritium in the seawater may be affected by the concentrations of tritium in the ALPS treated water that is discharged, and exceed those observed in the past.
- However, even if this occurs, sea dispersion simulation results for discharged water performed during the radiological impact assessment have shown that these fluctuations will be within predicted levels and below the investigation level.



*1: This standard has been stipulated based on the calculation that if a person were to drink approximately 2L of the water coming out of the discharge outlet of a nuclear facility every day for one year, his/her exposure would be 1mSv.
*2: Source: Environmental Radioactivity and Radiation in Japan (Period: April 2019 to March 2022)

1-4. Unit 5 intake channel monitoring

- Sea water monitoring results at near the intake for seawater to be used for dilution during the discharge of ALPS treated water have confirmed that values are similar to those outside of the term of the discharge.

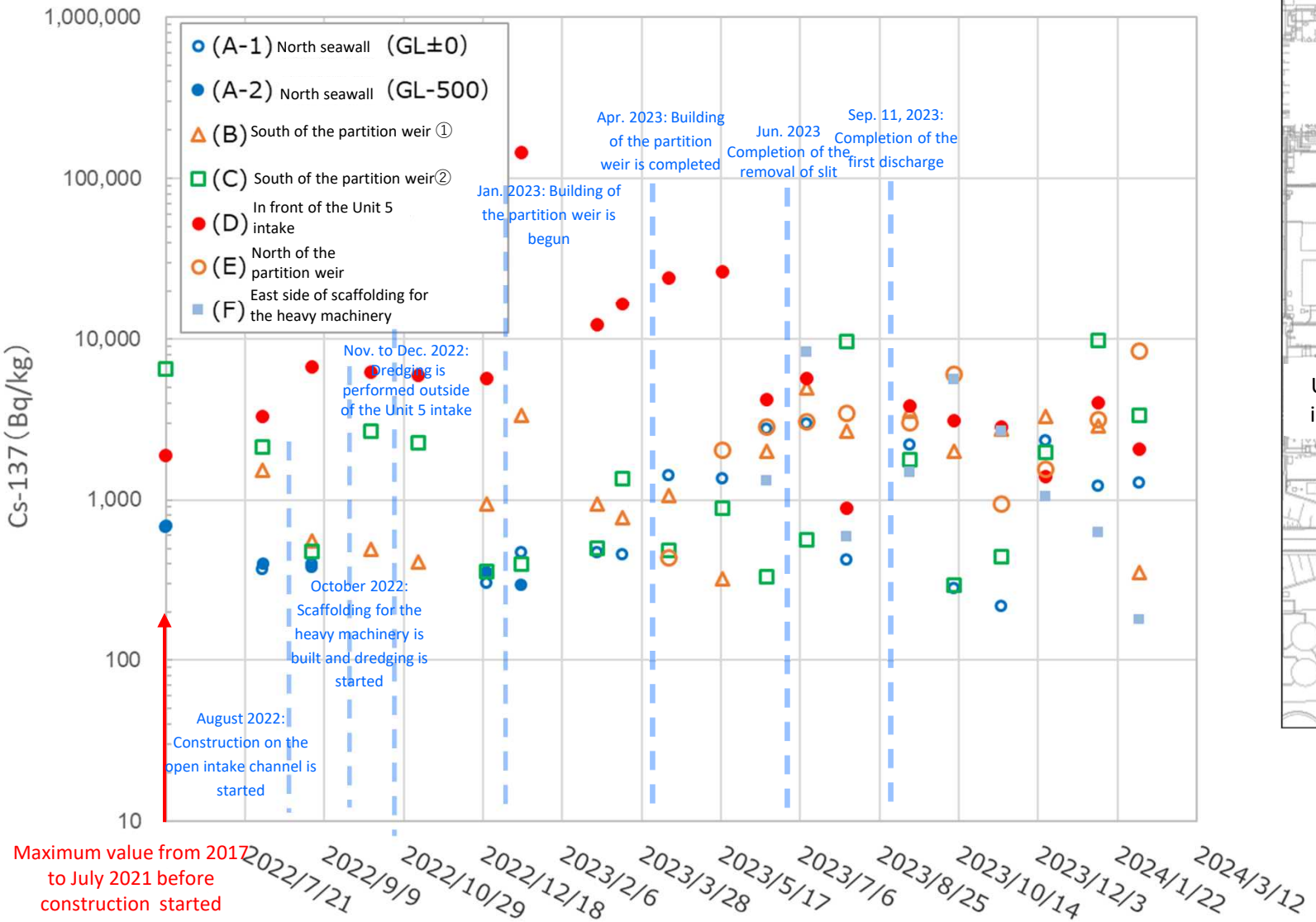


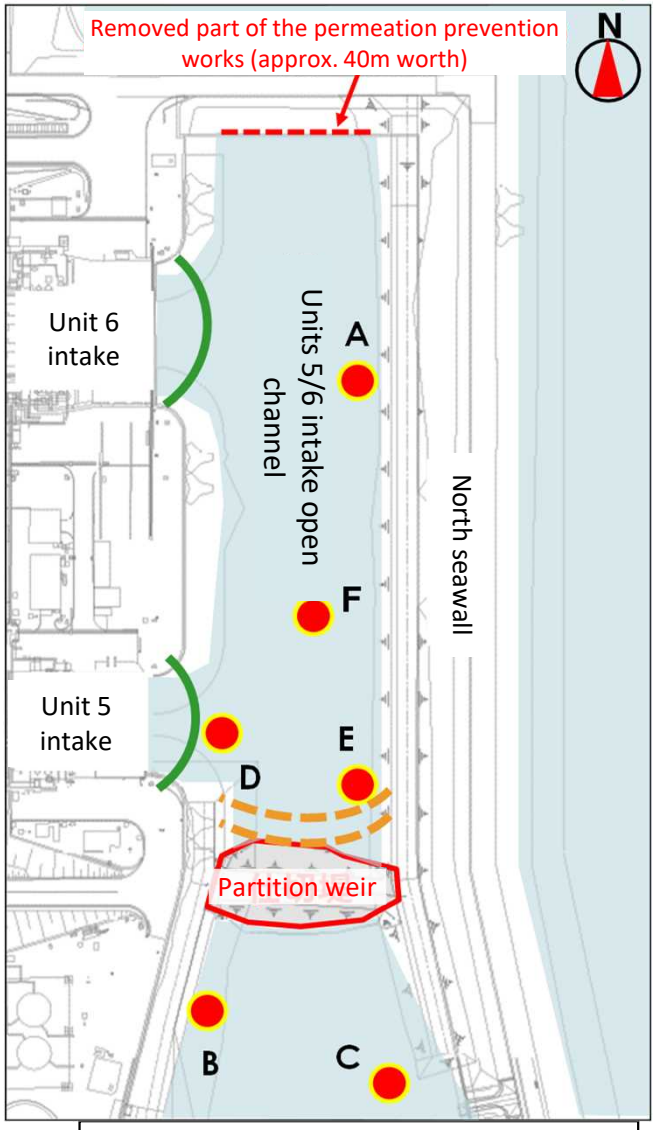
*1: Detection limit is displayed on the graph when the concentration is lower than detection limit.

※The location of seawater monitoring inside the Unit 5/6 intake open channel has been changed to the sampling location near the intake for seawater to be used for dilution (changed from “in front of the Unit 6 intake” to “in front of the Unit 5 intake”).

1-5. Monitoring results for seabed soil inside the Unit 5/6 intake open channel (1)

- Monitoring results for seabed soil in front of Unit 5 intake did not show significant fluctuations from the beginning of construction until December 2022. While they showed higher readings after January 2023, we have confirmed that these readings decreased after the completion of silt removal.
- We will continue to monitor the seabed soil.





1-5. Monitoring results for seabed soil inside the Unit 5/6 intake open channel (2)

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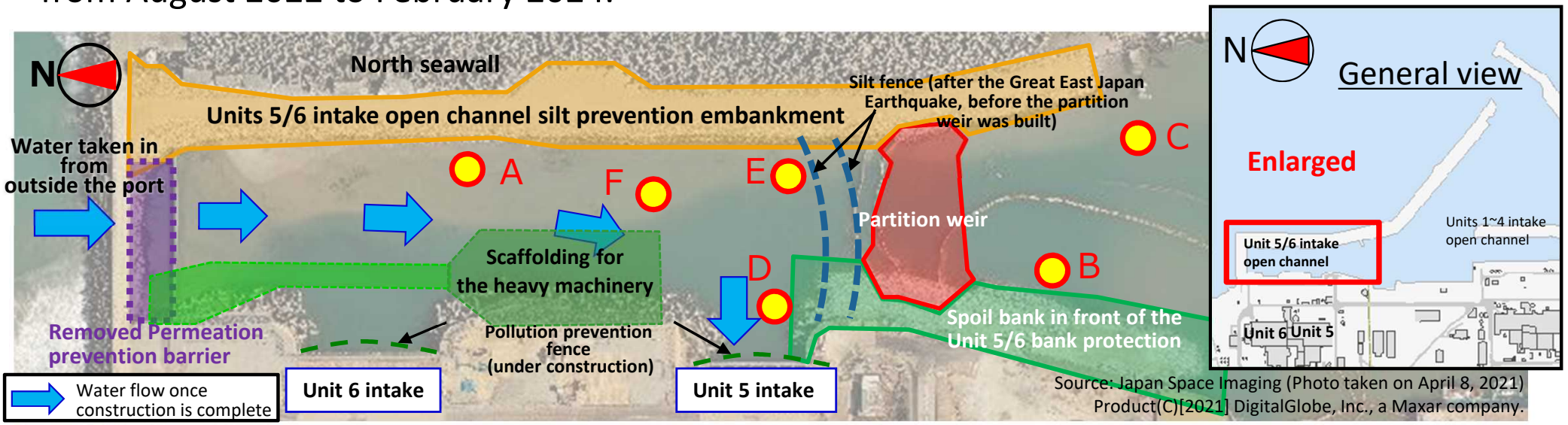
- The following shows monitoring results for seabed soil inside the unit 5/6 intake open channel from August 2022 to February 2024.



Sampling points		Before construction	2022					2023												2024	
		2017 to July 2021	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.
A−1 North side of the Unit 5/6 open channel (North side of the silt fence (GL±0m))	Cs−134	4.4～52.3	33.2	36.0	−	−	31.5	37.2	39.8	39.8	40.1	33.9	66.5	65.5	33.6	65.9	34.6	32.0	69.5	44.5	51.1
	Cs−137	163.6～678.6	371.6	398.8	−	−	303.2	468.1	460.2	460.2	1,414.0	1,360.0	2,752.0	2,957.0	422.3	2,195.0	281.8	216.7	2,322.0	1,210.0	1,270.0
A−2 North side of the Unit 5/6 open channel (North side of the silt fence (GL-0.5m))	Cs−134	14.4～58.5	33.6	32.5	−	−	38.3	33.4	※Only sampled from the surface (GL±0m) since sand was removed during dredging												
	Cs−137	310.0～689.8	404.0	383.2	−	−	356.4	299.1													
B South side of the partition weir ① (South side of the silt fence)	Cs−134	723.0	34.5	42.1	65.6	55.4	46.7	73.9	49.1	43.1	62.6	47.8	60.1	97.1	59.9	92.5	52.4	53.2	83.7	75.2	38.2
	Cs−137	6,475.0	1,528.0	553.9	492.4	412.8	936.0	3,331.0	936.1	777.0	1,061.0	323.8	2,008.0	4,943.0	2,649.0	3,528.0	2,004.0	2,732.0	3,287.0	2,868.0	353.9
C South side of the partition weir ② (South side of the silt fence)	Cs−134	183.0	51.3	47.2	68.7	59.7	51.8	40.3	30.9	40.3	44.6	61.6	59.5	47.7	234.8	59.3	37.1	39.6	44.0	153.3	115.8
	Cs−137	1,893.0	2,114.0	476.0	2,671.0	2,242.0	360.8	400.5	503.5	1,356.0	485.9	886.9	330.5	560.6	9,519.0	1,773.0	295.9	441.2	1,970.0	9,737.0	3,345.0
D Unit 5 intake	Cs−134	−	101.6	184.0	213.7	160.4	108.7	3,546.0	167.4	472.0	690.7	586.2	63.7	141.4	64.5	75.2	70.7	50.2	50.5	61.8	50.3
	Cs−137	−	3,301.0	6,714.0	6,198.0	5,941.0	5,678.0	144,000.0	12,290.0	16,972.0	24,760.7	26,400.0	4,189.0	5,699.0	951.7	3,876.2	3,085.0	2,810.0	1,387.0	3,981.0	2,069.0
E North side of the partition weir	Cs−134	−									42.8	59.8	86.8	98.7	96.8	56.9	147.0	35.6	45.5	64.4	161.2
	Cs−137	−									437.1	2,022.0	2,822.0	3,069.0	3,438.0	3,022.0	5,975.0	936.5	1,546.0	3,145.0	8,371.0
F East side of scaffolding for the heavy machinery	Cs−134	−											40.2	166.1	45.3	53.7	98.0	52.4	51.4	58.6	31.3
	Cs−137	−											1,312.0	8,303.0	592.4	1,481.0	5,569.0	2,676.0	1,049.0	630.9	178.7

※Unit: Bq/liter, Figures in gray were below the detection limit

1. Performance of the 4th discharge of the ALPS treated water

2. Responding to earthquakes

3. Sea area dispersion simulation

4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

5. FY2024 ALPS Treated Water Discharge Plan

(Reference 1) Changes to internal corporate functions in conjunction with director appointments (As of April 1, 2024)

(Reference 2) Sea area monitoring history after the commencement of discharge

2. Responding to earthquakes

- Friday, March 15
  - Around 12:14AM: An earthquake with its epicenter off the coast of Fukushima Prefecture occurred (The seismic intensity of 5-lower was measured in Naraha Town, one of the towns* where our power stations are located.)
  - 12:33AM: Discharge was suspended in accordance with pre-defined operational procedures.
  - 3:49PM: Resumed the discharge after conducting field patrol inspections and confirming that there was no abnormality on our facilities.

- Sunday, March 17
  - 3:29AM: Transfer procedure of the 4th discharge of ALPS treated water into the sea was completed
  - Around 6:17AM: An earthquake with its epicenter off the coast of Fukushima Prefecture occurred (The seismic intensity of 4 was measured in one of the towns* where our power stations are located.)

  ⇒Confirmed that there was no abnormality on our facilities after checking parameters and conducting field patrol inspections.

*Fukushima Daiichi Nuclear Power Station is located in Okuma Town and Futaba Town. Fukushima Daini Nuclear Power Station is located in Tomioka Town and Naraha Town.

1. Performance of the 4th discharge of the ALPS treated water

2. Responding to earthquakes

3. Sea area dispersion simulation

4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

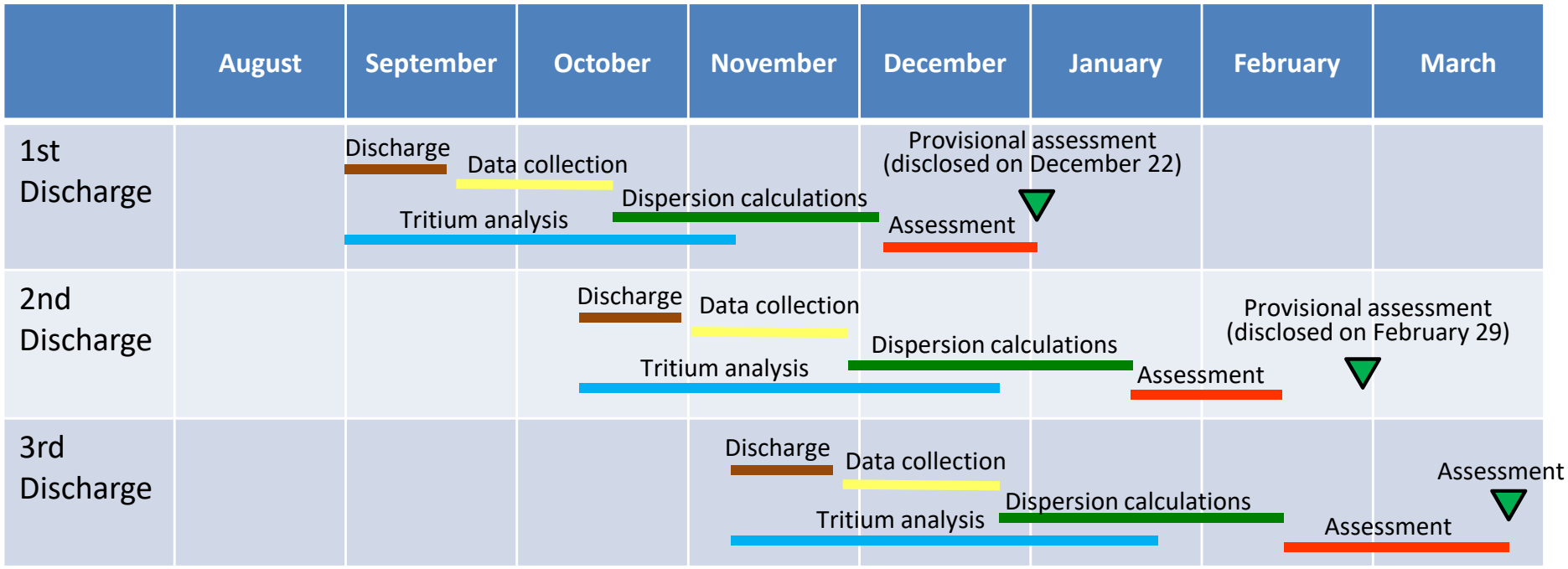
5. FY2024 ALPS Treated Water Discharge Plan

(Reference 1) Changes to internal corporate functions in conjunction with director appointments (As of April 1, 2024)

(Reference 2) Sea area monitoring history after the commencement of discharge

3-1-1. Validating the sea area dispersion simulation

- In order to verify the validity of the sea area dispersion simulation used for the Radiological Environmental Impact Assessment, tritium dispersion calculations estimated from actual tritium discharge volumes and meteorological /marine meteorological data are being compared/assessed with sea area monitoring data.
- We verify the first three discharges as a whole by adding monitoring data that was disclosed after the first and second discharges, as well as the comparing between dispersion calculations and sea area monitoring data for the third discharge period (November 2 - November 20).



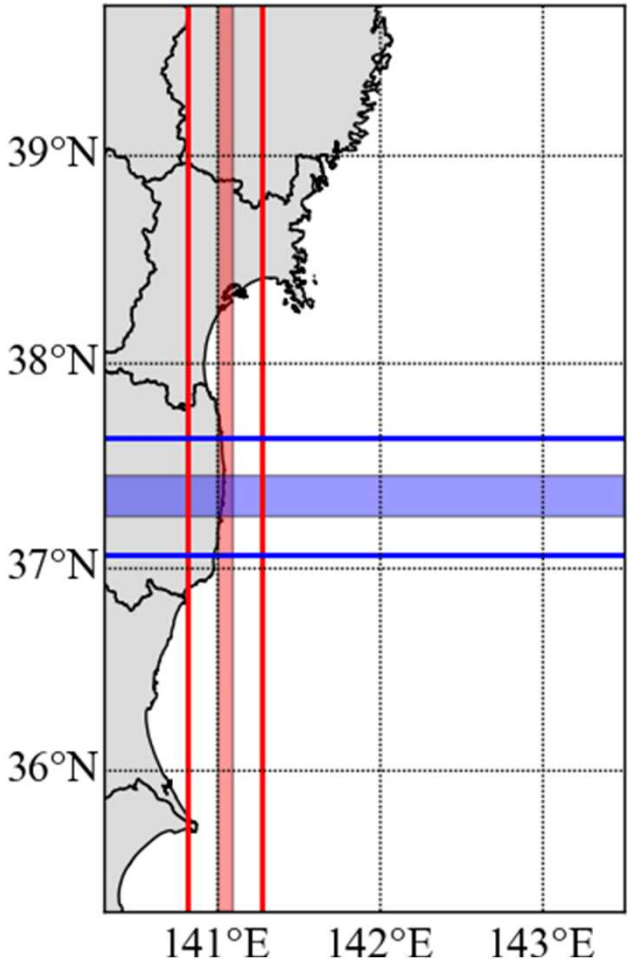
3-1-2. Validation approach

Validity is being verified using the following approach.

- 10 locations near the discharge outlet (within a 3km radius from the power station) and 4 locations within the 10km square off the coast of the power station, which could detect the increase in concentrations, have been selected for comparison.
- Results of monitoring conducted by other organizations (Ministry of environment, Nuclear Regulation Authority, and Fukushima prefecture) in vicinity of the power station have also been selected for comparison.
- The results from normal measurement have been selected because they are thought to contain little uncertainty (quick measurements have been excluded).
- Since there is little sea area monitoring data, the simulation contains uncertainty, and the simulation cannot reproduce minute differences in concentrations at a certain location, validation is **not based on a comparison of numerical figures, but rather whether or not concentration increase trends (dispersion tendencies) are being reproduced.**

3-1-3. Overview of dispersion simulation (Regional Ocean Modeling System)

- We use a model that has been validated through dispersion calculations for cesium concentration in seawater after the Fukushima Daiichi Nuclear Accident.
- Furthermore, we calculate at a higher resolution to enable a highly detailed simulation of the sea area in the vicinity of the power station.



- The Regional Ocean Modeling System (ROMS) is applied to the area off the coast of Fukushima
- Sea area flow data
  - Use data[1] which interpolated Metrological Agency's short-term weather forecast data to the driving force of the sea surface
  - Use reanalyzed data of the sea (JCOPE2M[2][3]) as the source data for boundary conditions and data assimilation* for open ocean
- Model scope: North latitude: 35.30 - 39.71 degrees、East longitude: 140.30 - 143.50 degrees (490km×270km); gradually improve resolutions of sea area approx. 22.5km north-south x approx. 8.4km east-west around the power station (The resolution for the area between the red/blue hatching and the red/blue lines in the figure to the left has been gradually reduced to the minimum assessment area size of approximately 200m²)
  - Resolution (all area): Approx. 925m north-south x approx. 735m (approx. 1km) east-west, vertical direction: 30 layers
  - Resolution (vicinity): Approx. 185m north-south x approx. 147m (approx. 200m) east-west, vertical direction: 30 layers
- Actual meteorological /marine meteorological data
  - Use meteorological/marine meteorological data from the discharge period

*Data assimilation: Method for incorporating actual data into numerical simulations. Also referred to as "nudging."

[1] Atsushi HASHIMOTO, Hiromaru HIRAGUCHI, Yasushi TOYODA, Kou NAKAYA, "Predicting Japan's Climate Changes in conjunction with Global Warming (Vol.1), -Application to Weather Forecast/Analysis System NuWFAS's Long-Term Climate Forecasts-", Central Research Institute of Electric Power Industry Report, 2010.
[2] Miyazawa, Y., A. Kuwano-Yoshida, T. Doi, H. Nishikawa, T. Narazaki, T. Fukuoka, and K. Sato, 2019: Temperature profiling measurements by sea turtles improve ocean state estimation in the Kuroshio-Oyashio Confluence region, Ocean Dynamics, 69, 267-282.
[3] Miyazawa, Y., S. M. Varlamov, T. Miyama, X. Guo, T. Hihara, K. Kiyomatsu, M. Kachi, Y. Kurihara, and H. Murakami, 2017: Assimilation of high-resolution sea surface temperature data into an operational nowcast/forecast system around Japan using a multi-scale three dimensional variational scheme, Ocean Dynamics, 67, 713-728.

3-2-1. Overview of the dispersion simulation for the first discharge period

- Dispersion calculations for the first discharge period (August 24 - September 11) were made based on the following conditions.
  - The dispersion model was the same model used for the radiological environmental impact assessment
  - Tritium discharge rate were calculated from the concentrations measured at the measurement/confirmation facility and the daily discharge flow volume, and these data were entered into the model

Calculation conditions for the first discharge period.
(The model is the same as that used for the radiological environmental impact assessment report)

Amount of tritium discharged

・8/24 13:03 – 9/10 14:52 (Constant)

Discharge rate＝2.66E+09Bq/hr （＝140,000Bq/L×456m3/day×1000L/m3÷24hr/day）

・9/11 10:33 - 12:15

Discharge rate＝1.32E+09Bq/hr （＝140,000Bq/L×16m3×1000L/m3÷102/60hr）

Meteorological/marine meteorological data

・ Actual meteorological/marine meteorological data from the discharge period (Meteorological Agency, JAMSTEC, etc.)

Reference

Tritium discharge volume used for the dispersion simulation in the radiological environmental impact assessment

・Constant throughout the year

Discharge rate＝2.51 E+09 Bq/hr (=22 trillion Bq/year ÷ 8760hr/yr)

3-2-2. Monitoring results from the first discharge period (Overview)

TEPCO

○ Since the commencement of discharge on August 24, quick measurements that obtain tritium concentration in seawater (target detection limit: less than 10Bq/liter) were performed for samples taken from 10 locations near the discharge outlet (within a 3km vicinity of the power station) and four locations on the outside of the area around the discharge outlet (within a 10km square off the coast of the power station). The maximum concentration detected during the first discharge period (August 24 - September 11) was 10 Bq/liter taken from location T-0-1A on August 31, and all values were below indicators (discharge suspension level, investigation level).

○ The highest concentrations detected during normal monitoring (target detection limit: less than 0.4Bq/liter or less than 0.1Bq/liter) were 2.6Bq/liter in the vicinity of the discharge outlet (within a 3km radius of the power station) (T-0-1A, August 24), and 0.59Bq/liter, outside of the area around the discharge outlet (within a 10km square off the coast of the power station) (T-D5, August 31) respectively.

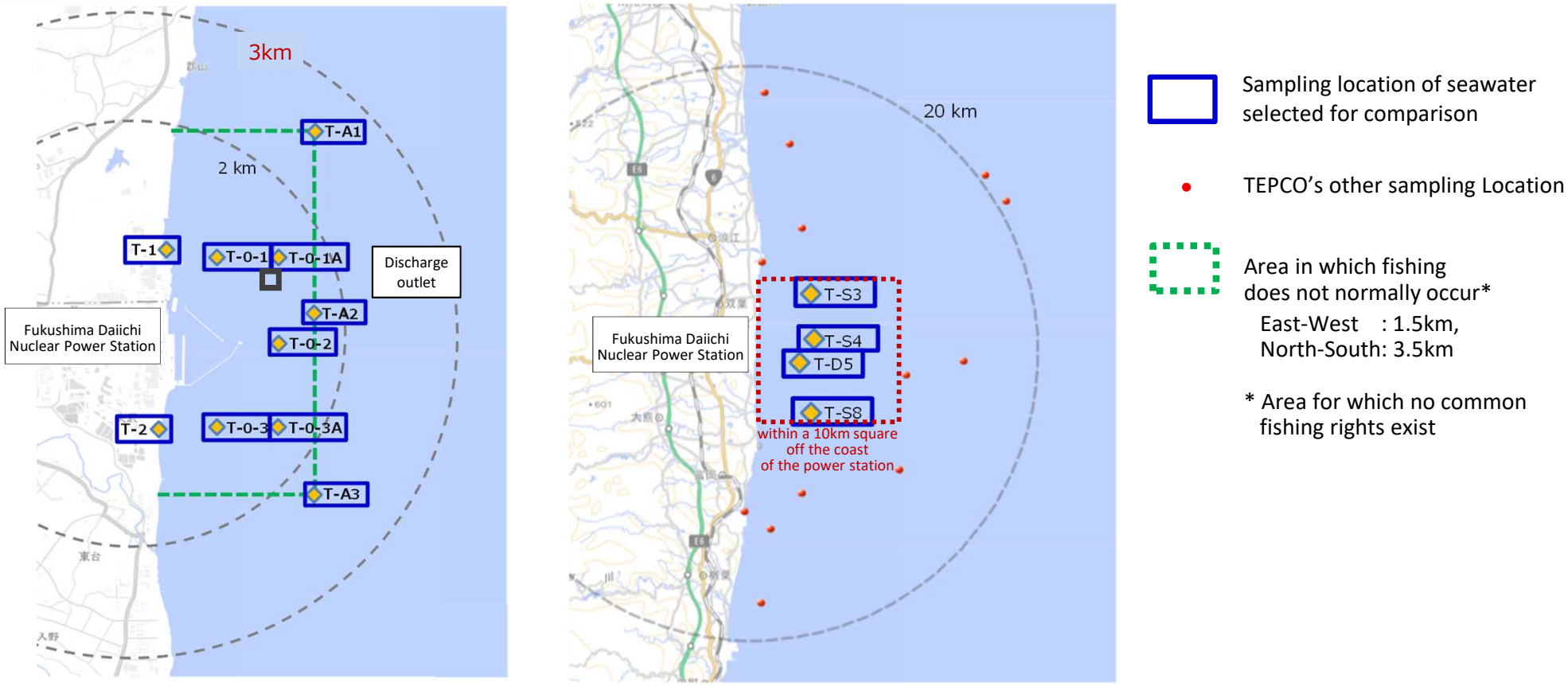


Fig. Sampling locations of seawater selected for comparison with dispersion simulation

3-2-3-1. Monitoring results from the first discharge period (1/3)

- The following chart shows the sea area monitoring results for the first discharge period.
- Verification was based on tritium concentrations detected more than 0.1 Bq/liter through normal measurements in the vicinity of the discharge outlet on August 24, 26, 30, September 4, and 11. (Indicated in the black boxes)

(Unit: Bq/liter)

	Sampling location	Frequency	August											
			24 *1	24 Normal *1,2	25	26	26 Normal* 3	27	28	29	30	30 Normal* 2,3	31	31 Normal* 3
In the vicinity of the discharge outlet	T-1	Once a week*	<6.3	<0.34	<5.6	<6.6	0.97	<6.2	<7.3	<5.9	<6.4	1.0	<6.8	–
	T-2	Once a week*	<6.3	<0.33	<5.5	<6.5	1.1	<6.2	<7.3	<5.9	<6.3	1.3	<6.8	–
	T-0-1	Once a week*	<8.0	<0.34	<6.8	<6.1	0.66	<6.1	–*4	–*4	<6.8	<0.32	<8.2	–
	T-0-1A	Once a week*	<4.6	2.6	<7.6	<6.2	0.087	<6.1	–*4	–*4	<6.9	0.43	10	–
	T-0-2	Once a week*	<8.1	<0.35	<6.8	<6.1	0.92	<6.1	–*4	–*4	<6.8	1.4	<8.2	–
	T-0-3A	Once a week*	<4.7	<0.33	<7.6	<6.8	<0.068	<6.8	–*4	–*4	<7.6	<0.32	<5.1	–
	T-0-3	Once a week*	<8.0	<0.34	<6.9	<6.1	0.14	<6.1	–*4	–*4	<6.8	<0.31	<8.3	–
	T-A1	Once a week*	<6.6	<0.32	<7.6	<6.8	0.13	<6.8	–*4	–*4	<7.6	1.1	<5.1	–
	T-A2	Once a week*	<6.6	<0.32	<7.6	<6.8	0.065	<6.8	–*4	–*4	<7.7	1.5	<5.1	–
	T-A3	Once a week*	<6.6	<0.32	<6.9	<6.8	<0.072	<6.8	–*4	–*4	<7.6	1.1	<5.2	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	–	–	–	–	<6.8	0.59
	T-S3	Once a month	–	–	–	–	–	–	–	–	<7.6	0.070	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	<7.7	0.073	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	<7.7	0.062	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.
：Term of discharge of ALPS treated water (Group B)
*：Monitored daily for the time being after the commencement of discharge

*1：Sampled after the commencement of discharge at 3PM
*2：Detection limit 0.4 Bq/liter
*3：Detection limit 0.1 Bq/liter
*4：Sampling suspended due to rough seas

3-2-3-2. Monitoring results from the first discharge period (2/3)

(Unit: Bq/liter)

	Sampling location	Frequency	9月											
			1	2	3	4	4 Normal*1	5	6	6 Normal *1	7	8	9	10
In the vicinity of the discharge outlet	T-1	Once a week*	<7.2	<6.8	<5.8	<6.6	0.68	<7.1	<7.1	–	<6.1	<5.9	<6.0	<7.8
	T-2	Once a week*	<7.4	<6.8	<5.8	<6.6	0.90	<7.1	<7.1	–	<6.1	<5.9	<6.0	<7.8
	T-0-1	Once a week*	<7.3	<7.3	<6.8	<6.9	<0.34	<6.6	<6.6	–	<8.7	<6.9	<8.0	<7.0
	T-0-1A	Once a week*	<7.3	<8.2	<6.8	<6.9	<0.33	<7.0	<6.6	–	<8.7	<6.9	<8.0	<7.1
	T-0-2	Once a week*	<7.3	<7.3	<6.7	<7.0	0.74	<6.5	<6.6	–	<8.6	<6.8	<8.0	<7.0
	T-0-3A	Once a week*	<7.0	<7.8	<6.5	<5.9	<0.33	<7.6	<6.3	–	<5.3	<7.4	<6.5	<6.5
	T-0-3	Once a week*	<7.3	<8.2	<6.7	<6.8	<0.34	<7.8	<6.6	–	<8.7	<6.9	<8.0	<7.1
	T-A1	Once a week*	<7.1	<7.9	<6.5	<5.9	1.1	<7.6	<6.3	–	<5.3	<7.4	<6.4	<6.5
	T-A2	Once a week*	<7.1	<7.8	<6.5	<7.3	0.88	<7.6	<6.2	–	<5.3	<7.3	<6.6	<6.4
	T-A3	Once a week*	<7.1	<7.9	<6.5	<7.3	0.82	<7.6	<6.3	–	<5.3	<7.3	<6.5	<6.5
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	<7.1	<0.34	–	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1：Detection limit 0.4 Bq/liter

：Term of discharge of ALPS treated water (Group B)

*：Monitored daily for the time being after the commencement of discharge

3-2-3-3. Monitoring results from the first discharge period (3/3)

(Unit: Bq/liter)

	Sampling location	Frequency	September											
			11 *1	11 Normal* 1,2	12	12 Normal* 2	13	13 Normal* 2	14	15	16	17	18	18 Normal* 3
In the vicinity of the discharge outlet	T-1	Once a week*	<7.0	0.21	<7.2	–	<7.2	–	<6.5	<7.3	<6.7	<7.0	<7.6	<0.31
	T-2	Once a week*	<7.0	0.24	<7.2	–	<7.2	–	<6.5	<7.4	<6.8	<6.9	<7.6	<0.31
	T-0-1	Once a week*	<6.8	0.10	<7.7	–	<6.6	–	<7.5	<7.8	<7.6	<7.8	<7.4	<0.36
	T-0-1A	Once a week*	<6.8	0.12	<7.8	–	<6.5	–	<7.5	<7.7	<7.5	<7.7	<7.3	<0.34
	T-0-2	Once a week*	<6.8	0.13	<7.7	–	<6.5	–	<7.5	<7.7	<7.6	<7.7	<7.3	<0.31
	T-0-3A	Once a week*	<6.2	0.10	<7.0	–	<5.9	–	<6.6	<7.4	<6.8	<6.9	<7.6	<0.35
	T-0-3	Once a week*	<6.8	0.16	<7.8	–	<6.5	–	<7.5	<7.7	<7.5	<7.8	<7.3	<0.34
	T-A1	Once a week*	<7.0	0.078	<7.0	–	<5.9	–	<6.7	<5.5	<7.2	<5.5	<6.7	<0.31
	T-A2	Once a week*	<7.0	0.097	<7.0	–	<5.9	–	<6.7	<5.5	<7.3	<5.4	<6.7	<0.31
	T-A3	Once a week*	<7.0	0.16	<7.0	–	<5.9	–	<6.7	<5.5	<7.2	<5.5	<6.7	<0.31
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	<7.2	0.11	–	–	–	–	–	–
	T-S3	Once a month	–	–	<7.1	<0.068	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	<7.1	0.087	–	–	–	–	–	–	–	–
	T-S8	Once a month	<6.2	0.098	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group B)

*：Monitored daily for the time being after the commencement of discharge

*1：Sampled before 9AM, prior to the completion of the discharge

*2：Detection limit 0.1 Bq/liter

*3：Detection limit 0.4 Bq/liter

3-2-4. Ocean current direction and flow speed of the surface layer by the discharge outlet (dispersion simulation results)

- Sea condition observed after 12AM on August 24 when the discharge was commenced are shown as below.

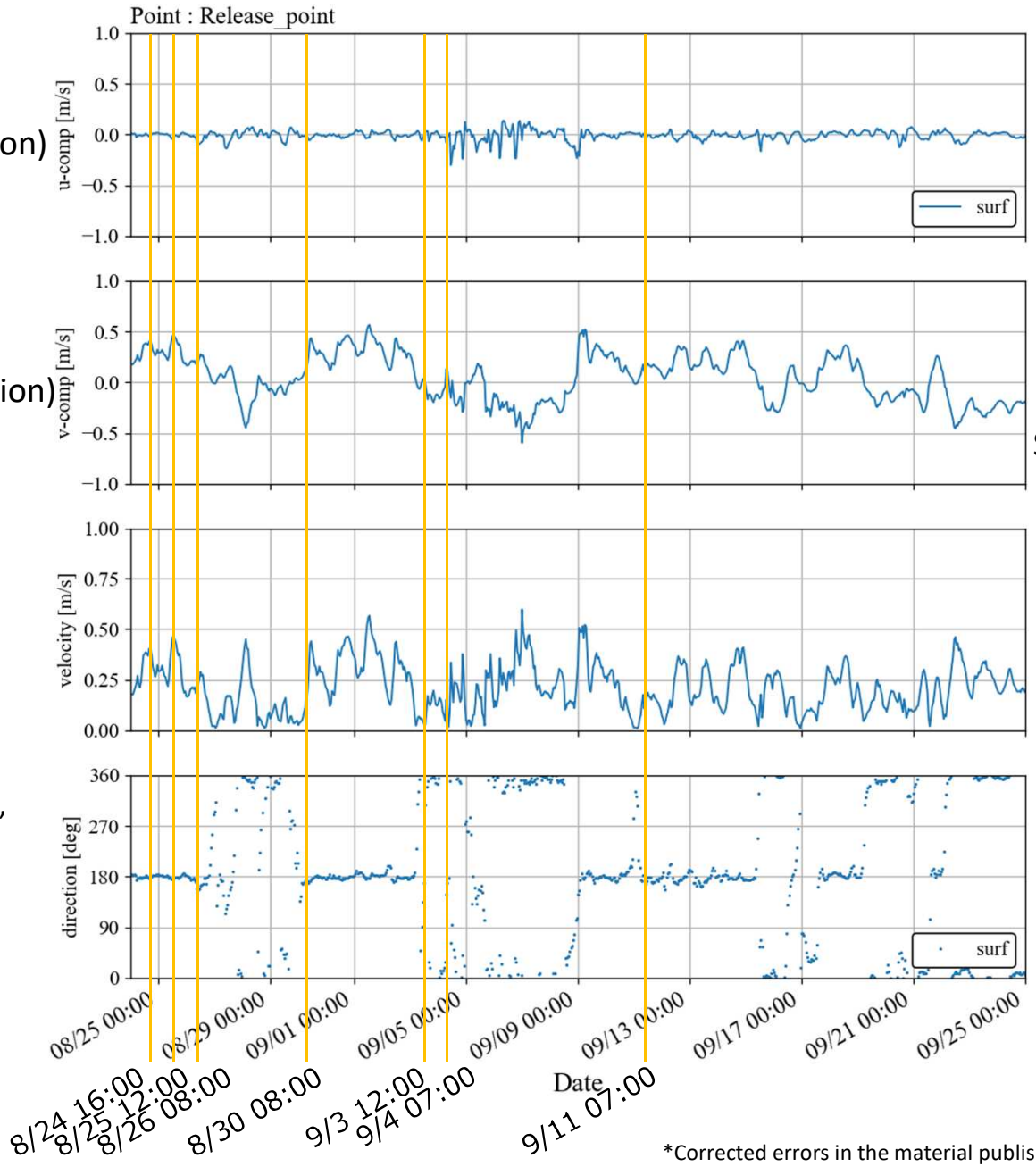
East-West flow speed
(+ indicates easterly* direction)

North-South flow speed
(+ indicates northerly direction)

Flow speed

Flow direction
(0° and 360° indicates South,
90° indicates West,
180° indicates North,
and 270° indicates East)

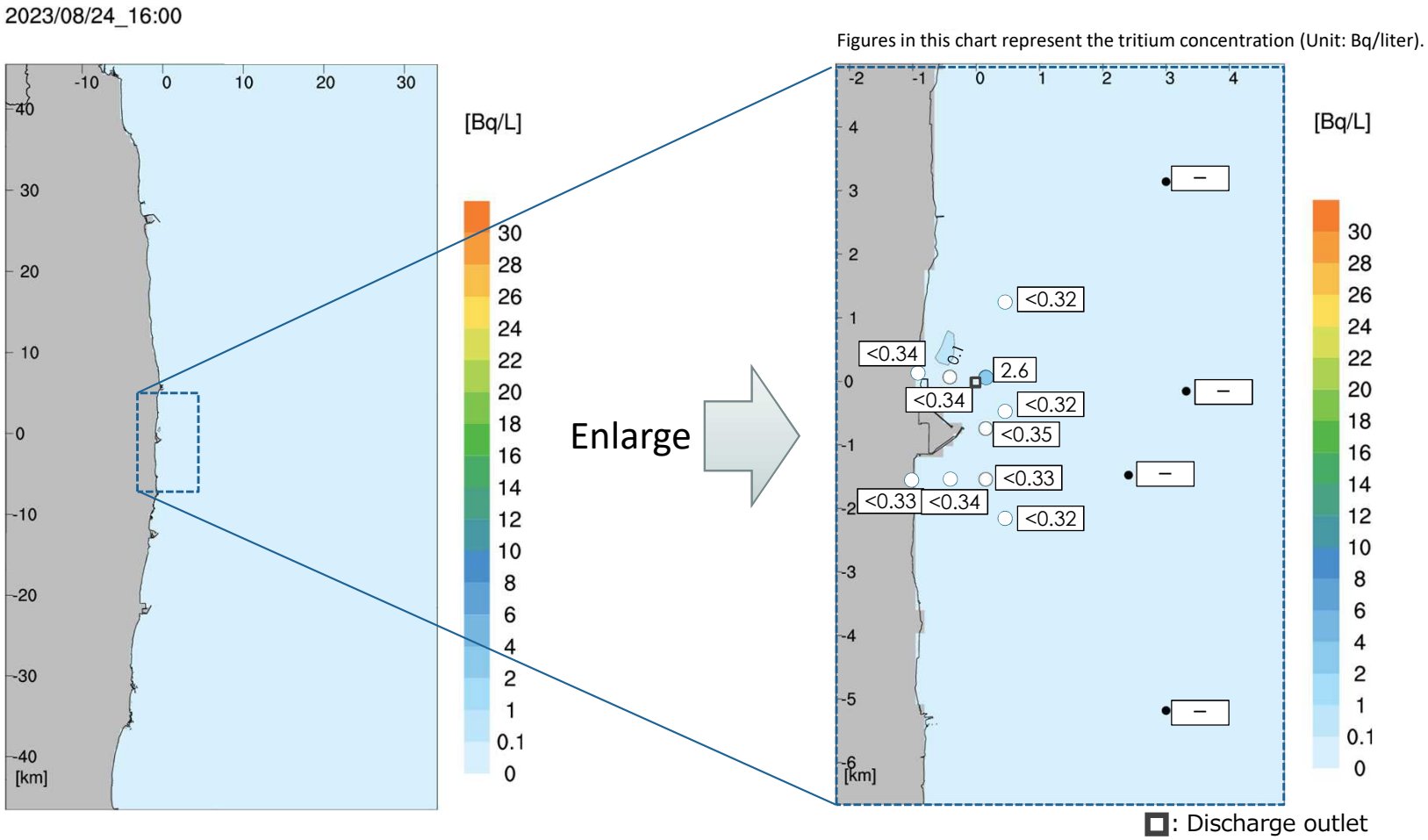
Sea monitoring timeframe



*Corrected errors in the material published on December 21, 2023

3-2-5-1. Comparison of dispersion calculation results and monitoring results (August 24, 4 PM)

- The following figures show the dispersion simulation results for 4PM on August 24, which is approximately three hours after the commencement of discharge, and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean current is in the northerly direction and tritium tend to disperse to the north. This trend is generally consistent with monitoring results. (Refer to 3-2-4. Ocean current direction and flow speed of the surface layer by the discharge outlet (dispersion simulation results) for more details)

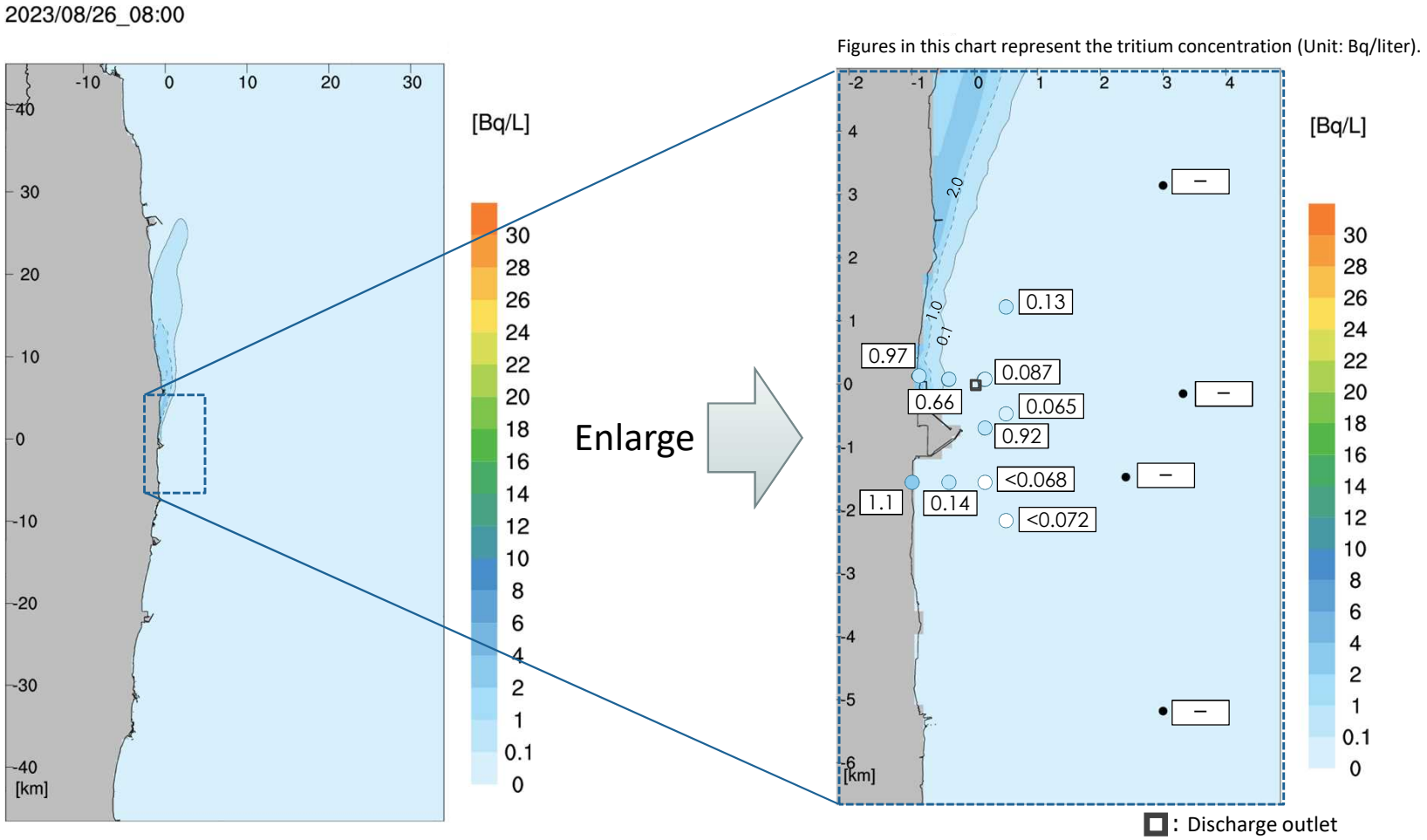


August 24, 4 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-2-5-2. Comparison of dispersion calculation results and monitoring results (August 26, 8 AM)

- The following figures show the dispersion simulation results for 8AM on August 26 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean current is in the northerly direction and tritium tend to disperse to northward. This trend is generally consistent with monitoring results.

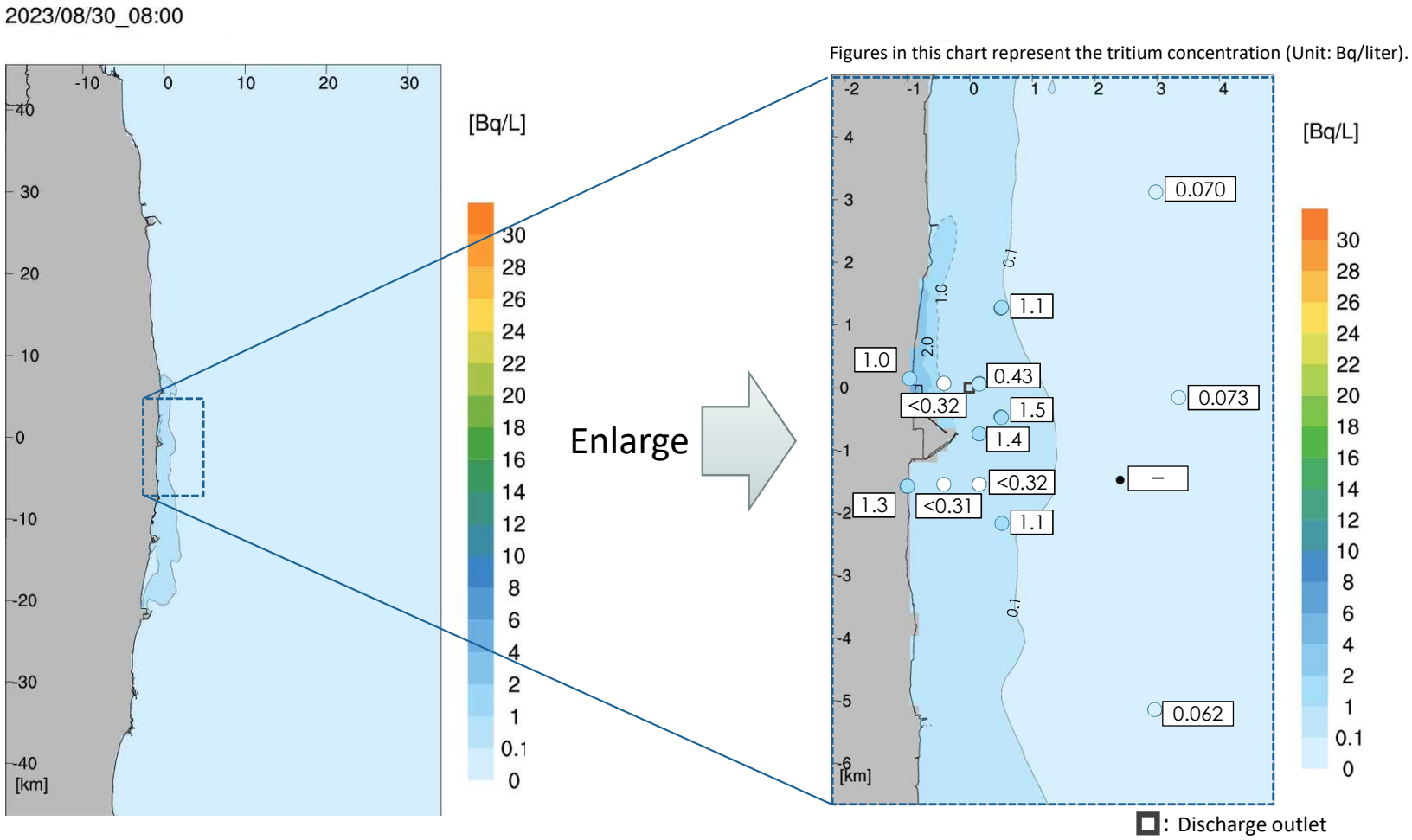


August 26, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-2-5-3. Comparison of dispersion calculation results and monitoring results (August 30, 8 AM)

- The following figures show the dispersion simulation results for 8AM on August 30 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean currents are slow in the north-south direction, so the scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.

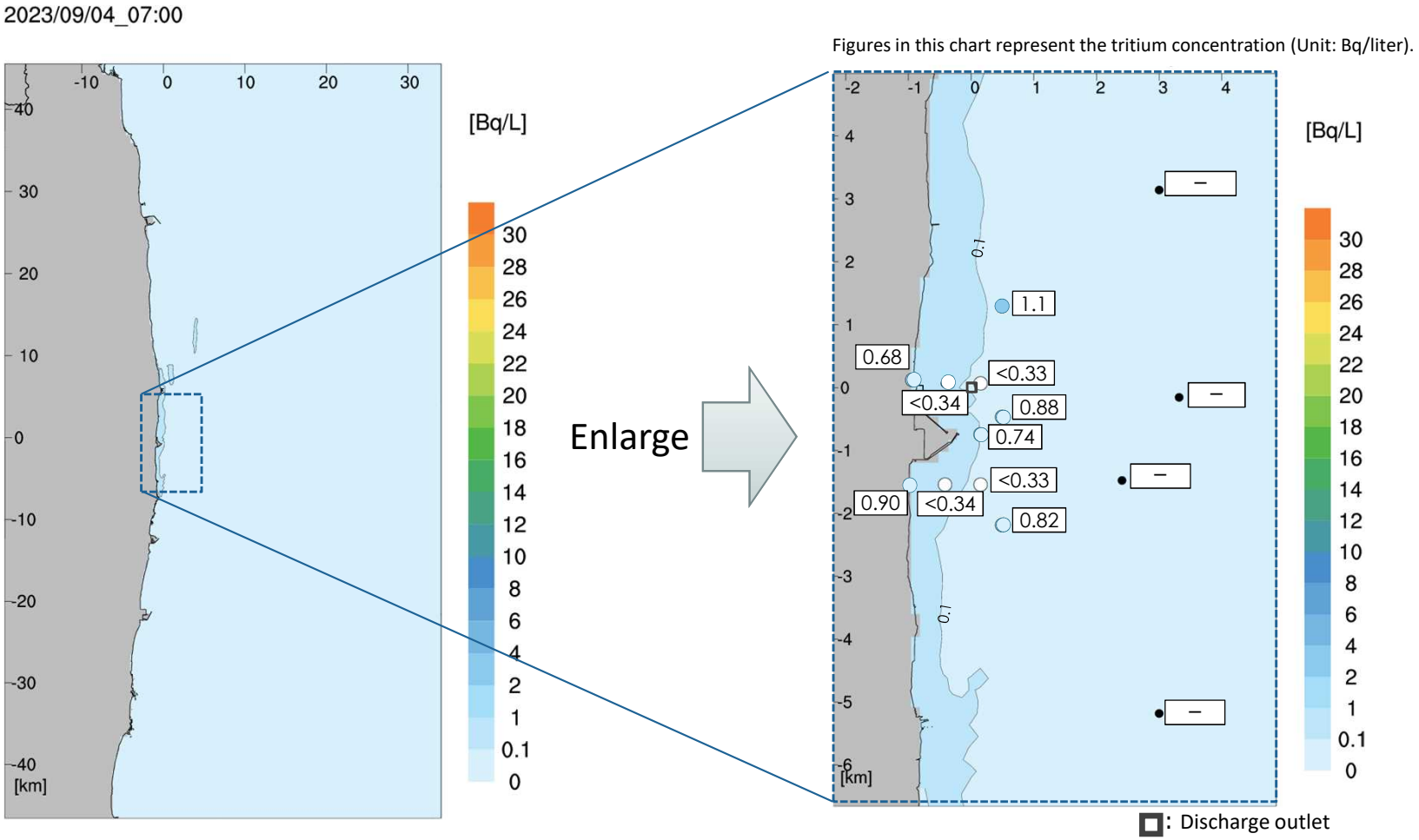


August 30, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-2-5-4. Comparison of dispersion calculation results and monitoring results (September 4, 7 AM)

- The following figures show the dispersion simulation results for 7AM on September 4 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean currents are slow in the north-south direction, so the scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.

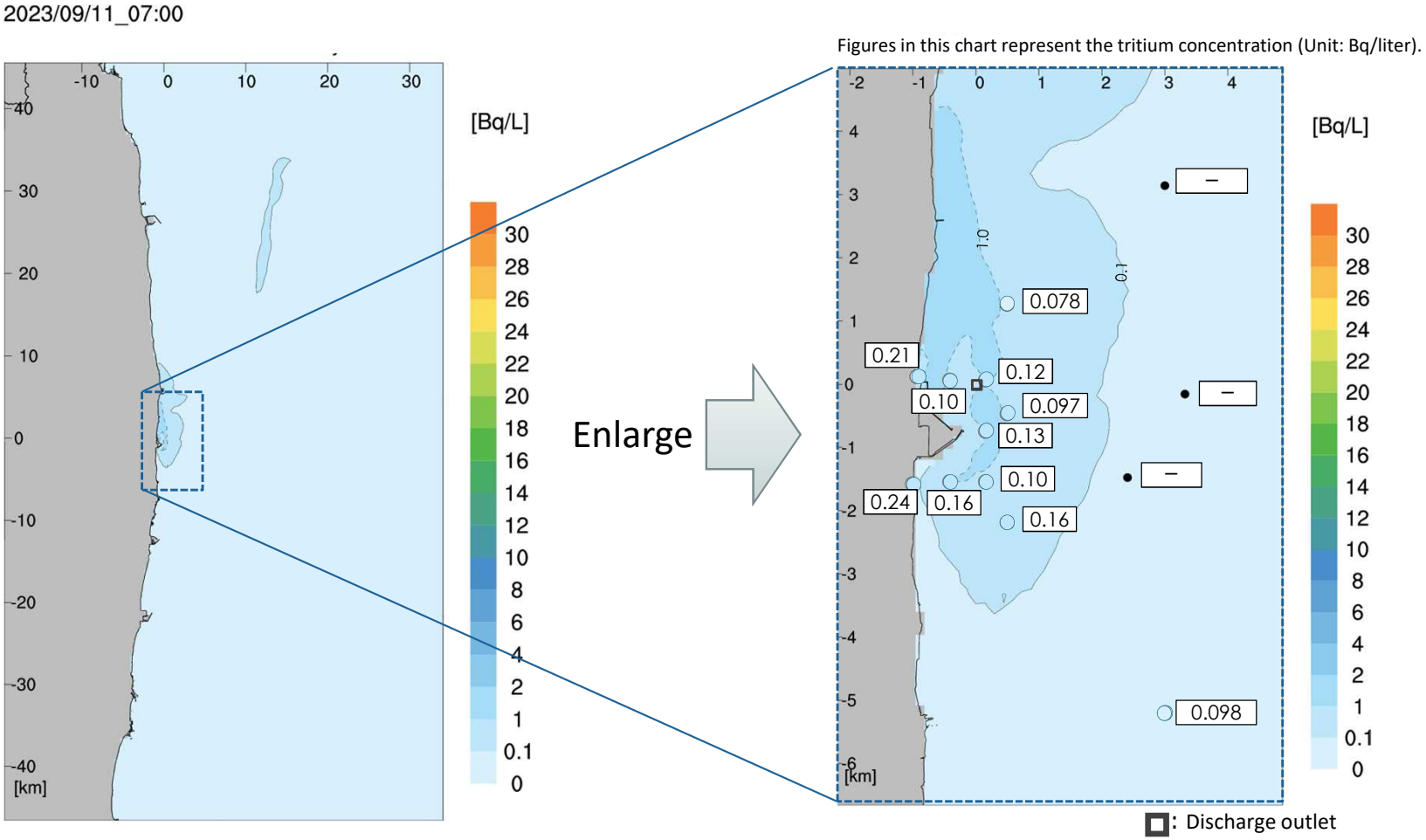


September 4, 7 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-2-5-5. Comparison of dispersion calculation results and monitoring results (September 11, 7 AM)

- The following figures show the dispersion simulation results for 7AM on September 11 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean currents are slow in the north-south direction, so the scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.



September 11, 7 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-2-6-1. Monitoring results from other agencies (for the first discharge period)

TEPCO

○ Apart from TEPCO, monitoring during the period of discharge of ALPS treated water is performed within 3km of the power station by the Ministry of the Environment, the Nuclear Regulation Authority and Fukushima Prefecture. While we have been reviewing results from these agencies from the second report, we did not review them in the first report, Therefore, we reviewed these results this time.

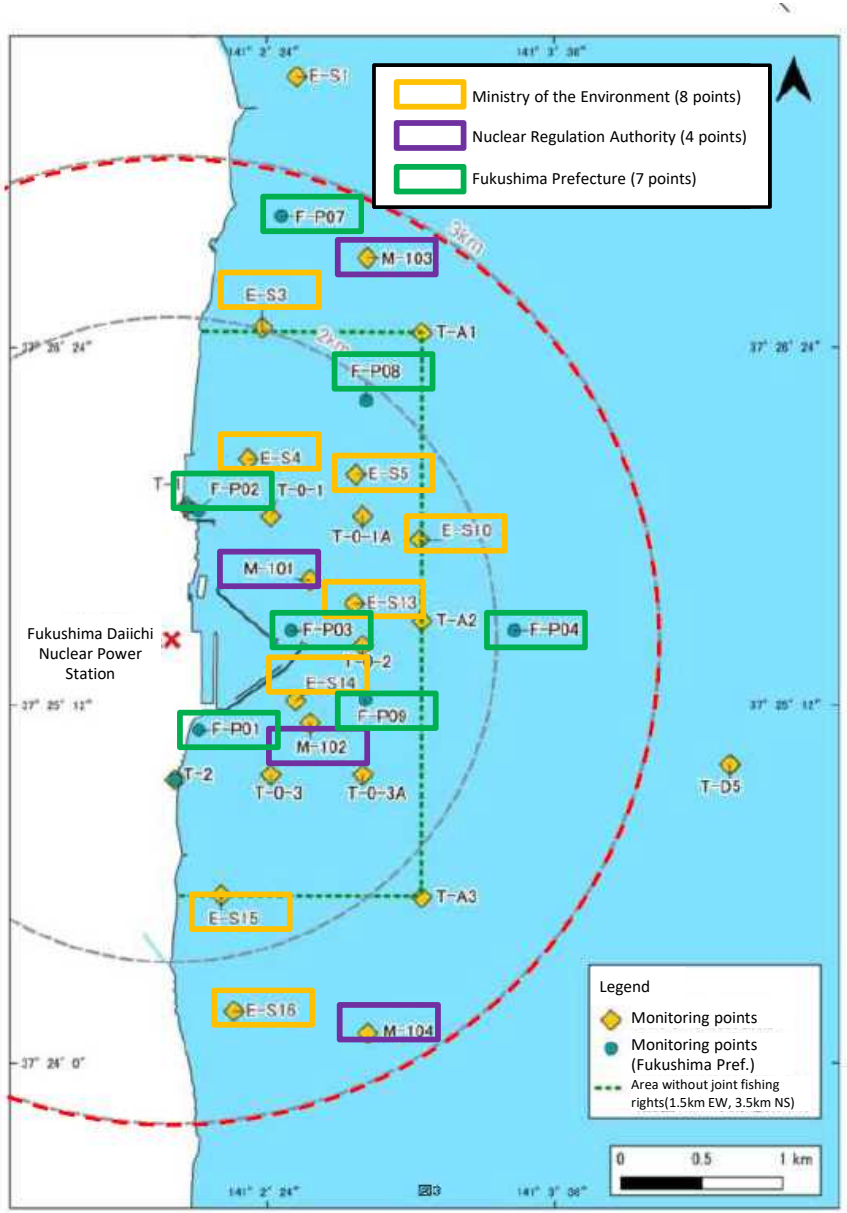
○ The locations from which samples are taken by other agencies is shown on the map to the right.

○ The following is a summary of the sea monitoring results from other agencies obtained during the first discharge (August 24 - September 11, 2023)

○ Since the Ministry of Environment conducted monitoring on August 25, and measured 5 Bq/liter at maximum, this measurement result is reviewed.

○ The Nuclear Regulation Authority performed monitoring on September 1. Since the monitoring results did not exceed 1.1Bq/liter, these results are not reviewed.

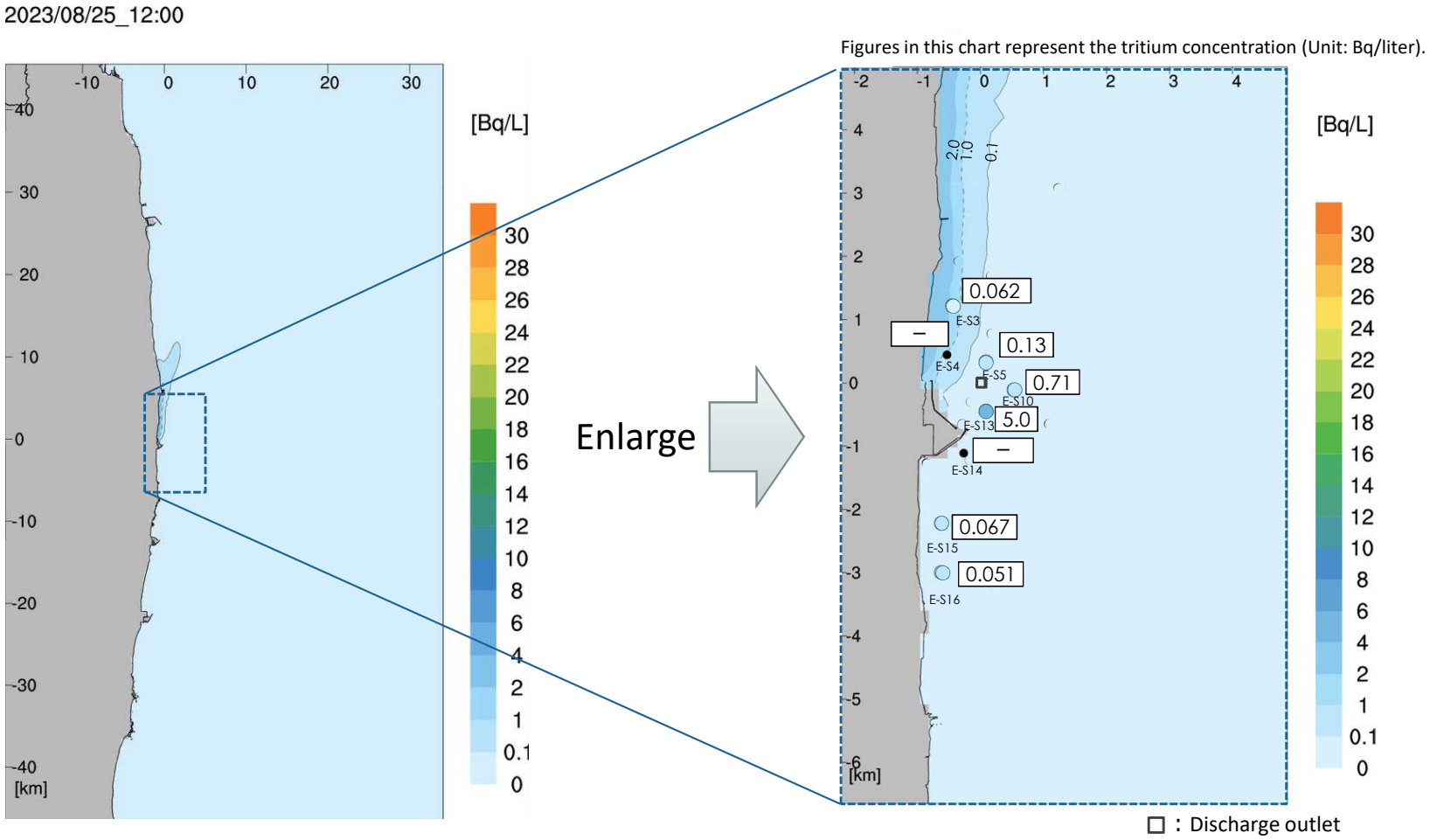
○ Fukushima Prefecture performed monitoring on September 3. Although detected tritium concentrations do not differ from those taken prior to the discharge of ALPS treated water, at several locations a concentration in excess of 0.1Bq/liter was found in the vicinity of the power station, so these measurements is reviewed.



Locations of samples taken by other agencies within 3km of the power station

3-2-6-2. Comparison of dispersion calculation results and monitoring results (August 25, 12 PM)

- The following figures show the dispersion simulation results for 12 PM on August 25 and the sea area monitoring results conducted by the Ministry of Environment for the same timeframe.
- The simulation results show that ocean currents continue in the north direction, so the scope of dispersion extends to the north. Monitoring results show that the concentrations are higher at the south of the discharge outlet, differently from the simulation results.

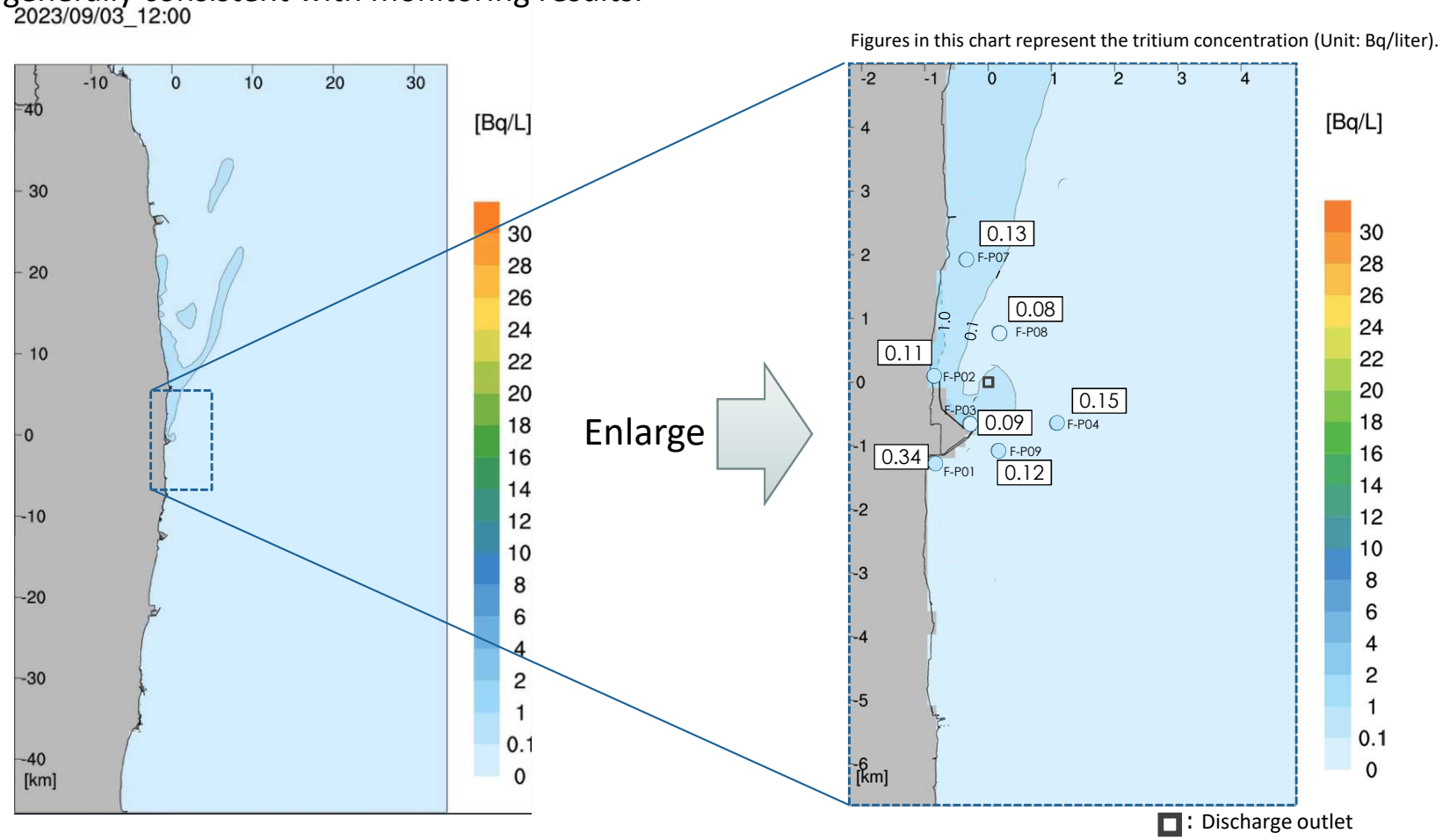


August 25, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-2-6-3. Comparison of dispersion calculation results and monitoring results (September 3, 12 PM)

- The following figures show the dispersion simulation results for 12 PM on September 3 and the sea area monitoring results conducted by the Fukushima Prefecture for the same timeframe.
- The simulation results show that ocean currents continue in the north direction since August 30. On September 3, the flow speed slows down and changes ocean currents to south direction. While the scope of dispersion extends to the north, it also extends to the south in the vicinity of the discharge outlet. This trend is generally consistent with monitoring results.



August 25, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-2-7. Summary of Comparison of dispersion simulation results and monitoring results during the first discharge period

- A comparison of the results from sea area monitoring during the first discharge period (August 24, 2023-September 11, 2023)with dispersion simulation results based on actual meteorological/marine meteorological data during the same period was performed.
- In addition to TEPCO's monitoring data for August 24, 26, 30, September 4, 11, data from the Ministry of the Environment for August 25, and data from Fukushima Prefecture for September 3, was also used for the comparison.
- The monitoring results from the first discharge showed that the diluted ALPS treated water is quickly dispersing in the sea after being discharged.
- As a result of comparison between the dispersion simulation trends and monitoring results in the vicinity of the power station, some differences were observed in some monitoring data, but overall trends were consistent in most cases.

3-3-1. Overview of the dispersion simulation for the second discharge period

- Dispersion calculations for the second discharge period (October 5 - October 23) were made based on the following conditions.
  - The dispersion model was the same model used for the radiological environmental impact assessment
  - Tritium discharge rate were calculated from the concentrations measured at the measurement/confirmation facility and the daily discharge flow volume, and these data were entered into the model

Calculation conditions for the second discharge period.
(The model is the same as that used for the radiological environmental impact assessment report)

Amount of tritium discharged

・10/5 10:18 – 10/22 13:19 (Constant)

Discharge rate＝2.66E+09Bq/hr （＝140,000Bq/L×456m3/day×1000L/m3÷24hr/day）

・10/23 10:26 - 12:08

Discharge rate＝1.32E+09Bq/hr （＝140,000Bq/L×16m3×1000L/m3÷102/60hr）

Meteorological/marine meteorological data

・ Actual meteorological/marine meteorological data from the discharge period (Meteorological Agency, JAMSTEC, etc.)

Reference

Tritium discharge volume used for the dispersion simulation in the radiological environmental impact assessment

・Constant throughout the year

Discharge rate＝2.51 E+09 Bq/hr (=22 trillion Bq/year ÷ 8760hr/yr)

3-3-2. Monitoring results from the second discharge period (Overview)

TEPCO

○ The second discharge was performed from October 5 to October 23. Results from both quick tritium measurement and normal monitoring showed low concentration levels outside the vicinity of the discharge outlet, and we confirmed that tritium is dispersing.

○ The highest concentration detected during quick tritium measurement (target detection limit: less than 10 Bq/liter) was 22Bq/liter (T-0-1A, October 21), which is below are operational indices (discharge suspension level and control level)

○ The highest concentrations detected during normal monitoring (target detection limit: less than 0.4Bq/liter or less than 0.1Bq/liter) were 14Bq/liter in the vicinity of the discharge outlet (within a 3km radius of the power station) (T-0-1A, October 16), and 0.065Bq/liter, outside of the area around the discharge outlet (within a 10km square off the coast of the power station) (T-S8, October 12) respectively.

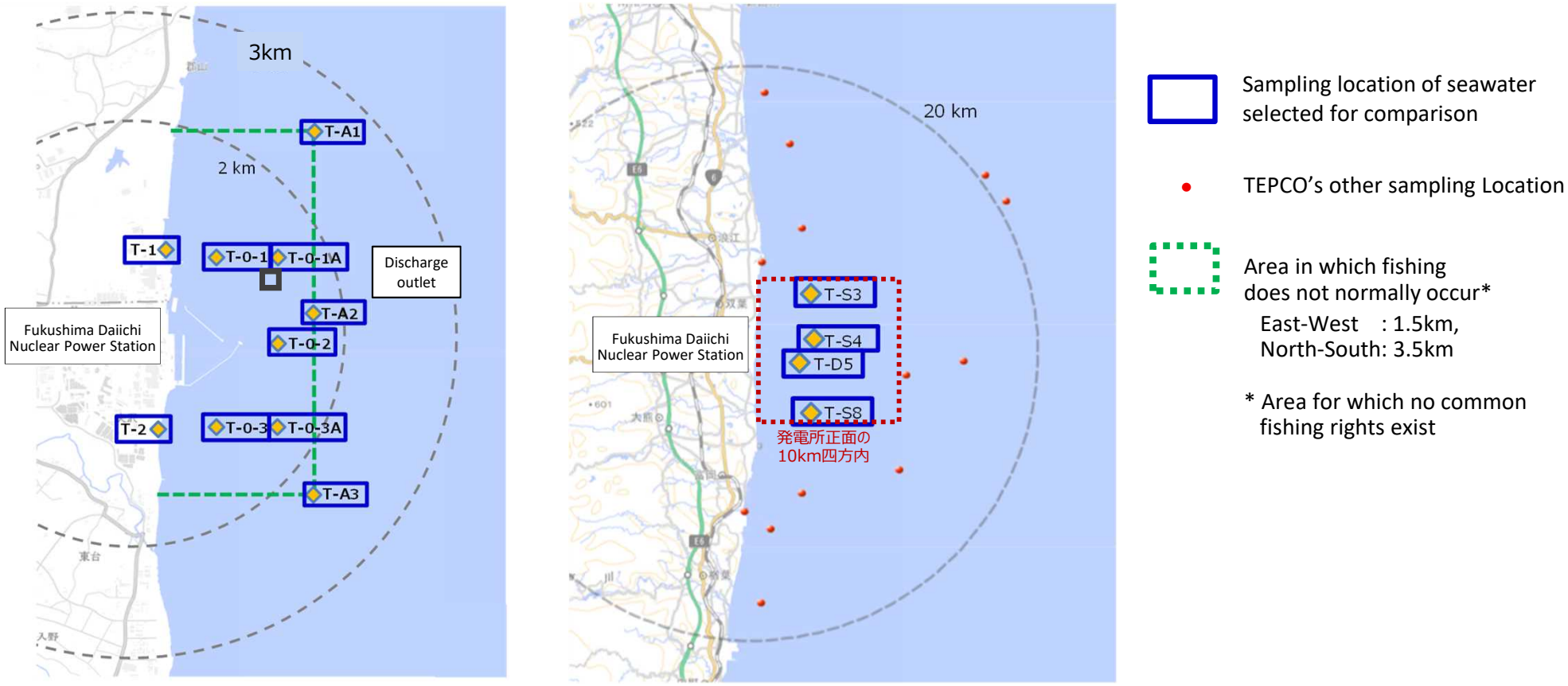


Fig. Sampling locations of seawater selected for comparison with dispersion simulation

3-3-3-1. Monitoring results from the second discharge period (1/3)

- The following chart shows the sea area monitoring results for the second discharge period.
- Verification was based on tritium concentrations detected more than 0.1 Bq/liter through normal measurements in the vicinity of the discharge outlet on October 5, 9, 16 and 23. (Indicated in the black boxes)

(Unit: Bq/liter)

	Sampling location	Frequency	October											
			5 *1	5 Normal *1,2	6	7	8	9	9 Normal *3	10	11	12	12 Normal *3	13
In the vicinity of the discharge outlet	T-1	Once a week*	<5.8	<0.31	<5.8	<5.8	<6.1	<7.2	0.40	<6.9	<6.5	<6.3	–	<6.5
	T-2	Once a week*	<5.7	<0.31	<5.7	<5.8	<6.1	<7.1	0.77	<6.9	<6.6	<6.3	–	<6.5
	T-0-1	Once a week*	<7.8	<0.31	<7.0	<6.7	<8.2	<7.9	1.4	–*4	<7.3	<7.3	–	<7.3
	T-0-1A	Once a week*	<7.6	5.2	<7.4	9.4	<8.2	11	12	–*4	<7.3	14	–	11
	T-0-2	Once a week*	<7.6	<0.33	<7.0	<6.8	<8.1	<7.9	0.43	–*4	<7.3	<7.3	–	<7.3
	T-0-3A	Once a week*	<5.9	<0.32	<5.8	<5.8	<6.1	<7.2	<0.072	–*4	<6.8	<6.3	–	<6.5
	T-0-3	Once a week*	<7.7	<0.32	<6.4	<6.7	<8.2	<7.8	0.45	–*4	<7.3	<7.2	–	<7.2
	T-A1	Once a week*	<7.7	<0.30	<7.0	<6.4	<5.5	<6.7	0.43	–*4	<6.8	<8.7	–	<8.6
	T-A2	Once a week*	<7.7	<0.31	<7.0	<5.9	<5.5	<6.7	0.25	–*4	<6.8	<8.6	–	<8.6
	T-A3	Once a week*	<7.6	<0.30	<7.1	<5.8	<5.5	<6.8	<0.073	–*4	<6.8	<8.6	–	<8.6
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	–	–	–	<6.4	<0.070	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	<6.4	<0.071	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	<6.4	<0.070	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	<6.5	0.065	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Discharge period of ALPS treated water (Second discharge)

*：Monitored daily for the time being after the commencement of discharge

*1：Sampled after the commencement of discharge at 2PM

*2：Detection limit 0.4 Bq/liter

*3：Detection limit 0.1 Bq/liter

*4：Sampling suspended due to bad weather condition

3-3-3-2. Monitoring results from the second discharge period (2/3)

(Unit: Bq/liter)

	Sampling location	Frequency	October											
			14	15	16	16 Normal *1	17	18	19	19 Normal *1	20	21	22	23
In the vicinity of the discharge outlet	T-1	Once a week*	<6.1	<5.5	<6.0	4.3	<6.5	<7.1	<7.2	–	<5.5	<5.6	<5.3	<6.5
	T-2	Once a week*	<6.2	<5.5	<6.0	0.66	<6.5	<7.1	<7.1	–	<5.5	<5.6	<5.2	<6.5
	T-0-1	Once a week*	<8.7	<7.3	<7.8	1.0	<6.7	<5.9	<8.3	–	<7.0	<6.8	<7.3	<6.7
	T-0-1A	Once a week*	<8.7	14	16	14	<6.7	<5.8	<8.5	–	<7.0	22	16	<6.7
	T-0-2	Once a week*	<8.7	<7.3	<7.8	1.2	<6.7	8.9	<8.4	–	<7.0	<6.8	<7.3	<6.7
	T-0-3A	Once a week*	<6.1	<5.6	<6.0	0.74	<6.5	<7.1	<7.1	–	<5.5	<5.6	<5.3	<6.5
	T-0-3	Once a week*	<8.6	<7.3	<7.8	1.0	<6.7	<6.7	<8.4	–	<7.0	<6.8	<7.3	<6.7
	T-A1	Once a week*	<6.2	<7.2	<7.2	0.50	<8.3	<7.2	<7.5	–	<7.5	<8.5	<5.7	<6.8
	T-A2	Once a week*	<5.6	<7.2	<7.2	0.56	<8.3	<7.2	<7.5	–	<7.5	<8.4	<5.7	<6.9
	T-A3	Once a week*	<5.7	<7.2	<7.2	0.80	<8.3	<7.2	<7.5	–	<7.5	<8.5	<5.7	<6.8
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	<7.5	<0.34	–	–	–	<6.9
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1：Detection limit 0.4 Bq/liter

：Discharge period of ALPS treated water (Second discharge)

*：Monitored daily for the time being after the commencement of discharge

3-3-3-3. Monitoring results from the second discharge period (3/3)

(Unit: Bq/liter)

	Sampling location	Frequency	October								
			23 Normal *1,2	24	25	26	27	28	29	30	31
In the vicinity of the discharge outlet	T-1	Once a week*	1.3	<6.5	<5.8	<6.5	<6.4	<7.2	<6.8	<6.4	<7.1
	T-2	Once a week*	0.80	<6.5	<5.8	<6.6	<6.3	<7.2	<6.8	<6.4	<7.1
	T-0-1	Once a week*	1.3	<7.8	<7.5	<7.6	<7.8	<8.3	<7.8	—*3	—*3
	T-0-1A	Once a week*	0.71	<7.7	<7.5	<7.7	<7.8	<8.3	<7.9	—*3	—*3
	T-0-2	Once a week*	0.40	<7.7	<7.5	<7.6	<7.8	<8.3	<7.9	—*3	—*3
	T-0-3A	Once a week*	<0.33	<6.5	<5.8	<6.6	<6.3	<7.3	<6.9	—*3	—*3
	T-0-3	Once a week*	1.0	<7.7	<7.5	<7.6	<7.8	<8.3	<7.9	—*3	—*3
	T-A1	Once a week*	0.37	<7.5	<7.8	<6.2	<6.6	<6.6	<6.6	—*3	—*3
	T-A2	Once a week*	<0.31	<7.5	<7.8	<6.2	<6.5	<6.6	<6.6	—*3	—*3
	T-A3	Once a week*	<0.32	<7.5	<7.8	<6.2	<6.6	<6.6	<6.6	—*3	—*3
Outside the vicinity of the discharge outlet	T-D5	Once a week	<0.32	—	—	—	—	—	—	—	—
	T-S3	Once a month	—	—	—	—	—	—	—	—	—
	T-S4	Once a month	—	—	—	—	—	—	—	—	—
	T-S8	Once a month	—	—	—	—	—	—	—	—	—

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Discharge period of ALPS treated water (Second discharge)

*：Monitored daily for the time being after the commencement of discharge

*1：Detection limit 0.4 Bq/liter
*2：Sampled before 9AM, prior to the completion of the discharge
*3：Sampling suspended due to bad weather condition

3-3-4. The direction and speed of currents in the surface layer of the sea above the discharge outlet (dispersion simulation results)

- Sea condition observed after 12AM on October 5 when the discharge was commenced are shown as below

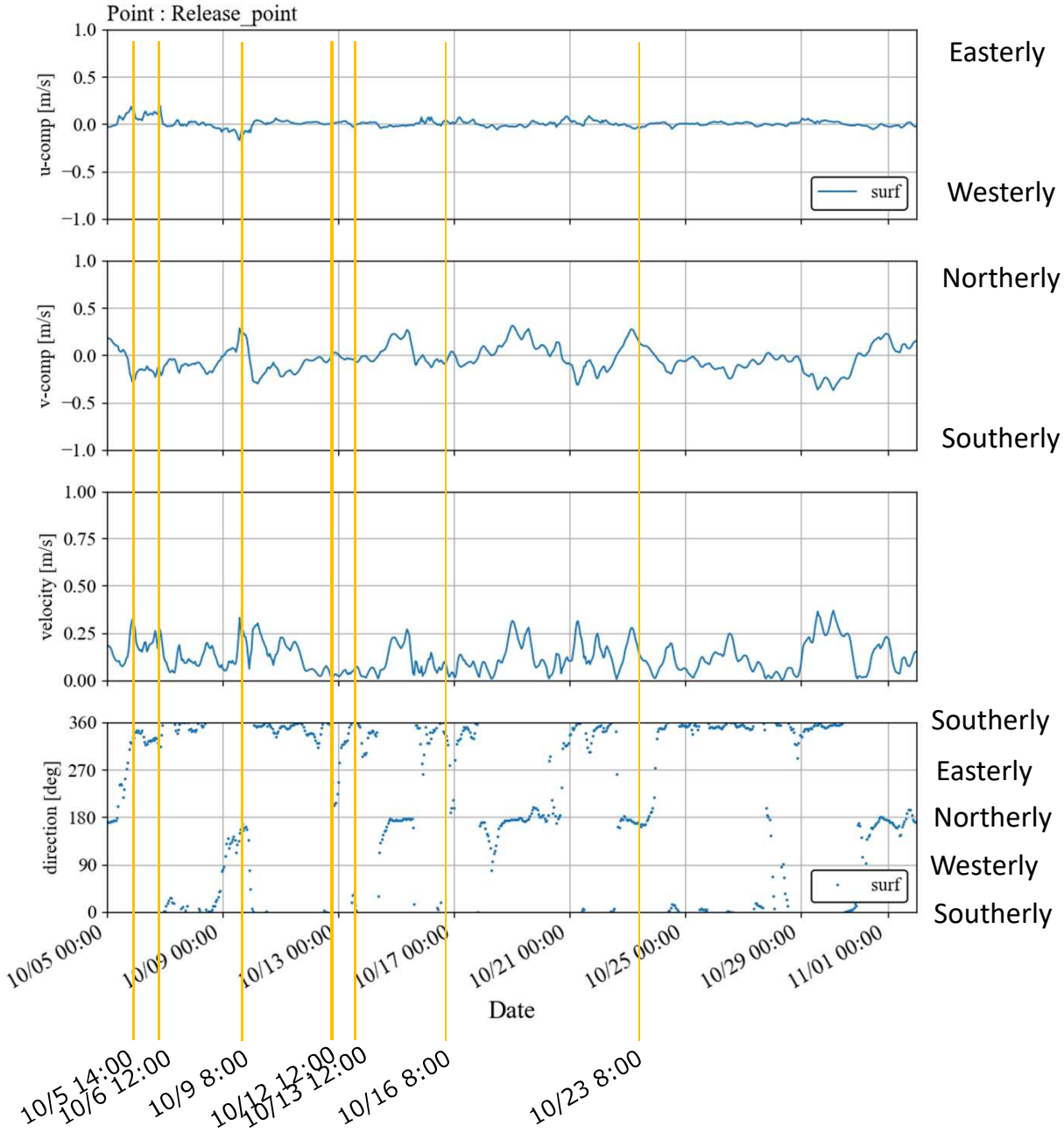
East-West component of flow speed
(easterly direction is indicated by a +)

North-South components of flow speed
(northerly direction is indicated by a +)

Flow speed

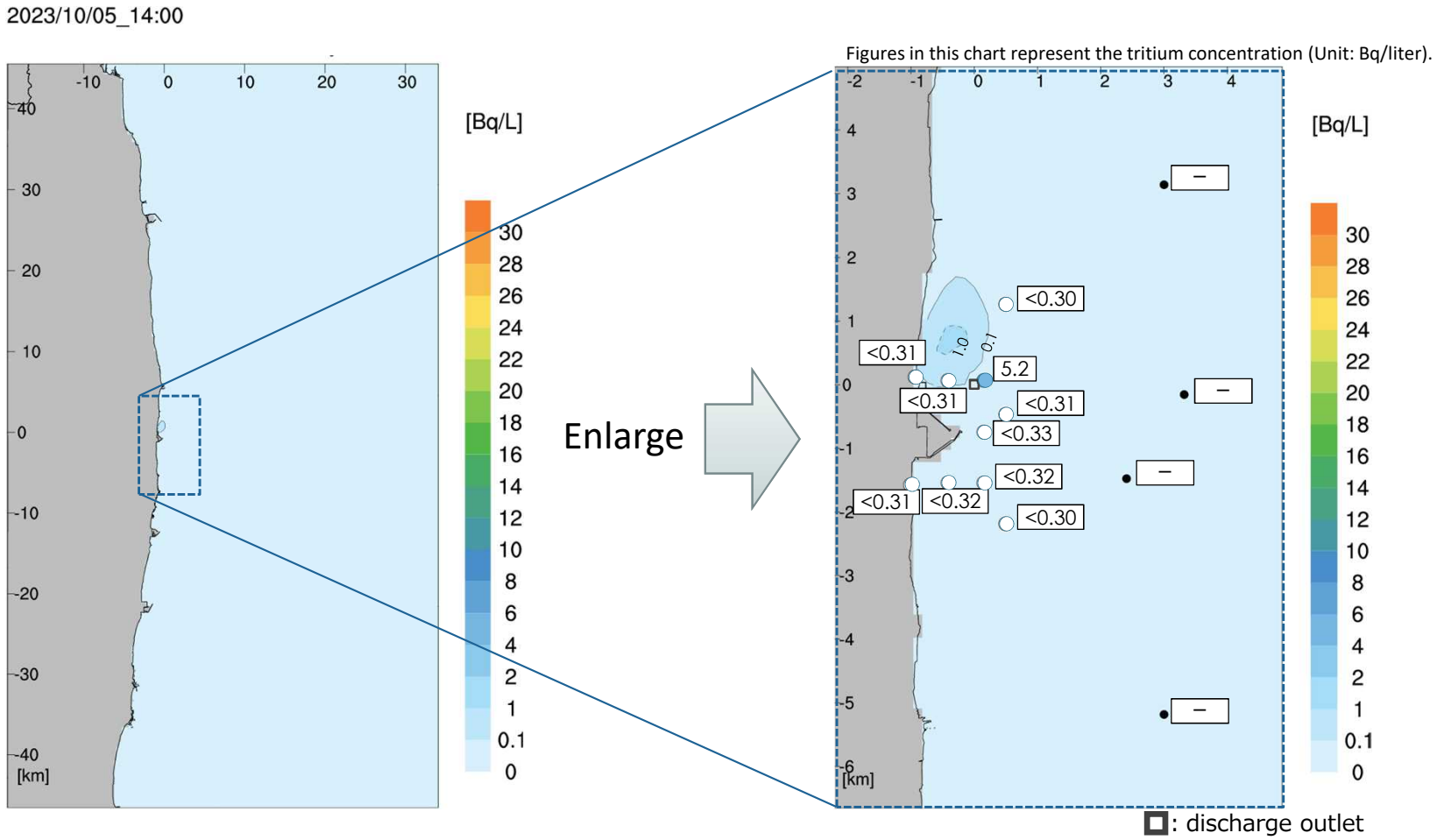
Flow direction
(0° and 360° indicates South,
90° indicates West,
180° indicates North,
and 270° indicates East)

Sea monitoring timeframe



3-3-5-1. Comparison of dispersion calculation results and monitoring results (October 5, 2 PM)

- The following figures show the dispersion simulation results for 2PM on October 5, which is approximately four hours after the commencement of discharge, and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean current is in the weak northerly direction and tritium tend to disperse to the north. The monitoring result was only detected at the northeastern side if the discharge outlet, on T-0-1A, This trend is generally consistent with monitoring results. (Refer to 3-3-4. Ocean current direction and flow speed of the surface layer by the discharge outlet (dispersion simulation results) for more details)

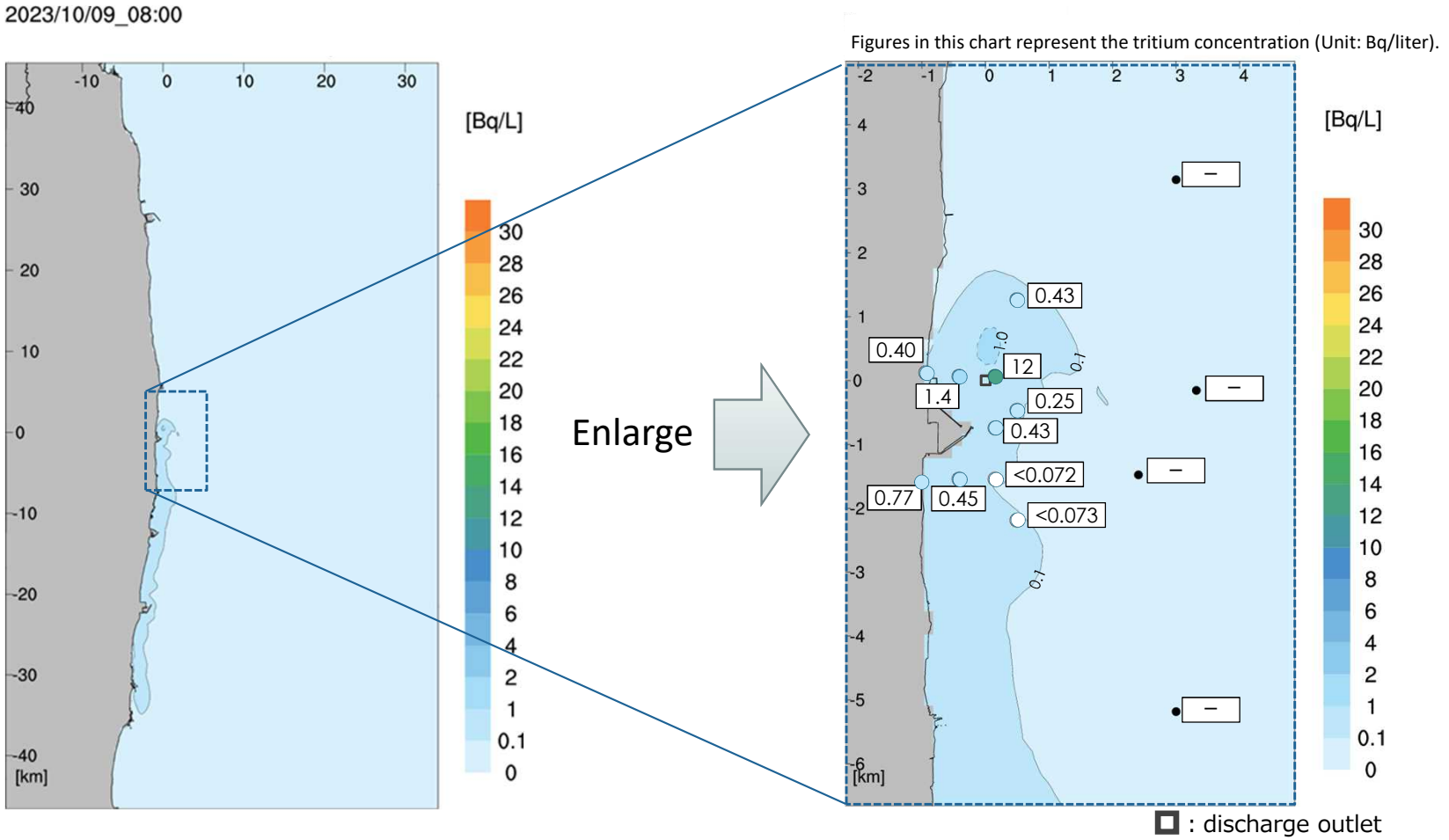


October 5, 2 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-3-5-2. Comparison of dispersion calculation results and monitoring results (October 9, 8 AM)

- The following figures show the dispersion simulation results for 8AM on October 9 and the sea area monitoring results for the same timeframe.
- The simulation results show the ocean currents right after they changed to north direction from south direction observed in the previous day. Overall dispersion is extending to the south, but trend extending to the south was observed. This trend is generally consistent with monitoring results.

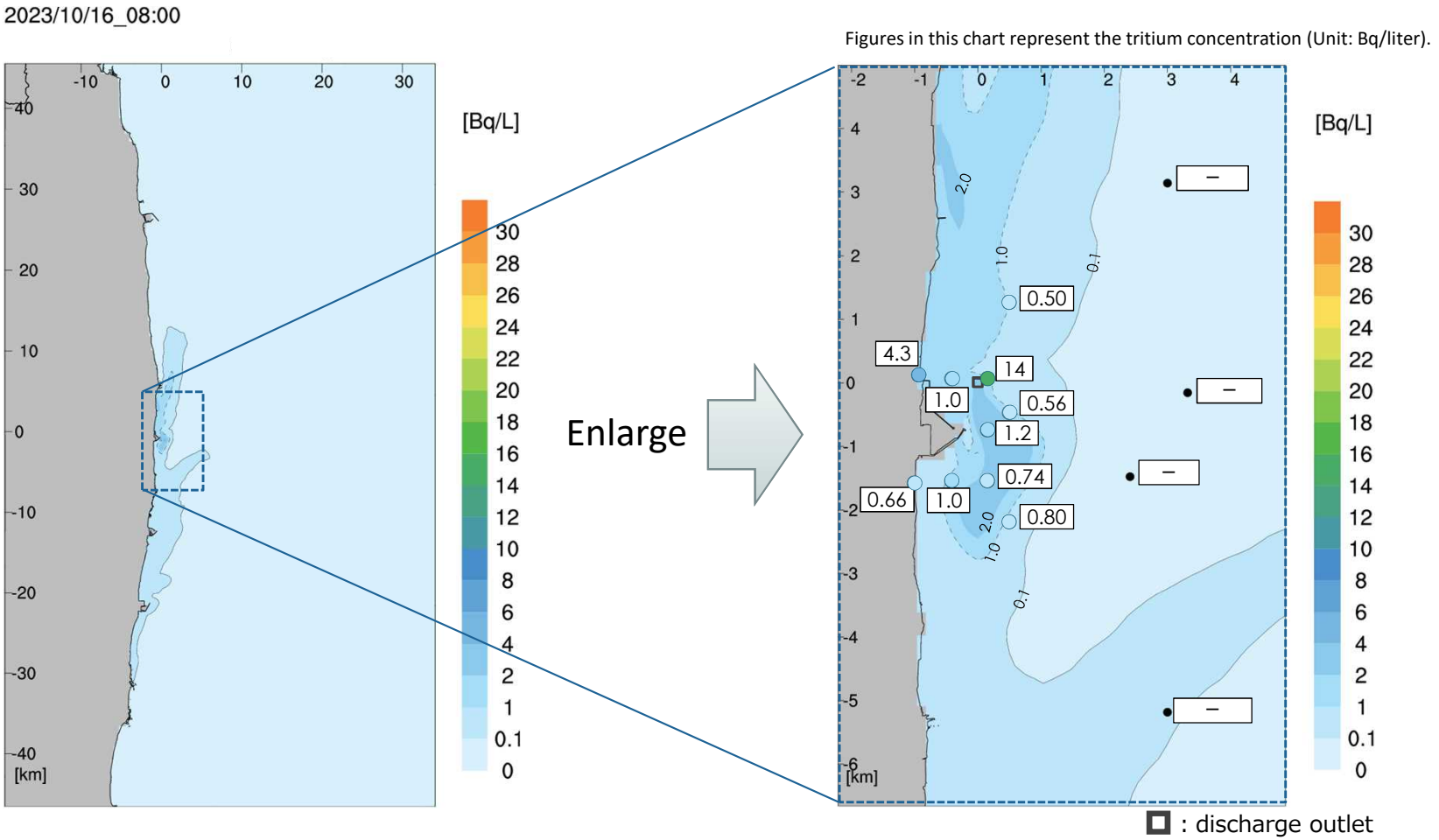


October 9, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-3-5-3. Comparison of dispersion calculation results and monitoring results (October 16, 8 AM)

- The following figures show the dispersion simulation results for 8AM on October 16 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean currents changed from north direction to south direction on October 15, and the scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.

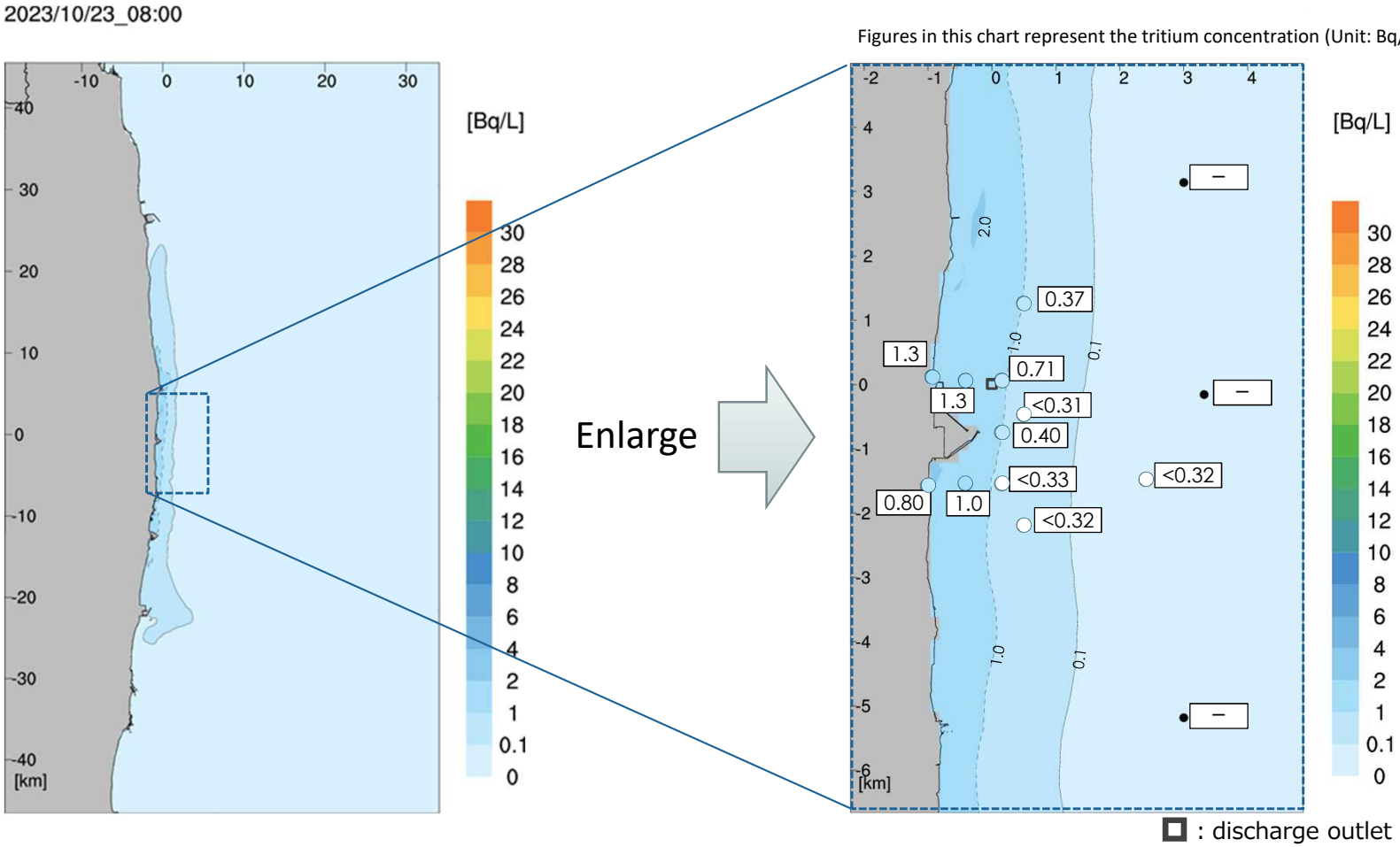


October 16, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-3-5-4. Comparison of dispersion calculation results and monitoring results (October 23, 8 AM)

- The following figures show the dispersion simulation results for 8AM on October 23 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean currents were in south direction from October 21 to 22 but changed to north direction on 23. The scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.



October 23, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-3-6-1. Monitoring results from other agencies (for the second discharge period)

TEPCO

○ Since monitoring during the period of discharge of ALPS treated water is performed within 3km of the power station by the Ministry of the Environment, the Nuclear Regulation Authority and Fukushima Prefecture in addition to TEPCO, the tritium analysis results from these agencies were also examined.

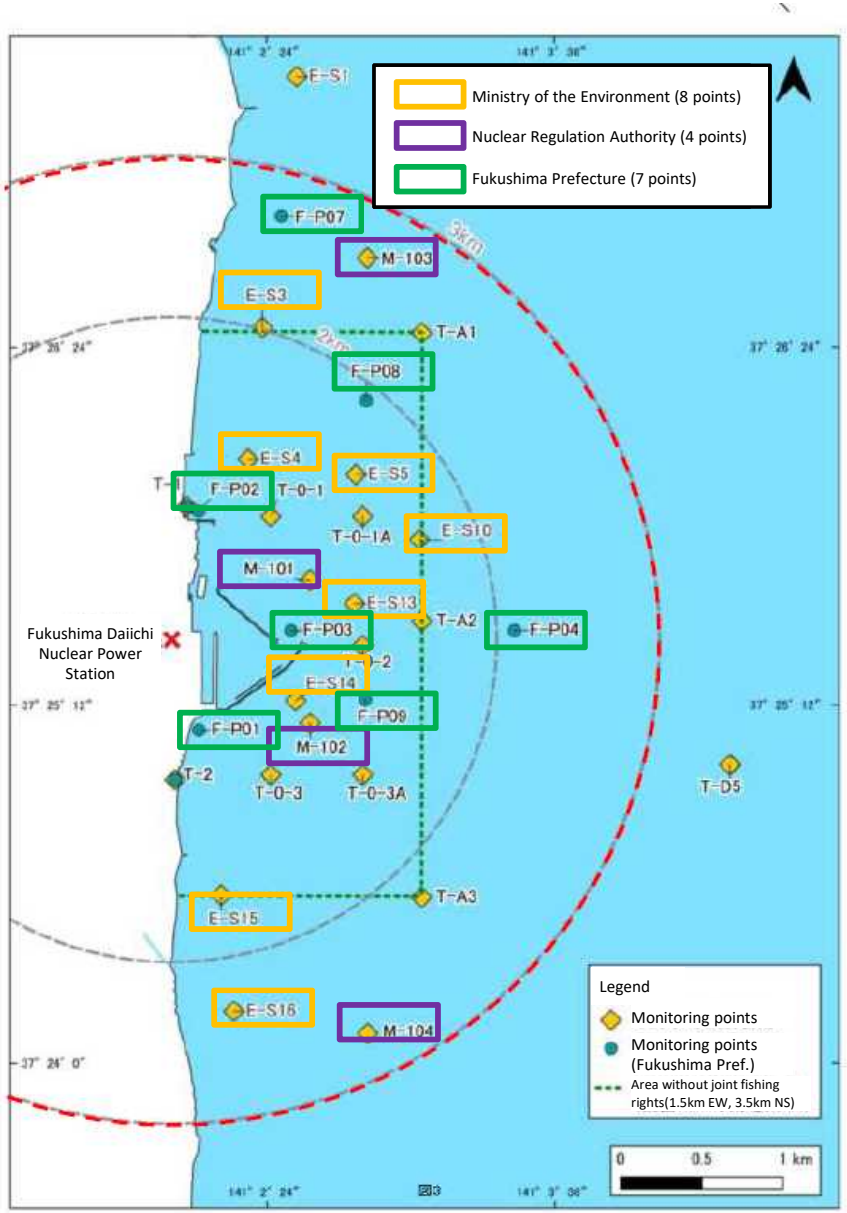
○ The locations from which samples are taken by other agencies is shown on the map to the right.

○ The following is a summary of the sea monitoring results from other agencies obtained during the second discharge (October 5 - October 23, 2023)

○ The Ministry of Environment conducted monitoring on October 13 and 17, 2023. Since only one location was monitored on October 17, we analyzed the monitoring results of October 13.

○ The Nuclear Regulation Authority performed monitoring on October 6. Since 1.1Bq/liter was detected at location M-103, this measurement result is reviewed.

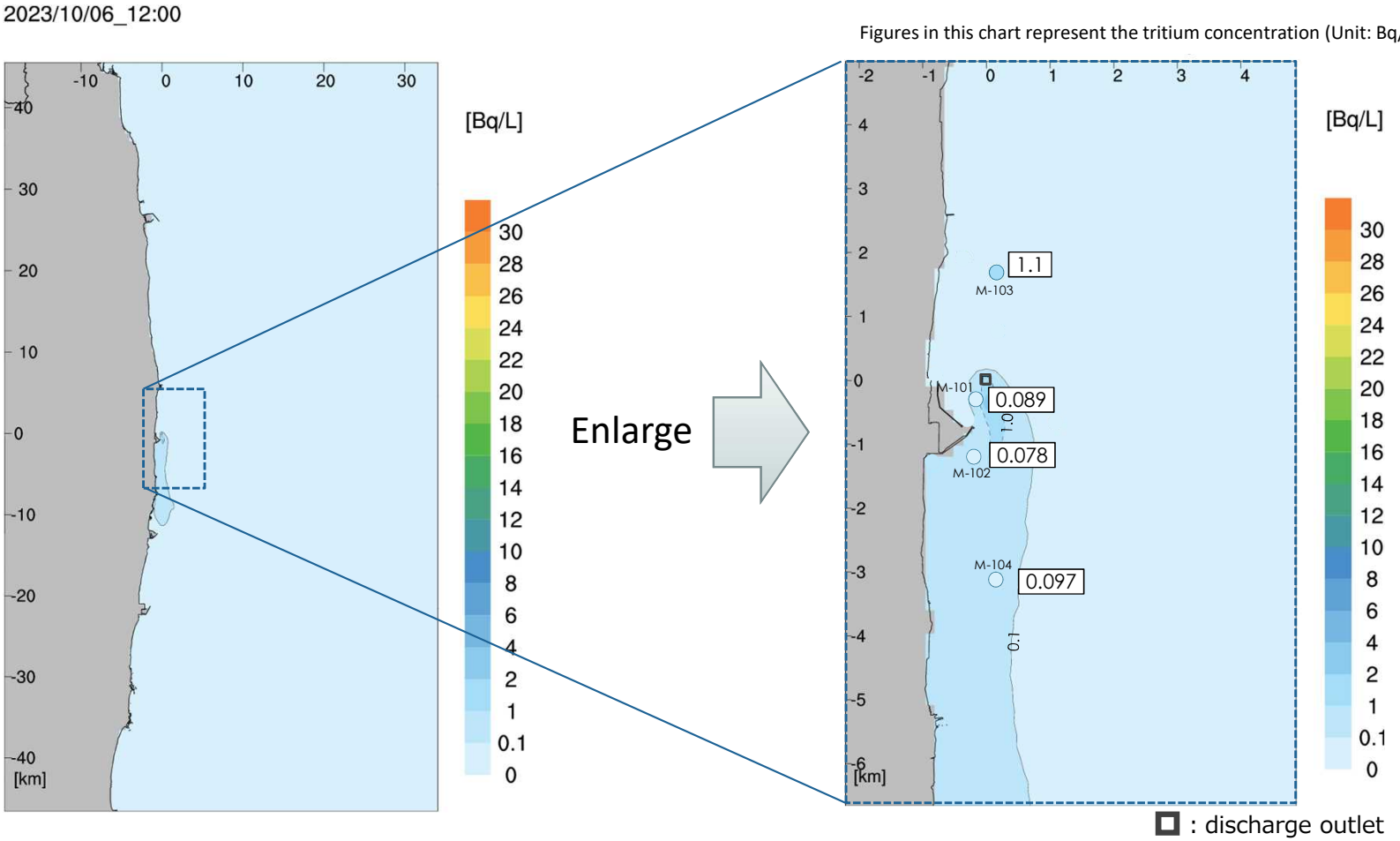
○ Fukushima Prefecture performed monitoring on October 12. Although detected tritium concentrations do not differ from those taken prior to the discharge of ALPS treated water, at several locations a concentration in excess of 0.1Bq/liter was found in the vicinity of the power station, so these measurements is reviewed.



Locations of samples taken by other agencies within 3km of the power station

3-3-6-2. Comparison of dispersion calculation results and monitoring results (October 16, 12 PM)

- The following figures show the dispersion simulation results for 12PM on October 6 and the sea area monitoring results by the Nuclear Regulation Authority for the same timeframe.
- The simulation results show that ocean currents continued to be in south direction from the previous day. Although the scope of dispersion extends to south direction, the monitoring result of M-103 in the northern side was not consistent with simulation results.

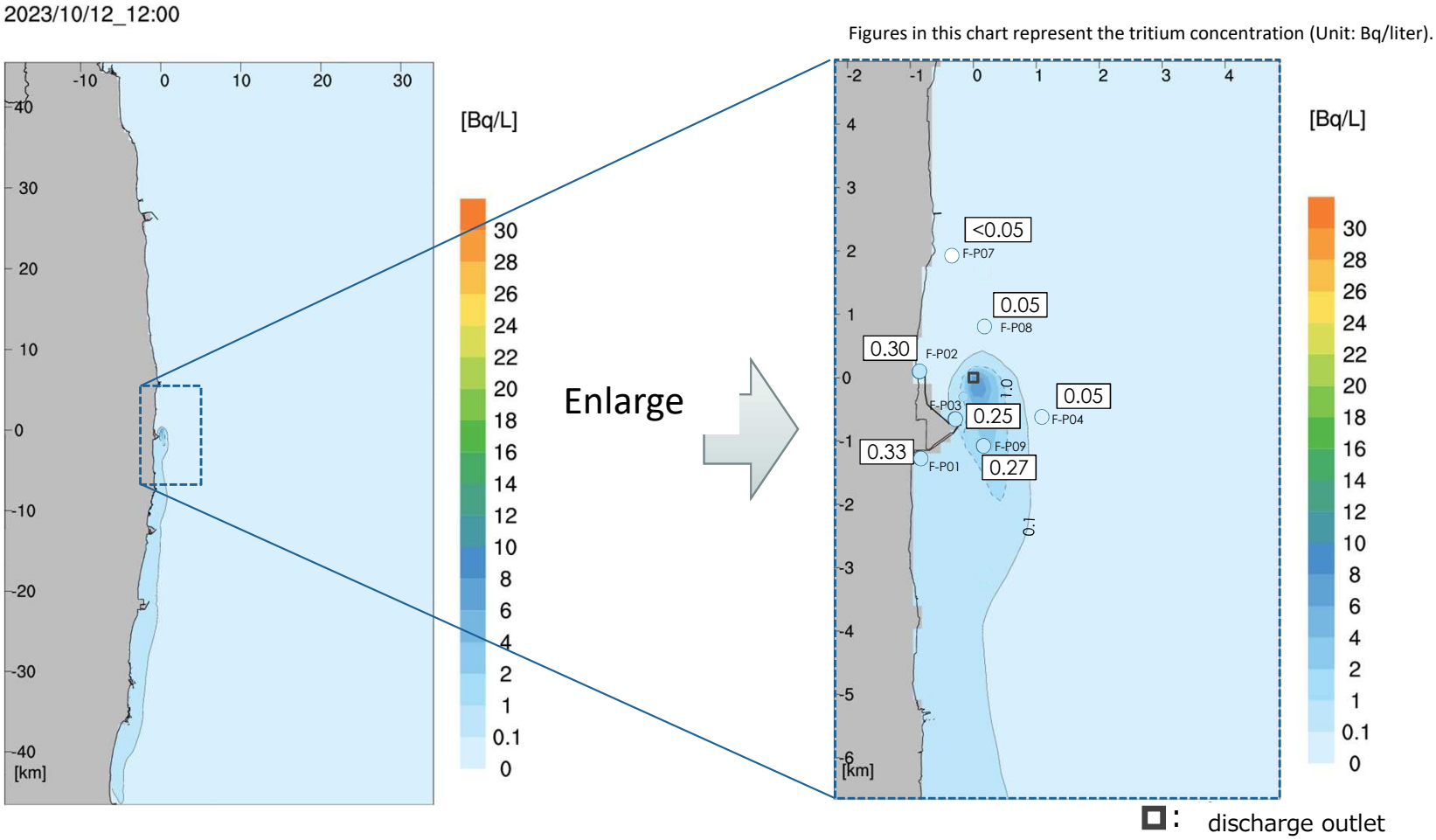


October 6, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-3-6-3. Comparison of dispersion calculation results and monitoring results (October 12, 12 PM)

- The following figures show the dispersion simulation results for 12PM on October 12 and the sea area monitoring results by Fukushima Prefecture for the same timeframe.
- The simulation results show that ocean currents continued to be in south direction since October 10. The scope of dispersion extends to the south. This trend is generally consistent with monitoring results.

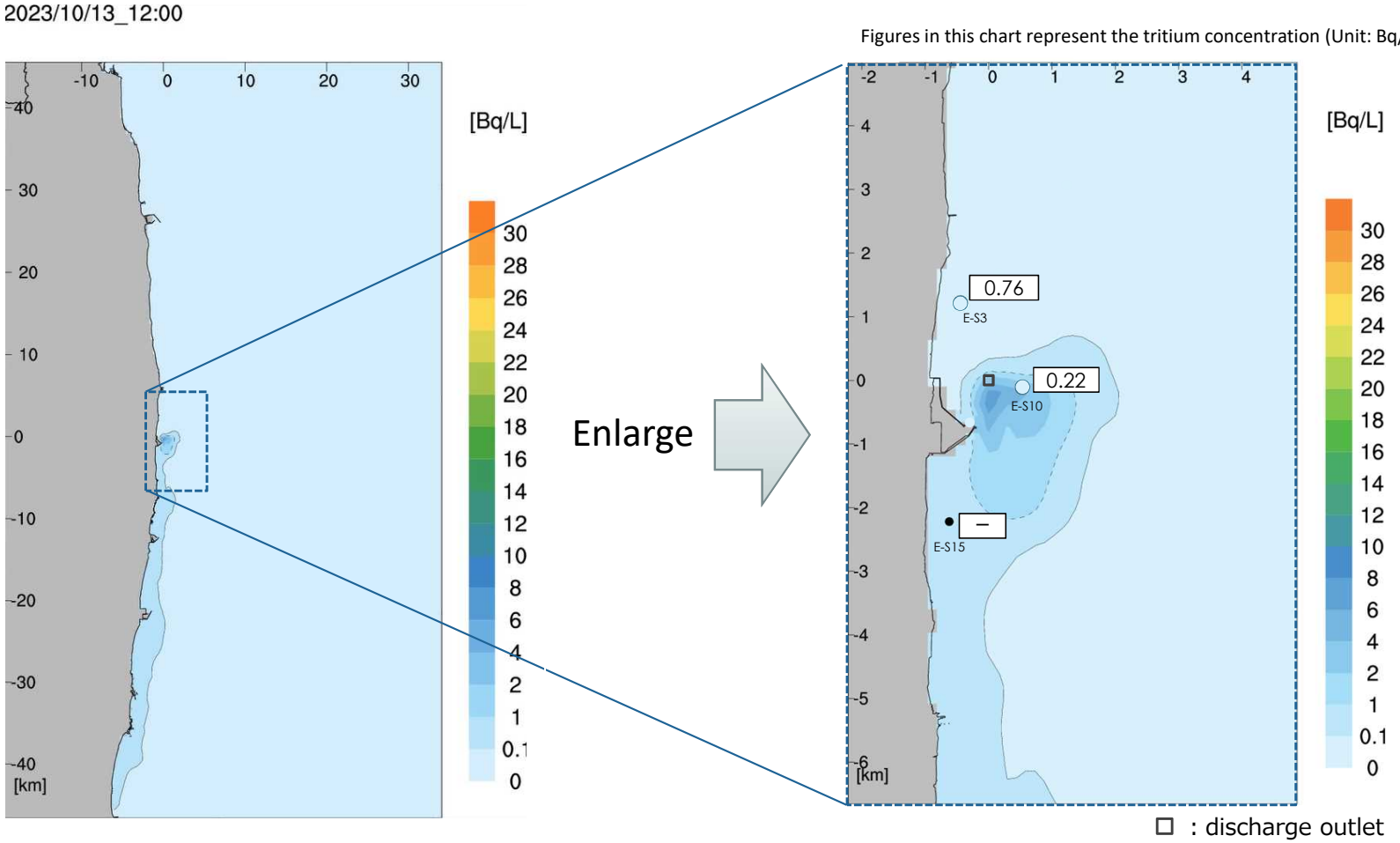


October 12, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-3-6-4. Comparison of dispersion calculation results and monitoring results (October 13, 12 PM)

- The following figures show the dispersion simulation results for 12PM on October 13 and results for the sea area monitoring conducted by Ministry of Environment on the same day.
- The simulation results show that ocean currents continued to be in south direction since October 10, but its speed slowed down since October 12. In addition to the south , the scope of dispersion in the vicinity of the discharge outlet broadens. ,Although this trend is not inconsistent with monitoring results, it is difficult to assess the results due to the small number of since monitoring points.



October 13, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-3-7. Summary of Comparison of dispersion simulation results and monitoring results during the second discharge period

- A comparison of sea area monitoring results during the second discharge period (October 5-October 23, 2023) with dispersion simulation results based on actual meteorological/ marine meteorological data during the same time period was performed.
- In addition to TEPCO's monitoring data for October 5, 9, 16, and the 23, data from the Nuclear Regulation Authority for October 6, data from Fukushima Prefecture for October 12, and data from the Ministry of the Environment for August 25 was also used for the comparison.
- The monitoring results from the second discharge period also confirmed that the diluted ALPS treated water quickly dispersed into the sea after being discharged.
- As a result of comparison between the dispersion simulation trends and monitoring results in the vicinity of the power station, some differences were observed in some monitoring data, but overall trends were consistent in most cases.

3-4-1. Verification of the third discharge period (Calculation conditions, etc.)

TEPCO

- Dispersion calculations for the third discharge period (November 2 - November 20) were performed based on the following conditions and were compared with monitoring results during the discharge period.
  - The dispersion model was the same model used for the radiological environmental impact assessment
  - Tritium discharge rate were calculated from the concentrations measured at the measurement/confirmation facility and the daily discharge flow volume, and these data were entered into the model

Calculation conditions for the third discharge period.
(The model is the same as that used for the radiological environmental impact assessment report)

Amount of tritium discharged

・11/2 10:21 – 11/19 10:18 (Constant)

Discharge rate＝2.7E+09Bq/hr （＝130,000Bq/L×456m3/day×1000L/m3÷24hr/day）

・11/20 10:18 - 12:01

Discharge rate＝1.32E+09Bq/hr （＝130,000Bq/L×16m3×1000L/m3÷103/60hr）

Meteorological/marine meteorological data

・ Actual meteorological/marine meteorological data from the discharge period (Meteorological Agency, JAMSTEC, etc.)

Reference

Tritium discharge volume used for the dispersion simulation in the radiological environmental impact assessment

・Constant throughout the year

Discharge rate＝2.51 E+09 Bq/hr (=22 trillion Bq/year ÷ 8760hr/yr)

3-4-2. Monitoring results from the third discharge period (Overview)

TEPCO

○ The third discharge was performed from November 2 to November 20. Results from both quick tritium measurement and normal monitoring showed low concentration levels outside the vicinity of the discharge outlet, and we confirmed that tritium is dispersing.

○ The highest concentration detected during quick tritium measurement (target detection limit: less than 10 Bq/liter) was 11Bq/liter (T-0-1A, November 10), which is below are operational indices (discharge suspension level and investigation level)

○ The highest concentrations detected during normal monitoring (target detection limit: less than 0.4Bq/liter or less than 0.1Bq/liter) were 9.5Bq/liter in the vicinity of the discharge outlet (within a 3km radius of the power station) (T-0-1A, November 6), and 0.12 Bq/liter, outside of the area around the discharge outlet (within a 10km square off the coast of the power station) (T-S3, November 8, and T-D5, November 15).

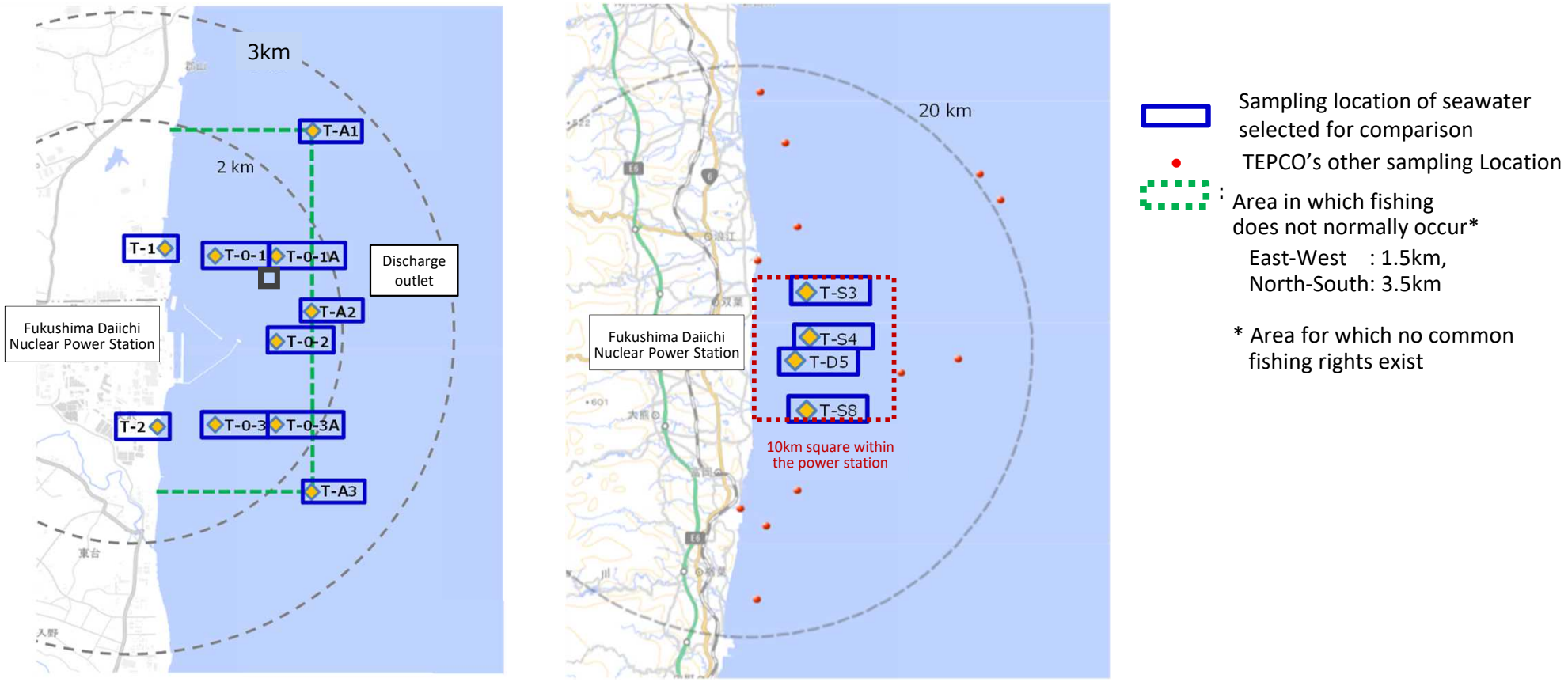


Fig. Sampling locations of seawater selected for comparison with dispersion simulation

3-4-3-1. Monitoring results from the third discharge period (1/3)

- The following chart shows the sea area monitoring results for the third discharge period.
- Verification was based on tritium concentrations detected more than 0.1 Bq/liter through normal measurements on November 2 6, 13 and 20. (Indicated in the black boxes), in the vicinity of the discharge outlet.

(Unit: Bq/liter)

	Sampling location	Frequency	2023年11月											
			2 *1	2 Normal *1,2	3	4	5	6	6 Normal *2	7	8	8 Normal *3	9	9 Normal *2
In the vicinity of the discharge outlet	T-1	Once a week*	<6.0	0.35	<8.1	<8.0	<7.6	<5.6	<0.34	<6.9	<5.5	–	<5.5	–
	T-2	Once a week*	<8.3	0.36	<8.1	<8.2	<7.5	<5.5	0.38	<6.9	<5.5	–	<5.5	–
	T-0-1	Once a week*	<8.0	<0.36	<6.2	<6.3	<7.5	<7.2	0.36	–*4	<6.7	–	<6.4	–
	T-0-1A	Once a week*	<8.0	6.9	7.1	<6.2	<7.6	9.0	9.5	–*4	<6.8	–	<6.4	–
	T-0-2	Once a week*	<8.1	<0.37	<6.2	<6.2	<7.5	<7.1	<0.31	–*4	<6.7	–	<8.4	–
	T-0-3A	Once a week*	<5.4	<0.26	<8.1	<8.2	<7.6	<5.4	0.54	–*4	<5.5	–	<5.6	–
	T-0-3	Once a week*	<8.0	<0.36	<6.2	<6.2	<7.5	<7.1	<0.31	–*4	<6.7	–	<6.4	–
	T-A1	Once a week*	<8.2	<0.31	<5.7	<9.2	<5.7	<6.5	<0.39	–*4	<7.2	–	<7.5	–
	T-A2	Once a week*	<8.2	<0.30	<5.7	<9.2	<5.7	<6.5	<0.38	–*4	<7.2	–	<7.5	–
	T-A3	Once a week*	<8.2	<0.31	<5.7	<9.2	<5.7	<6.5	<0.39	–*4	<7.2	–	<7.6	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	–	–	–	–	<7.5	<0.34
	T-S3	Once a month	–	–	–	–	–	–	–	–	<7.7	0.12	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	<7.7	0.10	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	<7.8	0.097	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Discharge period of ALPS treated water (Third discharge)

*：Monitored daily for the time being after the commencement of discharge

*1：Sampled after the commencement of discharge at 2PM

*2：Detection limit 0.4 Bq/liter

*3：Detection limit 0.1 Bq/liter

*4：Sampling suspended due to bad weather condition

3-4-3-2. Monitoring results from the third discharge period (2/3)

(Unit: Bq/liter)

	Sampling location	Frequency	November 2023											
			10	11	12	13	13 Normal *1	14	15	15 Normal *1	16	17	18	19
In the vicinity of the discharge outlet	T-1	Once a week*	<6.9	<5.8	<7.0	<6.3	0.25	<5.8	<6.9	–	<8.8	<7.8	<9.3	<6.3
	T-2	Once a week*	<7.0	<5.8	<6.9	<6.3	0.25	<5.9	<6.9	–	<8.6	<7.7	<9.3	<6.2
	T-0-1	Once a week*	<8.1	–*2	<4.7	<9.0	0.15	<6.6	<6.2	–	<7.1	<7.9	–*2	<7.4
	T-0-1A	Once a week*	11	–*2	<4.6	<9.0	0.14	7.2	10	–	<7.3	<7.9	–*2	<7.4
	T-0-2	Once a week*	<8.1	–*2	<4.7	<8.9	0.17	<6.5	<6.2	–	7.9	<7.8	–*2	<7.4
	T-0-3A	Once a week*	<7.0	–*2	<6.9	<6.3	0.49	<5.7	<6.9	–	<8.8	<8.0	–*2	<6.3
	T-0-3	Once a week*	<8.1	–*2	<5.1	<9.0	0.44	<6.6	<6.2	–	<7.3	<7.9	–*2	<7.3
	T-A1	Once a week*	<6.9	–*2	<7.8	<7.6	0.082	<6.8	<8.6	–	<8.8	<5.5	–*2	<8.6
	T-A2	Once a week*	<6.9	–*2	<7.8	<7.6	0.16	<6.8	<8.8	–	<8.6	<5.5	–*2	<8.8
	T-A3	Once a week*	<6.8	–*2	<7.8	<7.6	0.15	<7.0	<8.6	–	<8.8	<5.5	–*2	<8.8
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	<8.6	0.12	–	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Discharge period of ALPS treated water (Third discharge)

*：Monitored daily for the time being after the commencement of discharge

*1：Detection limit 0.4 Bq/liter

*2： Sampling suspended due to bad weather condition

3-4-3-3. Monitoring results from the third discharge period (3/3)

(Unit: Bq/liter)

	Sampling location	Frequency	November 2023										
			20 *1	23 Normal *1,2	21	21 Normal *2	22	23	24	25	26	27	27 Normal *2
In the vicinity of the discharge outlet	T-1	Once a week*	<7.0	1.7	<6.6	–	<6.5	<5.5	<5.3	<6.3	<7.1	<5.7	<0.34
	T-2	Once a week*	<7.1	0.60	<6.5	–	<6.4	<5.5	<5.2	<6.3	<7.1	<5.8	<0.34
	T-0-1	Once a week*	<8.1	1.2	<7.0	–	<7.1	<6.4	<7.2	<7.3	<8.1	<6.4	0.38
	T-0-1A	Once a week*	<8.1	1.0	<7.0	–	<7.0	<6.4	<7.2	<7.3	<8.2	<6.5	<0.33
	T-0-2	Once a week*	<8.1	0.77	<7.1	–	<7.0	<6.5	<7.3	<7.3	<8.1	<6.5	<0.26
	T-0-3A	Once a week*	<7.0	0.87	<6.7	–	<6.6	<5.5	<5.2	<6.3	<7.1	<5.7	<0.33
	T-0-3	Once a week*	<8.1	0.92	<7.2	–	<7.1	<6.5	<7.3	<7.3	<8.2	<6.4	<0.33
	T-A1	Once a week*	<7.3	1.5	<9.0	–	<7.4	<7.2	<5.7	<5.2	<5.7	<7.8	<0.36
	T-A2	Once a week*	<7.2	0.60	<8.9	–	<7.7	<7.2	<5.7	<5.2	<5.6	<7.8	<0.36
	T-A3	Once a week*	<7.2	0.37	<8.9	–	<7.6	<7.2	<5.6	<5.2	<5.7	<7.8	<0.36
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	<7.2	<0.33	–	–	–	–	–	<7.8	<0.34
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Discharge period of ALPS treated water (Third discharge)

*：Monitored daily for the time being after the commencement of discharge

*1：Sampled before 8AM, prior to the completion of the discharge

*2： Detection limit 0.4 Bq/liter

3-4-4. The direction and speed of currents in the surface layer of the sea above the discharge outlet (dispersion simulation results)

- Sea condition observed after 12AM on November 2 when the discharge was commenced are shown as below

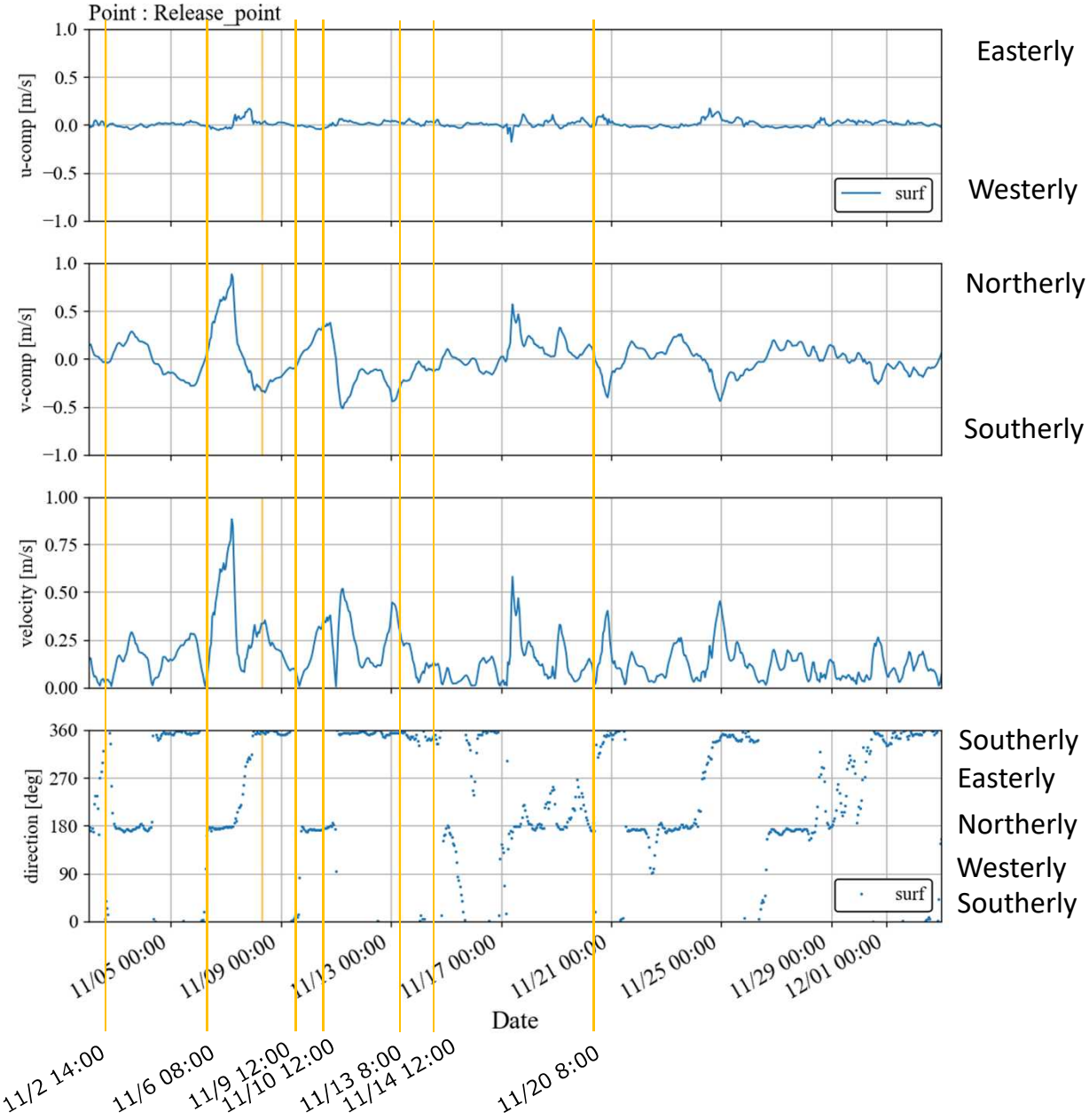
East-West component of flow speed
(easterly direction is indicated by a +)

North-South components of flow speed
(northerly direction is indicated by a +)

Flow speed

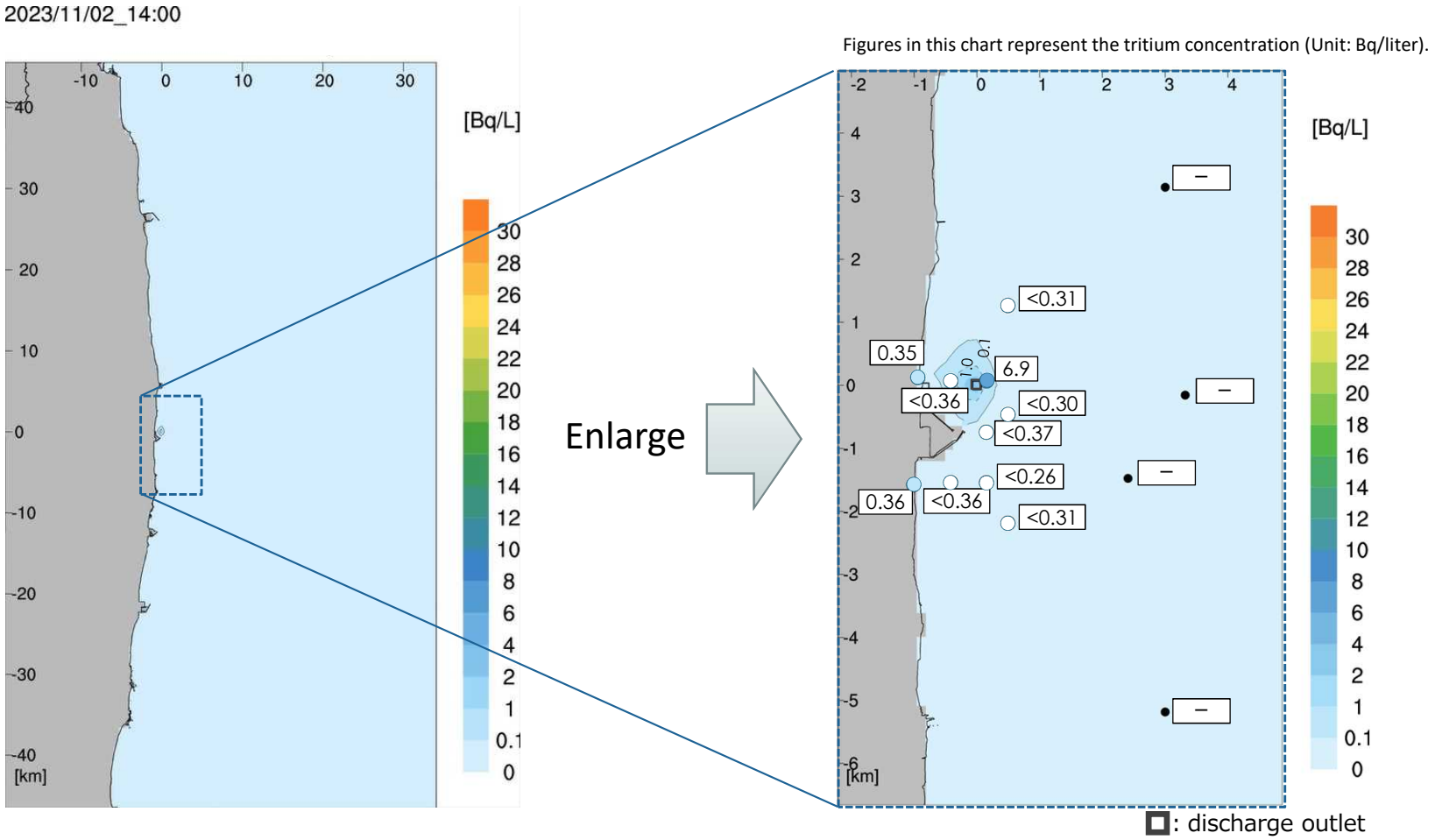
Flow direction
(0° and 360° indicates South,
90° indicates West,
180° indicates North,
and 270° indicates East)

Sea monitoring timeframe



3-4-5-1. Comparison of dispersion calculation results and monitoring results (November 2, 2 PM)

- The following figures show the dispersion simulation results for 2PM on November 2, which is approximately four hours after the commencement of the discharge, and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean current is in the weak northerly direction and tritium tend to disperse to the north. The monitoring result was only detected at the northeastern side if the discharge outlet, on T-0-1A, This trend is generally consistent with monitoring results. (Refer to 3-4-4. Ocean current direction and flow speed of the surface layer by the discharge outlet (dispersion simulation results) for more details)

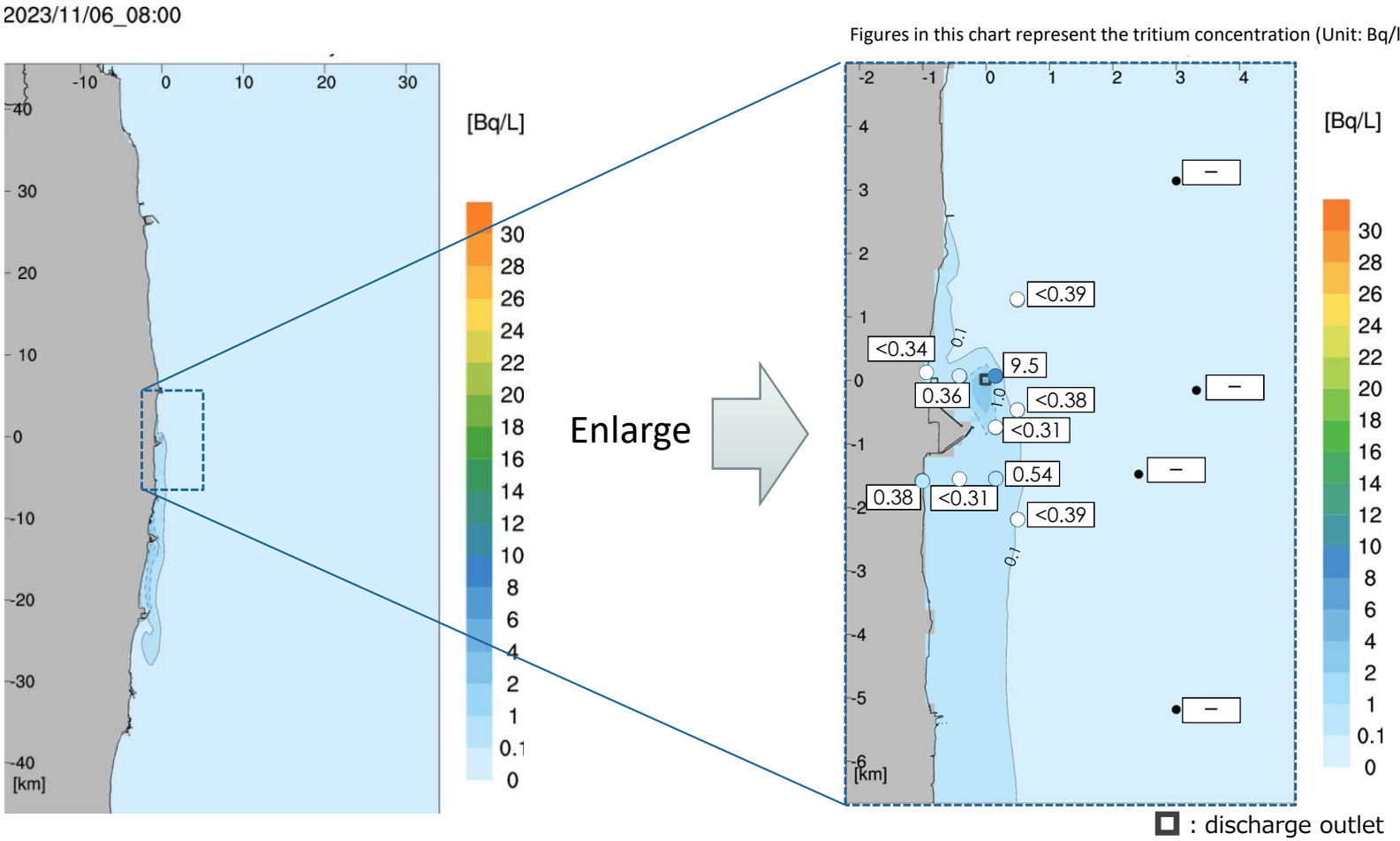


November 2, 2 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-4-5-2. Comparison of dispersion calculation results and monitoring results (November 6, 8 AM)

- The following figures show the dispersion simulation results for 8AM on November 6 and the sea area monitoring results for the same timeframe.
- The simulation results show the ocean currents right after they changed to north direction from south direction observed in the previous day. Overall dispersion is extending to the south, but trend extending to the south was observed. This trend is generally consistent with monitoring results.

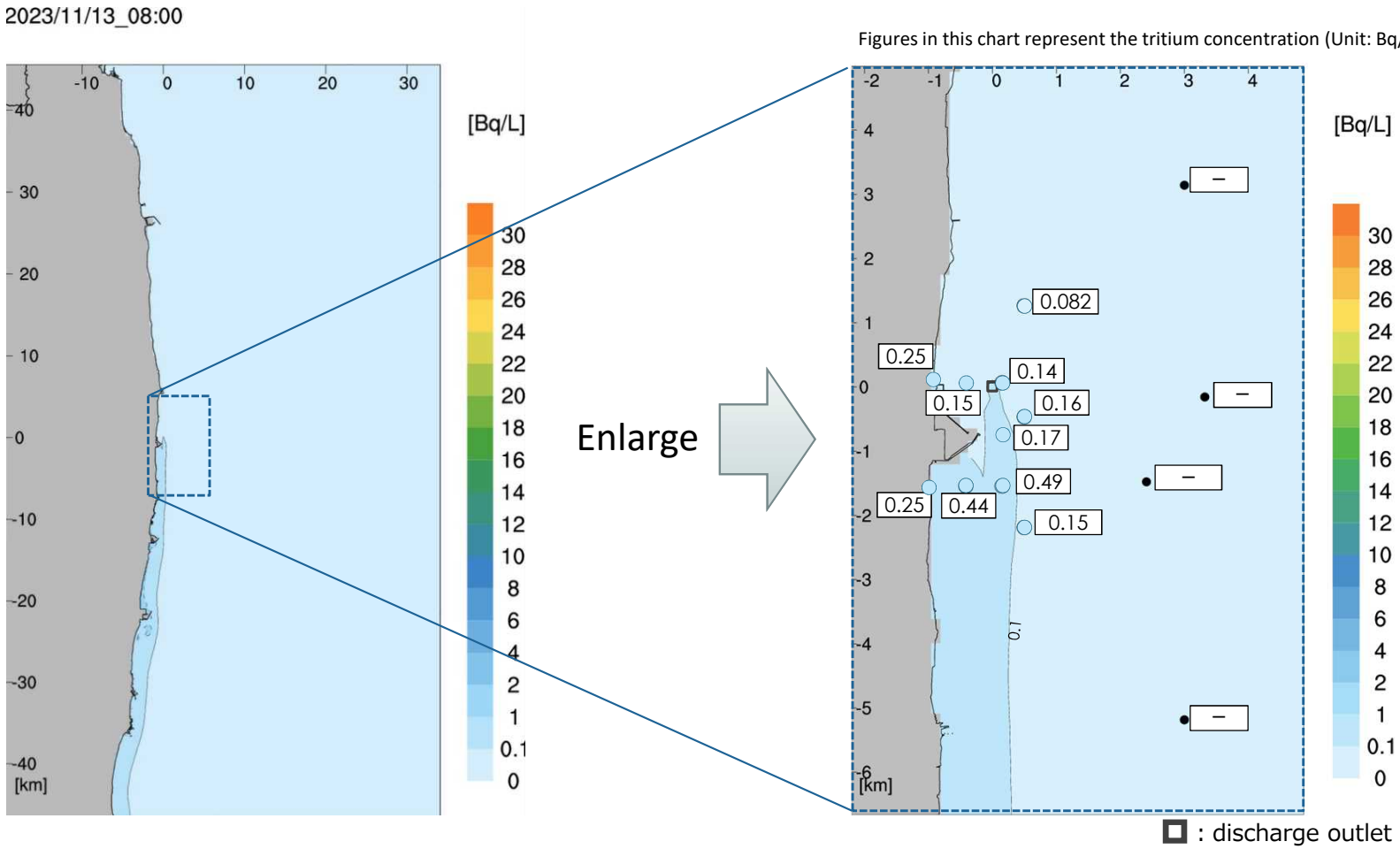


October 9, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-4-5-3. Comparison of dispersion calculation results and monitoring results (November 13, 8 AM)

- The following figures show the dispersion simulation results for 8AM on November 13 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean currents continued to be in south direction from November 11, and the scope of is extending to the south. This trend is generally consistent with monitoring results.

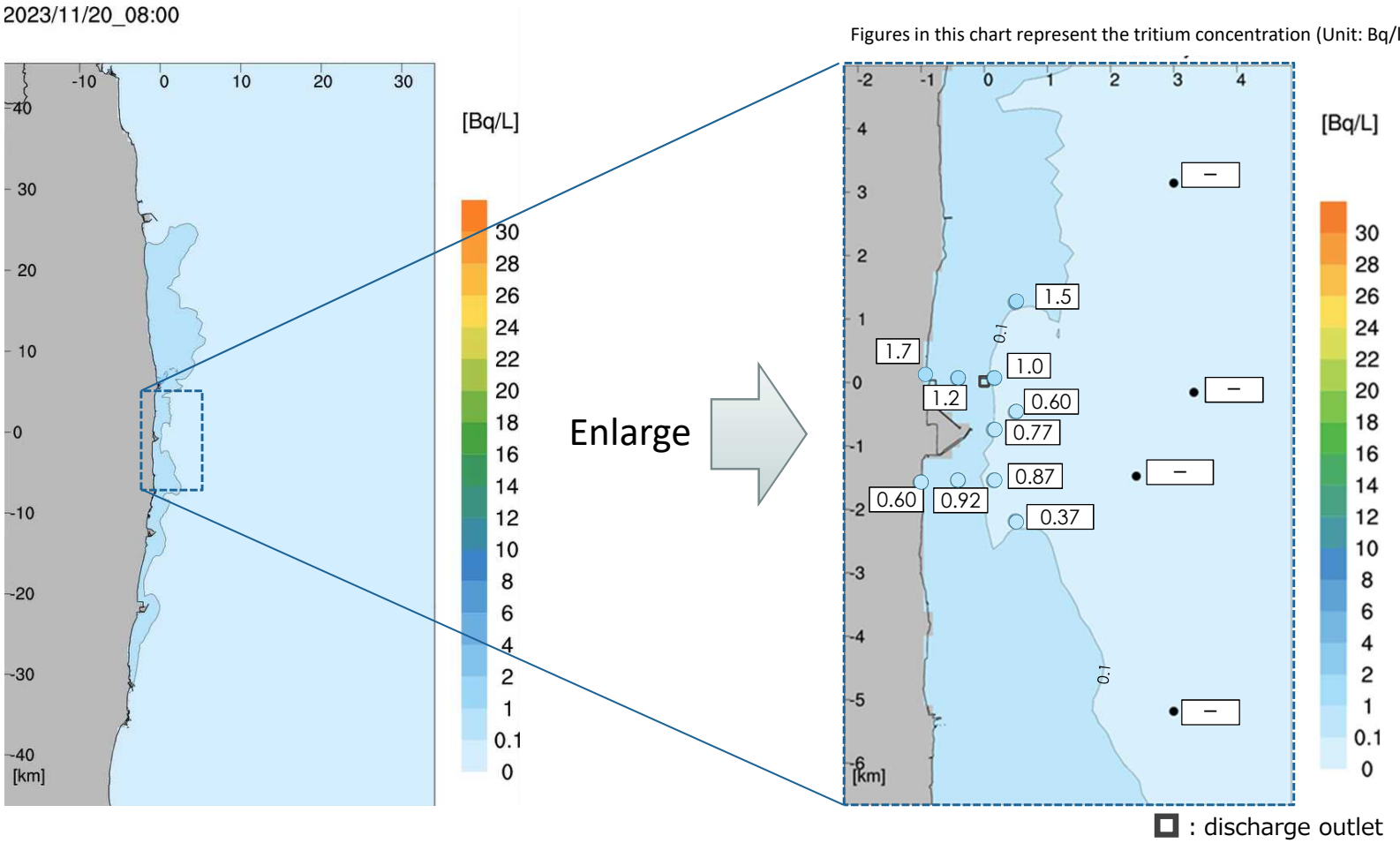


November 13, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-4-5-4. Comparison of dispersion calculation results and monitoring results (November 20, 8 AM)

- The following figures show the dispersion simulation results for 8AM on November 20 and the sea area monitoring results for the same timeframe.
- The simulation results show that slow flow speed continued to be in north direction from November 18, and changed to south direction on November 20. The scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.

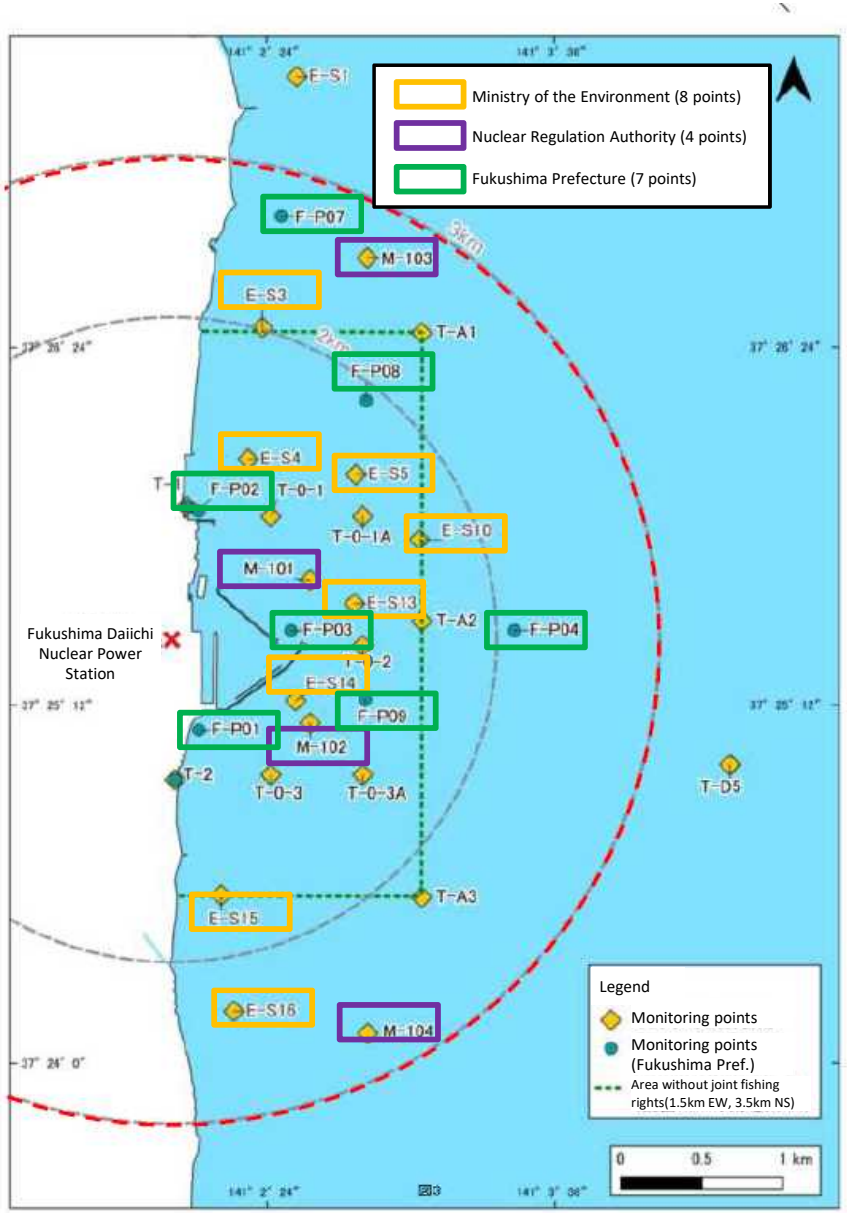


November 20, 8 AM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-4-6-1. Monitoring results from other agencies (for the third discharge period)

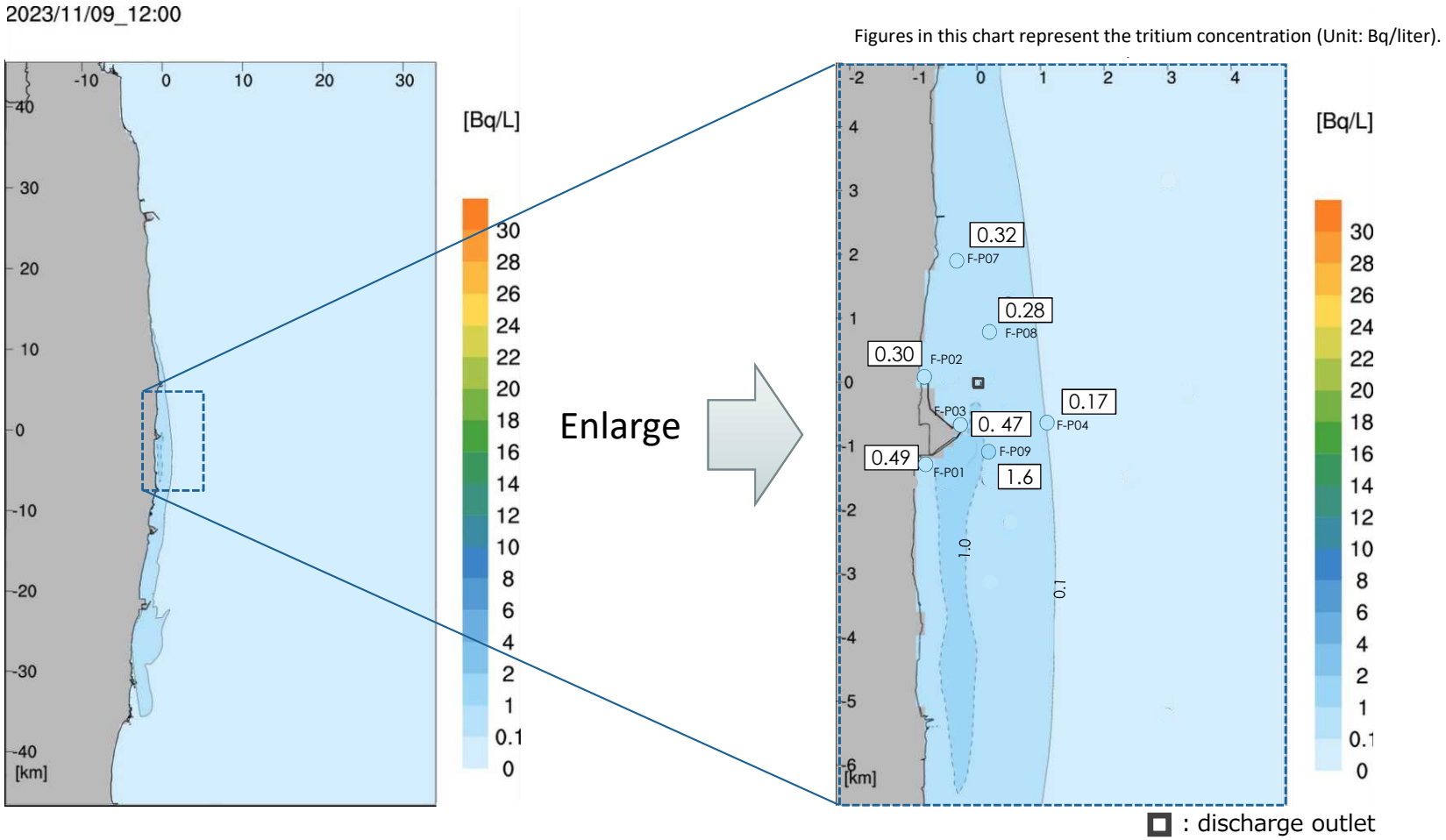
- ○ Since monitoring during the period of discharge of ALPS treated water is performed within 3km of the power station by the Ministry of the Environment, the Nuclear Regulation Authority and Fukushima Prefecture in addition to TEPCO, the tritium analysis results from these agencies were also examined.
- ○ The locations from which samples are taken by other agencies is shown on the map to the right.
- ○ The following is a summary of the sea monitoring results from other agencies obtained during the third discharge (November 2 - November 20, 2023)
- ○ The Ministry of Environment conducted monitoring on November 14 and 15, 2023. Since 3.5Bq/liter at maximum was detected on November 14, this measurement result is reviewed.
- ○ The Nuclear Regulation Authority performed monitoring on November 10. Since 0.42-0.63Bq/liter were detected at four locations (M-101-104), these measurement results are reviewed.
- ○ Fukushima Prefecture performed monitoring on November 9. Since concentrations at all monitoring points exceeded 0.1Bq/liter , these measurements are reviewed.



Locations of samples taken by other agencies within 3km of the power station

4-6-2. Comparison of dispersion calculation results and monitoring results (November 9, 12 PM)

- The following figures show the dispersion simulation results for 12PM on November 9 and results of sea area monitoring conducted by Fukushima Prefecture for the same timeframe.
- The simulation results show that ocean currents changed from north direction to south direction on November 8, and the scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.

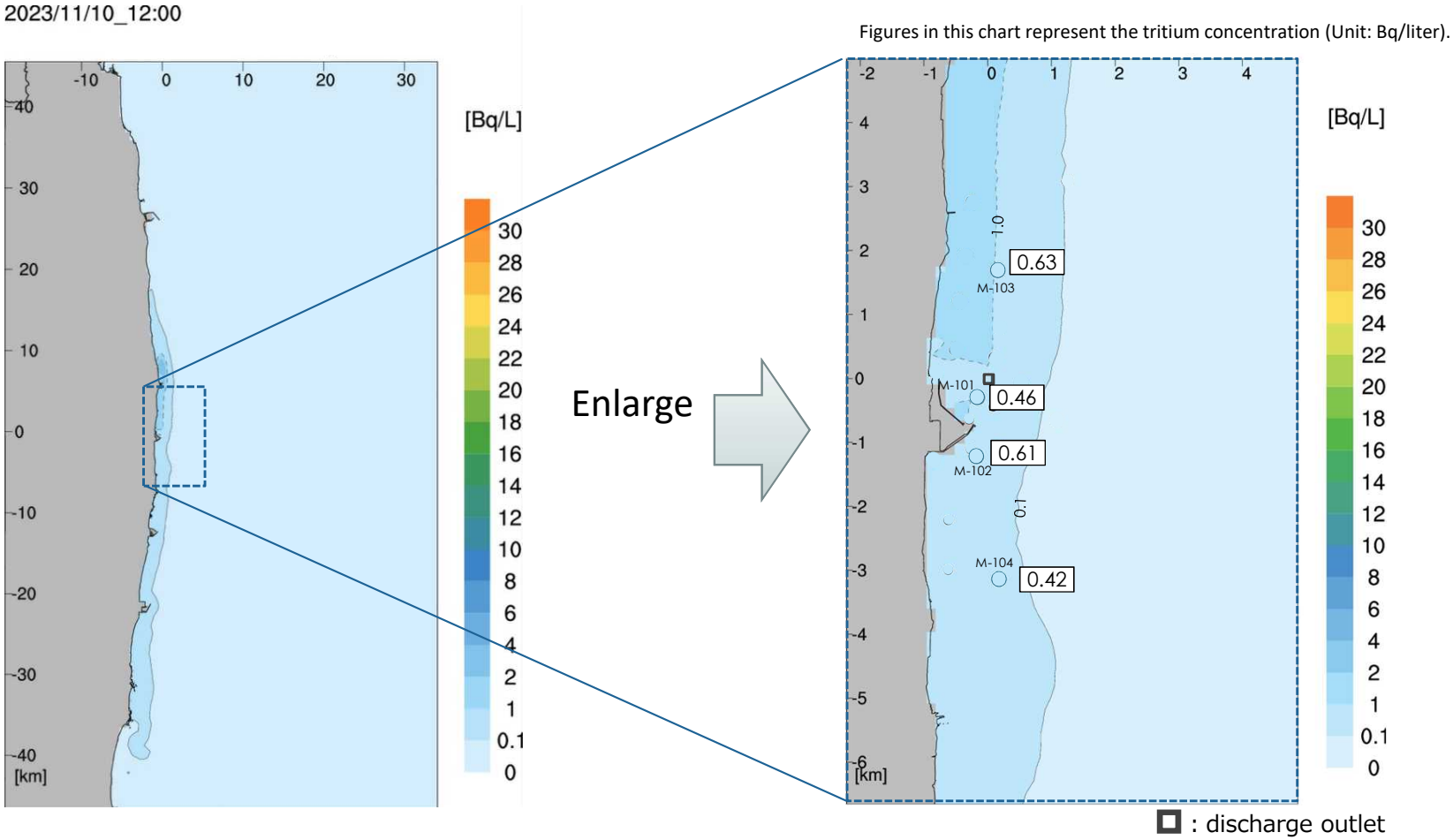


November 9, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-4-6-3. Comparison of dispersion calculation results and monitoring results (November 10, 12 PM)

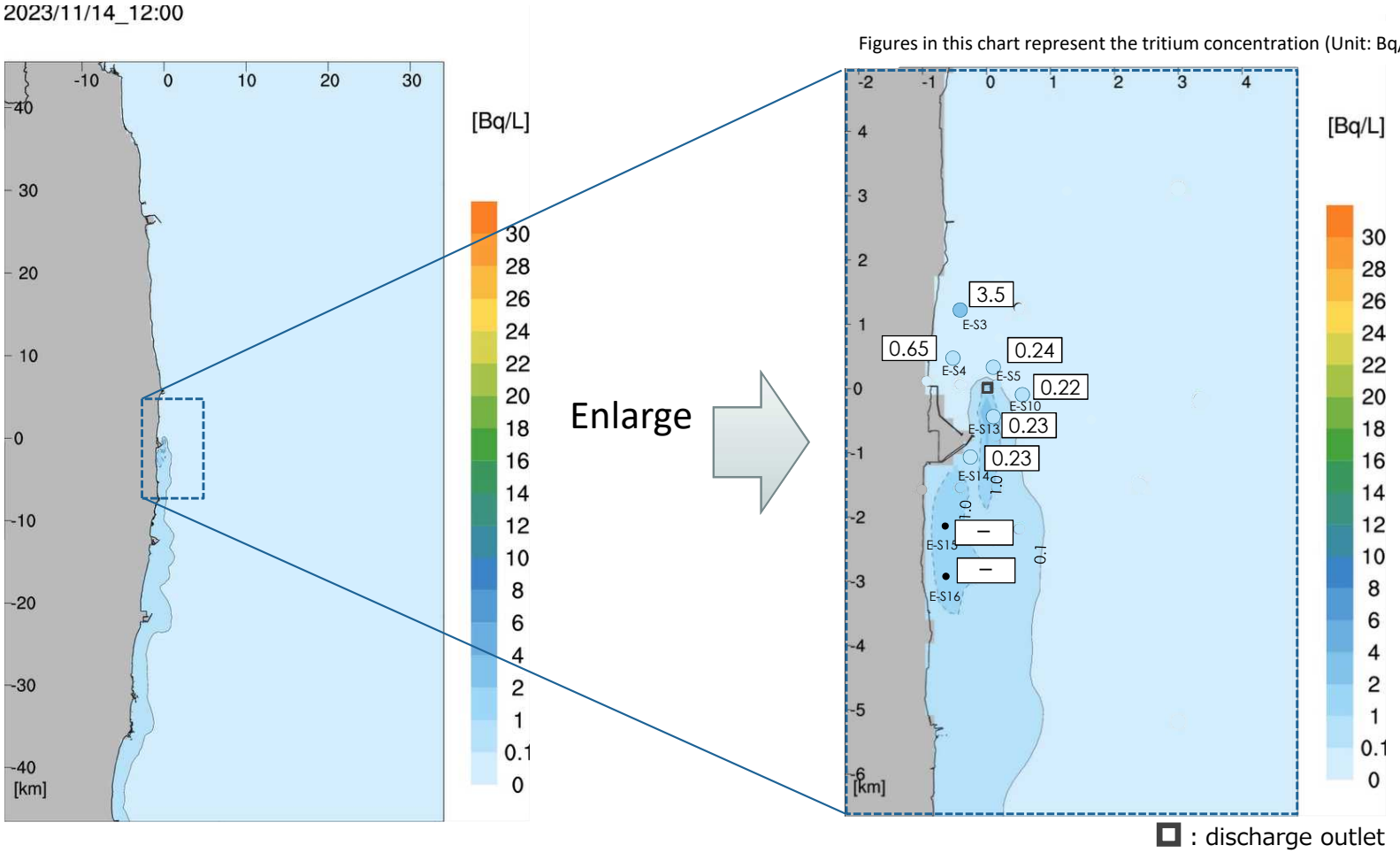
- The following figures show the dispersion simulation results for 12PM on November 10 and results of sea area monitoring conducted by Nuclear Regulation Authority for the same timeframe.
- The simulation results show that ocean currents changed from south direction to north direction observed in the previous day. The scope of dispersion extends to the north-south. This trend is generally consistent with monitoring results.



November 10, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison
○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

4-6-2. Comparison of dispersion calculation results and monitoring results (November 14, 12 PM)

- The following figures show the dispersion simulation results for 12PM on November 14 and the sea area monitoring results for the same timeframe.
- The simulation results show that ocean currents continues to be in south direction and the scope of dispersion extends to the south. Monitoring results were measured both at the north and south, and measurement results of the north side of the discharge outlet were higher. This trend is not consistent with simulation results.



November 14, 12 PM dispersion calculation results (ocean surface concentration distribution map) and monitoring results comparison

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

3-4-7. Summary of Comparison of dispersion simulation results and monitoring results during the third discharge period

- A comparison of sea area monitoring results during the third discharge period (November 2-November 20, 2023) with dispersion simulation results based on actual meteorological/ marine meteorological data during the same time period was performed.
- In addition to TEPCO's monitoring data for November 2, 6, 13, and 20, data from Fukushima Prefecture for November 9, data from the Nuclear Regulation Authority for November 10, and data from the Ministry of the Environment for November 14 were also used for the comparison.
- Both dispersion simulation results and the monitoring results from the third discharge showed that the diluted ALPS treated water quickly dispersed into the sea after being discharged.
- As a result of comparison between the dispersion simulation trends and monitoring results in the vicinity of the power station, some differences were observed in some monitoring data, but overall trends were consistent in most cases.

3-5. Overall conclusions

- By using sea area monitoring results from each discharge period, we examined the validity of the dispersion simulations for the first three discharges of ALPS treated water conducted from August to November 2023.
- The data used for the comparison was from monitoring points around the discharge outlet where it is able to detect increased concentrations of tritium. Monitoring data used was from not only TEPCO, but also other agencies (Ministry of the Environment, Nuclear Regulation Authority, and Fukushima Prefecture).
- **The monitoring results from the discharge periods showed that the diluted ALPS treated water is quickly dispersing in the sea after being discharged.**
- Since we had just commenced the discharge of ALPS treated water into the sea, and there are small numbers of sea area monitoring data, we cannot statistically compare the annual averages. The simulations contain some uncertainty and dispersion phenomena widely vary in time and space. Therefore, it is difficult to precisely simulate the exact concentration at certain time and location. For these reasons, in order to observe the validity, we observed whether the trend of increasing concentrations (dispersion tendencies) is being recreated, rather than comparing numerical values.
- As a result of comparing dispersion tendencies shown by dispersion simulation and monitoring results measured in the vicinity of the power station during the first three discharges, the overall trend was consistent in most cases. **Therefore, dispersion simulation are recreating the dispersion tendencies in the vicinity of the power station.**
- Since dispersion phenomena fluctuate in time and space, the simulations are based on annual averages. We will continue to accumulate data by continuing monitoring.

[Reference] Observation on dispersion towards upward of the discharge outlet

- The model used calculates dispersions over several hundred kilometers and the smallest calculation resolution is approximately 185m NS × approximately 147m EW. The amount of discharged tritium is overlaid on a seafloor calculation matrix to calculate the dispersion using sea currents and the tides, and the model does not recreate the phenomenon of tritium migrating upwards due to the discharge current.
- In order to recreate this phenomenon, it might be possible to overlay the amount of tritium on a calculation matrix near the sea surface, in consideration of the fact that the tritium will rise due to the discharge current (a virtual discharge point could be created near the sea surface). However, the discharge current is very localized and there is no large difference from dispersion in the surrounding sea, so this would have no impact on the radiological environmental impact assessment results (refer to the chart below). Since uncertainty still remains even if a virtual discharge point is created, the radiological environmental impact assessment only assessed the discharge near the seafloor.
- For the sake of reference, a calculation was performed after setting a virtual discharge point near the sea surface for the second discharge period. (Sea surface discharge: Discharge point set at 0-1m below the sea surface). An example of the comparison with calculations performed to date (Seafloor discharge: Discharge point set at 10-11m below the sea surface) can be found on the following pages.

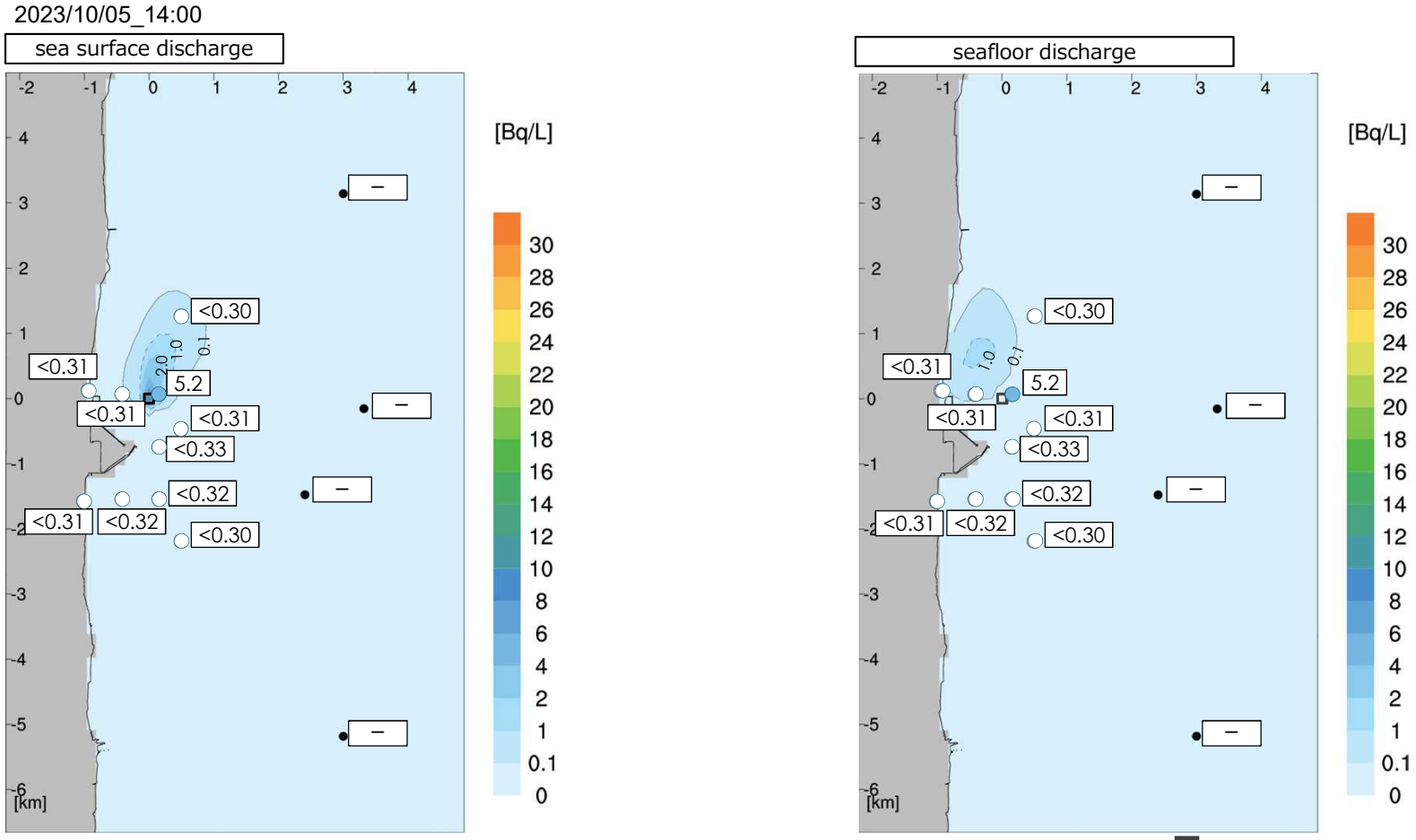
Table: Comparison between the average concentration of sea surface discharge and seafloor discharge within the 10km square of the power station (during the second discharge period)

Discharge point	Average concentration within the 10km square of the power station（Bq/L）		
	Sea surface (used to assess external expose to humans)	Seafloor (used to assess exposure to animals and plants)	Whole layer (used to assess internal expose to humans)
Near the sea surface	1.4E-01	4.2E-02	5.8E-02
Near the seafloor※	1.2E-01(1.2E-01)	4.8E-02(6.0E-02)	5.9E-02(5.6E-02)

※（）indicates annual average concentration used in radiological environmental impact assessment

Reference figure 1. Comparison between sea surface discharge and seafloor discharge (October 5, 2PM)

- The following figures show the comparison between the dispersion simulation results for 2PM on October 5 and sea area monitoring results of sea surface discharge and seafloor discharge.
- While there are no significant difference in dispersion tendencies, sea surface discharge showed concentration that is closer to the monitoring results in the vicinity of the discharge outlet.



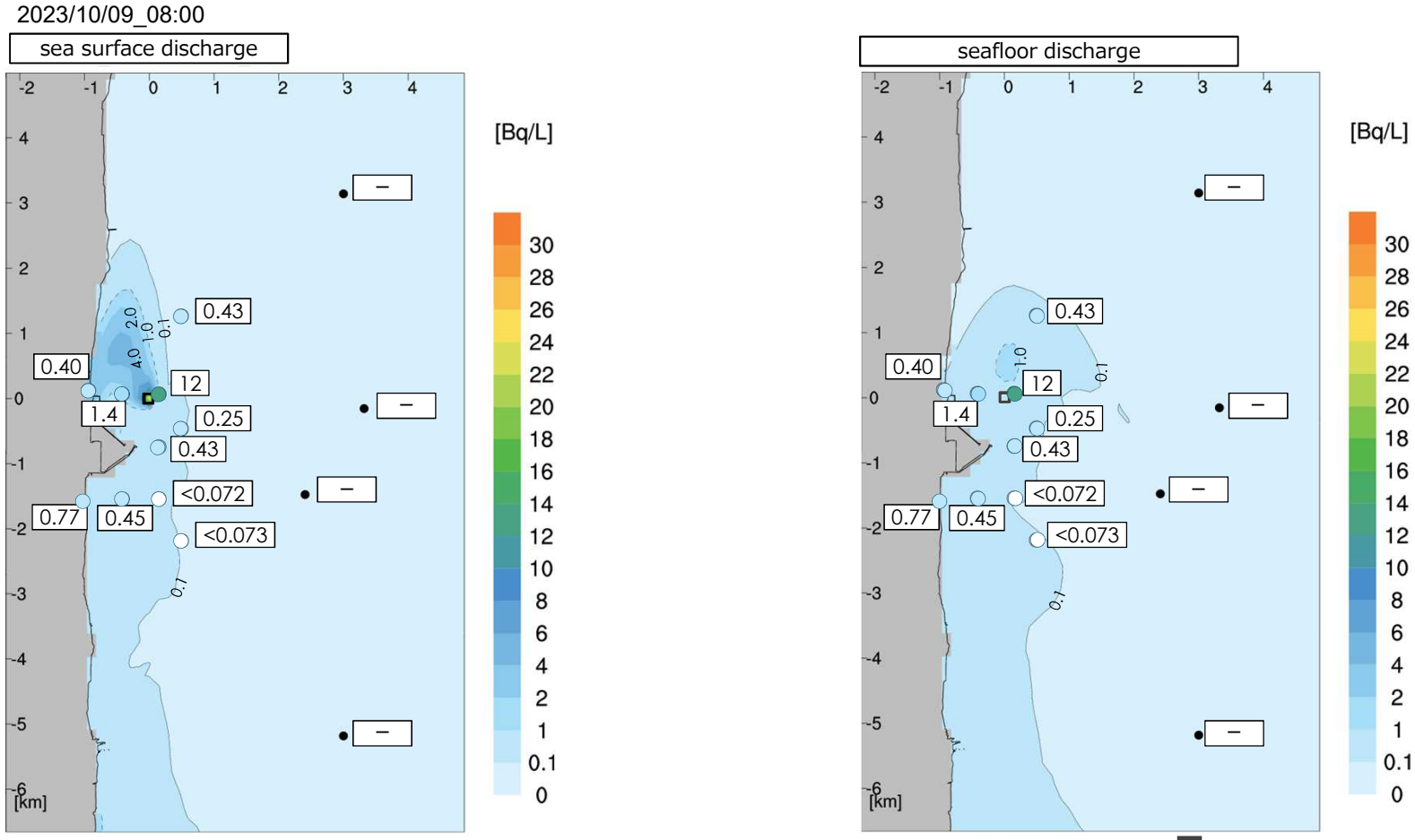
Figures in this chart represent the tritium concentration (Unit: Bq/liter).

October 5, 2 PM dispersion calculation results (comparison between sea surface discharge and seafloor discharge)

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

Reference figure 2. Comparison between sea surface discharge and seafloor discharge (October 9, 8AM)

- The following figures show the comparison between the dispersion simulation results for 8AM on October 9 and sea area monitoring results of sea surface discharge and seafloor discharge.
- While there are no significant difference in dispersion tendencies, sea surface discharge showed concentration that is closer to the monitoring results in the vicinity of the discharge outlet.



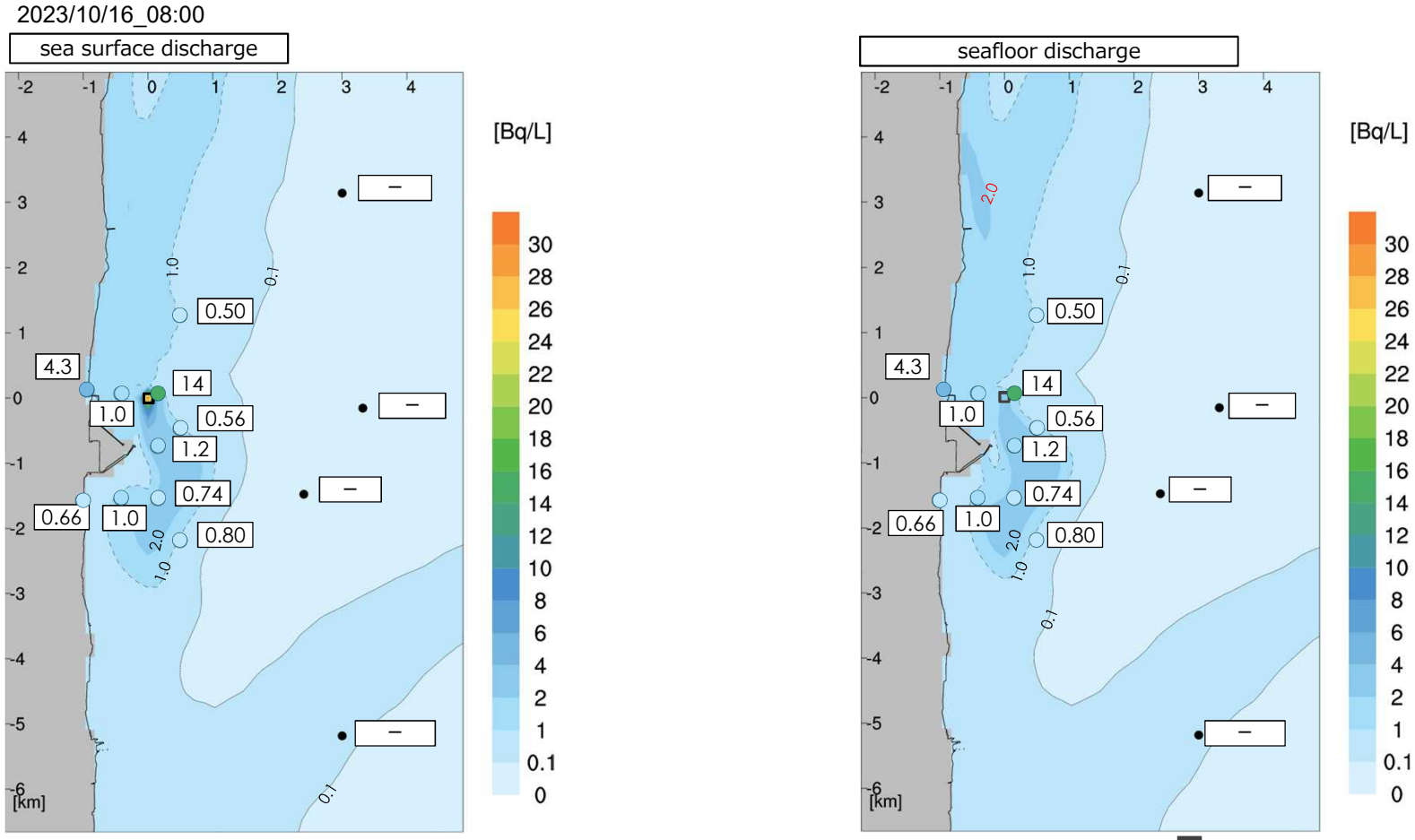
Figures in this chart represent the tritium concentration (Unit: Bq/liter).

October 9, 8AM dispersion calculation results (comparison between sea surface discharge and seafloor discharge)

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

Reference figure 3. Comparison between sea surface discharge and seafloor discharge (October 16, 8AM)

- The following figures show the comparison between the dispersion simulation results for 8AM on October 16 and sea area monitoring results of sea surface discharge and seafloor discharge.
- While there are no significant difference in dispersion tendencies, sea surface discharge showed concentration that is closer to the monitoring results in the vicinity of the discharge outlet.



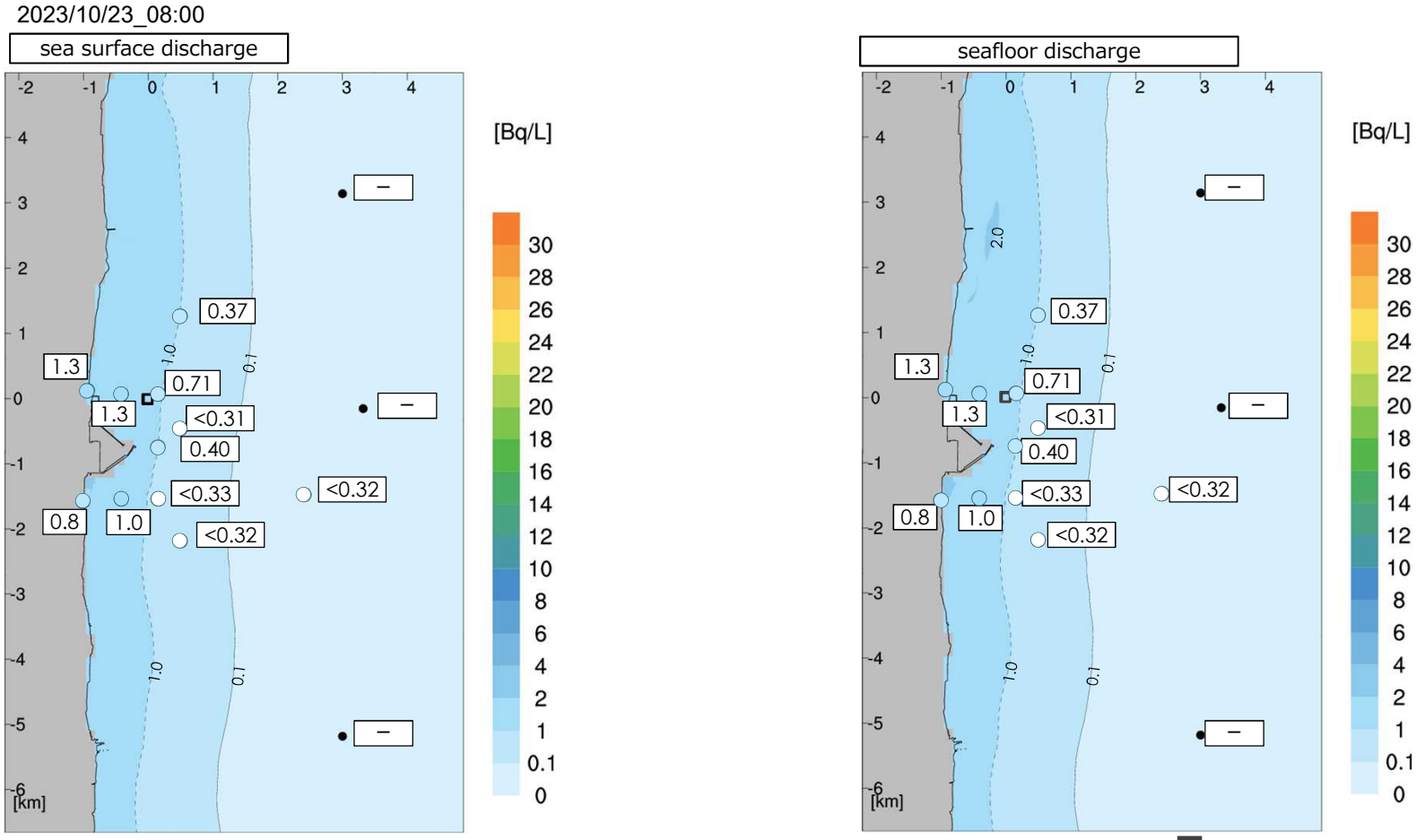
Figures in this chart represent the tritium concentration (Unit: Bq/liter).

October 16, 8AM dispersion calculation results (comparison between sea surface discharge and seafloor discharge)

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

Reference figure 4. Comparison between sea surface discharge and seafloor discharge (October 23, 8AM)

- The following figures show the comparison between the dispersion simulation results for 8AM on October 23 and sea area monitoring results of sea surface discharge and seafloor discharge.
- Since flow speed was relatively fast, the difference on tritium concentration was small both in the vicinity of the discharge outlet and other areas.



Figures in this chart represent the tritium concentration (Unit: Bq/liter).

October 23, 8AM dispersion calculation results (comparison between sea surface discharge and seafloor discharge)

○ indicates monitoring result concentrations, white circles indicate ND. ● indicate that no monitoring took place during this timeframe

1. Performance of the 4th discharge of the ALPS treated water

2. Responding to earthquakes

3. Sea area dispersion simulation

4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

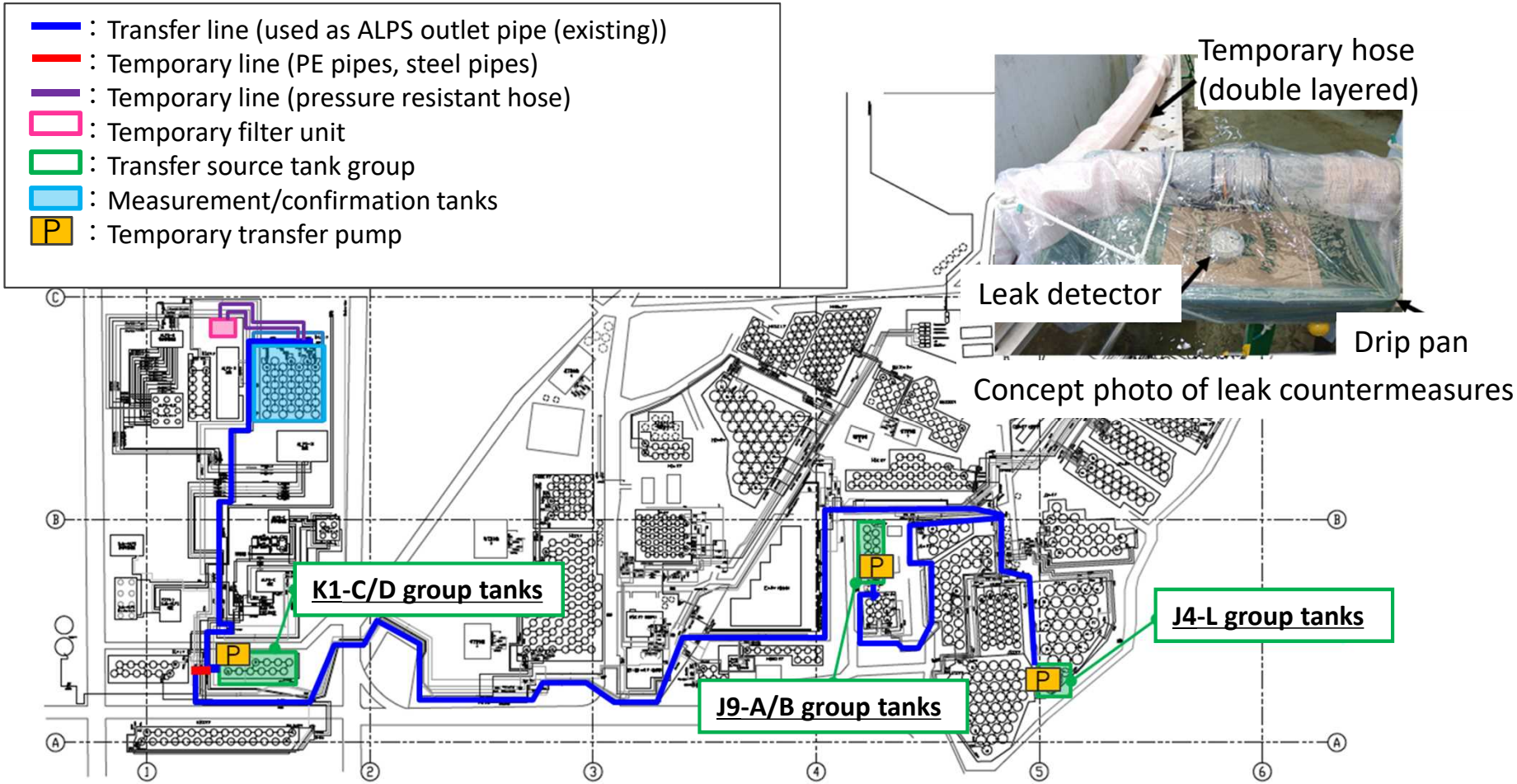
5. FY2024 ALPS Treated Water Discharge Plan

(Reference 1) Changes to internal corporate functions in conjunction with director appointments (As of April 1, 2024)

(Reference 2) Sea area monitoring history after the commencement of discharge

4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

- Transfer of ALPS treated water from J4 area Group L and J9 area Group A/B to measurement/confirmation facility tank group A in preparation for the 6th discharge was conducted (transfer commenced on February 20 and completed on March 14. Circulation/agitation commenced on March 18. Sample was taken on March 25.).
- Transfer of ALPS treated water from J9 area Group A/B and K1 area Group C/D to measurement/confirmation facility tank group B in preparation for the 7th discharge is being conducted (transfer commenced on March 19, and is scheduled to be completed around early-mid April. Circulation/agitation is scheduled to start around mid April).



1. Performance of the 4th discharge of the ALPS treated water

2. Responding to earthquakes

3. Sea area dispersion simulation

4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

5. FY2024 ALPS Treated Water Discharge Plan

[Main points of FY2024 ALPS treated water discharge plan]
- Number of annual discharge: 7 times
- Annual amount of water to be discharged: Approx. 54,600m³
- Total amount of tritium to be discharged: Approx. 14 trillion Bq

(Reference 1) Changes to internal corporate functions in conjunction with director appointments (As of April 1, 2024)

(Reference 2) Sea area monitoring history after the commencement of discharge

5. Discharge plan

- As a general rule, TEPCO will start by discharging water with a low concentration of tritium.

- Based on this general rule, TEPCO will create a discharge plan for the following fiscal year at the end of each fiscal year and announce it while considering tritium concentration, facilities required for decommissioning and the future management of storage tanks.

※Issues that will be considered when formulating the discharge plan

- Based on tritium concentration trends in the water generated daily, we will decide whether to prioritize the amount of water being generated daily or in storage when discharging water during the next fiscal year in order to reduce the annual amount of tritium to be discharged while ensuring that the concentration of radioactive substances, with the exception of tritium, meet regulatory standards (sum of the ratios of the concentration of each radionuclide to the regulatory concentration limit is less than 1).
- During the initial stage of discharge, TEPCO will discharge stored water that does not requires secondary treatment in order to keep the process smooth.
- Water in tanks close to the measurement/confirmation facility will be discharged first, considering that TEPCO will need to transfer ALPS treated water there during the discharge process.

Material republished from the meeting of the Secretariat of the Team for the Countermeasures for Decommissioning and Contaminated Water Treatment (January 25, 2024)

5. Considerations when deliberating the FY2024 discharge plan

- As a general rule, water with low tritium concentration shall be discharged first, however when deliberating the ALPS treated water discharge plan, the following issues must be taken into consideration.

① Estimates of the tritium concentrations in contaminated water generated in the future

② The amount of contaminated water generated in the future

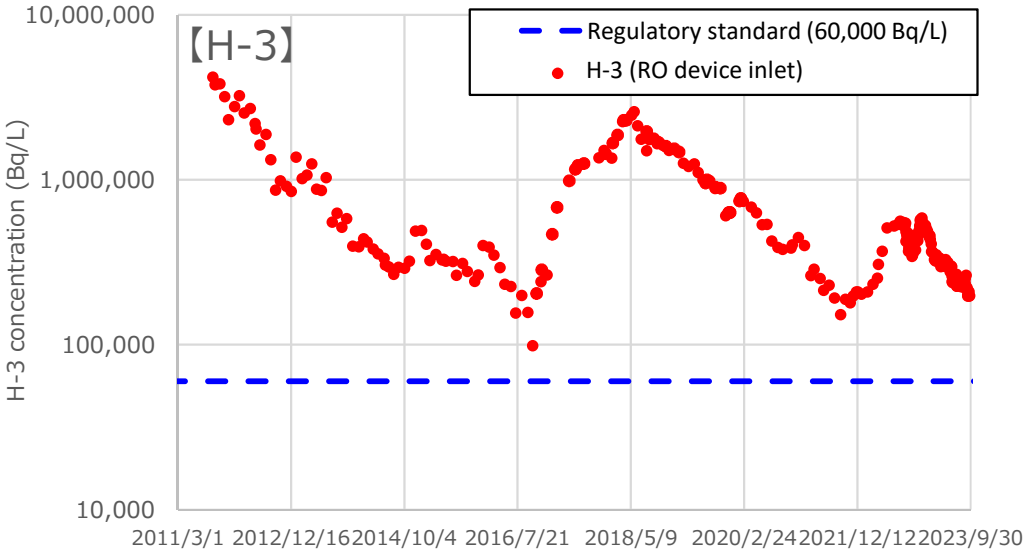
③ Site usage

Material republished from the meeting of the Secretariat of the Team for the Countermeasures for Decommissioning and Contaminated Water Treatment (January 25, 2024)

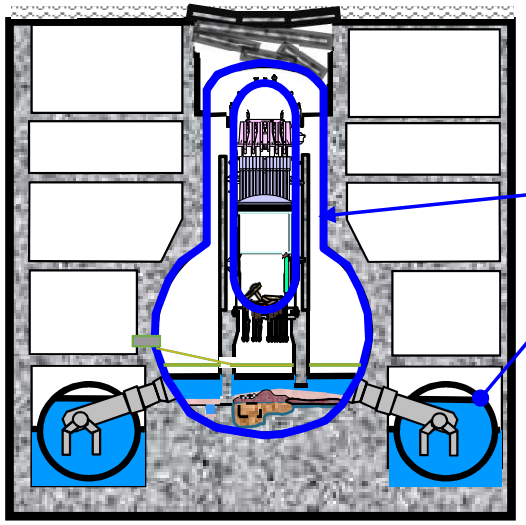
5-1. Tritium concentrations in contaminated water

- Although there is a decreasing trend in the tritium concentrations in contaminated water, considering that we will be handling water with high concentrations of tritium in the primary containment vessel, etc.*, contaminated water generated during FY2024 (estimated to have concentrations of tritium that exceed 400,000Bq/liter) will be stored in tanks after purification with ALPS.

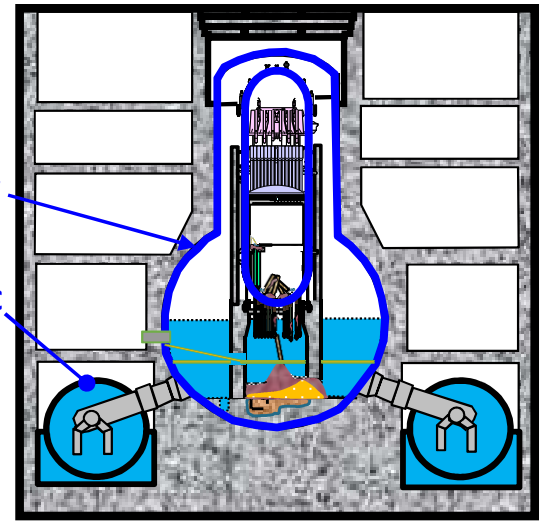
* Includes water drained from equipment/pipes in conjunction with future decommissioning tasks



Tritium concentrations in contaminated water (from RO system inlet)



Unit 1

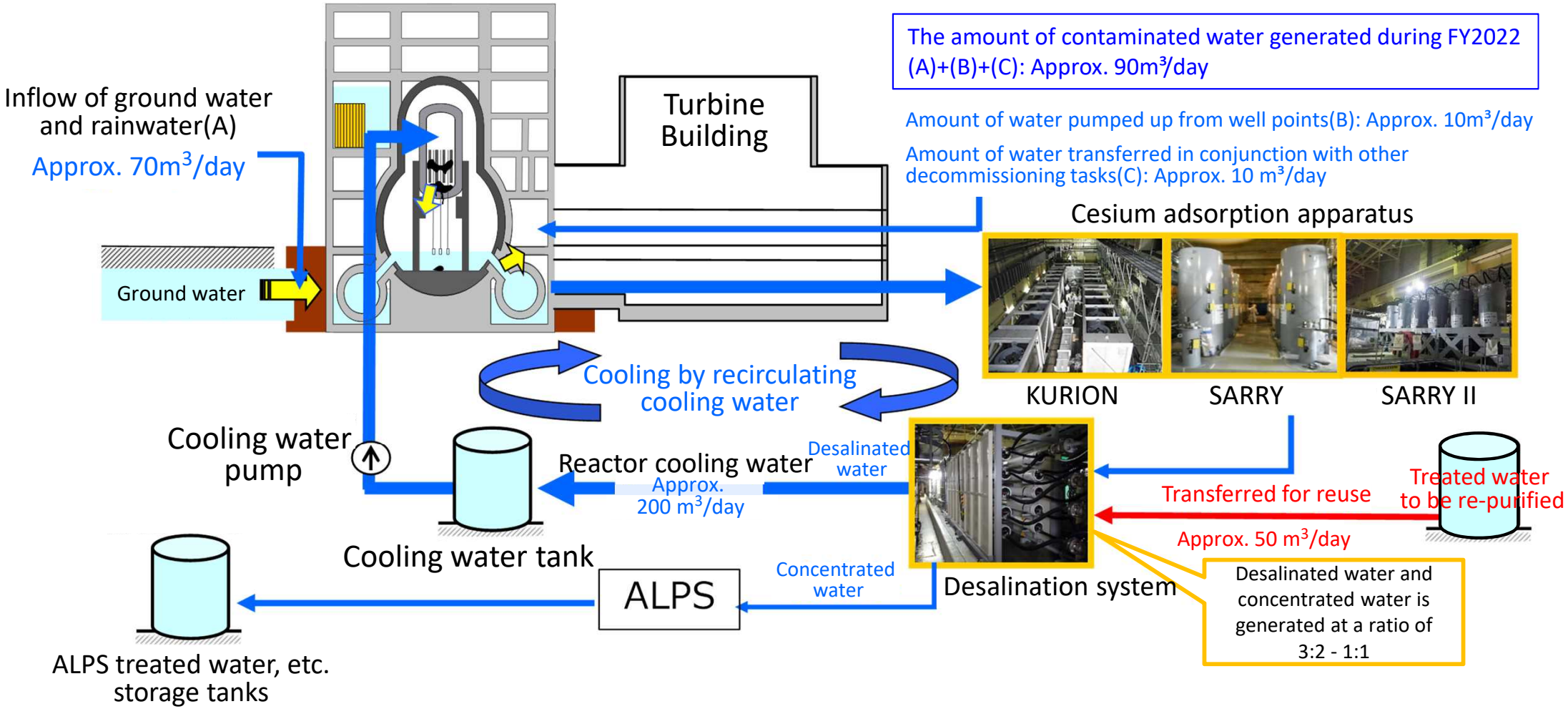


Unit 3

5-2. The amount of contaminated water generated

Material from the meeting of the Secretariat of the Team for the Countermeasures for Decommissioning and Contaminated Water Treatment (January 25, 2024), partially edited, etc. (in red)

- The amount of contaminated water generated during FY2022 was approximately 90m³/day, and the amount generated during FY2023 is estimated to be approximately 80m³/day. Even if the region experiences average rainfall, the amount of contaminated water generated shall be less than approximately 100m³/day. When creating the discharge plans, the amount of contaminated water to be generated during FY2024 was conservatively set at 100m³/day to ensure that we won't run out of room in the tanks for storing ALPS treated water.



Material republished from the meeting of the Secretariat of the Team for the Countermeasures for Decommissioning and Contaminated Water Treatment (January 25, 2024)

5-3. Site usage

＜Facilities/equipment for steady discharge into the sea＞

- After contaminated water generated on a daily basis and treated water to be re-purified are purified with ALPS, but before this water is transferred to the measurement/confirmation facility (K4 area), it will be kept in relay tanks in order to measure the concentrations of the primary seven nuclides contained in the water after treatment so that contamination of the K4 area can be prevented. Tanks to be used as these relay tanks shall be selected/prepared going forward.

＜Facility/equipment needed for fuel debris retrieval＞

- In addition to the E area (currently being used for flanged tank dismantling), which will be the construction site for facilities needed for the retrieval of fuel debris from Unit 2, the J8※ and J9 areas in the vicinity of the E area will also be the construction site for facilities needed for the retrieval of fuel debris from Unit 3. So during FY2024, we shall start emptying and dismantling the tanks in these areas.

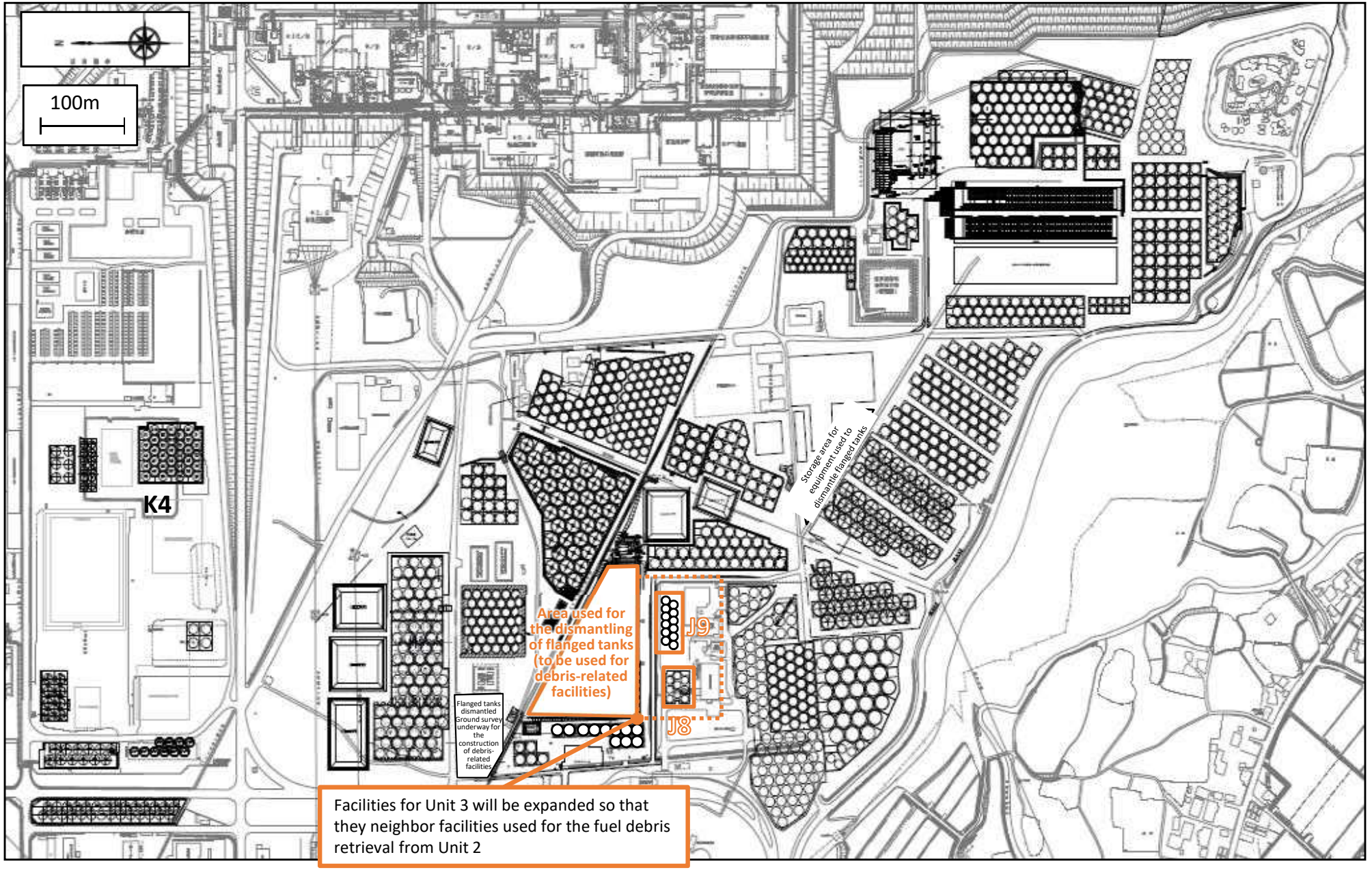
  ※Since the J8 area has tanks needed for secondary treatment, water will be transferred to tanks that were emptied in order to replenish fresh water.

- We shall continue to deliberate discharge plans and dismantle tanks so that we can construct facilities/equipment required for decommissioning tasks, such as the retrieval of fuel debris and pool fuel removal, etc., according to plans.

Material republished from the meeting of the Secretariat of the Team for the Countermeasures for Decommissioning and Contaminated Water Treatment (January 25, 2024)

[Reference] Areas of dismantled tank groups

TEPCO



Material from the meeting of the Secretariat of the Team for the Countermeasures for Decommissioning and Contaminated Water Treatment (January 25, 2024), partially edited, etc. (in red)

5-4. FY2024 discharge plan (1/2)

- In light of the considerations mentioned on the aforementioned pages, the FY2024 discharge plan is as follows: There will be seven discharges during the year that will result in an annual discharge of approximately 54,600m³ of treated water and an annual tritium discharge volume of approximately 14 trillion Bq.
- ALPS treated water generated daily during FY2024 shall be stored in tanks that have been emptied by transferring the water in them to the measurement/confirmation facility (excluding the J9 area in which the tanks will be dismantled)

Management number*1		Amount of water to be transferred*2		Discharge period
24-1-5	K3 area Group A/B (Transferred to Measurement/confirmation facility group C)	: Approx. 4,510m³	Secondary treatment: No Tritium concentration : 180,000-200,000 Bq/liter※3 Total amount of tritium: 1.5 trillion Bq	April-May
	J4 area Group L (Transferred to Measurement/confirmation facility group C)	: Approx. 3,240m³		
24-2-6	J4 area Group L (Transferred to Measurement/confirmation facility group A)	: Approx. 2,030m³	Secondary treatment: No Tritium concentration : 170,000-190,000 Bq/liter※3 Total amount of tritium: 1.4 trillion Bq	May-June
	J9 area Group A/B (Transferred to Measurement/confirmation facility group A)	: Approx. 5,710m³		
24-3-7	J9 area Group A/B (Transferred to Measurement/confirmation facility group B)	: Approx. 1,800m³	Secondary treatment: No Tritium concentration : 160,000-180,000 Bq/liter※3 Total amount of tritium: 1.3 trillion Bq	June-July
	K1 area Group C/D (Transferred to Measurement/confirmation facility group B)	: Approx. 6,000m³		
24-4-8	K1 area Group C/D (Transferred to Measurement/confirmation facility group C)	: Approx. 4,700m³	Secondary treatment: No Tritium concentration : 160,000～310,000 Bq/liter※3 Total amount of tritium: 1.7 trillion Bq	July-August
	G4 south area Group C (Transferred to Measurement/confirmation facility group C)	: Approx. 3,100m³		

Continues on next slide

*1 The management number is made up of the fiscal year, followed by the discharge number for that fiscal year, and the total number of discharges to date. For example, “24-1-5” indicates that the data is for the first discharge of 2024, which is the fifth discharge to date.
*2 Underlined texts indicate actual results.
*3 Average value of the tank group that was assessed taking into account the radioactive decay until April 1, 2024

FY2024 discharge plan (2/2)

Material from the meeting of the Secretariat of the Team for the Countermeasures for Decommissioning and Contaminated Water Treatment (January 25, 2024), partially edited, etc. (in red)

Continued from previous slide

Management number*1		Amount of water to be transferred		Discharge period
24-5-9	G4 south area Group C (Transferred to Measurement/confirmation facility group A) G4 south area Group A (Transferred to Measurement/confirmation facility group A)	: Approx. 6,700m^3 : Approx. 1,100m^3	Secondary treatment: No Tritium concentration : 300,000～350,000 Bq/liter ※2 Total amount of tritium: 2.4 trillion Bq	August-September
24-6-10	G4 south area Group A (Transferred to Measurement/confirmation facility group B)	: Approx. 7,800m^3	Secondary treatment: No Tritium concentration : 340,000～350,000 Bq/liter ※2 Total amount of tritium: 2.7 trillion Bq	September-October

Inspection suspension (including full inspections of measurement/confirmation facility Group B)

24-7-11	G4 south area Group A (Transferred to Measurement/confirmation facility group C) G4 south area Group B (Transferred to Measurement/confirmation facility group C)	: Approx. 800m^3 : Approx. 7,000m^3	Secondary treatment: No Tritium concentration : 340,000～400,000 Bq/liter ※2 Total amount of tritium: 3.0 trillion Bq	February-March

➥ Total amount of tritium to be discharged during FY2024 : Approx. 14 trillion Bq

*1 The management number is made up of the fiscal year, followed by the discharge number for that fiscal year, and the total number of discharges to date.
For example, “24-1-5” indicates that the data is for the first discharge of 2024, which is the fifth discharge to date.
*2 Average value of the tank group that was assessed taking into account the radioactive decay until April 1, 2024

1. Performance of the 4th discharge of the ALPS treated water

2. Responding to earthquakes

3. Sea area dispersion simulation

4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

5. FY2024 ALPS Treated Water Discharge Plan

(Reference 1) Changes to internal corporate functions in conjunction with director appointments (As of April 1, 2024)

(Reference 2) Sea area monitoring history after the commencement of discharge

(Reference 1) Changes to internal corporate functions in conjunction with director appointments (As of April 1, 2024)

- In order to smoothly engage in the safe discharge of ALPS treated water, implementation of countermeasures for adverse impact on reputation, and providing compensation, etc., while coordinating with stakeholders both in Japan and overseas, in August of last year, we created project teams for the interdepartmental supervision of all departments involved. The teams have been changed as follows and these changes will take effect on April 1 of this year in conjunction with new director appointments. (Changes have been underlined).
- We will leverage these teams to continue the safe and steady discharge of ALPS treated water and thoroughly implement reputational damage countermeasures.

(1) ALPS Treated Water Unified Management Project Team

Team Leader	Tomoaki Kobayakawa, President
Deputy Team Leader	Akira Ono, Executive Vice President Nobuhide Akimoto, Managing Executive Officer Tomomichi Seki, Managing Executive Officer Momoko Nagasaki, Managing Executive Officer Masayuki Kishino, Managing Executive Officer Takahiko Yoshida, Managing Executive Officer Akinori Muramatsu, Managing Executive Officer Yoshihiko Shinobu, Managing Executive Officer Shigehiro Yoshino, Director, Executive Officer Tsunemasa Niitsuma, Fellow, Assistant to the President
Team Members	General Managers of related Departments/Offices at the Head Office, Fukushima Revitalization Headquarters, and Fukushima D&D Engineering Company

(2) ALPS Treated Water Public Relations Team

Team Leader	Takahiko Yoshida, Managing Executive Officer
Assistant Team Leader	Yukihiko Kakizawa, Corporate office, General Manager, Plant Siting and Regional Relations Office
Team Members	Related workers, etc. at the Head Office and the Fukushima Revitalization Headquarters

■ ALPS Treated Water Unified Management Project Team

Project team under the direct supervision of the President that oversees all departments engaged in Fukushima Daiichi Nuclear Power Station initiatives, compensation/reputational damage measures, and regional relations, etc., so as to keep upper management updated about information and enable them to quickly give instructions to subordinates.

■ ALPS Treated Water Public Relations Team

A team dedicated to unified management of all distribution countermeasures, compensation efforts, and information dissemination, and dealing with all related issues across the entire nation has been established at the Head Office and a managing director has been assigned to this team.

1. Performance of the 4th discharge of the ALPS treated water

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4. Transfer of ALPS treated water in preparation for the 6th and 7th discharges

5. FY2024 ALPS Treated Water Discharge Plan

(Reference 1) Changes to internal corporate functions in conjunction with director appointments (As of April 1, 2024)

(Reference 2) Sea area monitoring history after the commencement of discharge

(Reference 2) Sea area monitoring history (1/20)

○ Measurement results of tritium concentrations in water sampled in the vicinity of the discharge outlet (within 3km of the power station) and outside of the vicinity of the discharge outlet (within a 10km square in front of the power station) since the commencement of the first discharge on August 24, 2023, were all below indices (discharge suspension level and investigation level).

○ For quick tritium measurements taken in the vicinity of the discharge outlet, we increased the frequency from once a week to daily after the commencement of the discharge, continuing until December 25, 2023, and promptly disclosed the results.

(Unit: Bq/liter)

	Sampling location	Frequency	August, 2023											
			24 *1	24 Normal *1,2	25	26	26 Normal *3	27	28	29	30	30 Normal *2,3	31	31 Normal *3
In the vicinity of the discharge outlet	T-1	Once a week*	<6.3	<0.34	<5.6	<6.6	0.97	<6.2	<7.3	<5.9	<6.4	1.0	<6.8	–
	T-2	Once a week*	<6.3	<0.33	<5.5	<6.5	1.1	<6.2	<7.3	<5.9	<6.3	1.3	<6.8	–
	T-0-1	Once a week*	<8.0	<0.34	<6.8	<6.1	0.66	<6.1	–*4	–*4	<6.8	<0.32	<8.2	–
	T-0-1A	Once a week*	<4.6	2.6	<7.6	<6.2	0.087	<6.1	–*4	–*4	<6.9	0.43	10	–
	T-0-2	Once a week*	<8.1	<0.35	<6.8	<6.1	0.92	<6.1	–*4	–*4	<6.8	1.4	<8.2	–
	T-0-3A	Once a week*	<4.7	<0.33	<7.6	<6.8	<0.068	<6.8	–*4	–*4	<7.6	<0.32	<5.1	–
	T-0-3	Once a week*	<8.0	<0.34	<6.9	<6.1	0.14	<6.1	–*4	–*4	<6.8	<0.31	<8.3	–
	T-A1	Once a week*	<6.6	<0.32	<7.6	<6.8	0.13	<6.8	–*4	–*4	<7.6	1.1	<5.1	–
	T-A2	Once a week*	<6.6	<0.32	<7.6	<6.8	0.065	<6.8	–*4	–*4	<7.7	1.5	<5.1	–
	T-A3	Once a week*	<6.6	<0.32	<6.9	<6.8	<0.072	<6.8	–*4	–*4	<7.6	1.1	<5.2	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	–	–	–	–	<6.8	0.59
	T-S3	Once a month	–	–	–	–	–	–	–	–	<7.6	0.070	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	<7.7	0.073	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	<7.7	0.062	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group B)

*：Monitored daily for the time being after the commencement of discharge

*1：Sampled after the commencement of discharge at 3PM　*2：Detection limit 0.4 Bq/liter

*3：Detection limit 0.1 Bq/liter　*4：Sampling suspended due to rough seas

(Reference 2) Sea area monitoring history (2/20)

(Unit: Bq/liter)

	Sampling location	Frequency	September, 2023											
			1	2	3	4	4 Normal *1	5	6	6 Normal *1	7	8	9	10
In the vicinity of the discharge outlet	T-1	Once a week*	<7.2	<6.8	<5.8	<6.6	0.68	<7.1	<7.1	–	<6.1	<5.9	<6.0	<7.8
	T-2	Once a week*	<7.4	<6.8	<5.8	<6.6	0.90	<7.1	<7.1	–	<6.1	<5.9	<6.0	<7.8
	T-0-1	Once a week*	<7.3	<7.3	<6.8	<6.9	<0.34	<6.6	<6.6	–	<8.7	<6.9	<8.0	<7.0
	T-0-1A	Once a week*	<7.3	<8.2	<6.8	<6.9	<0.33	<7.0	<6.6	–	<8.7	<6.9	<8.0	<7.1
	T-0-2	Once a week*	<7.3	<7.3	<6.7	<7.0	0.74	<6.5	<6.6	–	<8.6	<6.8	<8.0	<7.0
	T-0-3A	Once a week*	<7.0	<7.8	<6.5	<5.9	<0.33	<7.6	<6.3	–	<5.3	<7.4	<6.5	<6.5
	T-0-3	Once a week*	<7.3	<8.2	<6.7	<6.8	<0.34	<7.8	<6.6	–	<8.7	<6.9	<8.0	<7.1
	T-A1	Once a week*	<7.1	<7.9	<6.5	<5.9	1.1	<7.6	<6.3	–	<5.3	<7.4	<6.4	<6.5
	T-A2	Once a week*	<7.1	<7.8	<6.5	<7.3	0.88	<7.6	<6.2	–	<5.3	<7.3	<6.6	<6.4
	T-A3	Once a week*	<7.1	<7.9	<6.5	<7.3	0.82	<7.6	<6.3	–	<5.3	<7.3	<6.5	<6.5
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	<7.1	<0.34	–	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1：Detection limit 0.4 Bq/liter

：Term of discharge of ALPS treated water (Group B)

*：Monitored daily for the time being after the commencement of discharge

(Reference 2) Sea area monitoring history (3/20)

(Unit: Bq/liter)

	Sampling location	Frequency	September, 2023											
			11 *1	11 Normal *1,2	12	12 Normal *2	13	13 Normal *2	14	15	16	17	18	18 Normal *3
In the vicinity of the discharge outlet	T-1	Once a week*	<7.0	0.21	<7.2	–	<7.2	–	<6.5	<7.3	<6.7	<7.0	<7.6	<0.31
	T-2	Once a week*	<7.0	0.24	<7.2	–	<7.2	–	<6.5	<7.4	<6.8	<6.9	<7.6	<0.31
	T-0-1	Once a week*	<6.8	0.10	<7.7	–	<6.6	–	<7.5	<7.8	<7.6	<7.8	<7.4	<0.36
	T-0-1A	Once a week*	<6.8	0.12	<7.8	–	<6.5	–	<7.5	<7.7	<7.5	<7.7	<7.3	<0.34
	T-0-2	Once a week*	<6.8	0.13	<7.7	–	<6.5	–	<7.5	<7.7	<7.6	<7.7	<7.3	<0.31
	T-0-3A	Once a week*	<6.2	0.10	<7.0	–	<5.9	–	<6.6	<7.4	<6.8	<6.9	<7.6	<0.35
	T-0-3	Once a week*	<6.8	0.16	<7.8	–	<6.5	–	<7.5	<7.7	<7.5	<7.8	<7.3	<0.34
	T-A1	Once a week*	<7.0	0.078	<7.0	–	<5.9	–	<6.7	<5.5	<7.2	<5.5	<6.7	<0.31
	T-A2	Once a week*	<7.0	0.097	<7.0	–	<5.9	–	<6.7	<5.5	<7.3	<5.4	<6.7	<0.31
	T-A3	Once a week*	<7.0	0.16	<7.0	–	<5.9	–	<6.7	<5.5	<7.2	<5.5	<6.7	<0.31
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	<7.2	0.11	–	–	–	–	–	–
	T-S3	Once a month	–	–	<7.1	<0.068	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	<7.1	0.087	–	–	–	–	–	–	–	–
	T-S8	Once a month	<6.2	0.098	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group B)

*：Monitored daily for the time being after the commencement of discharge

*1：Sampled before 9AM, prior to the completion of the discharge

*2：Detection limit 0.1 Bq/liter

*3：Detection limit 0.4 Bq/liter

(Reference 2) Sea area monitoring history (4/20)

(Unit: Bq/liter)

	Sampling location	Frequency	September, 2023											
			19	20	20 Normal *1	21	22	23	24	25	25 Normal *1	26	27	27 Normal *1
In the vicinity of the discharge outlet	T-1	Once a week*	<5.0	<6.9	–	<5.0	<5.3	<6.5	<6.7	<7.2	<0.31	<5.6	<6.2	–
	T-2	Once a week*	<5.0	<6.9	–	<5.0	<5.3	<6.5	<6.7	<7.2	<0.31	<5.6	<6.3	–
	T-0-1	Once a week*	<5.5	<7.9	–	<6.5	<6.3	<6.5	<7.6	<8.7	<0.35	<7.9	<6.2	–
	T-0-1A	Once a week*	<5.6	<8.2	–	<6.5	<6.3	<6.5	<7.5	<8.7	<0.35	<7.9	<6.2	–
	T-0-2	Once a week*	<5.6	<7.9	–	<6.5	<6.2	<6.5	<7.5	<8.7	<0.30	<7.9	<6.2	–
	T-0-3A	Once a week*	<5.0	<6.1	–	<5.0	<5.3	<6.5	<6.7	<7.2	<0.35	<5.6	<6.2	–
	T-0-3	Once a week*	<5.5	<7.9	–	<6.5	<6.3	<6.5	<7.5	<8.7	<0.35	<7.9	<6.2	–
	T-A1	Once a week*	<6.9	<5.9	–	<6.6	<7.0	<7.6	<5.1	<6.3	<0.30	<7.3	<6.6	–
	T-A2	Once a week*	<6.9	<5.9	–	<6.7	<7.0	<7.6	<5.1	<6.3	<0.30	<7.3	<6.7	–
	T-A3	Once a week*	<7.0	<6.3	–	<6.6	<7.0	<7.6	<5.1	<6.3	<0.29	<7.3	<6.6	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	<6.1	<0.34	–	–	–	–	–	–	–	<6.3	<0.35
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1：Detection limit 0.4 Bq/liter

*：Monitored daily for the time being after the commencement of discharge

(Reference 2) Sea area monitoring history (5/20)

(Unit: Bq/liter)

	Sampling location	Frequency	September, 2023			October, 2023								
			28	29	30	1	2	2 Normal *1	3	4	4 Normal *1	5 *2	5 Normal *1,2	6
In the vicinity of the discharge outlet	T-1	Once a week*	<6.7	<4.9	<7.3	<6.0	<5.8	<0.34	<6.7	<6.9	–	<5.8	<0.31	<5.8
	T-2	Once a week*	<6.7	<4.7	<7.3	<6.0	<5.7	<0.33	<6.6	<6.8	–	<5.7	<0.31	<5.7
	T-0-1	Once a week*	<6.8	<6.8	<7.9	<8.3	<7.0	<0.35	<6.5	<7.3	–	<7.8	<0.31	<7.0
	T-0-1A	Once a week*	<6.8	<6.8	<7.9	<8.0	<6.9	<0.35	<6.4	<7.3	–	<7.6	5.2	<7.4
	T-0-2	Once a week*	<6.8	<6.9	<8.0	<8.4	<7.0	<0.36	<6.4	<7.2	–	<7.6	<0.33	<7.0
	T-0-3A	Once a week*	<6.7	<4.7	<7.4	<6.2	<5.8	<0.35	<6.8	<6.9	–	<5.9	<0.32	<5.8
	T-0-3	Once a week*	<6.8	<7.0	<7.7	<8.0	<7.0	<0.35	<6.4	<7.2	–	<7.7	<0.32	<6.4
	T-A1	Once a week*	<9.3	<7.8	<8.1	<8.0	<5.6	<0.30	<7.3	<7.5	–	<7.7	<0.30	<7.0
	T-A2	Once a week*	<5.5	<7.8	<8.0	<8.0	<5.7	<0.30	<7.5	<7.5	–	<7.7	<0.31	<7.0
	T-A3	Once a week*	<7.2	<7.6	<8.0	<8.1	<5.6	<0.30	<7.4	<7.4	–	<7.6	<0.30	<7.1
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	–	<6.8	<0.35	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group C)

*：Monitored daily for the time being after the commencement of discharge

*1：Detection limit 0.4 Bq/liter

*2：Sampled after the commencement of discharge at 2PM

(Reference 2) Sea area monitoring history (6/20)

(Unit: Bq/liter)

	Sampling location	Frequency	October, 2023											
			7	8	9	9 Normal *1	10	11	12	12 Normal *1	13	14	15	16
In the vicinity of the discharge outlet	T-1	Once a week*	<5.8	<6.1	<7.2	0.40	<6.9	<6.5	<6.3	–	<6.5	<6.1	<5.5	<6.0
	T-2	Once a week*	<5.8	<6.1	<7.1	0.77	<6.9	<6.6	<6.3	–	<6.5	<6.2	<5.5	<6.0
	T-0-1	Once a week*	<6.7	<8.2	<7.9	1.4	–*2	<7.3	<7.3	–	<7.3	<8.7	<7.3	<7.8
	T-0-1A	Once a week*	9.4	<8.2	11	12	–*2	<7.3	14	–	11	<8.7	14	16
	T-0-2	Once a week*	<6.8	<8.1	<7.9	0.43	–*2	<7.3	<7.3	–	<7.3	<8.7	<7.3	<7.8
	T-0-3A	Once a week*	<5.8	<6.1	<7.2	<0.072	–*2	<6.8	<6.3	–	<6.5	<6.1	<5.6	<6.0
	T-0-3	Once a week*	<6.7	<8.2	<7.8	0.45	–*2	<7.3	<7.2	–	<7.2	<8.6	<7.3	<7.8
	T-A1	Once a week*	<6.4	<5.5	<6.7	0.43	–*2	<6.8	<8.7	–	<8.6	<6.2	<7.2	<7.2
	T-A2	Once a week*	<5.9	<5.5	<6.7	0.25	–*2	<6.8	<8.6	–	<8.6	<5.6	<7.2	<7.2
	T-A3	Once a week*	<5.8	<5.5	<6.8	<0.073	–*2	<6.8	<8.6	–	<8.6	<5.7	<7.2	<7.2
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	<6.4	<0.070	–	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	<6.4	<0.071	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	<6.4	<0.070	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	<6.5	0.065	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group C)

*：Monitored daily for the time being after the commencement of discharge

*1：Detection limit 0.1 Bq/liter

*2：Sampling suspended due to bad weather condition

(Reference 2) Sea area monitoring history (7/20)

(Unit: Bq/liter)

	Sampling location	Frequency	October, 2023											
			16 Normal *1	17	18	19	19 Normal *1	20	21	22	23 *2	23 Normal *1,2	24	25
In the vicinity of the discharge outlet	T-1	Once a week*	4.3	<6.5	<7.1	<7.2	–	<5.5	<5.6	<5.3	<6.5	1.3	<6.5	<5.8
	T-2	Once a week*	0.66	<6.5	<7.1	<7.1	–	<5.5	<5.6	<5.2	<6.5	0.80	<6.5	<5.8
	T-0-1	Once a week*	1.0	<6.7	<5.9	<8.3	–	<7.0	<6.8	<7.3	<6.7	1.3	<7.8	<7.5
	T-0-1A	Once a week*	14	<6.7	<5.8	<8.5	–	<7.0	22	16	<6.7	0.71	<7.7	<7.5
	T-0-2	Once a week*	1.2	<6.7	8.9	<8.4	–	<7.0	<6.8	<7.3	<6.7	0.40	<7.7	<7.5
	T-0-3A	Once a week*	0.74	<6.5	<7.1	<7.1	–	<5.5	<5.6	<5.3	<6.5	<0.33	<6.5	<5.8
	T-0-3	Once a week*	1.0	<6.7	<6.7	<8.4	–	<7.0	<6.8	<7.3	<6.7	1.0	<7.7	<7.5
	T-A1	Once a week*	0.50	<8.3	<7.2	<7.5	–	<7.5	<8.5	<5.7	<6.8	0.37	<7.5	<7.8
	T-A2	Once a week*	0.56	<8.3	<7.2	<7.5	–	<7.5	<8.4	<5.7	<6.9	<0.31	<7.5	<7.8
	T-A3	Once a week*	0.80	<8.3	<7.2	<7.5	–	<7.5	<8.5	<5.7	<6.8	<0.32	<7.5	<7.8
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	<7.5	<0.34	–	–	–	<6.9	<0.32	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group C)

*：Monitored daily for the time being after the commencement of discharge

*1：Detection limit 0.4 Bq/liter

*2：Sampled before 9AM, prior to the completion of the discharge

(Reference 2) Sea area monitoring history (8/20)

(Unit: Bq/liter)

	Sampling location	Frequency	October, 2023						November, 2023					
			26	27	28	29	30	31	1	1 Normal *2	2 *3	2 Normal *2,3	3	4
In the vicinity of the discharge outlet	T-1	Once a week*	<6.5	<6.4	<7.2	<6.8	<6.4	<7.1	<7.9	<0.32	<6.0	0.35	<8.1	<8.0
	T-2	Once a week*	<6.6	<6.3	<7.2	<6.8	<6.4	<7.1	<7.9	<0.33	<8.3	0.36	<8.1	<8.2
	T-0-1	Once a week*	<7.6	<7.8	<8.3	<7.8	—*1	—*1	<7.8	<0.35	<8.0	<0.36	<6.2	<6.3
	T-0-1A	Once a week*	<7.7	<7.8	<8.3	<7.9	—*1	—*1	<7.8	<0.34	<8.0	6.9	7.1	<6.2
	T-0-2	Once a week*	<7.6	<7.8	<8.3	<7.9	—*1	—*1	<7.8	<0.33	<8.1	<0.37	<6.2	<6.2
	T-0-3A	Once a week*	<6.6	<6.3	<7.3	<6.9	—*1	—*1	<7.9	<0.32	<5.4	<0.26	<8.1	<8.2
	T-0-3	Once a week*	<7.6	<7.8	<8.3	<7.9	—*1	—*1	<7.8	<0.34	<8.0	<0.36	<6.2	<6.2
	T-A1	Once a week*	<6.2	<6.6	<6.6	<6.6	—*1	—*1	<6.6	<0.31	<8.2	<0.31	<5.7	<9.2
	T-A2	Once a week*	<6.2	<6.5	<6.6	<6.6	—*1	—*1	<6.4	<0.31	<8.2	<0.30	<5.7	<9.2
	T-A3	Once a week*	<6.2	<6.6	<6.6	<6.6	—*1	—*1	<6.6	<0.32	<8.2	<0.31	<5.7	<9.2
Outside the vicinity of the discharge outlet	T-D5	Once a week	—	—	—	—	—	—	<7.9	<0.33	—	—	—	—
	T-S3	Once a month	—	—	—	—	—	—	—	—	—	—	—	—
	T-S4	Once a month	—	—	—	—	—	—	—	—	—	—	—	—
	T-S8	Once a month	—	—	—	—	—	—	—	—	—	—	—	—

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group A)

*：Monitored daily for the time being after the commencement of discharge

*1：Sampling suspended due to bad weather condition

*2：Detection limit 0.4 Bq/liter

*3：Sampled after the commencement of discharge at 2PM

(Reference 2) Sea area monitoring history (9/20)

(Unit: Bq/liter)

	Sampling location	Frequency	November, 2023											
			5	6	6 Normal *1	7	8	8 Normal *3	9	9 Normal *1	10	11	12	13
In the vicinity of the discharge outlet	T-1	Once a week*	<7.6	<5.6	<0.34	<6.9	<5.5	–	<5.5	–	<6.9	<5.8	<7.0	<6.3
	T-2	Once a week*	<7.5	<5.5	0.38	<6.9	<5.5	–	<5.5	–	<7.0	<5.8	<6.9	<6.3
	T-0-1	Once a week*	<7.5	<7.2	0.36	–*2	<6.7	–	<6.4	–	<8.1	–*2	<4.7	<9.0
	T-0-1A	Once a week*	<7.6	9.0	9.5	–*2	<6.8	–	<6.4	–	11	–*2	<4.6	<9.0
	T-0-2	Once a week*	<7.5	<7.1	<0.31	–*2	<6.7	–	<8.4	–	<8.1	–*2	<4.7	<8.9
	T-0-3A	Once a week*	<7.6	<5.4	0.54	–*2	<5.5	–	<5.6	–	<7.0	–*2	<6.9	<6.3
	T-0-3	Once a week*	<7.5	<7.1	<0.31	–*2	<6.7	–	<6.4	–	<8.1	–*2	<5.1	<9.0
	T-A1	Once a week*	<5.7	<6.5	<0.39	–*2	<7.2	–	<7.5	–	<6.9	–*2	<7.8	<7.6
	T-A2	Once a week*	<5.7	<6.5	<0.38	–*2	<7.2	–	<7.5	–	<6.9	–*2	<7.8	<7.6
	T-A3	Once a week*	<5.7	<6.5	<0.39	–*2	<7.2	–	<7.6	–	<6.8	–*2	<7.8	<7.6
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	<7.5	<0.34	–	–	–	–
	T-S3	Once a month	–	–	–	–	<7.7	0.12	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	<7.7	0.10	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	<7.8	0.097	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group A)

*：Monitored daily for the time being after the commencement of discharge

*1：Detection limit 0.4 Bq/liter

*2：Sampling suspended due to bad weather condition

*3：Detection limit 0.1 Bq/liter

(Reference 2) Sea area monitoring history (10/20)

(Unit: Bq/liter)

	Sampling location	Frequency	November, 2023											
			13 Normal *1	14	15	15 Normal *1	16	17	18	19	20 *3	20 Normal *3,4	21	21 Normal *4
In the vicinity of the discharge outlet	T-1	Once a week*	0.25	<5.8	<6.9	–	<8.8	<7.8	<9.3	<6.3	<7.0	1.7	<6.6	–
	T-2	Once a week*	0.25	<5.9	<6.9	–	<8.6	<7.7	<9.3	<6.2	<7.1	0.60	<6.5	–
	T-0-1	Once a week*	0.15	<6.6	<6.2	–	<7.1	<7.9	–*2	<7.4	<8.1	1.2	<7.0	–
	T-0-1A	Once a week*	0.14	7.2	10	–	<7.3	<7.9	–*2	<7.4	<8.1	1.0	<7.0	–
	T-0-2	Once a week*	0.17	<6.5	<6.2	–	7.9	<7.8	–*2	<7.4	<8.1	0.77	<7.1	–
	T-0-3A	Once a week*	0.49	<5.7	<6.9	–	<8.8	<8.0	–*2	<6.3	<7.0	0.87	<6.7	–
	T-0-3	Once a week*	0.44	<6.6	<6.2	–	<7.3	<7.9	–*2	<7.3	<8.1	0.92	<7.2	–
	T-A1	Once a week*	0.082	<6.8	<8.6	–	<8.8	<5.5	–*2	<8.6	<7.3	1.5	<9.0	–
	T-A2	Once a week*	0.16	<6.8	<8.8	–	<8.6	<5.5	–*2	<8.8	<7.2	0.60	<8.9	–
	T-A3	Once a week*	0.15	<7.0	<8.6	–	<8.8	<5.5	–*2	<8.8	<7.2	0.37	<8.9	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	<8.6	0.12	–	–	–	–	–	–	<7.2	<0.33
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group A)

*：Monitored daily for the time being after the commencement of discharge

*1： Detection limit 0.1 Bq/liter

*2：Sampling suspended due to bad weather condition

*3： Sampled before 8AM, prior to the completion of the discharge

*4： Detection limit 0.4 Bq/liter

(Reference 2) Sea area monitoring history (11/20)

(Unit: Bq/liter)

	Sampling location	Frequency	November, 2023										December, 2023	
			22	23	24	25	26	27	27 Normal *1	28	29	30	1	2
In the vicinity of the discharge outlet	T-1	Once a week*	<6.5	<5.5	<5.3	<6.3	<7.1	<5.7	<0.34	<5.5	<6.0	<7.4	<4.9	<5.5
	T-2	Once a week*	<6.4	<5.5	<5.2	<6.3	<7.1	<5.8	<0.34	<5.5	<6.0	<7.4	<4.9	<5.5
	T-0-1	Once a week*	<7.1	<6.4	<7.2	<7.3	<8.1	<6.4	0.38	<6.8	<5.9	<7.3	<7.3	<6.8
	T-0-1A	Once a week*	<7.0	<6.4	<7.2	<7.3	<8.2	<6.5	<0.33	<6.7	<5.8	<7.2	<7.2	<6.7
	T-0-2	Once a week*	<7.0	<6.5	<7.3	<7.3	<8.1	<6.5	<0.26	<6.7	<5.8	<7.3	<7.2	<6.7
	T-0-3A	Once a week*	<6.6	<5.5	<5.2	<6.3	<7.1	<5.7	<0.33	<5.5	<6.0	<7.4	<4.9	<5.5
	T-0-3	Once a week*	<7.1	<6.5	<7.3	<7.3	<8.2	<6.4	<0.33	<6.8	<5.9	<7.3	<7.2	<6.7
	T-A1	Once a week*	<7.4	<7.2	<5.7	<5.2	<5.7	<7.8	<0.36	<6.7	<5.9	<6.8	<8.8	<8.1
	T-A2	Once a week*	<7.7	<7.2	<5.7	<5.2	<5.6	<7.8	<0.36	<6.7	<5.9	<6.8	<8.8	<8.1
	T-A3	Once a week*	<7.6	<7.2	<5.6	<5.2	<5.7	<7.8	<0.36	<6.7	<5.9	<6.8	<8.8	<8.1
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	<7.8	<0.34	–	–	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1：Detection limit 0.4 Bq/liter

*：Monitored daily for the time being after the commencement of discharge

(Reference 2) Sea area monitoring history (12/20)

(Unit: Bq/liter)

	Sampling location	Frequency	December, 2023											
			3	4	4 Normal *1	5	6	7	7 Normal *2	8	9	9 Normal *1	10	11
In the vicinity of the discharge outlet	T-1	Once a week*	<6.7	<6.0	<0.31	<6.3	<5.8	<5.0	–	<5.2	<6.1	–	<6.2	<6.3
	T-2	Once a week*	<6.7	<6.1	<0.31	<6.2	<5.7	<5.0	–	<5.2	<6.1	–	<6.3	<6.2
	T-0-1	Once a week*	<5.1	<5.8	<0.35	<7.5	<8.0	<7.3	–	<6.3	<8.3	–	<4.8	<6.5
	T-0-1A	Once a week*	<5.1	<5.8	<0.33	<7.5	<8.0	<7.3	–	<6.3	<8.4	–	<6.2	<6.5
	T-0-2	Once a week*	<5.1	<5.8	<0.30	<7.5	<7.9	<7.2	–	<6.3	<8.5	–	<4.9	<6.5
	T-0-3A	Once a week*	<6.9	<6.0	<0.33	<6.2	<5.9	<5.0	–	<5.2	<6.0	–	<6.2	<6.3
	T-0-3	Once a week*	<5.1	<5.8	<0.33	<7.4	<8.0	<7.2	–	<6.3	<8.3	–	<7.4	<6.5
	T-A1	Once a week*	<6.1	<8.1	<0.36	<8.4	<5.2	<6.5	–	<8.6	<7.9	–	<6.8	<5.2
	T-A2	Once a week*	<6.1	<8.1	<0.36	<8.3	<7.5	<6.5	–	<8.6	<7.8	–	<6.8	<5.3
	T-A3	Once a week*	<6.1	<8.1	<0.36	<8.3	<5.3	<6.5	–	<8.7	<7.9	–	<6.9	<5.3
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	–	–	<6.0	<0.34	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	<6.6	0.057	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.
*：Monitored daily for the time being after the commencement of discharge

*1： Detection limit 0.4 Bq/liter
*2： Detection limit 0.1 Bq/liter

(Reference 2) Sea area monitoring history (13/20)

(Unit: Bq/liter)

	Sampling location	Frequency	December, 2023											
			11 Normal *1	12	13	14	14 Normal *1	15	16	17	18	18 Normal *3	19	19 Normal *3
In the vicinity of the discharge outlet	T-1	Once a week*	being measured	<7.0	<6.7	<6.7	–	<6.1	<6.9	<6.5	<5.8	<0.36	<5.7	–
	T-2	Once a week*	being measured	<7.0	<6.7	<6.7	–	<6.1	<6.9	<6.5	<5.8	<0.36	<5.7	–
	T-0-1	Once a week*	being measured	–*2	–*2	<7.0	–	<5.9	<6.8	–*2	<5.8	<0.34	<8.2	–
	T-0-1A	Once a week*	<0.073	–*2	–*2	<5.5	–	<5.8	<6.7	–*2	<5.9	<0.35	<8.2	–
	T-0-2	Once a week*	being measured	–*2	–*2	<5.9	–	<5.9	<6.8	–*2	<5.9	<0.33	<8.2	–
	T-0-3A	Once a week*	<0.074	–*2	–*2	<6.7	–	<6.1	<6.9	–*2	<5.7	<0.34	<5.8	–
	T-0-3	Once a week*	<0.075	–*2	–*2	<8.1	–	<5.9	<7.0	–*2	<5.9	<0.35	<8.2	–
	T-A1	Once a week*	0.095	–*2	–*2	<8.1	–	<6.5	<7.5	–*2	<6.8	<0.36	<7.5	–
	T-A2	Once a week*	0.081	–*2	–*2	<8.1	–	<6.5	<7.5	–*2	<6.8	<0.36	<7.5	–
	T-A3	Once a week*	0.13	–*2	–*2	<8.1	–	<6.5	<7.5	–*2	<6.8	<0.36	<7.5	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	<8.1	0.079	–	–	–	–	–	<7.5	<0.34
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.
*：Monitored daily for the time being after the commencement of discharge

*1： Detection limit 0.1 Bq/liter
*2： Sampling suspended due to bad weather condition
*3： Detection limit 0.4 Bq/liter

(Reference 2) Sea area monitoring history （14/20）

○ For quick tritium measurements taken in the vicinity of the discharge outlet, we changed the frequency in order to place importance on the discharge period from December 26, 2023, and have been continuing the monitoring.

(Unit: Bq/liter)

	Sampling location	Frequency	December, 2023									January, 2024		
			20	20 Normal *1	21	22	23	24	25	25 Normal *2	26	1	3	3 Normal *2
In the vicinity of the discharge outlet	T-1	Once a week*	<6.7	–	<7.2	<6.6	<7.0	<7.1	<6.1	<0.33	<5.0	<5.6	–	<0.33
	T-2	Once a week*	<6.7	–	<7.1	<6.6	<7.0	<7.2	<6.1	<0.33	<4.9	<5.5	–	<0.33
	T-0-1	Once a week*	<7.5	–	<8.0	<7.1	<6.6	<7.3	<7.3	<0.27	<6.9	–*3	<6.5	<0.27
	T-0-1A	Once a week*	<7.5	–	<8.0	<7.1	<6.5	<7.3	<7.3	<0.34	<5.8	–*3	<6.5	<0.35
	T-0-2	Once a week*	<7.5	–	<8.0	<7.1	<6.6	<7.3	<7.3	<0.31	<6.8	–*3	<6.5	<0.32
	T-0-3A	Once a week*	<6.5	–	<7.3	<6.6	<7.0	<7.2	<6.1	<0.34	<5.0	–*3	<8.1	<0.34
	T-0-3	Once a week*	<7.5	–	<8.1	<7.1	<6.5	<7.4	<7.4	<0.34	<7.0	–*3	<6.5	<0.34
	T-A1	Once a week*	<6.5	–	<6.9	<6.1	<6.2	<7.3	<7.8	<0.36	<9.2	–*3	<8.1	<0.37
	T-A2	Once a week*	<6.5	–	<6.9	<6.2	<6.2	<7.2	<7.9	<0.36	<9.2	–*3	<8.1	<0.37
	T-A3	Once a week*	<6.5	–	<6.9	<6.2	<6.2	<7.2	<7.8	<0.36	<9.2	–*3	<8.2	<0.37
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–	–	<7.9	<0.33	–	–	–	–
	T-S3	Once a month	<6.7	0.12	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	<6.7	0.075	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.　*1： Detection limit 0.1 Bq/liter　*2： Detection limit 0.4 Bq/liter　*3： Sampling suspended due to bad weather condition

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet (T-0-1, T-0-1A, T-0-2, T-A2) ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations (T-1, T-2, T-0-3A, T-0-3, T-A1, T-A3)： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

(Reference 2) Sea area monitoring history （15/20）

(Unit: Bq/liter)

	Sampling location	Frequency	January, 2024											
			6	6 Normal *1	8	8 Normal *2	9	9 Normal *2	11	11 Normal *2	15	15 Normal *1	17	17 Normal *2
In the vicinity of the discharge outlet	T-1	Twice a week*	–	–	–	being measured	–	–	–	–	–	<0.37	–	–
	T-2	Twice a week*	–	–	–	being measured	–	–	–	–	–	<0.37	–	–
	T-0-1	Once a day*	–	–	<6.5	0.045	–	–	–	–	<6.2	<0.27	–	–
	T-0-1A	Once a day*	–	–	<7.2	0.21	–	–	–	–	<4.2	<0.33	–	–
	T-0-2	Once a day*	–	–	<6.6	being measured	–	–	–	–	<6.2	<0.31	–	–
	T-0-3A	Twice a week*	–	–	–	0.23	–	–	–	–	–	<0.33	–	–
	T-0-3	Twice a week*	–	–	–	0.16	–	–	–	–	–	<0.33	–	–
	T-A1	Twice a week*	–	–	–	<0.071	–	–	–	–	–	<0.36	–	–
	T-A2	Once a day*	–	–	<7.6	0.11	–	–	–	–	<4.2	<0.36	–	–
	T-A3	Twice a week*	–	–	–	0.079	–	–	–	–	–	<0.36	–	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	<8.1	<0.35	–	–	<7.0	being measured	–	–	–	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	<7.8	being measured
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	<7.7	being measured
	T-S8	Once a month	–	–	–	–	–	–	<6.8	being measured	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1： Detection limit 0.4 Bq/liter *2： Detection limit 0.1 Bq/liter

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

(Reference 2) Sea area monitoring history （16/20）

(Unit: Bq/liter)

	Sampling location	Frequency	January, 2024				February, 2024							
			24	24 Normal *1	29	29 Normal *1	5	5 Normal *1	7	7 Normal *2	12	12 Normal *2	13	13 Normal *2
In the vicinity of the discharge outlet	T-1	Twice a week*	–	<0.37	–	<0.34	<6.1	<0.33	–	–	–	being measured	–	–
	T-2	Twice a week*	–	<0.37	–	<0.35	<6.1	<0.33	–	–	–	being measured	–	–
	T-0-1	Once a day*	<7.8	<0.37	<5.9	<0.29	<7.7	<0.34	–	–	<7.0	being measured	–	–
	T-0-1A	Once a day*	<7.3	<0.34	<7.6	<0.33	<7.6	<0.32	–	–	<6.6	being measured	–	–
	T-0-2	Once a day*	<7.7	<0.32	<8.2	<0.38	<7.6	<0.36	–	–	<7.1	being measured	–	–
	T-0-3A	Twice a week*	–	<0.33	–	<0.33	<6.0	<0.32	–	–	–	being measured	–	–
	T-0-3	Twice a week*	–	<0.33	–	<0.33	<7.5	<0.34	–	–	–	being measured	–	–
	T-A1	Twice a week*	–	<0.37	–	<0.35	<7.0	<0.36	–	–	–	<0.073	–	–
	T-A2	Once a day*	<7.3	<0.37	<7.6	<0.35	<6.8	<0.36	–	–	<6.7	<0.068	–	–
	T-A3	Twice a week*	–	<0.37	–	<0.35	<6.9	<0.36	–	–	–	<0.068	–	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	<6.9	<0.33	<6.1	<0.33	–	–	–	–	<8.1	being measured
	T-S3	Once a month	–	–	–	–	–	–	<6.2	being measured	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	<6.1	being measured	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

*1： Detection limit 0.4 Bq/liter *2： Detection limit 0.1 Bq/liter

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

(Reference 2) Sea area monitoring history （17/20）

(Unit: Bq/liter)

	Sampling location	Frequency	February, 2024								March, 2024			
			19	19 Normal *1	21	21 Normal *1	26	26 Normal *1	28	29	1	1 Normal *1	2	3
In the vicinity of the discharge outlet	T-1	Twice a week*	–	<0.32	–	–	–	<0.34	–*2	<6.9	<9.3	being measured	–	–
	T-2	Twice a week*	–	<0.31	–	–	–	<0.33	–*2	<6.8	<9.2	being measured	–	–
	T-0-1	Once a day*	<6.6	<0.27	–	–	<7.9	being measured	–*2	–*2	<6.5	being measured	–*2	<7.3
	T-0-1A	Once a day*	<6.4	<0.32	–	–	<7.9	<0.33	–*2	–*2	<6.4	being measured	–*2	12
	T-0-2	Once a day*	<6.5	<0.37	–	–	<7.9	<0.36	–*2	–*2	<9.5	being measured	–*2	<7.8
	T-0-3A	Twice a week*	–	<0.33	–	–	–	<0.32	–*2	–*2	<8.2	being measured	–	–
	T-0-3	Twice a week*	–	<0.33	–	–	–	<0.32	–*2	–*2	<6.6	being measured	–	–
	T-A1	Twice a week*	–	<0.36	–	–	–	<0.35	–*2	–*2	<7.8	being measured	–	–
	T-A2	Once a day*	<6.8	<0.36	–	–	<7.9	<0.35	–*2	–*2	<7.8	being measured	–*2	<8.2
	T-A3	Twice a week*	–	<0.36	–	–	–	<0.35	–*2	–*2	<7.8	being measured	–	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	<5.5	being measured	–	–	–*2	–	–*2	–*2	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–*2	–*2	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

：Term of discharge of ALPS treated water (Group B)

*1： Detection limit 0.4 Bq/liter

*2： Sampling suspended due to bad weather condition

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

(Reference 2) Sea area monitoring history （18/20）

(Unit: Bq/liter)

	Sampling location	Frequency	March, 2024										
			4	4 Normal *1,2	5	6	7	8	9	10	11	11 Normal *2	12	13
In the vicinity of the discharge outlet	T-1	Twice a week*	<7.4	being measured	–	–	<8.1	<7.2	<6.7	<6.4	<6.1	being measured	–	–
	T-2	Twice a week*	<7.4	being measured	–	–	<8.1	<7.4	<6.7	<6.3	<6.1	being measured	–	–
	T-0-1	Once a day*	<9.0	being measured	<7.9	–*3	–*3	–*3	–*3	–*3	<6.8	being measured	<8.8	–*3
	T-0-1A	Once a day*	<6.9	being measured	16	–*3	–*3	–*3	–*3	–*3	9.5	being measured	<7.5	–*3
	T-0-2	Once a day*	<9.0	being measured	<8.0	–*3	–*3	–*3	–*3	–*3	<6.1	being measured	<7.6	–*3
	T-0-3A	Twice a week*	<9.0	being measured	–	–	–*3	–*3	–*3	–*3	<6.8	being measured	–	–
	T-0-3	Twice a week*	<9.1	being measured	–	–	–*3	–*3	–*3	–*3	<6.9	being measured	–	–
	T-A1	Twice a week*	<6.8	being measured	–	–	–*3	–*3	–*3	–*3	<7.1	being measured	–	–
	T-A2	Once a day*	<6.9	being measured	<7.9	–*3	–*3	–*3	–*3	–*3	<7.0	being measured	<7.5	–*3
	T-A3	Twice a week*	<6.9	being measured	–	–	–*3	–*3	–*3	–*3	<6.9	being measured	–	–
Outside the vicinity of the discharge outlet	T-D5	Once a week	<8.8	being measured	–	–	–	–	–	–	<6.9	being measured	–	–
	T-S3	Once a month	<6.8	being measured	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	<6.9	being measured	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	<9.1	being measured	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

: Term of discharge of ALPS treated water (Group B)

*1： Detection limit 0.4 Bq/liter
*2： Detection limit 0.1 Bq/liter
*3： Sampling suspended due to bad weather condition

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

(Reference 2) Sea area monitoring history （19/20）

(Unit: Bq/liter)

	Sampling location	Frequency	March, 2024											
			14	15 *1	16	17 *2	18	19	19 Normal *4	20	21	22	23	24
In the vicinity of the discharge outlet	T-1	Twice a week*	<8.0	–	–	–	–*3	<6.7	being measured	–	<6.3	–	<6.2	–
	T-2	Twice a week*	<8.0	–	–	–	–*3	<6.8	being measured	–	<6.4	–	<6.1	–
	T-0-1	Once a day*	<7.1	<6.6	<7.1	<6.2	–*3	<5.8	being measured	<7.6	–*3	–*3	–*3	<7.6
	T-0-1A	Once a day*	<6.9	<6.1	<7.2	<7.7	–*3	<5.9	being measured	<7.6	–*3	–*3	–*3	<5.5
	T-0-2	Once a day*	<6.9	<6.1	<7.3	<7.7	–*3	<5.7	being measured	<7.6	–*3	–*3	–*3	<7.4
	T-0-3A	Twice a week*	<8.3	–	–	–	–*3	<5.9	being measured	–	–*3	–*3	–*3	<5.4
	T-0-3	Twice a week*	<7.0	–	–	–	–*3	<5.9	being measured	–	–*3	–*3	–*3	<7.5
	T-A1	Twice a week*	<8.4	–	–	–	–*3	<7.6	being measured	–	–*3	–*3	–*3	<6.9
	T-A2	Once a day*	<8.4	<6.1	<7.3	<7.6	–*3	<7.5	being measured	<7.5	–*3	–*3	–*3	<6.7
	T-A3	Twice a week*	<8.3	–	–	–	–*3	<7.5	being measured	–	–*3	–*3	–*3	<6.9
Outside the vicinity of the discharge outlet	T-D5	Once a week	–	–	–	–	–*3	<6.9	being measured	–	–	–	–	–
	T-S3	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S4	Once a month	–	–	–	–	–	–	–	–	–	–	–	–
	T-S8	Once a month	–	–	–	–	–	–	–	–	–	–	–	–

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.

: Term of discharge of ALPS treated water (Group B)

*1： Sampled during the suspension of discharge caused by the earthquake

*2： Sampled before 8AM, prior to the completion of the discharge

*3： Sampling suspended due to bad weather condition

*4： Detection limit 0.4 Bq/liter

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge

(Reference 2) Sea area monitoring history （20/20）

(Unit: Bq/liter)

	Sampling location	Frequency	March, 2024	
			25	25 Normal *1,2
In the vicinity of the discharge outlet	T-1	Twice a week*	<5.8	being measured
	T-2	Twice a week*	<5.9	being measured
	T-0-1	Once a day*	<6.4	being measured
	T-0-1A	Once a day*	<7.2	being measured
	T-0-2	Once a day*	<6.5	being measured
	T-0-3A	Twice a week*	<6.8	being measured
	T-0-3	Twice a week*	<7.2	being measured
	T-A1	Twice a week*	<6.7	being measured
	T-A2	Once a day*	<6.7	being measured
	T-A3	Twice a week*	<7.2	being measured
Outside the vicinity of the discharge outlet	T-D5	Once a week	—	—
	T-S3	Once a month	—	—
	T-S4	Once a month	—	—
	T-S8	Once a month	<7.1	being measured

※：A “less than” symbol (<) indicates that the analysis result was less than the detection limit.　　*1： Detection limit 0.4 Bq/liter　*2： Detection limit 0.1 Bq/liter

*： Monitored daily for the time being after the commencement of discharge. In order to place importance on the discharge period, frequency of the measurement was changed from December 26, 2023 as follows;
4 locations in the vicinity of the discharge outlet ： Conduct daily during the discharge period and for one week following the completion of discharge
Conduct twice a week outside the discharge period, excluding one week following the completion of discharge
Other 6 locations： Conduct twice a week during the discharge period and for one week following the completion of discharge
Conduct once a month outside the discharge period, excluding one week following the completion of discharge