

(Report) Improvements in the Surroundings of
ALPS Treated Water Dilution/Discharge Facilities
at the Fukushima Daiichi Nuclear Power Station

May 26, 2022



Tokyo Electric Power Company Holdings, Inc.

1. The progress of improvements in the surroundings and plans to be made going forward

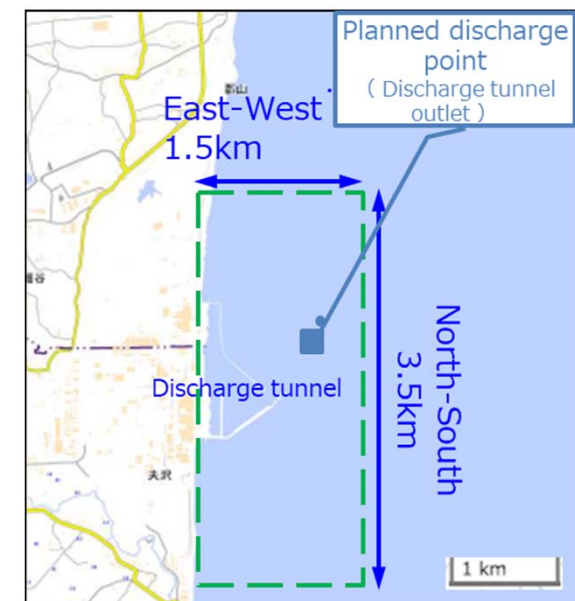
- From late November through the end of December 2021, we conducted magnetic surveys and geological surveys in areas for which geological data must be ascertained in order to ensure safety of the project and deliberate in detail discharge facilities from amongst facilities for diluting and discharging water treated with multi-nuclide removal (hereinafter referred to as, "ALPS treated water").
- In the three target areas of the geological survey where we plan to construct the discharge tunnel, geological samples were collected and tests to measure the firmness of the ground were conducted. Based on the results of the surveys, and the results of geologic surveys performed in the past, we have determined that a discharge tunnel can be constructed within the bedrock through all the target areas. Furthermore, from the results of geological surveys we were able to acquire basic data required for designing and examining the project method of the discharge tunnel.
- Improvements in the surroundings (installation of floating lights^{※1}, etc., seafloor excavation, riprap lining construction, etc.) in the ocean area approximately 1km offshore^{※2} from the power station, which the Nuclear Regulation Authority was briefed on during the 12th Review Meeting on the Implementation Plan Regarding the Handling of ALPS Treated Water, have been underway since April 25. These improvements in the surroundings do not constitute facility construction engaged in in conjunction with changes to the implementation plan. And, these shall be made while considering weather/ocean conditions and prioritizing safety.


- Seafloor excavation began on May 5 when weather/ocean conditions became suitable, and as of May 26 approximately 3,000m³ of material has been excavated^{※3}. We shall prioritize safety and continue excavation as weather/ocean conditions permit.
- During these offshore improvements, seawater sampling (cesium) at the surrounding area, seawater turbidity measurements and excavated soil analysis (cesium) at four locations on the border of the work area, are being implemented. At current time, there have been no significant results from seawater sampling, seawater turbidity measurements, or excavated soil analysis.
- Inland improvements in the surroundings, such as soil retention and excavation for vertical shaft (upper-stream storage), will commence at the beginning of June as soon as preparations have been completed.
- Discharge tunnel construction will commence based on the authorization of the implementation plan.

※ 1 Navigational aids installed to demarcate offshore construction areas and ensure that public vessels can navigate the area safely (lighted buoys)

※ 2 Area around the planned location of the discharge outlet (within the area where fishing is not routinely conducted)

※ 3 The discharge outlet will be formed by excavating material in an earthen mortar shape (sea floor area: Approximately 40m X 40m; Excavation bottom area: Approximately 20m X 20m; Depth: Approximately 11m; Amount of excavated material: Approximately 10,000m³)



 Area where fishing is not routinely conducted
East-West 1.5km North-South 3.5km

2. Progress status of improvements in the surroundings (offshore)

- Seafloor excavation commenced on May 5 approximately 1km offshore from the power station



Offshore excavation

- At current time, we've seen no significant increase in the concentration of cesium in sampled seawater taken during seafloor excavation, nor any remarkable seawater turbidity.



Seawater sampling



Turbidity measurements

3. Results of seawater monitoring conducted during the period of improvements in the surroundings (offshore)

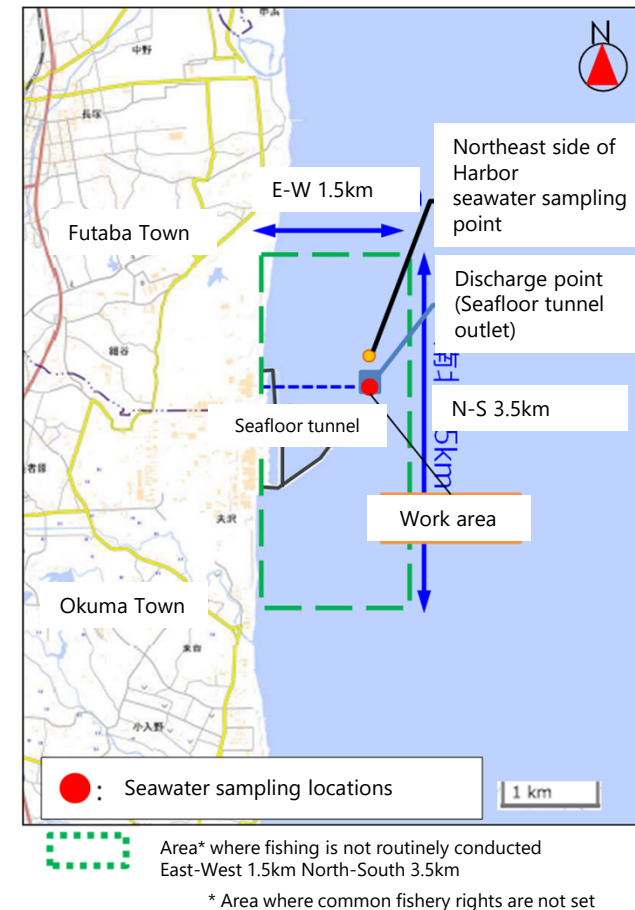
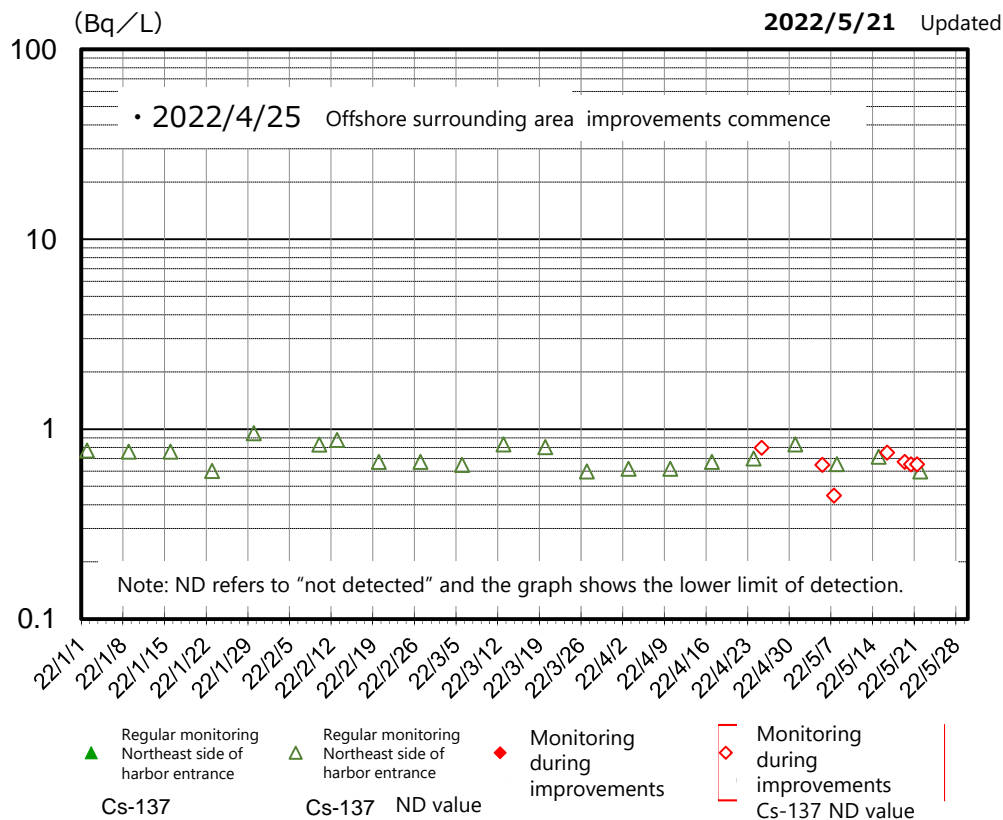
➤ Overview

During the period of offshore improvements in the surroundings, seawater is being sampled to confirm that there was no significant increase in cesium concentration in the seawater.

➤ Results

As of May 21, cesium concentrations in sampled seawater have been below detectable levels, and we have seen no significant fluctuation in the concentration of cesium in seawater. We will continue seawater monitoring during the improvement period.

The results of seawater monitoring during the period of offshore surrounding area improvements (Cs-137 concentration)



4. Results of seafloor soil monitoring during the period of improvements in the surroundings (offshore)

➤ Overview

During offshore improvements in the surroundings, some of the seafloor soil excavated is being sampled to analyze it for cesium concentrations. The soil will be sampled three times, at the beginning, middle and end of improvement work.

➤ Results

As of May 21, cesium concentration analysis results from seafloor soil taken during initial excavation have shown no significant difference when compared to the analysis results for seafloor soil from the surrounding area.

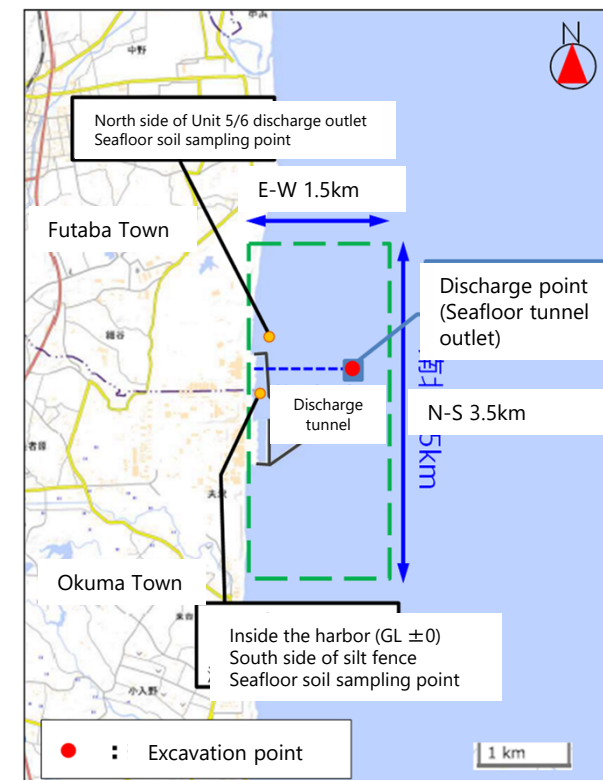
Seafloor soil monitoring will continue during the improvement period.

(Unit: Bq/kg)

Period	Seafloor soil analysis results	Results for seafloor soil from the surrounding area	
	Excavation location (Approx. 1km offshore from the power station)	North side of Unit 5/6 outlet (Outside the harbor)	Inside the harbor (GL ±0) South side of silt fence
Beginning	9 (Sampled on May 7, 2022)	110~410 (Sampled between 2017~2021)	1,893~6,475 (2018)
Middle	—		
End	—		

- Excavated soil shall be transported to the on-site soil disposal area at the power station after it is confirmed that requirements for being brought on-site* have been met.

※Surface dose rate: γ : Less than 0.01mSv/h β : No detection



* Area where common fishery rights are not set

Area* where fishing is not routinely conducted
East-West 1.5km North-South 3.5km

5. Results of monitoring seawater turbidity during the period of improvements in the surroundings (offshore)

➤ Overview

During seafloor excavation conducted as part of offshore improvements in the surroundings, a turbidity meter is being used at four locations on the borders of the work area to check for remarkable seawater turbidity.

➤ Results

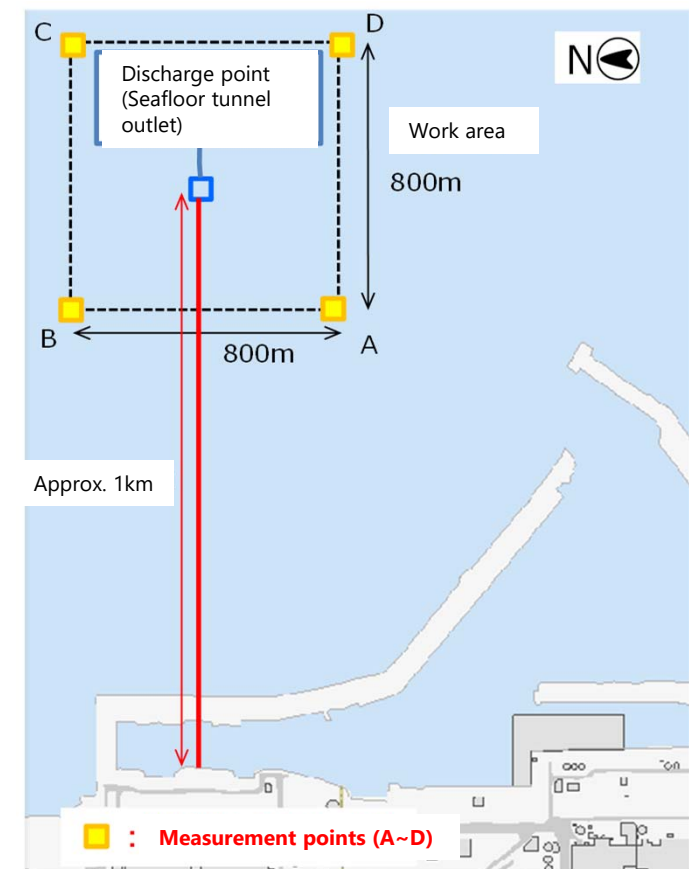
As of May 21, turbidity measurements have all been below control values※, and visual turbidity inspections conducted during excavation have seen no remarkable seawater turbidity.

We will continue to watch for turbidity while considering tidal movements, and monitors seawater turbidity during the improvement period.

※Control value: Turbidity level is converted into SS (suspended solid, mg/L) that must not exceed the BG value (measurement taken prior to commencing excavation) of +10mg/L

The number in () is the BG value
 Determination: Below control value ○
 Above control value ×

Work day (Measurement date)	Turbidity measurement results			
	A	B	C	D
2022/5/5	○(5.0)	○(5.0)	○(5.0)	○(5.0)
2022/5/7	○(1.5)	○(1.5)	○(1.5)	○(1.5)
2022/5/16	○(10.0)	○(0.6)	○(1.7)	○(2.6)
2022/5/19	○(15.3)	○(14.7)	○(15.6)	○(10.1)
2022/5/20	○(12.1)	○(0.9)	○(1.0)	○(1.8)
2022/5/21	○(2.0)	○(3.0)	○(1.3)	○(0.7)

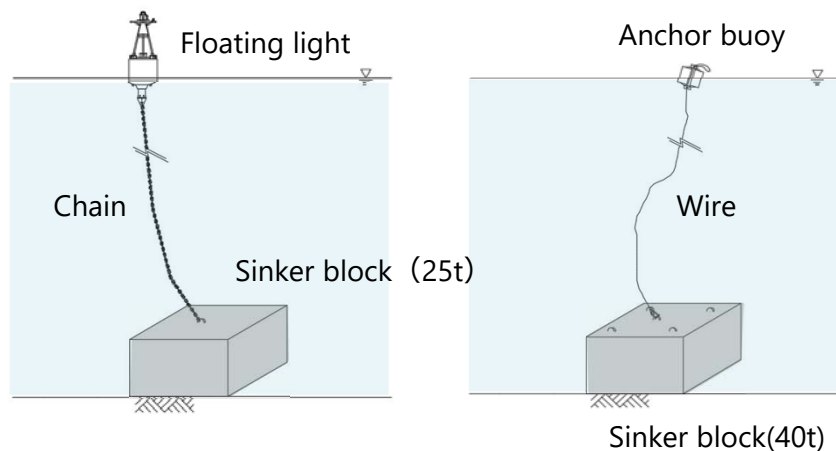


【Reference】 Overview of improvements in the surroundings

Decommissioning/Contaminated Water/Treated Water Countermeasure Team Meeting/Secretariat meeting (101st)
(document excerpt April 27, 2022)

① Floating lights/sinker block installation

- A crane ship will be used to position four floating lights attached to four sinker blocks (25t) in order to demarcate the offshore construction area.
- Sinker blocks used to moor ships will be positioned by a crane ship outside (four 110t blocks) and inside the harbor (three 25t and 40t blocks).

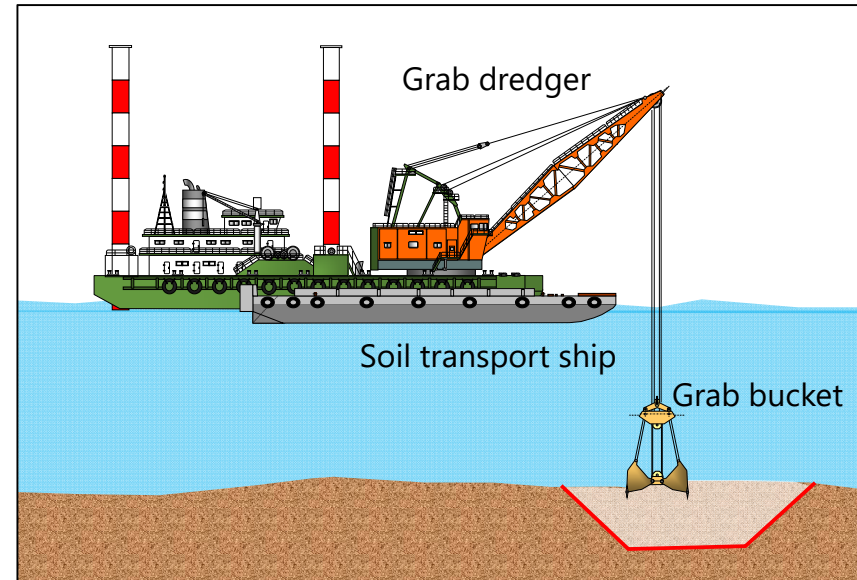


Floating light installation (concept diagram)

Ship mooring sinker block installation (concept diagram)

② Seafloor excavation/Riprap lining construction

- The seafloor will be excavated using a grab dredger in order to construct the discharge outlet caisson.
- Excavated seafloor soil shall be shipped to the power station unloading wharf inside the harbor, gathered, and brought on-site to the soil disposal yard.
- The crane ship will deposit riprap onto the seafloor in order to cover the surface of the area that has been excavated.



Seafloor excavation using a grab dredger (concept diagram)

< Tasks to be implemented >

- During the improvements in the surroundings period, seawater from the vicinity shall be sampled along with some of the excavated soil.
- Turbidity shall be visually monitored while paying careful attention to tidal movements. In particular, work shall be done slowly during the initial phase of improvements and accelerated as suitable while watching turbidity and implementing measures to prevent it.

<Details>

- During the improvements in the surroundings period, seawater from the vicinity of the improvement area shall be sampled daily and turbidity shall be checked at four locations along the border of the work area (using a turbidity meter).
- Some of the excavated soil shall also be analyzed for cesium. (Analysis shall be conducted three times; at the beginning of improvements, during improvements, and when improvements conclude)

< Handling abnormalities >

- If a significant increase in cesium concentrations in the seawater are seen during improvements, or if a remarkable increase in seawater turbidity is observed, improvements shall be suspended.
- Monitoring shall continue and improvements shall only recommence after it is confirmed that there are no problems with seawater cesium concentrations or turbidity.
- If significant concentrations of cesium are found during soil analysis, the excavated soil shall be stored within containers on site.
- The installation of an oil fence (or silt fence), or the use of sedimentation agents, etc., to suppress the turbidity dispersion shall be examined as necessary.