

<Reference>

Condition of Radioactive Density of the Groundwater and the Seawater at the East Side of Turbine Buildings

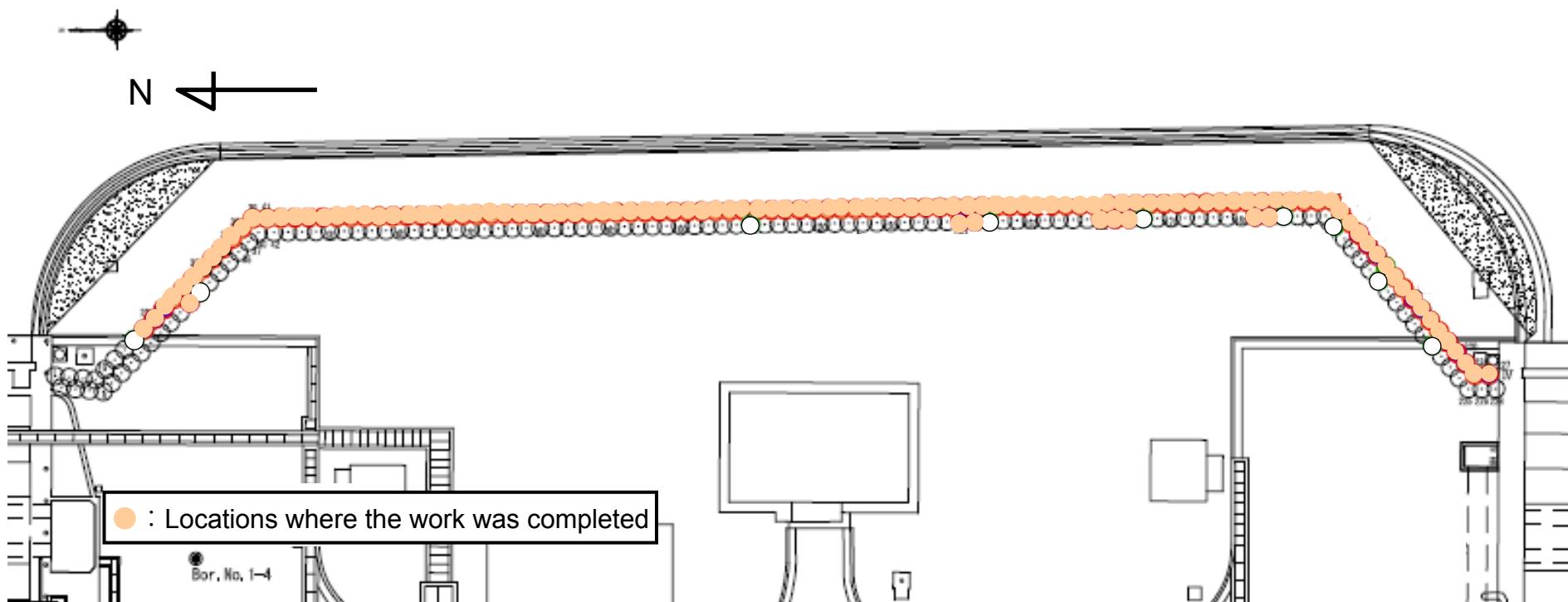
July 26, 2013

Tokyo Electric Power Company

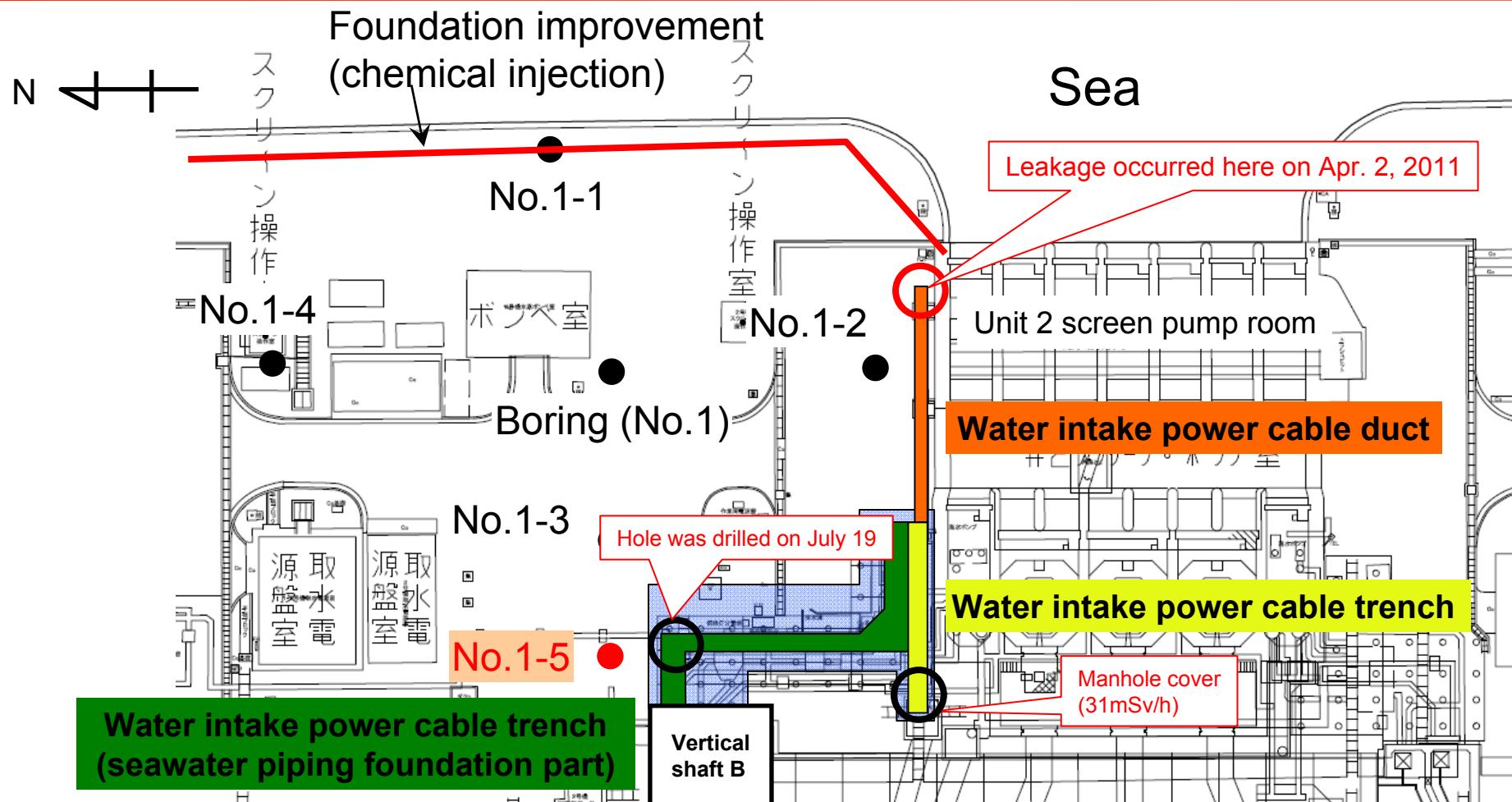
Progress Status of Bank Protection Foundation Improvement Work between Water Intakes of Units 1 and 2

- The foundation improvement was started on July 8, and is currently underway by use of ten foundation improvement machines. (The work starts at 7:00 PM each day and ends at 7:00 AM next day.)
- By the morning of July 26, the work was completed in total of 114 locations (106 on the sea side line and 8 on the mountain side line). (The work is planed to cover a total of 228 locations (114 on the sea side line* and 114 on the mountain side line))

* As the work progressed, the plan has changed in accordance with situation of the ground (117 locations → 114 locations).

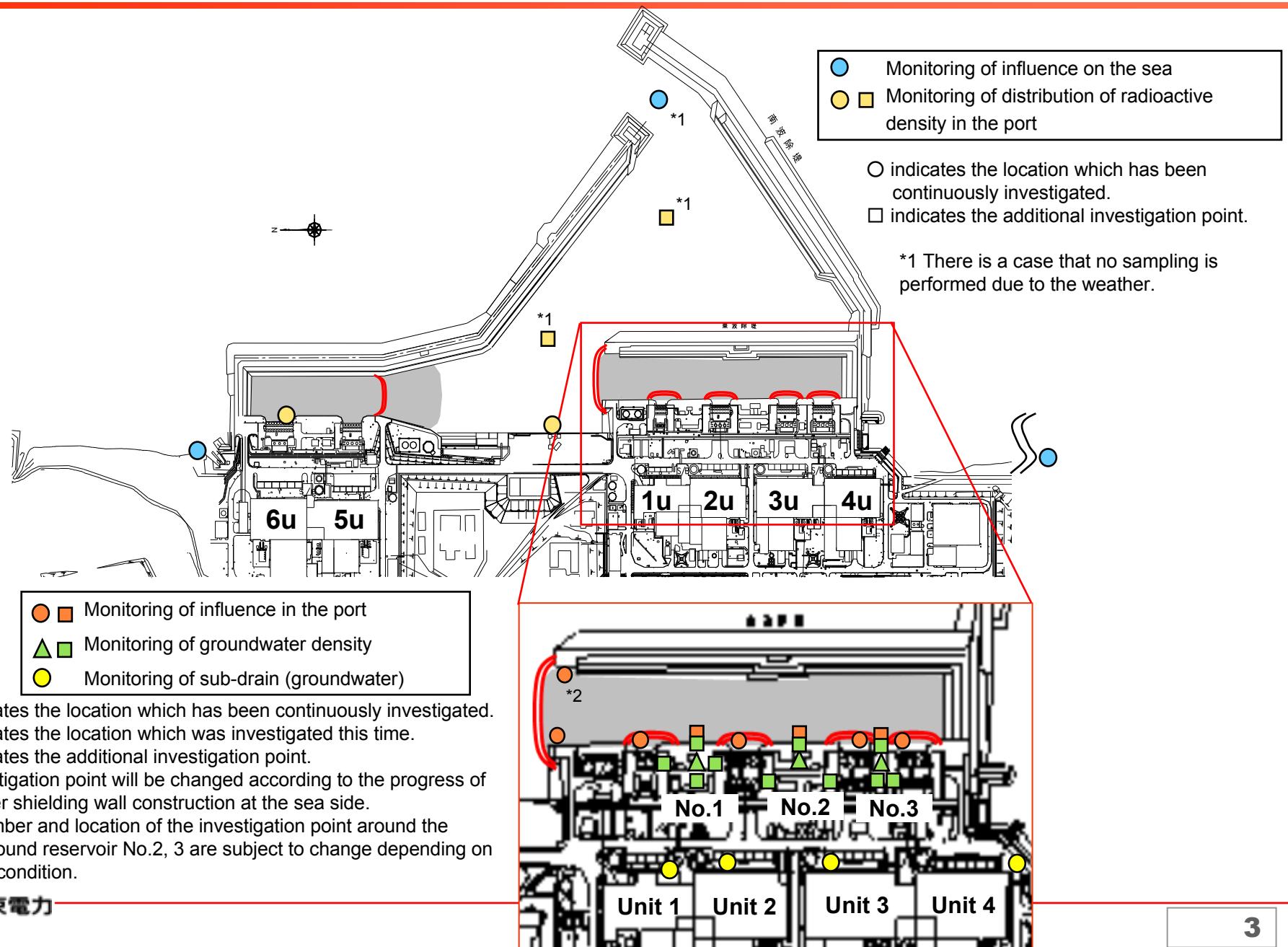


Position of the Additional Boring No.1-5



- This observation hole locates at approx. 15m from the observation hole No.1-3 to the mountain side (near the vertical shaft B at the seawater piping trench).
- Drilling will be started from today (on July 26).
- The range of the foundation improvement (at the mountain side) will be considered based on the groundwater survey.

Monitoring Plan (Sampling Locations)



Monitoring Plan (Analysis Item, Frequency)

Area	Sampling location	Current analysis item and frequency				Contents of the change ^{*4}			
		γ ray	Tritium (3H)	All β	Sr-90	γ ray	H-3	All β	Sr-90
Around Unit 1-4 water intake channel	Between the water intake channel of Unit 1 and Unit 2 (surface layer)	-	-	-	-	1 time a week (3 times a week ^{*5})	1 time a week (3 times a week ^{*5})	1 time a week (3 times a week ^{*5})	1 time a month
	Between the water intake channel of Unit 1 and Unit 2 (lower layer)	-	-	-	-				
	Inside the silt fence of Unit 1	1 time a day	-	-	-	1 time a day	1 time a week	1 time a week	1 time a month
	Inside the silt fence of Unit 2								
	North side of Unit 1-4 water intake channel ^{*1}	1 time a day	1 time a month	1 time a week	2 times a month	1 time a day	1 time a week	1 time a week	1 time a month ^{*6}
	Outside the silt fence of Unit 1	1 time a day	-	-	-	1 time a day	-	-	-
	Outside the silt fence of Unit 2								
	Between the water intake channel of Unit 2 and Unit 3 (surface layer)	-	-	-	-	1 time a week	1 time a week	1 time a week	1 time a month
	Between the water intake channel of Unit 3 and Unit 4 (surface layer)					1 time a week	1 time a week	1 time a week	1 time a month
	Inside the silt fence of Unit 3	1 time a day	-	-	2 times a month	1 time a day	1 time a week	1 time a week	1 time a month ^{*6}
	Inside the silt fence of Unit 4								
	Outside the silt fence of Unit 3	1 time a day	-	-	-	1 time a day	-	-	-
	Outside the silt fence of Unit 4								
	South side of Unit 1-4 water intake channel								
In the port	In front of shallow draft quay	1 time a day	-	-	-	1 time a day	1 time a week	1 time a week	1 time a month
	In front of Unit 6 water intake channel	1 time a week	-	-	-	1 time a week	1 time a week	1 time a week	-
	West side in the port ^{*2}	-	-	-	-	1 time a week	1 time a week	1 time a week	-
	East side in the port ^{*2}								
	Port entrance ^{*2}	Non-regular ^{*3}	-	-	-	1 time a week	1 time a week	1 time a week	1 time a month
Around the north/south discharge channel	North side of Unit 5,6 discharge channel	1 time a day	1 time a month	1 time a month	1 time a month	1 time a day	1 time a week	1 time a week	1 time a month
	Around the south discharge channel	1 time a day	1 time a month	1 time a day	1 time a month	1 time a day	1 time a week	1 time a day	1 time a month
Land area (sea side of Unit 1-4 Turbine Building)	Underground reservoir No.1 (includes additional boring)	-	-	-	-	1 time a week (2 times a week ^{*5})	1 time a week (2 times a week ^{*5})	1 time a week (2 times a week ^{*5})	1 time a month
	Underground reservoir No.2 (includes additional boring)	-	-	-	-	1 time a week	1 time a week	1 time a week	Only for the first time
	Underground reservoir No.3 (includes additional boring)								
	Unit 1 sub-drain	3 times a week	2 times a year	2 times a year	2 times a year	3 times a week	2 times a year	2 times a year	2 times a year
	Unit 2 sub-drain	3 times a week	1 time a month	1 time a month	1 time a month	3 times a week	1 time a month	1 time a month	1 time a month
	Unit 3 sub-drain	3 times a week	2 times a year	2 times a year	2 times a year	3 times a week	2 times a year	2 times a year	2 times a year
	Unit 4 sub-drain								

*1 Sampling point will be changed according to the progress of the water shielding wall construction at the sea side.

*2 There is a case that we cannot sample due to the weather.

*3 Sampling and measurement will be performed in case vessel enters the water intake channel.

*4 Measurement of γ ray, 3H and all β will be performed in order to monitor leakage to the sea. Measurement of strontium will be performed in order to compare with the notification level and to evaluate the exposure dose.

*5 Monitoring will be enhanced until ground improvement at the bank protection between the water intake channel of Unit 1 and Unit 2 will be finished.

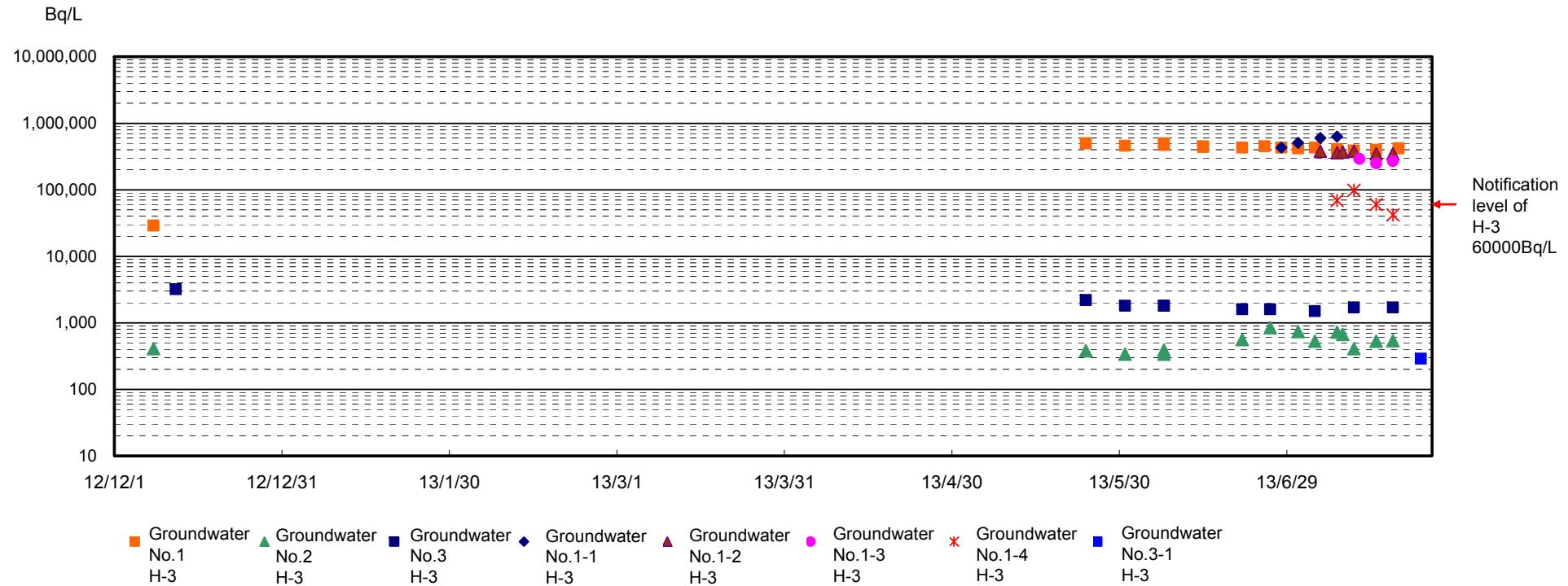
*6 All β will be substituted for the monitoring of strontium taking analysis capacity into consideration.

←Measurement of tritium (3H) and all β will be performed "3 times a week" for a while due to the rising trend of tritium (3H).

←Measurement of γ ray, tritium (3H) and all β will be performed "2 times a week" for a while at the underground reservoir No.2 due to the rising trend of all β .

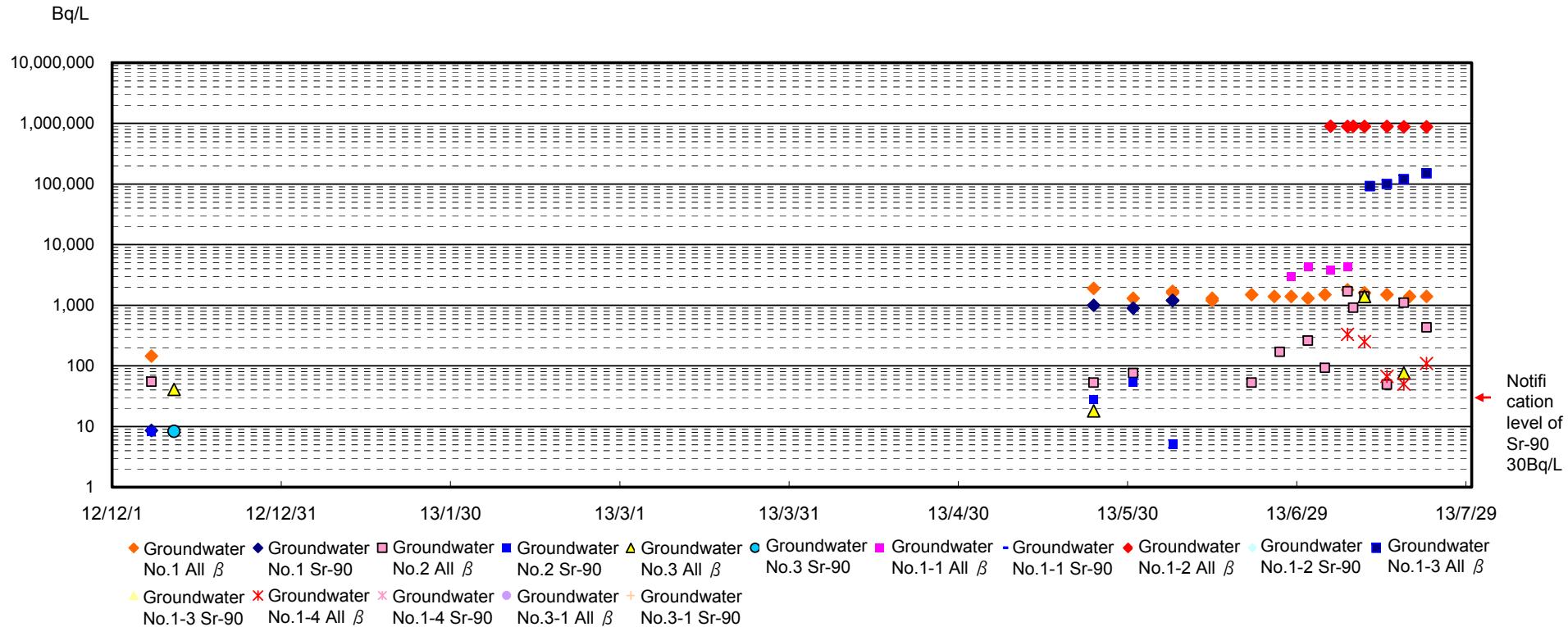
Density Transition of Tritium in the Groundwater

As of July 25, 2013



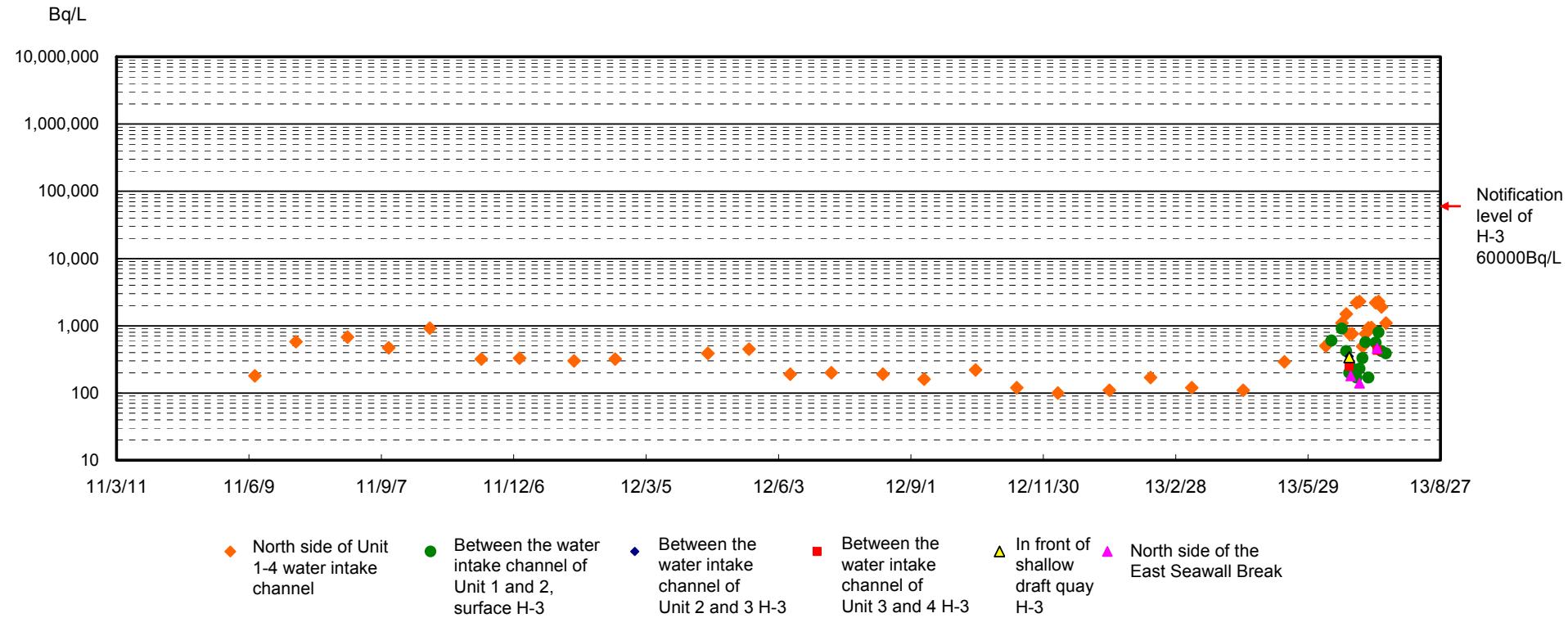
Density Transition of All β and Strontium in the Groundwater

As of July 25, 2013



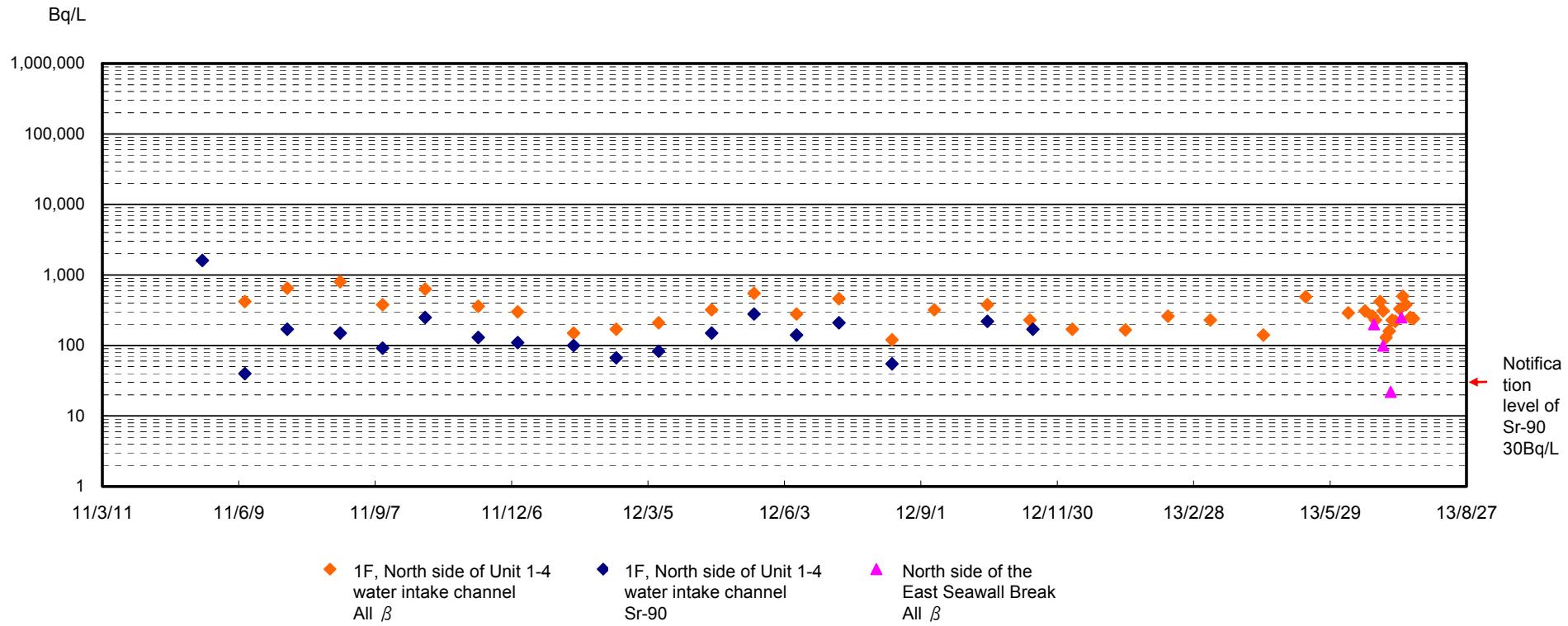
Density Transition of Tritium in the Seawater

As of July 25, 2013



Density Transition of All β and Strontium in the Seawater

As of July 25, 2013



Groundwater observation hole No.1 (Bq/L)

Sampling date	2012/12/8 ²	2013/5/24	2013/5/31	2013/6/7 ①	2013/6/7 ②	2013/6/14 ①	2013/6/14 ②	2013/6/21	2013/6/25	2013/6/28	2013/7/1
Sampling time	11:00 AM	4:19 PM	3:01 PM	3:45 PM	3:45 PM	2:29 PM	2:29 PM	9:01 AM	1:39 PM	5:50 PM	3:05 PM
Cs-134	ND (0.59)	ND (0.45)	0.53	ND (0.42)	ND (0.40)	ND (0.37)	ND (0.37)	ND (0.36)	ND (0.39)	ND (0.40)	1.1
Cs-137	ND (0.72)	ND (0.45)	0.57	ND (0.53)	0.49	ND (0.43)	0.51	0.53	ND (0.49)	ND (0.43)	1.5
Ru-106	ND	26	19	19	21	18	19	16	20	16	ND
Mn-54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Co-60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sb-125	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
All β	150	1,900	1,300	1,700	1,600	1,200	1,300	1,500	1,400	1,400	1,300
H-3	29,000	500,000	460,000	500,000	470,000	450,000	440,000	430,000	450,000	430,000	420,000
Sr-90	8.6	1,000	890	1,200	1,200	Under measurement	Under measurement	Under measurement	—	—	—

*1 "ND" indicates that the measurement result is below the detection limit, and the detection limit of each nuclide is provided in parentheses.

*2 As of γ nuclide measurement, the amount is lower than true value since the high BG is in use.

Sampling date	2013/7/4	2013/7/8	2013/7/11	2013/7/15	2013/7/19	2013/7/22
Sampling time	11:50 AM	1:30 PM	12:51 PM	1:00 PM	8:02 AM	1:21 PM
Cs-134	ND (0.64)	ND (0.50)	ND (0.61)	ND (0.43)	ND (0.48)	ND (0.42)
Cs-137	ND (0.47)	ND (0.47)	1.0	ND (0.49)	0.73	ND (0.45)
Ru-106	24	16	15	18	17	ND
Mn-54	ND	ND	ND	ND	ND	ND
Co-60	ND	ND	ND	ND	0.50	ND
Sb-125	ND	ND	1.7	ND	ND	ND
All β	1,500	1,800	1,600	1,500	1,400	1,400
H-3	430,000	410,000	390,000	400,000	420,000	Under measurement
Sr-90	—	—	—	—	—	—

*1 "ND" indicates that the measurement result is below the detection limit, and the detection limit of each nuclide is provided in parentheses.

*2 As of γ nuclide measurement, the amount is lower than true value since the high BG is in use.

Groundwater observation hole No.1-1 (Bq/L)

Sampling date	2013/6/28	2013/7/1	2013/7/5	2013/7/8
Sampling time	4:40 PM	4:05 PM	11:00 AM	2:35 PM
Cs-134	ND (0.41)	ND (0.44)	ND (0.42)	1.9
Cs-137	ND (0.51)	0.98	0.55	3.6
Ru-106	—	7.8	7.7	7.9
Mn-54	0.52	0.92	1.0	0.78
Co-60	ND	ND	ND	ND
Sb-125	ND	ND	ND	ND
All β	3,000	4,300	3,800	4,400
H-3	430,000	510,000	600,000	630,000
Sr-90	Under measurement	—	—	—

* "ND" indicates that the measurement result is below the detection limit.

Groundwater observation hole No.1-2 (Bq/L)

Sampling date	2013/7/5	2013/7/8	2013/7/8 (Filtration)	2013/7/9	2013/7/9 (Filtration)	2013/7/9 (Residue)	2013/7/11	2013/7/11 (Filtration)	2013/7/15	2013/7/15 (Filtration)
Sampling time	12:10 PM	2:00 PM	2:00 PM	1:00 PM	1:00 PM	1:00 PM	1:25 PM	1:25 PM	1:23 PM	1:23 PM
Cs-134	99	9,000	94	11,000	130	10,000	8,200	98	5,900	ND (21)
Cs-137	210	18,000	190	22,000	270	20,000	17,000	150	12,000	ND (21)
Ru-106	95	ND		ND			ND		ND	
Mn-54	62	25		ND			ND		ND	
Co-60	1.2	3.1		ND			ND		ND	
Sb-125	35	ND		ND			ND		250	
All β	900,000	890,000	920,000	900,000	890,000		890,000		890,000	
H-3	380,000	360,000		370,000			380,000		350,000	
Sr-90	Under measurement	—		—			—		—	

* "ND" indicates that the measurement result is below the detection limit.

Sampling date	2013/7/18	2013/7/18 (Filtration)	2013/7/22	2013/7/22 (Filtration)
Sampling time	1:23 PM	1:23 PM	1:47 PM	1:47 PM
Cs-134	5,400	ND (25)	3,500	50
Cs-137	11,000	ND (25)	7,300	71
Ru-106	ND		ND	
Mn-54	ND		ND	
Co-60	ND		ND	
Sb-125	ND		ND	
All β	880,000		880,000	
H-3	350,000		Under measurement	
Sr-90	—		—	

* "ND" indicates that the measurement result is below the detection limit.

Groundwater observation hole No.1-3 (Bq/L)

Sampling date	2013/7/12	2013/7/15	2013/7/18	2013/7/22
Sampling time	12:20 PM	1:20 PM	12:36 PM	12:33 PM
Cs-134	ND (0.66)	ND (0.46)	ND (0.39)	ND (0.46)
Cs-137	1.4	ND (0.54)	0.53	ND (0.58)
Ru-106	16	14	15	17
Mn-54	ND	ND	ND	ND
Co-60	ND	ND	ND	ND
Sb-125	1.4	ND	ND	ND
All β	92,000	100,000	120,000	150,000
H-3	290,000	250,000	270,000	Under measurement
Sr-90	Under measurement	—	—	—

* "ND" indicates that the measurement result is below the detection limit.

Groundwater observation hole No.1-4 (Bq/L)

Sampling date	2013/7/8	2013/7/11	2013/7/15	2013/7/18	2013/7/22
Sampling time	3:30 PM	12:25 PM	11:55 AM	12:03 PM	12:18 PM
Cs-134	1.5	0.91	ND (0.41)	0.67	ND (0.43)
Cs-137	3.6	2.0	0.67	1.0	1.1
Ru-106	ND	ND	ND	ND	ND
Mn-54	ND	ND	ND	ND	ND
Co-60	ND	ND	ND	ND	ND
Sb-125	ND	ND	ND	ND	ND
All β	330	250	67	50	110
H-3	69,000	98,000	60,000	42,000	Under measurement
Sr-90	Under measurement	—	—	—	—

* "ND" indicates that the measurement result is below the detection limit.

Groundwater observation hole No.3-1 (Bq/L)

Sampling date	2013/7/23
Sampling time	11:10 AM
Cs-134	1.1
Cs-137	2.2
Ru-106	ND
Mn-54	ND
Co-60	ND
Sb-125	ND
All β	ND (19)
H-3	290
Sr-90	Under measurement

* "ND" indicates that the measurement result is below the detection limit.

North side of Unit 5,6 discharge channel (Bq/L)

Sampling date	2013/6/21	2013/6/26	2013/7/3	2013/7/8	2013/7/15	2013/7/22
Sampling time	7:25 AM	11:25 AM	6:55 AM	6:15 AM	6:05 AM	5:50 AM
Cs-134	1.8	ND (1.9)	ND (1.2)	1.4	ND (1.2)	ND (1.3)
Cs-137	2.1	3.3	1.2	2.5	1.5	2.5
All β	—	ND (22)	ND (17)	ND (19)	ND (22)	ND (23)
H-3	—	8.6	4.9	3.7	5.5	Under measurement
Sr-90	—	Under measurement	—	—	—	Under measurement

* "ND" indicates that the measurement result is below the detection limit.

In front of Unit 6 water intake channel, seawater (Bq/L)

Sampling date	2013/6/25	2013/7/2	2013/7/8	2013/7/15	2013/7/22
Sampling time	7:15 AM	6:25 AM	6:30 AM	6:15 AM	5:50 AM
Cs-134	ND (3.3)	ND (1.7)	ND (2.2)	ND (1.6)	ND (1.4)
Cs-137	ND (2.1)	2.6	ND (1.9)	3.1	ND (1.3)
All β	ND (18)	20	ND (17)	ND (22)	ND (21)
H-3	6.0	8.2	ND (3.1)	11	Under measurement
Sr-90	—	—	—	—	—

* "ND" indicates that the measurement result is below the detection limit.

In front of shallow draft quay, seawater (Bq/L)

Sampling date	2013/6/26	2013/7/3	2013/7/8	2013/7/15	2013/7/22
Sampling time	6:06 AM	6:03 AM	5:31 AM	5:30 AM	5:25 AM
Cs-134	ND (1.8)	1.9	ND (1.8)	ND (2.3)	ND (1.9)
Cs-137	2.3	5.6	5.1	5.7	ND (2.2)
All β	ND (18)	40	19	35	ND (21)
H-3	340	ND (120)	ND (120)	ND (120)	Under measurement
Sr-90	Under measurement	—	—	—	Under measurement

* "ND" indicates that the measurement result is below the detection limit.

Unit 4 screen (inside the silt fence), seawater (Bq/L)

Sampling date	2013/6/21	2013/6/26	2013/7/3	2013/7/8	2013/7/15	2013/7/22
Sampling time	6:37 AM	6:35 AM	6:42 AM	6:04 AM	6:02 AM	11:16 AM
Cs-134	31	34	17	46	43	12
Cs-137	70	65	36	93	89	26
All β	250	220	160	130	300	49
H-3	ND (210)	260	ND (120)	ND (120)	180	Under measurement
Sr-90	Under measurement	—	—	—	—	Under measurement

* "ND" indicates that the measurement result is below the detection limit.

Around the south discharge channel (Bq/L)

Sampling date	2013/6/21	2013/6/26	2013/7/3	2013/7/8	2013/7/15	2013/7/22
Sampling time	7:15 AM	11:15 AM	5:10 AM	5:15 AM	10:45 AM	5:15 AM
Cs-134	ND (1.0)	ND (1.1)	ND (1.2)	ND (0.93)	ND (1.2)	ND (1.2)
Cs-137	2.0	(1.3)	(1.2)	(1.1)	3.0	(1.4)
All β	ND (19)	ND (22)	ND (18)	ND (18)	ND (21)	ND (20)
H-3	—	ND (2.9)	ND (3.0)	ND (3.1)	ND (2.9)	Under measurement
Sr-90	—	Under measurement	—	—	—	Under measurement

* "ND" indicates that the measurement result is below the detection limit.

Port entrance, seawater (Bq/L)

Sampling date	2013/6/20	2013/6/26	2013/7/4	2013/7/9	2013/7/17	2013/7/22
Sampling time	1:18 PM	2:19 PM	3:19 PM	10:29 AM	12:20 PM	11:32 AM
Cs-134	ND (1.3)	ND (1.9)	ND (1.7)	ND (2.0)	ND (2.2)	ND (1.9)
Cs-137	ND (1.2)	3.7	ND (2.0)	ND (2.6)	ND (2.0)	ND (2.0)
All β	15	31	ND (22)	ND (19)	ND (20)	ND (18)
H-3	5.0	29	ND (3.6)	4.2	4.8	Under measurement
Sr-90	Under measurement	—	—	—	—	Under measurement

* "ND" indicates that the measurement result is below the detection limit.

East side in the port, seawater (Bq/L)

Sampling date	2013/6/26	2013/7/4	2013/7/9	2013/7/17	2013/7/22
Sampling time	2:22 PM	10:32 AM	10:34 AM	2:40 PM	11:41 AM
Cs-134	ND (2.4)	ND (2.3)	ND (2.0)	ND (1.7)	ND (2.3)
Cs-137	ND (2.4)	3.3	ND (2.4)	ND (2.5)	ND (2.1)
All β	33	40	ND (19)	ND (20)	ND (18)
H-3	14	44	ND (2.9)	7.0	Under measurement
Sr-90	Under measurement	—	—	—	—

* "ND" indicates that the measurement result is below the detection limit.

West side in the port, seawater (Bq/L)

Sampling date	2013/6/26	2013/7/4	2013/7/9	2013/7/17	2013/7/22
Sampling time	2:25 PM	10:37 AM	10:38 AM	2:47 PM	11:50 AM
Cs-134	ND (2.5)	ND (2.2)	ND (2.0)	ND (2.2)	ND (2.2)
Cs-137	3.3	ND (2.6)	ND (1.9)	2.4	ND (2.2)
All β	43	60	ND (19)	ND (20)	ND (18)
H-3	26	37	4.7	20	Under measurement
Sr-90	Under measurement	—	—	—	—

* "ND" indicates that the measurement result is below the detection limit.