

Progress of Landside Impermeable Wall freezing: Phase 2 of the first stage



- The purpose of the Landside Impermeable Wall construction lies not in freezing soil to form an underground wall but in keeping groundwater from flowing into the reactor/turbine buildings and preventing new contaminated water from being generated.
- By closing 95 percent of the landside of the Landside Impermeable Wall in Phase 2 of the first stage, it is expected that the amount of groundwater flowing into areas around the reactor/turbine buildings will be reduced. This will help keep groundwater from being contaminated during the first stage.
- Throughout the first stage, how freezing of the Landside Impermeable Wall has progressed will be evaluated by monitoring the difference in groundwater levels inside and outside of the wall and groundwater amount pumped up by the subdrain and groundwater drain systems and the well point system.

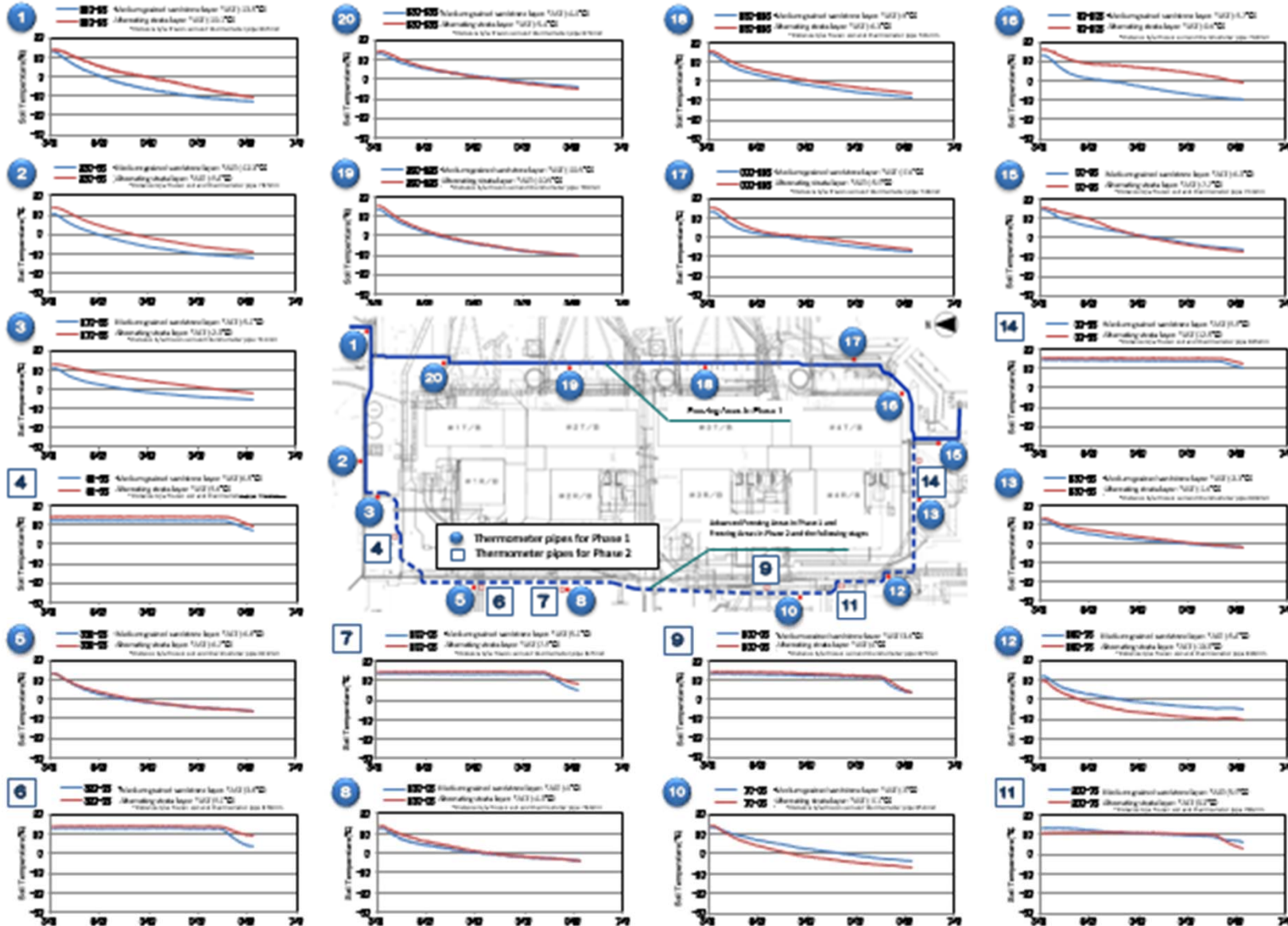
Changes in soil temperatures over time



- Note
- Average Soil Temperature (AST) of medium-grained sandstone layer (blue line): average value of thermometer temperatures measured at 1m intervals except for the areas between ground surface and Ground Level 2m and the areas around the first muddy layer boarder.
 - Average Soil Temperature (AST) of alternating strata layer (red line): Average value of thermometer temperatures measured at 1m intervals except for the areas around the upper and lower parts of the alternating layer boarder.

Landside Impermeable Wall Freezing Progress Report: Soil Temperatures (Temperatures in Thermometer Pipes) (As of June 21, 2016 at 7 a.m.)

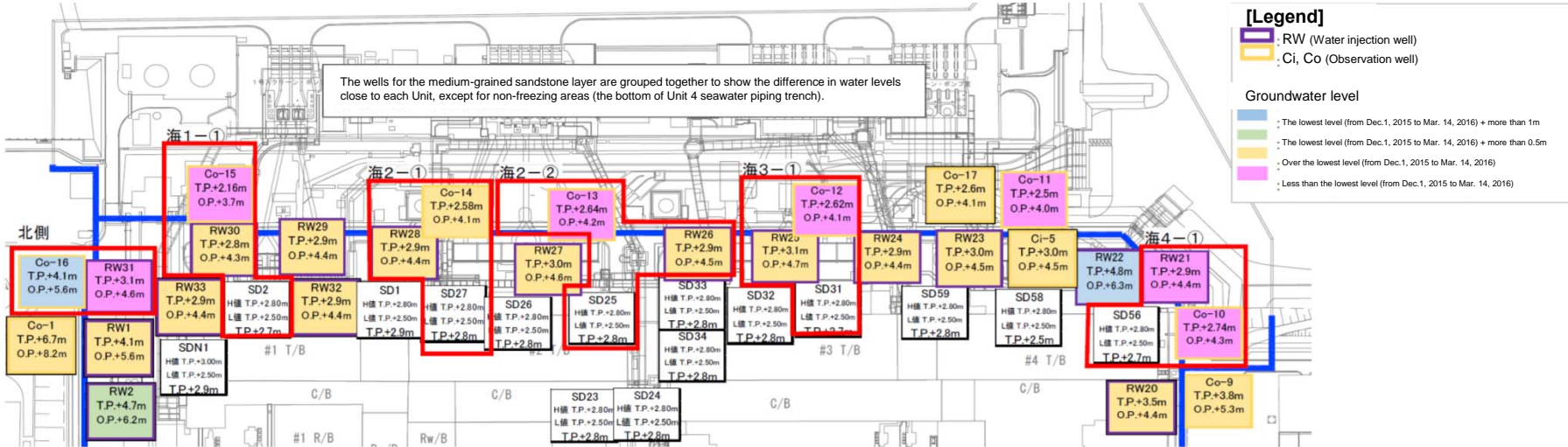
Phase 2



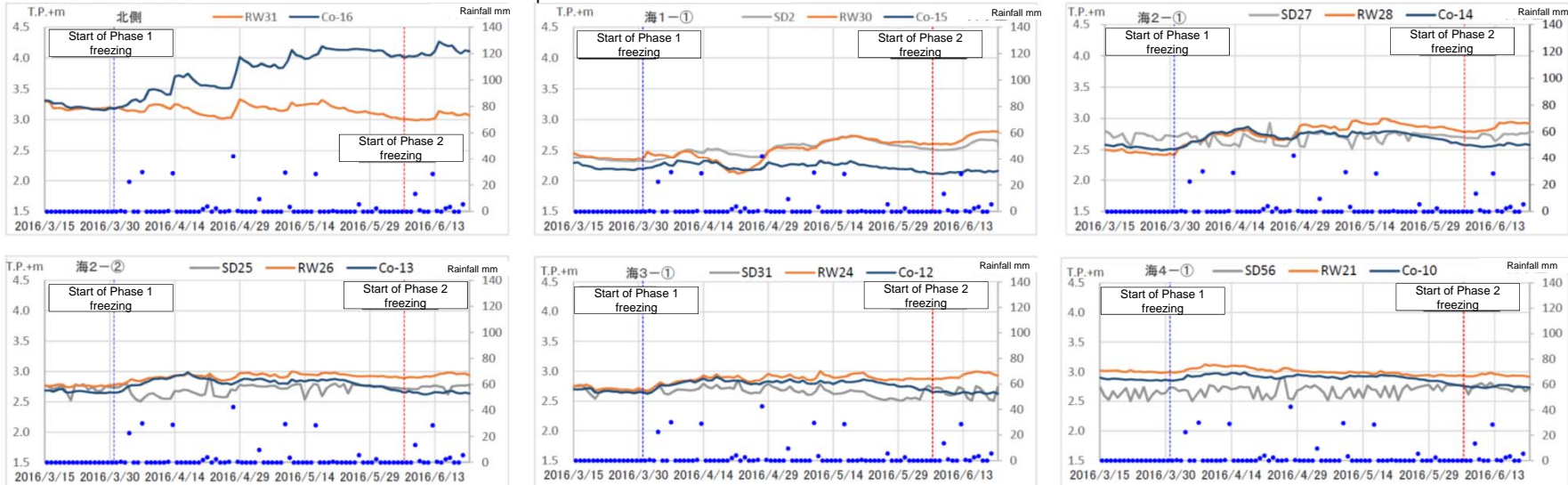
Groundwater levels and hydraulic heads (in the medium-grained sandstone layer 1 on the seaside)



1. Landside Impermeable Wall (groundwater levels around the seaside and the operations of Subdrain pumping system)



2. Groundwater levels inside and outside of the Landside Impermeable Wall

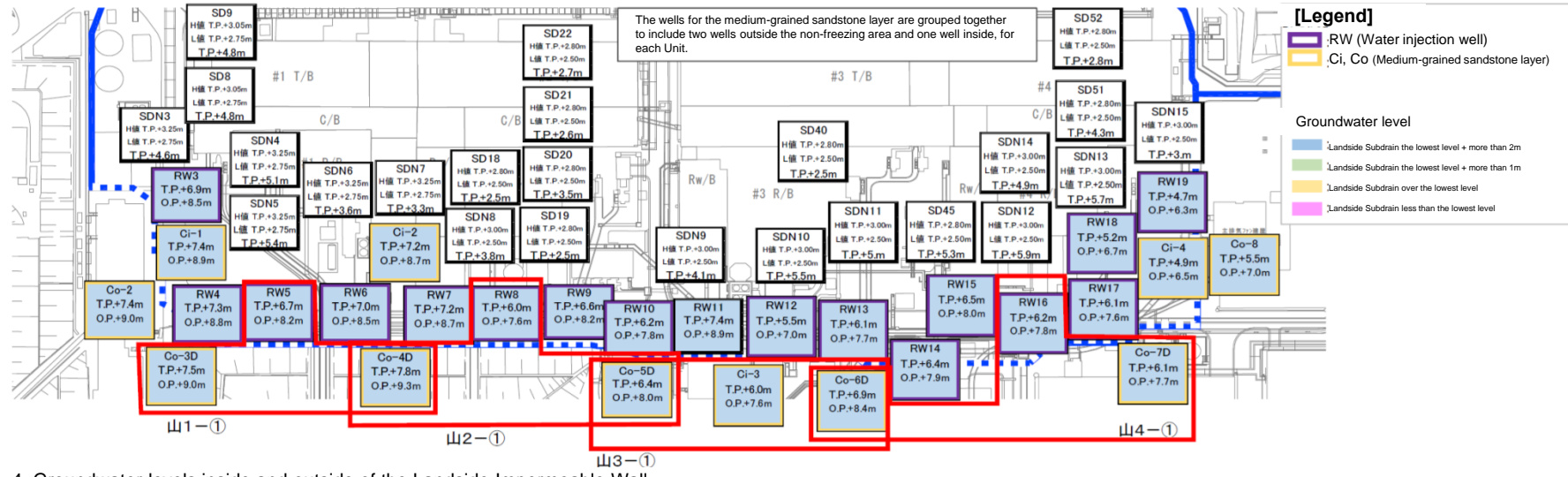


The data of groundwater levels as of 12 p.m. on June 21.

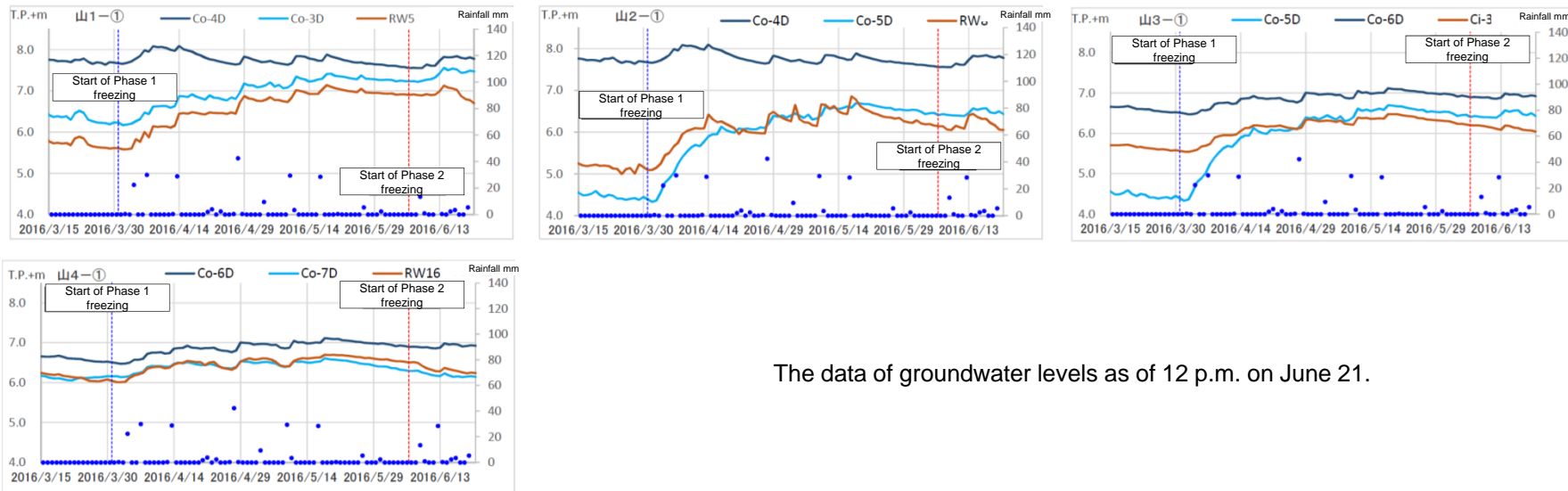
Groundwater levels and hydraulic heads (in the medium-grained sandstone layer 2 on the landside)



3. Landside Impermeable Wall (groundwater levels around the seaside and the operations of Subdrain pumping system)



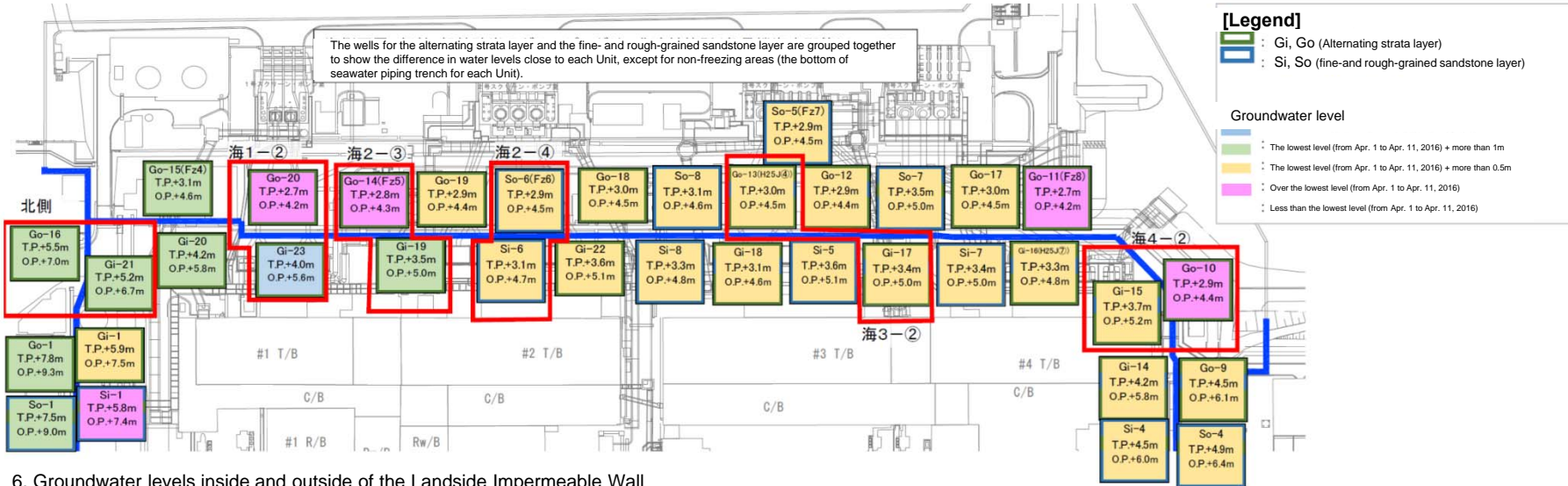
4. Groundwater levels inside and outside of the Landside Impermeable Wall



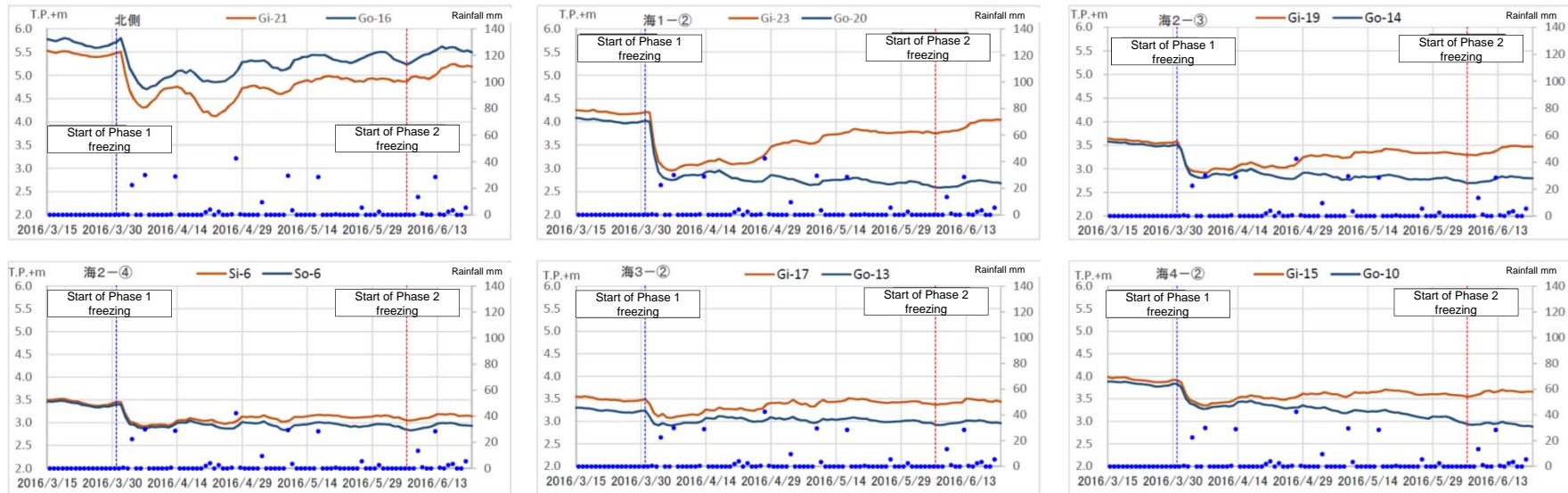
The data of groundwater levels as of 12 p.m. on June 21.

Groundwater levels and hydraulic heads (in the alternating strata layer and the fine- and rough-grained sandstone layer 1 on the seaside) **TEPCO**

5. Landside Impermeable Wall (groundwater levels around the seaside and the operations of Subdrain pumping system)



6. Groundwater levels inside and outside of the Landside Impermeable Wall

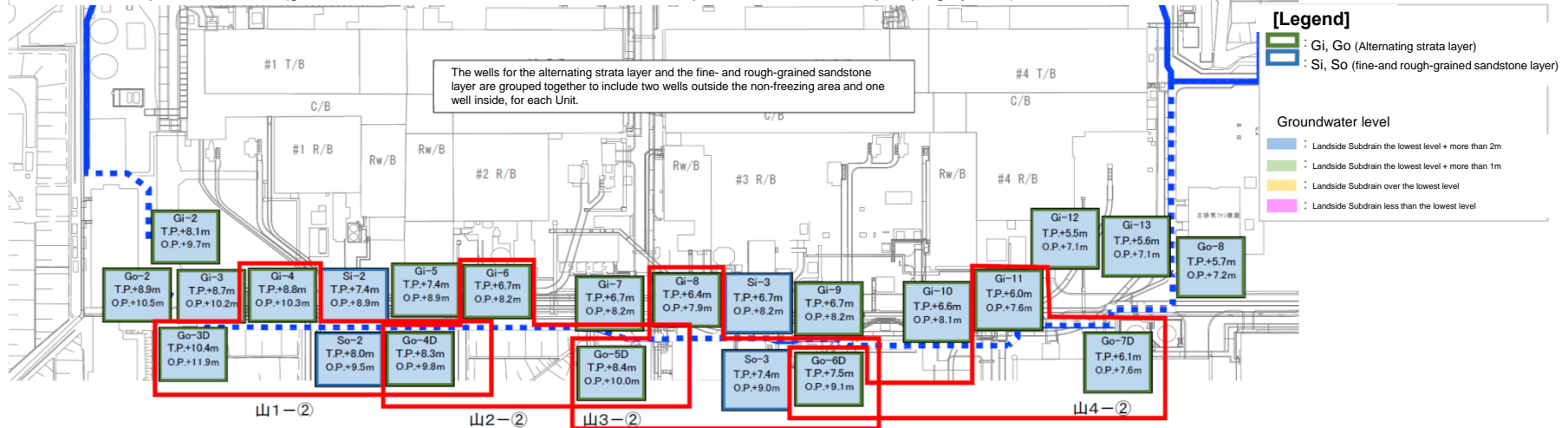


The data of groundwater levels as of 12 p.m. on June 21. 4

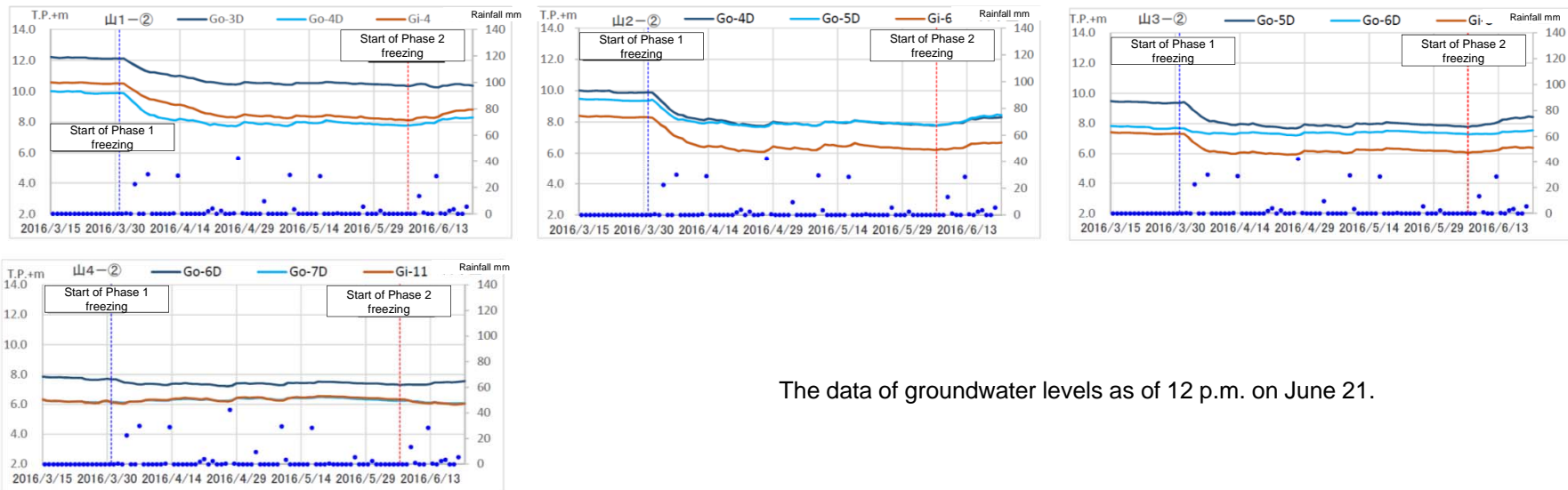
Groundwater levels and hydraulic heads

(in the alternating strata layer and the fine- and rough-grained sandstone layer 2 on the landside) **TEPCO**

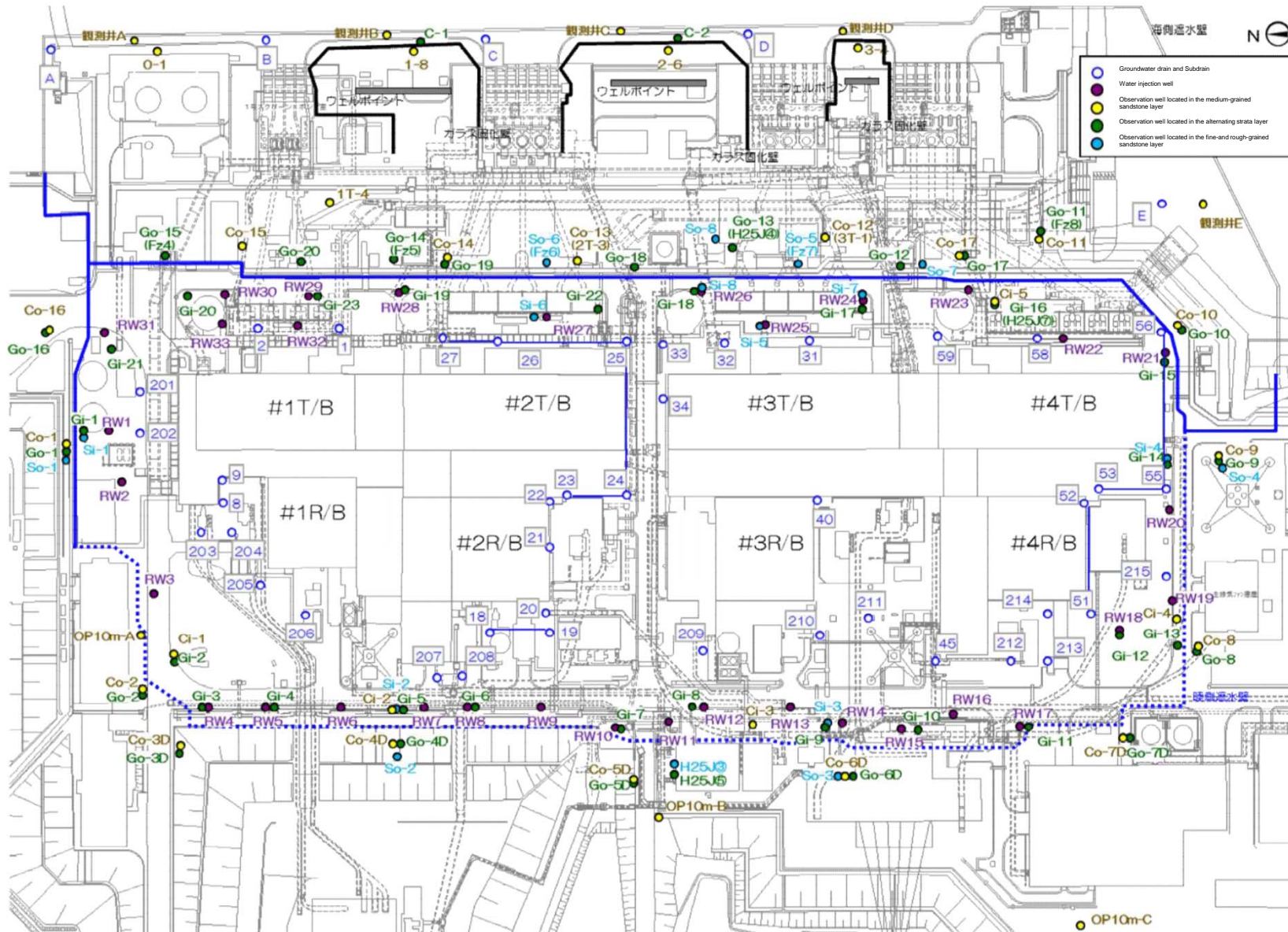
7. Landside Impermeable Wall (groundwater levels around the seaside and the operations of Subdrain pumping system)



8. Groundwater levels inside and outside of the Landside Impermeable Wall



[Reference] Location map of groundwater level observation wells
(as of April 2016)



[Reference] Distribution map of soil temperatures (north side of Unit1)



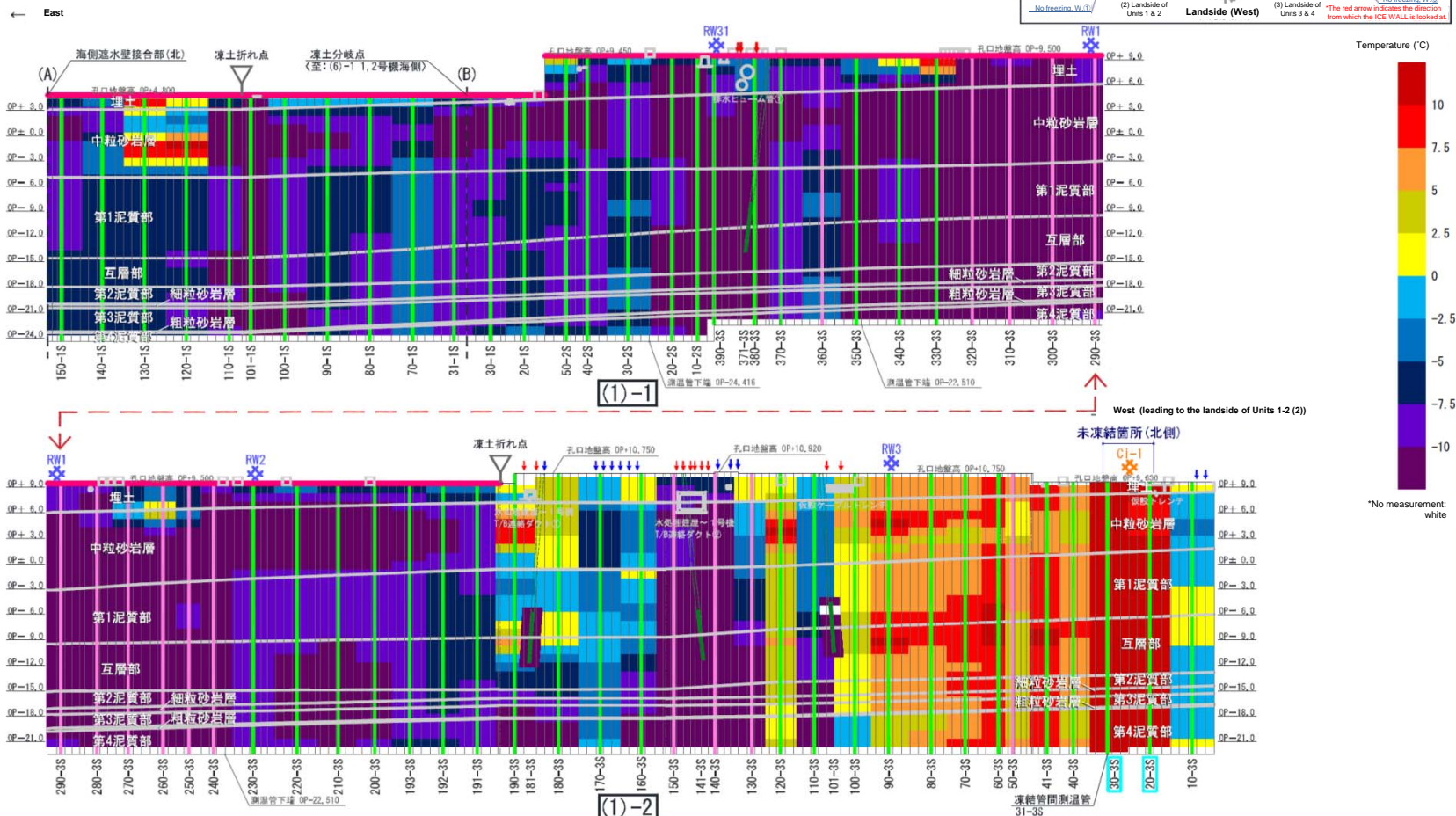
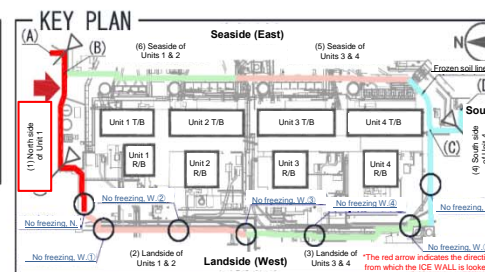
■ Distribution map of soil temperatures

(1) North side of Unit 1 (a view from the north side)

(The temperature data as of 7 a.m. on June 21.)

[Legend]

- : Thermometer pipe for the outside of frozen soil line
- : Thermometer pipe for the inside of frozen soil line
- ▲ : Diagonally installed thermometer pipe for the soil freezing pipes installed on multiple line
- : Thermometer pipe for no freezing areas
- ▽ : Corner of frozen soil line
- ✕ : RE (recharge well)
- ✕ : CI (medium-grained sandstone layer in the inside of frozen soil line)
- ↓ : Soil freezing pipes installed on single line (advanced freezing)
- ↓ : Soil freezing pipes installed on multiple lines (advanced freezing)
- : Freezing areas for the seaside and a part of the north side



The distribution maps on pages 7-12 are for reference to check soil temperature fluctuations of the depth direction which are measured by the thermometer pipes installed around the Landside Impermeable Wall.

[Reference] Distribution map of soil temperatures (west side of Units 1-2)



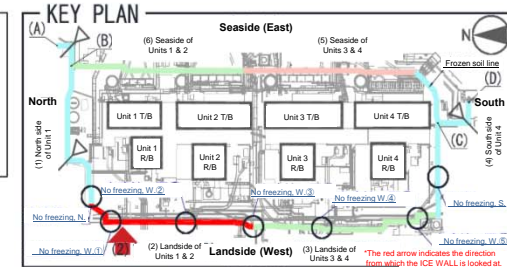
■ Distribution map of soil temperatures

(2) Landside of Units 1-2 (a view from the west side)

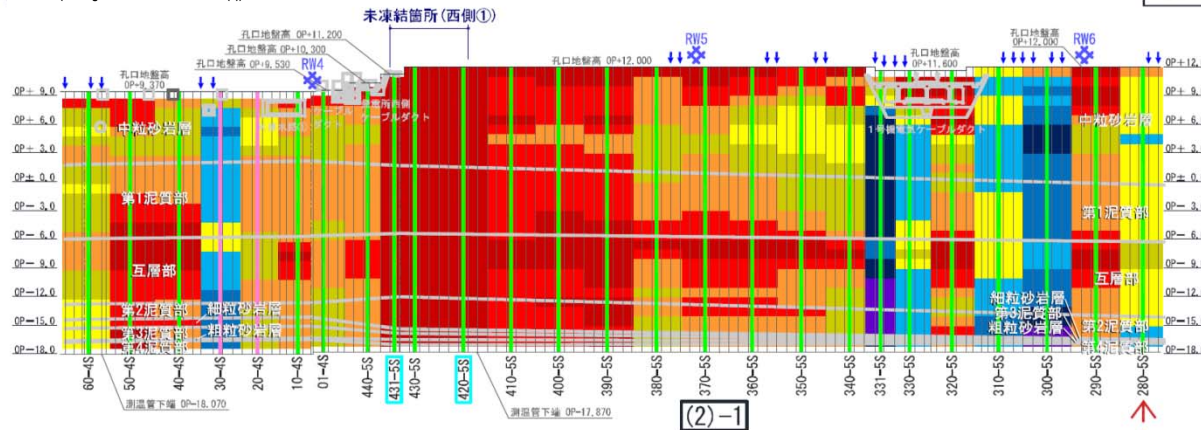
(The temperature data as of 7 a.m. on June 21.)

[Legend]

- : Thermometer pipe for the outside of frozen soil line
- : Thermometer pipe for the inside of frozen soil line
- : Diagonally installed thermometer pipe for the soil freezing pipes installed on multiple line
- : Thermometer pipe for no freezing areas
- ▽ : Corner of frozen soil line
- ✕ : RE (recharge well)
- ✕ : CI (medium-grained sandstone layer in the inside of frozen soil line)
- ↓ : Soil freezing pipes installed on single line (advanced freezing)
- ↓ : Soil freezing pipes installed on multiple lines (advanced freezing)
- : Freezing areas for the seaside and a part of the north side

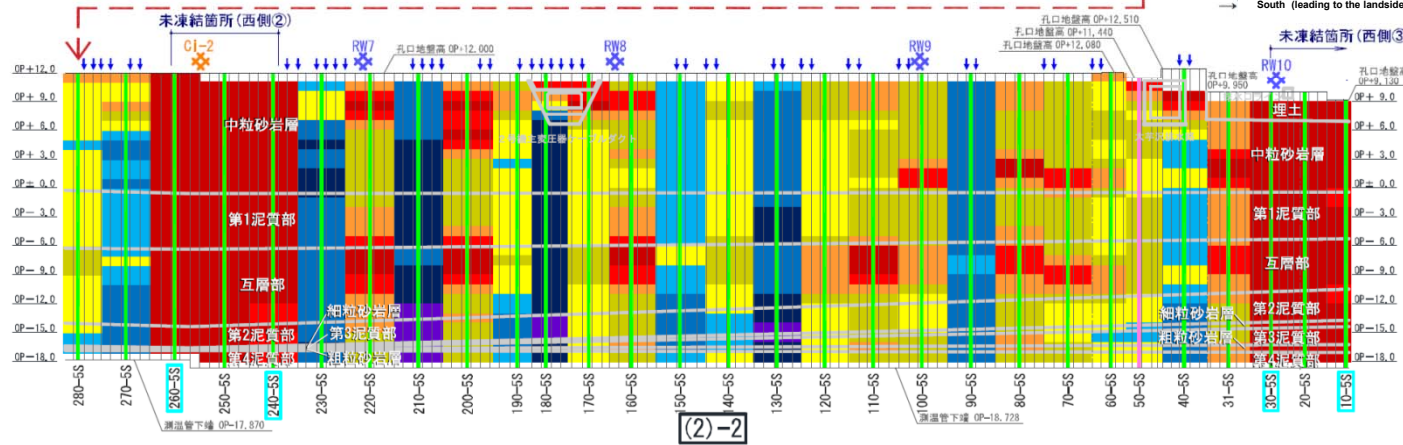


← North (leading to the north side of Unit 1 (1))



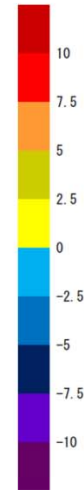
(2)-1

→ South (leading to the landside of Units 3-4 (3))



(2)-2

Temperature (°C)



*No measurement: white

[Reference] Distribution map of soil temperatures (west side of Units 3-4) TEDCO

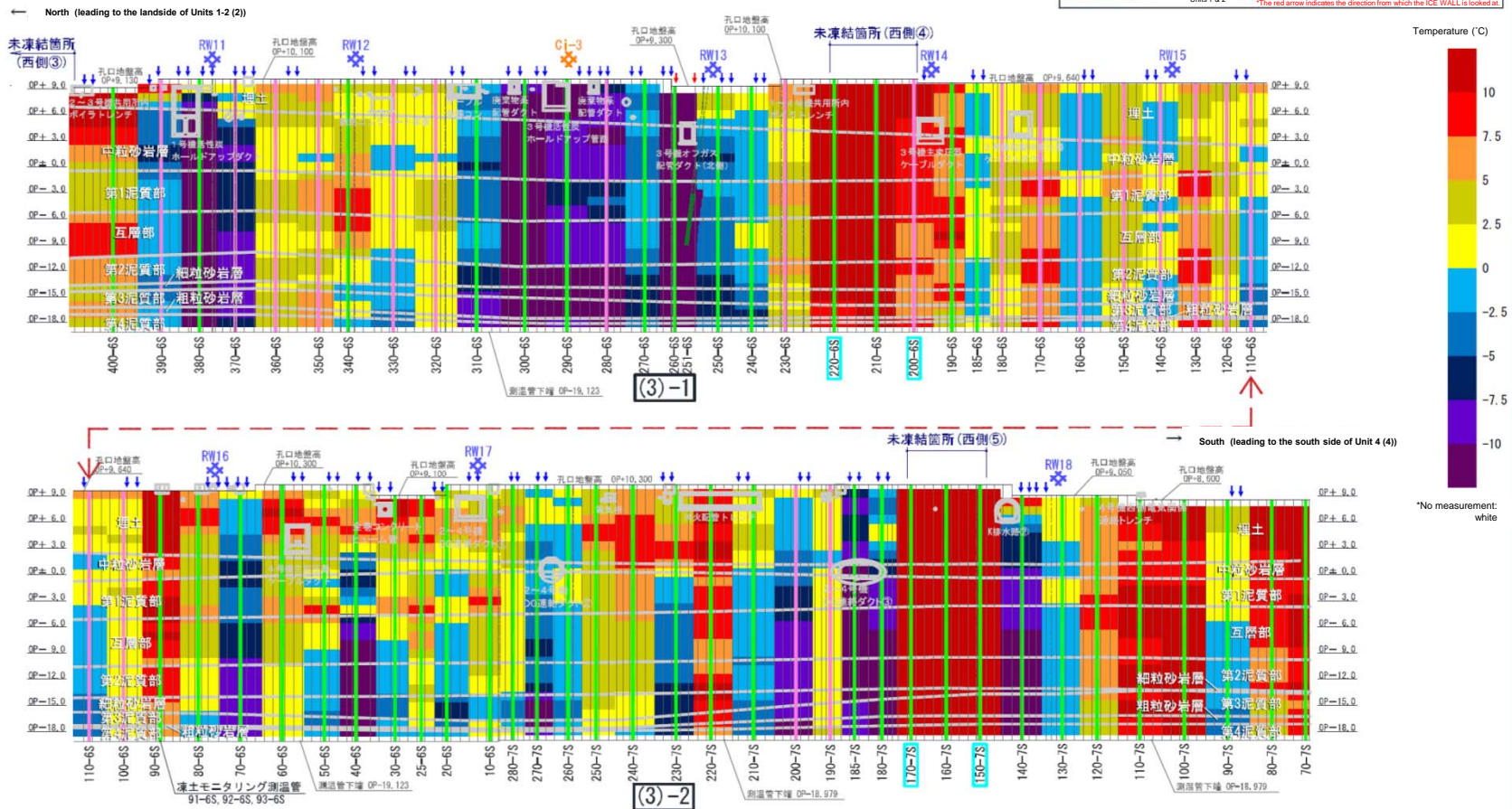
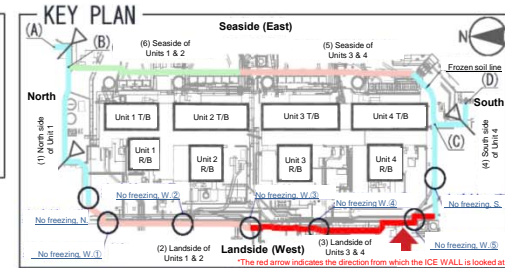
■ Distribution map of soil temperatures

(3) Landside of Units 3-4 (a view from the west side)

(The temperature data as of 7 a.m. on June 21)

[Legend]

- Thermometer pipe for the outside of frozen soil line
- Thermometer pipe for the inside of frozen soil line
- ◀▶ Diagonally installed thermometer pipe for the soil freezing pipes installed on multiple line
- Thermometer pipe for no freezing areas
- ▽ Corner of frozen soil line
- ✕ RE (recharge well)
- ✕ CI (medium-grained sandstone layer in the inside of frozen soil line)
- ↓ Soil freezing pipes installed on single line (advanced freezing)
- ↓ Soil freezing pipes installed on multiple lines (advanced freezing)
- Freezing areas for the seaside and a part of the north side



[Reference] Distribution map of soil temperatures (south side of Unit 4)



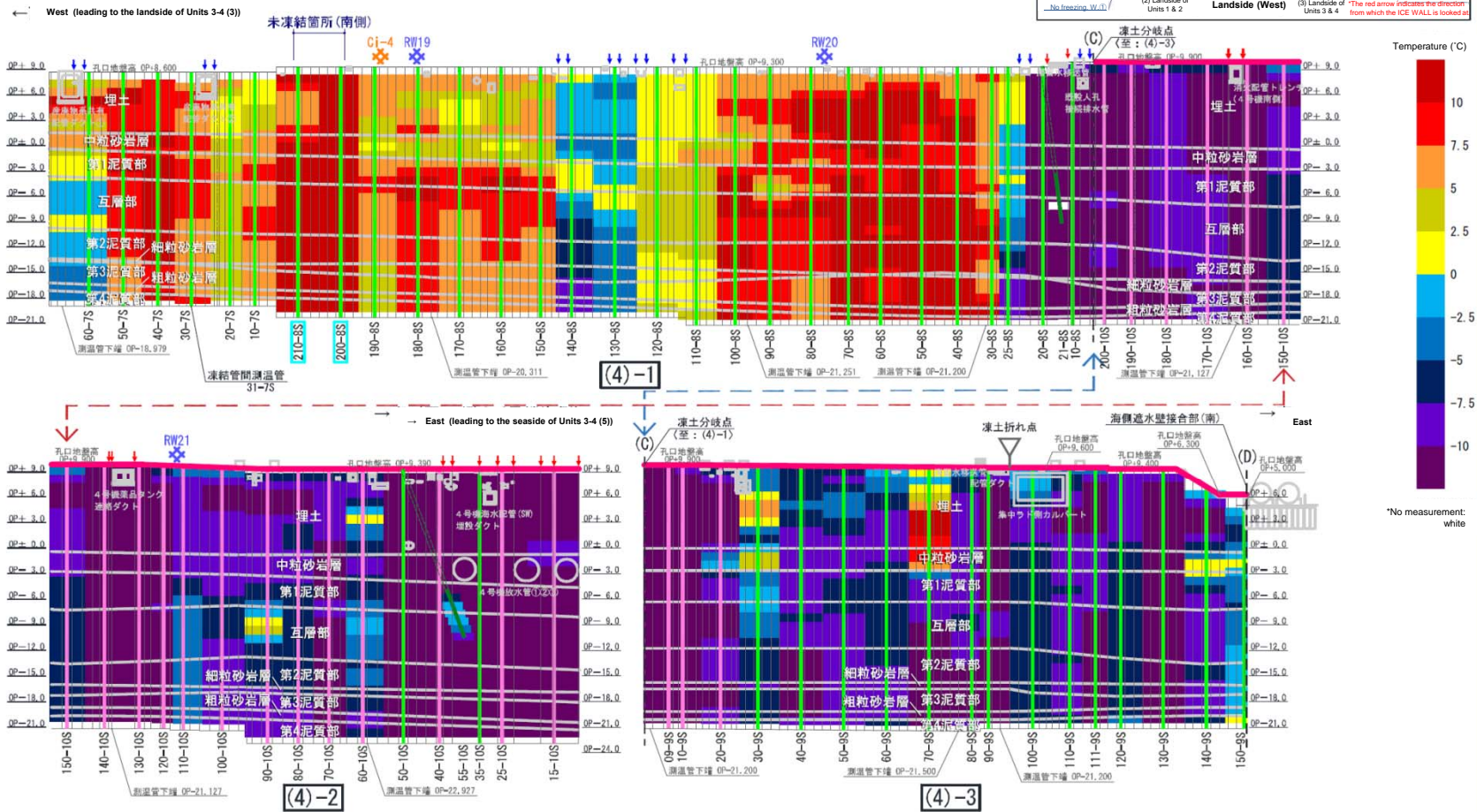
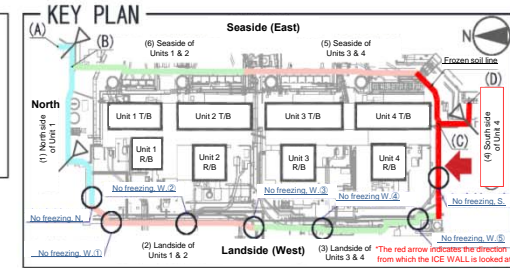
■ Distribution map of soil temperatures

(4) South side of Unit 4 (a view from the south side)

(The temperature data as of 7 a.m. on June 21)

[Legend]

- Thermometer pipe for the outside of frozen soil line
- Thermometer pipe for the inside of frozen soil line
- Diagonally installed thermometer pipes for the soil freezing pipes installed on multiple line
- Thermometer pipe for no freezing areas
- Corner of frozen soil line
- RE (recharge well)
- CI (medium-grained sandstone layer in the inside of frozen soil line)
- Soil freezing pipes installed on single line (advanced freezing)
- Soil freezing pipes installed on multiple lines (advanced freezing)
- Freezing areas for the seaside and a part of the north side



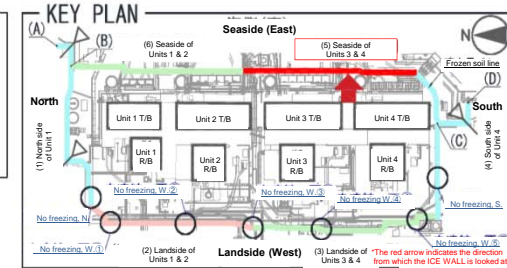
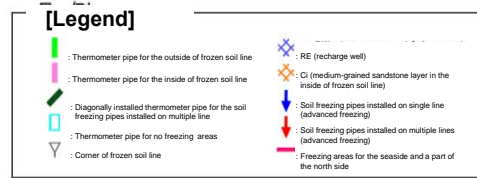
[Reference] Distribution map of soil temperatures (east side of Units 3-4)



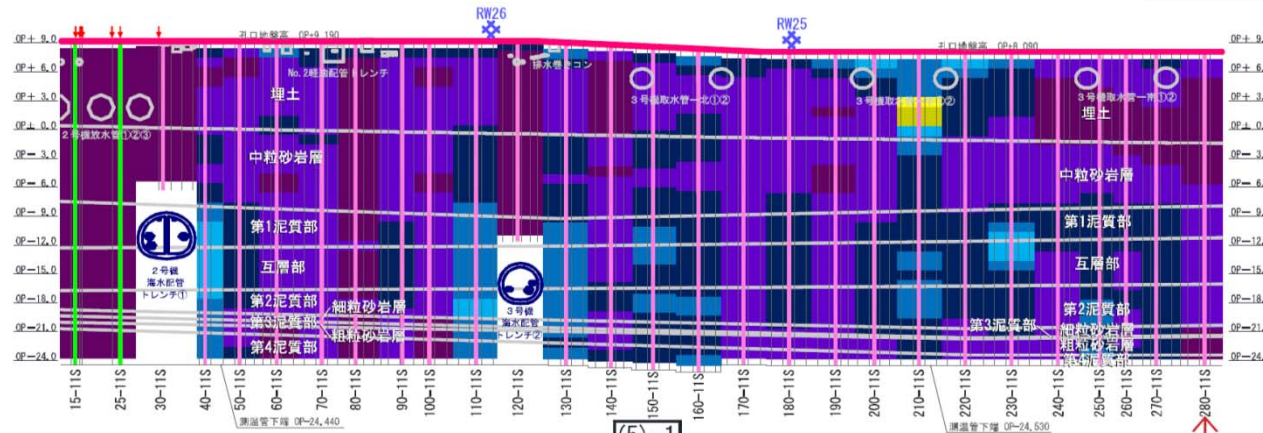
■ Distribution map of soil temperatures

(5) Seaside of Units 3-4 (west side: a view from the inside of frozen soil)

(The temperature data as of 7 a.m. on June 21)

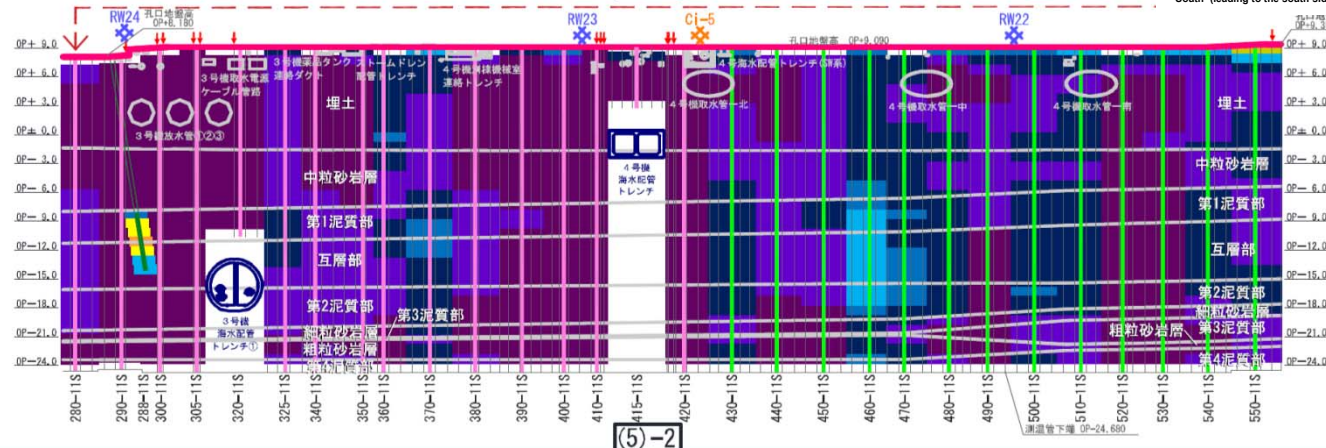


← North (leading to the seaside of Units 1-2 (6))

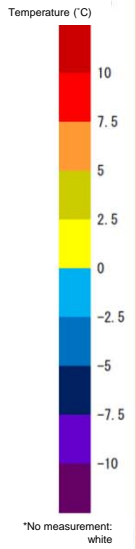


(5)-1

→ South (leading to the south side of Unit 4 (4))



(5)-2



[Reference] Distribution map of soil temperature (east side of Units 1-2)



■ Distribution map of soil temperatures

(6) Seaside of Units 1-2 (west side: a view from the inside of frozen soil)

(The temperature data as of 7 a.m. on June 21)

[Legend]

- : Thermometer pipe for the outside of frozen soil line
- : Thermometer pipe for the inside of frozen soil line
- : Diagonally installed thermometer pipe for the soil freezing pipes installed on multiple line
- : Thermometer pipe for no freezing areas
- ▽ : Corner of frozen soil line
- ✳ : RE (recharge well)
- ✳ : CI (medium grained sandstone layer in the inside of frozen soil line)
- ↓ : Soil freezing pipes installed on single line (advanced freezing)
- ↓ : Soil freezing pipes installed on multiple lines (advanced freezing)
- : Freezing areas for the seaside and a part of the north side

