

Progress of Landside Impermeable Wall freezing: the Second 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 part of not frozen areas on the mountainside in the second stage following the first stage, it is expected that the amount of groundwater flowing into the areas around the reactor/turbine buildings will be reduced. This will also keep groundwater from being contaminated.
- Throughout the second stage, freezing progress of the Landside Impermeable Wall will be checked by monitoring the difference in groundwater levels inside and outside of the wall and the amount of groundwater pumped up by the Subdrain, groundwater drain, and the well point systems.

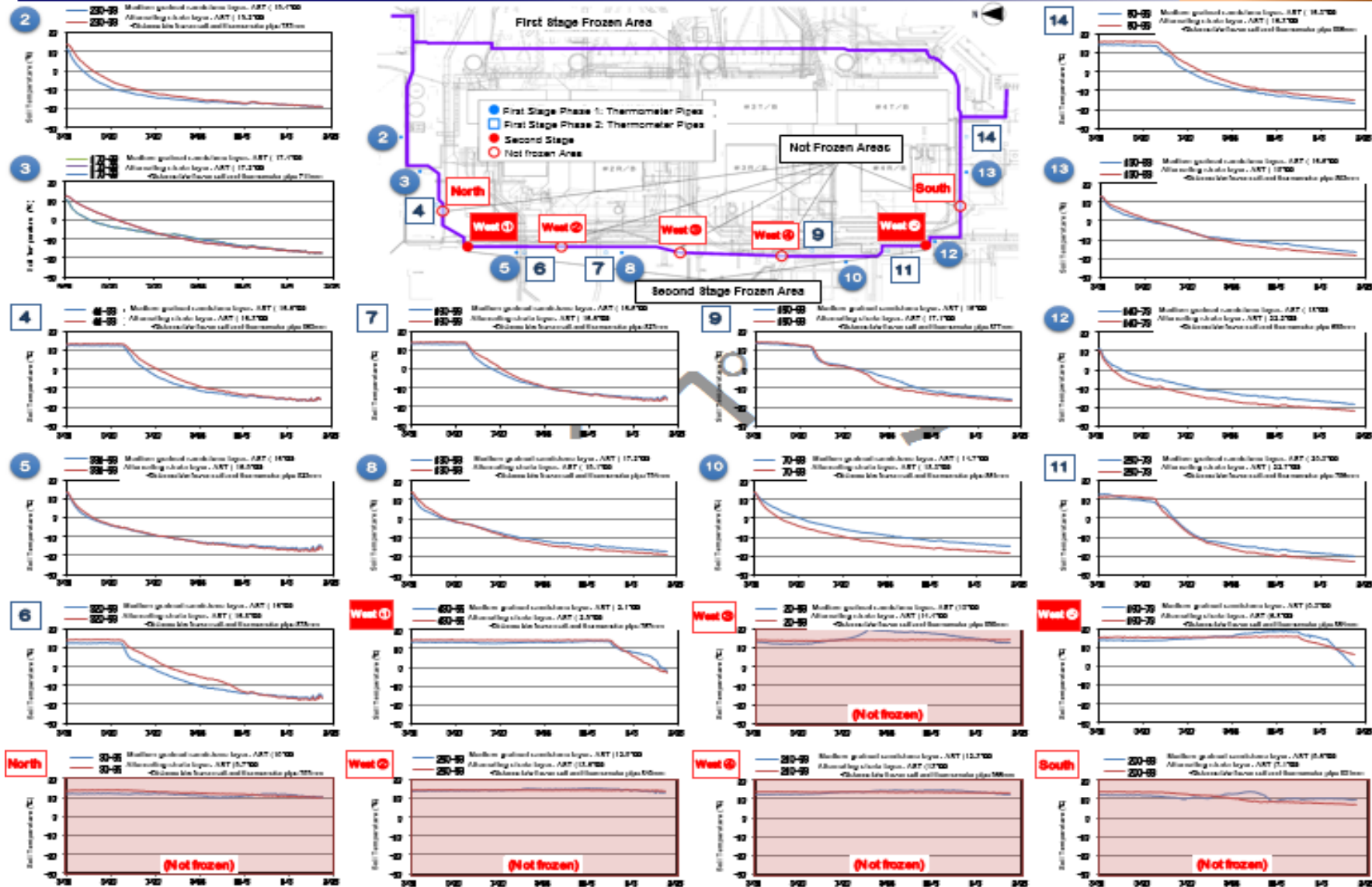
Changes in soil temperatures over time



- 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 February 14, 2017 at 7 a.m.)

Stage Two

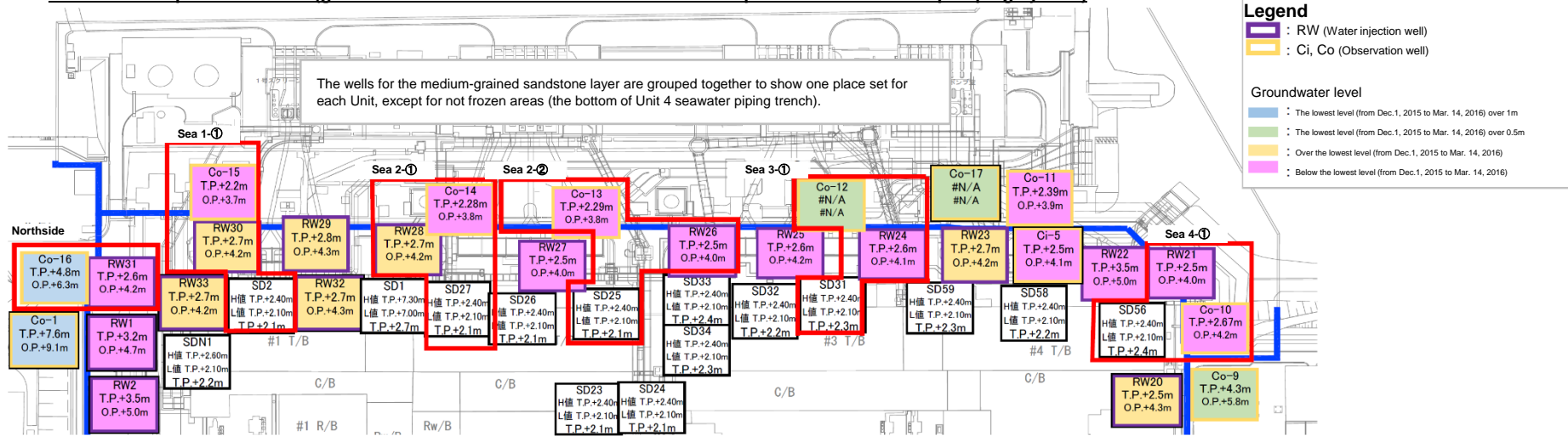


Groundwater levels and hydraulic heads (in the medium-grained sandstone layer 1 on the seaside)

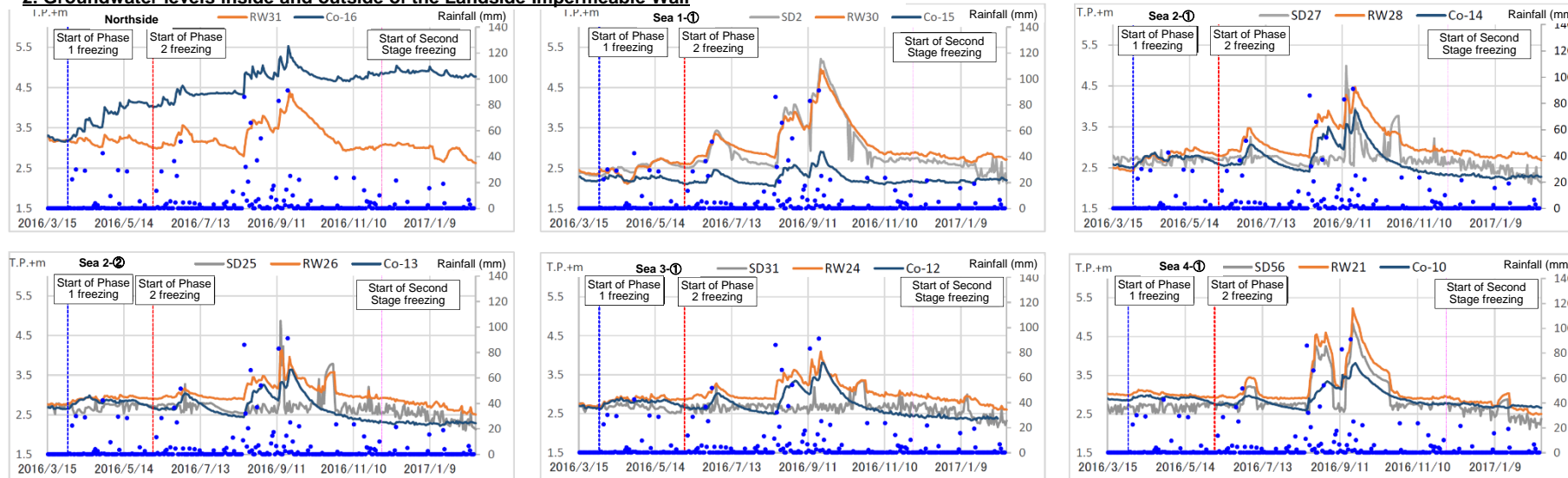


Monitoring items in early stages of the ice wall freezing (Second Stage, seaside, water levels in the medium-grained sandstone layer)

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

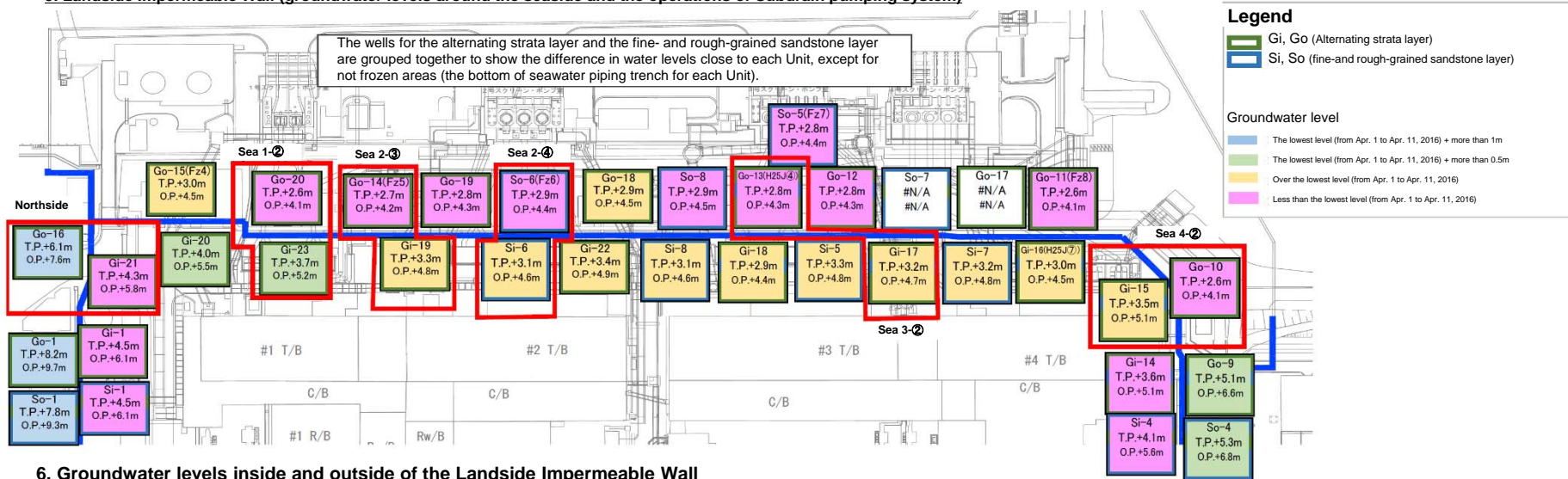


Groundwater levels and hydraulic heads

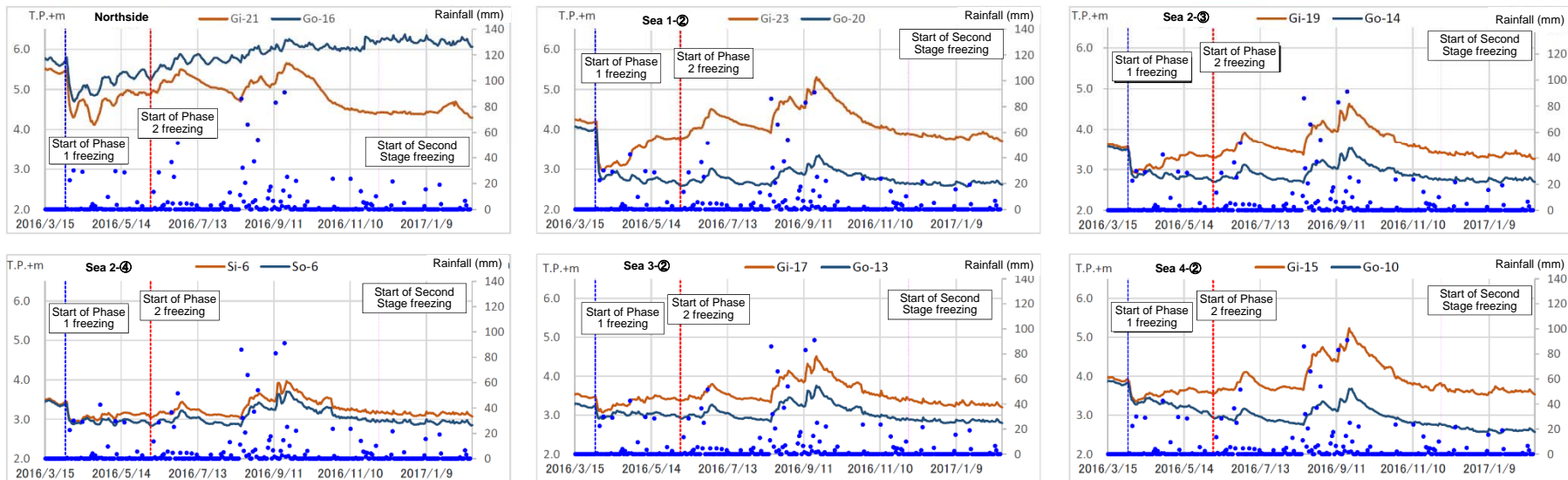
(in the alternating strata layer and the fine- and rough-grained sandstone layer 1 on the seaside) **TEPCO**

Monitoring items in an early stage of the ice wall freezing (Phase 1 Stage 1, seaside, water levels in the middle-grained sandstone layer)

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



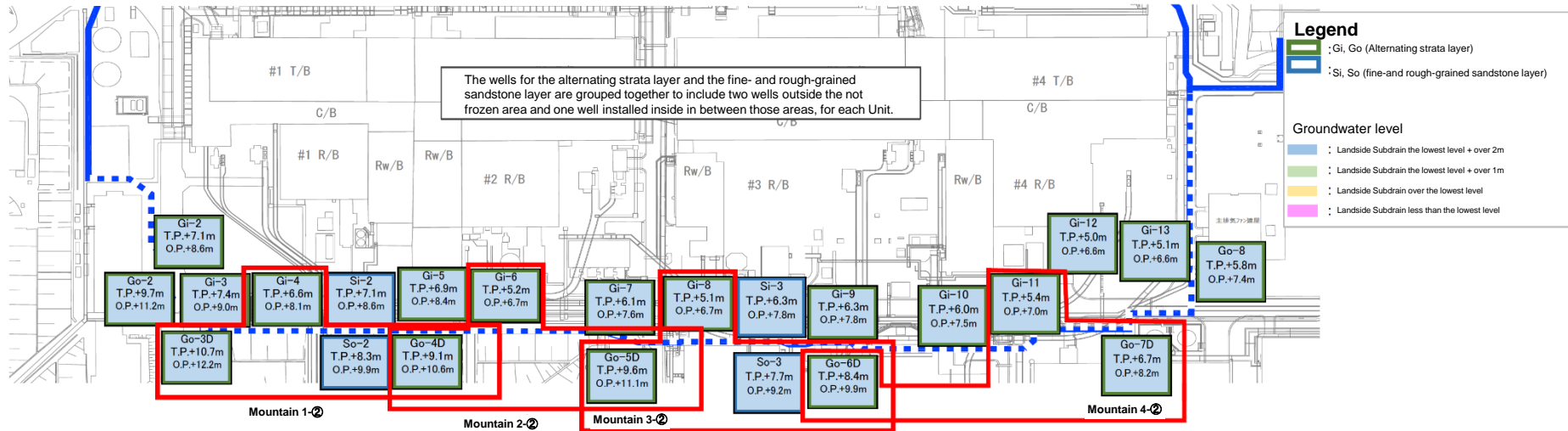
Groundwater levels data as of February 14 at 12 p.m.

Groundwater levels and hydraulic heads

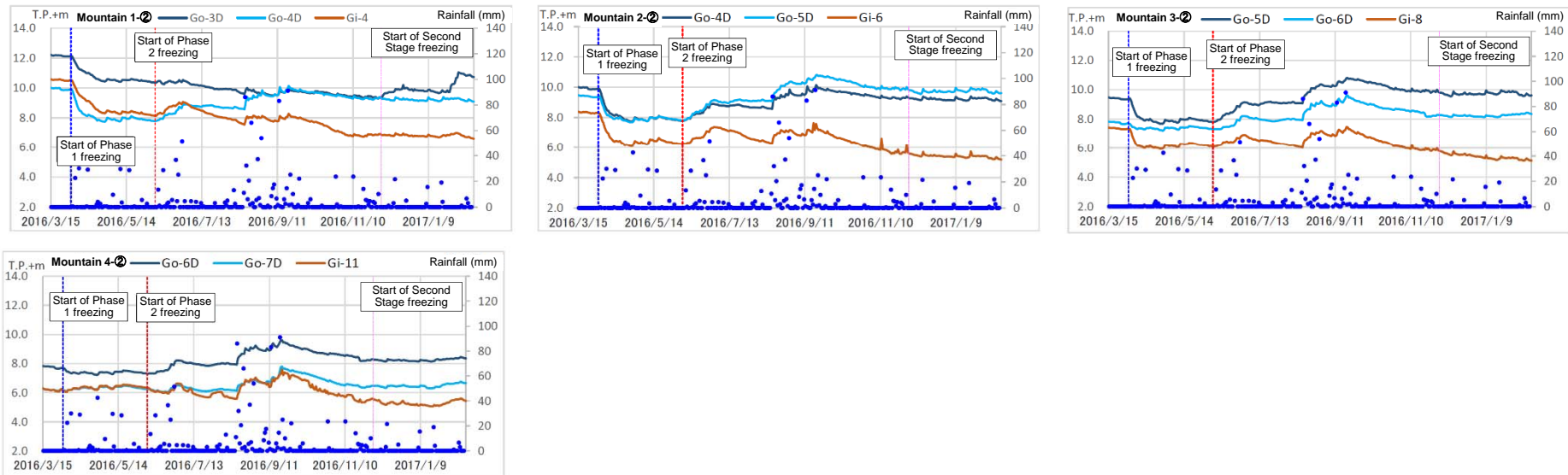
(in the alternating strata layer and the fine- and rough-grained sandstone layer hydraulic heads 2 landside) **TEPCO**

Monitoring items in early stages of ice wall freezing (Phase 1 Stage 2, landside, alternating strata layer, water levels in the fine- and rough-grained sandstone layer)

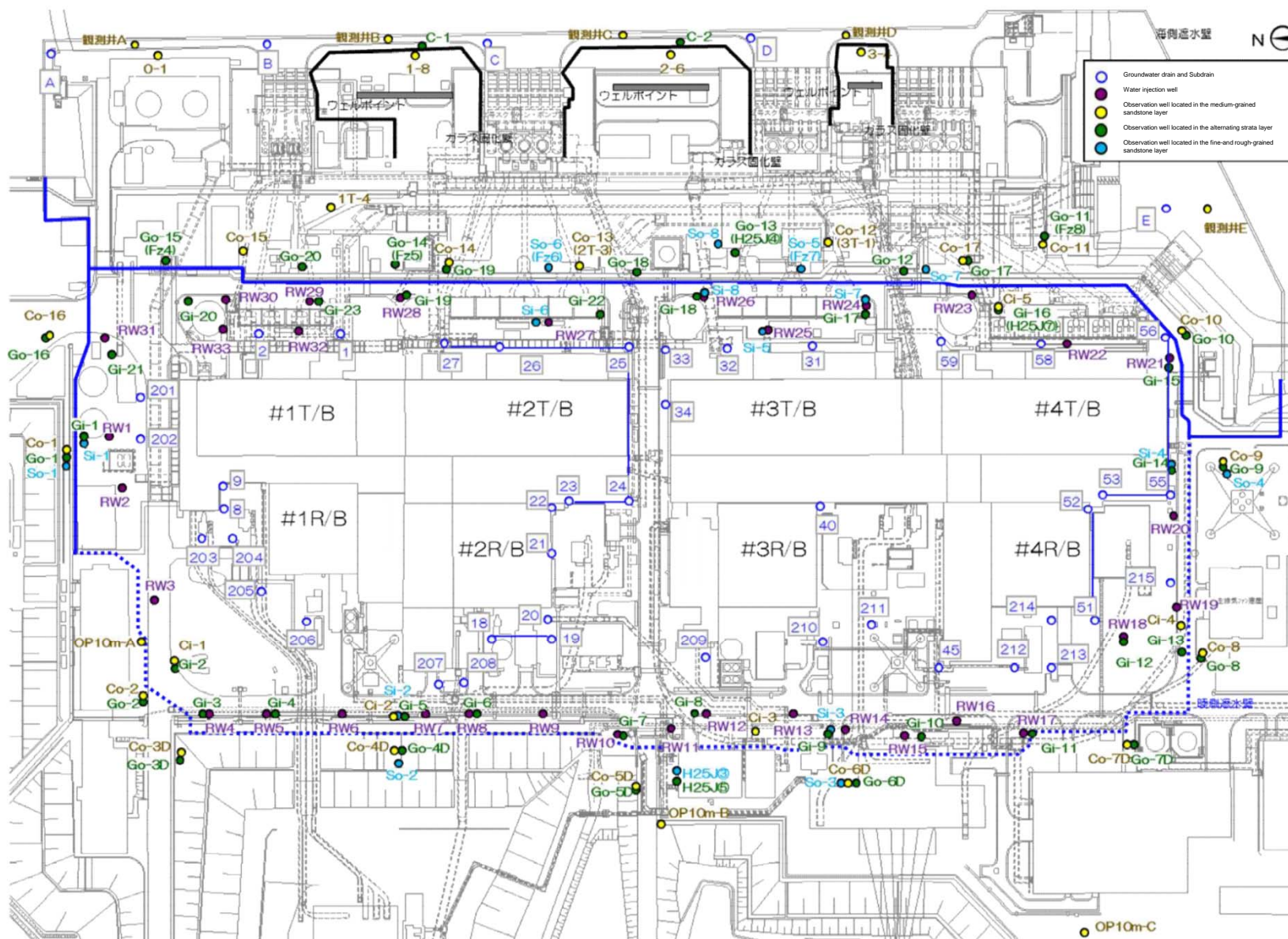
7. Landside Impermeable Wall (groundwater levels around the seaside and the Subdrain pumping system operations)



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



For Reference: Location map of groundwater level observation wells **TEPCO**



For Reference: Distribution map of soil temperatures (north side of Unit 1)



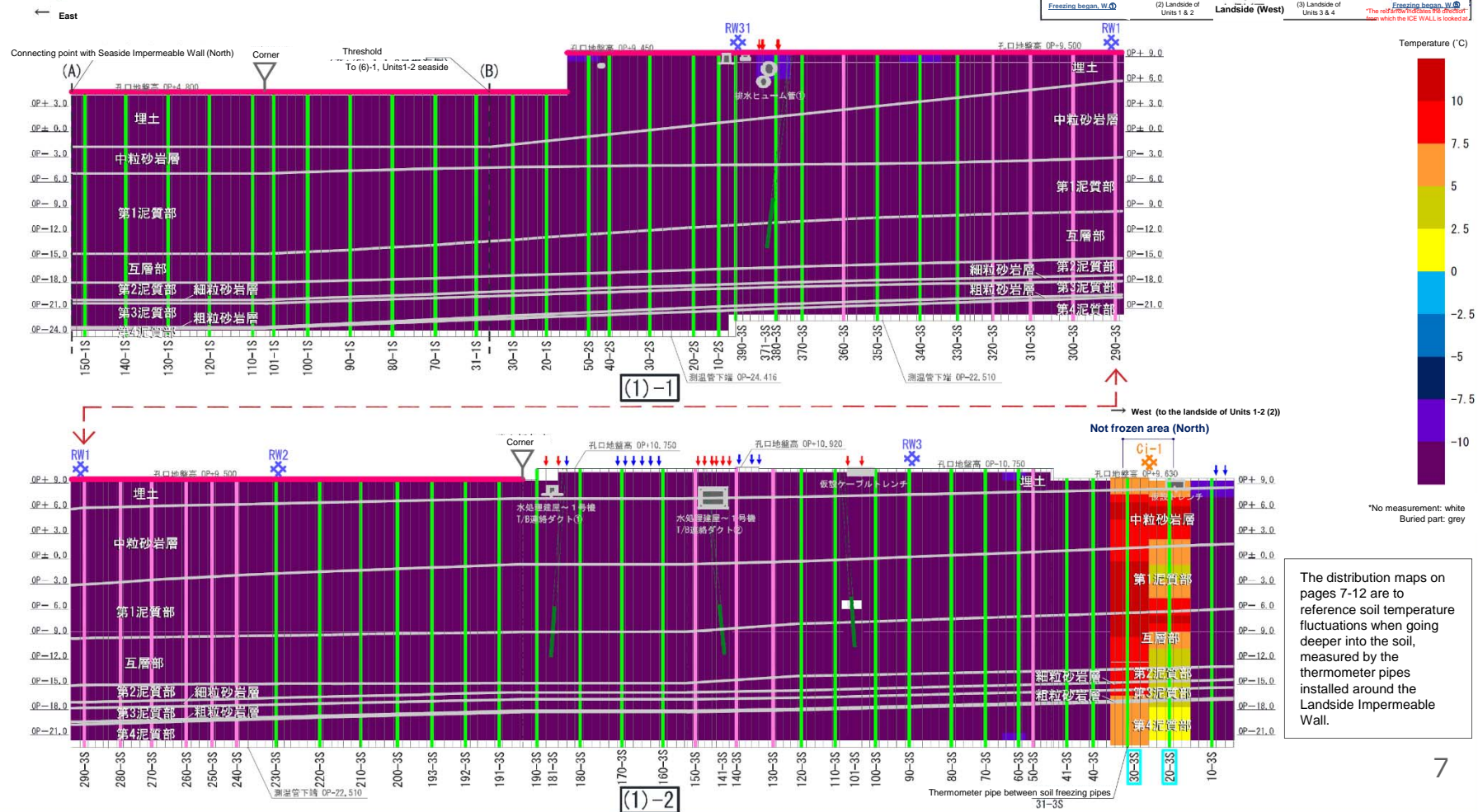
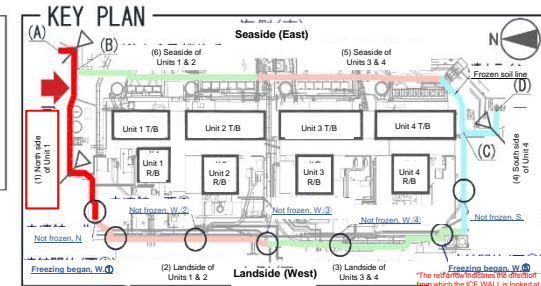
Distribution map of soil temperatures

(1) North side of Unit 1 (viewed from the north side)

(Temperature data as of February 7 at 7 a.m.)

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 in multiple lines
- Thermometer pipe for not frozen areas management
- Corner of frozen soil line
- RW (recharge well)
- CI (medium-grained sandstone layer on the inside of frozen soil line)
- Soil freezing pipes installed in a single line (advanced freezing)
- Soil freezing pipes installed in multiple lines
- Freezing areas for the seaside and a part of the north side



For Reference: Distribution map of soil temperatures (west side of Units 1-2)



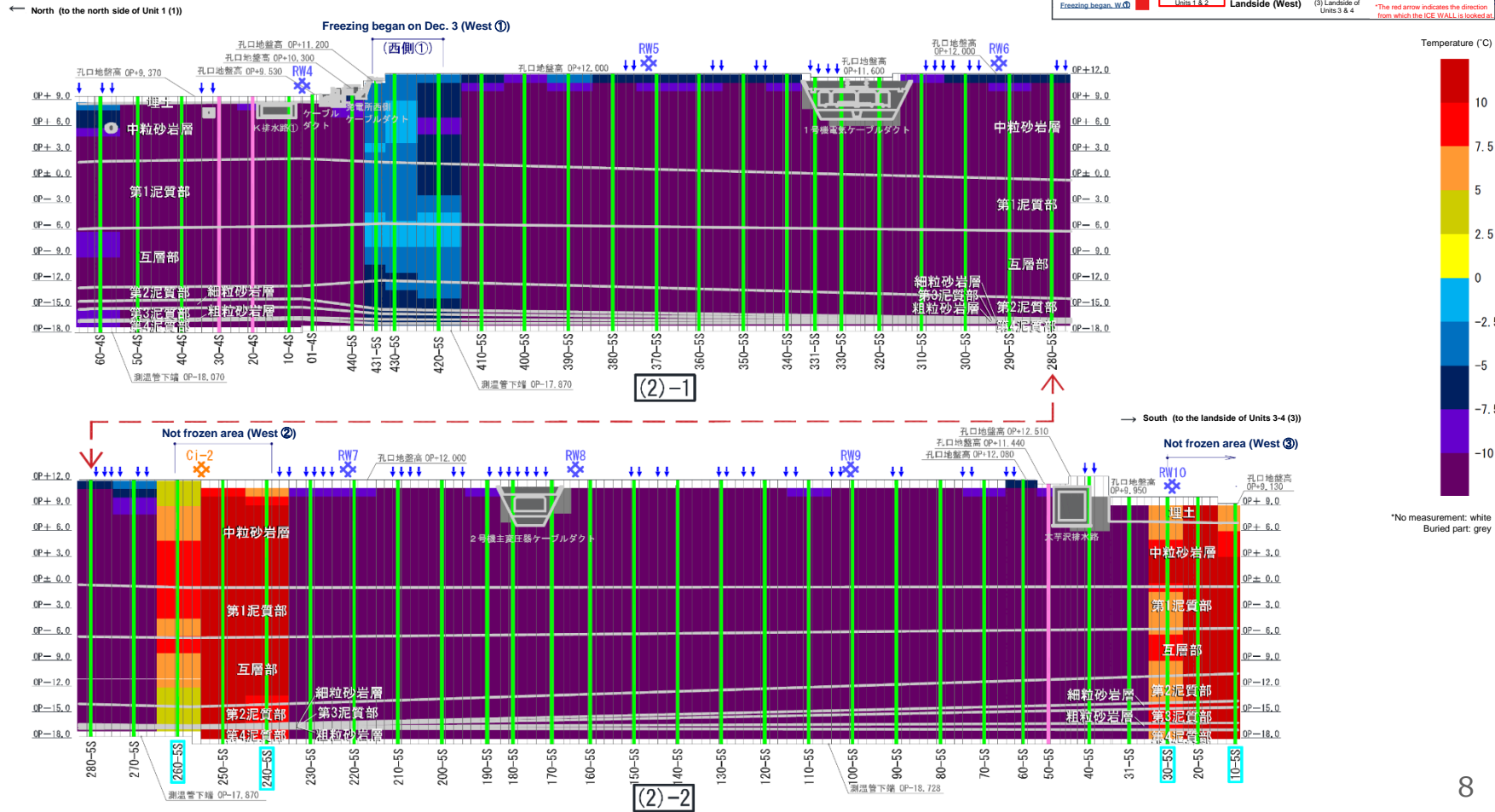
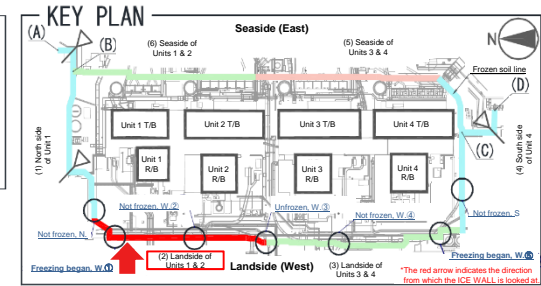
■ Distribution map of soil temperatures

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

(Temperature data as of February 14 at 7 a.m.)

Legend

- Thermometer pipe for outside of the frozen soil line
- Thermometer pipe for inside of the frozen soil line
- Diagonally installed thermometer pipe for the soil freezing pipes installed in multiple lines (advanced freezing)
- Thermometer pipe for not frozen areas management
- Corner of frozen soil line
- RW (recharge well)
- CI (medium-grained sandstone layer inside of the frozen soil line)
- Soil freezing pipes installed in a single line (advanced freezing)
- Soil freezing pipes installed in multiple lines
- Freezing areas for the seaside and a part of the north side



For Reference: Distribution map of soil temperatures (west side of Units 3-4)



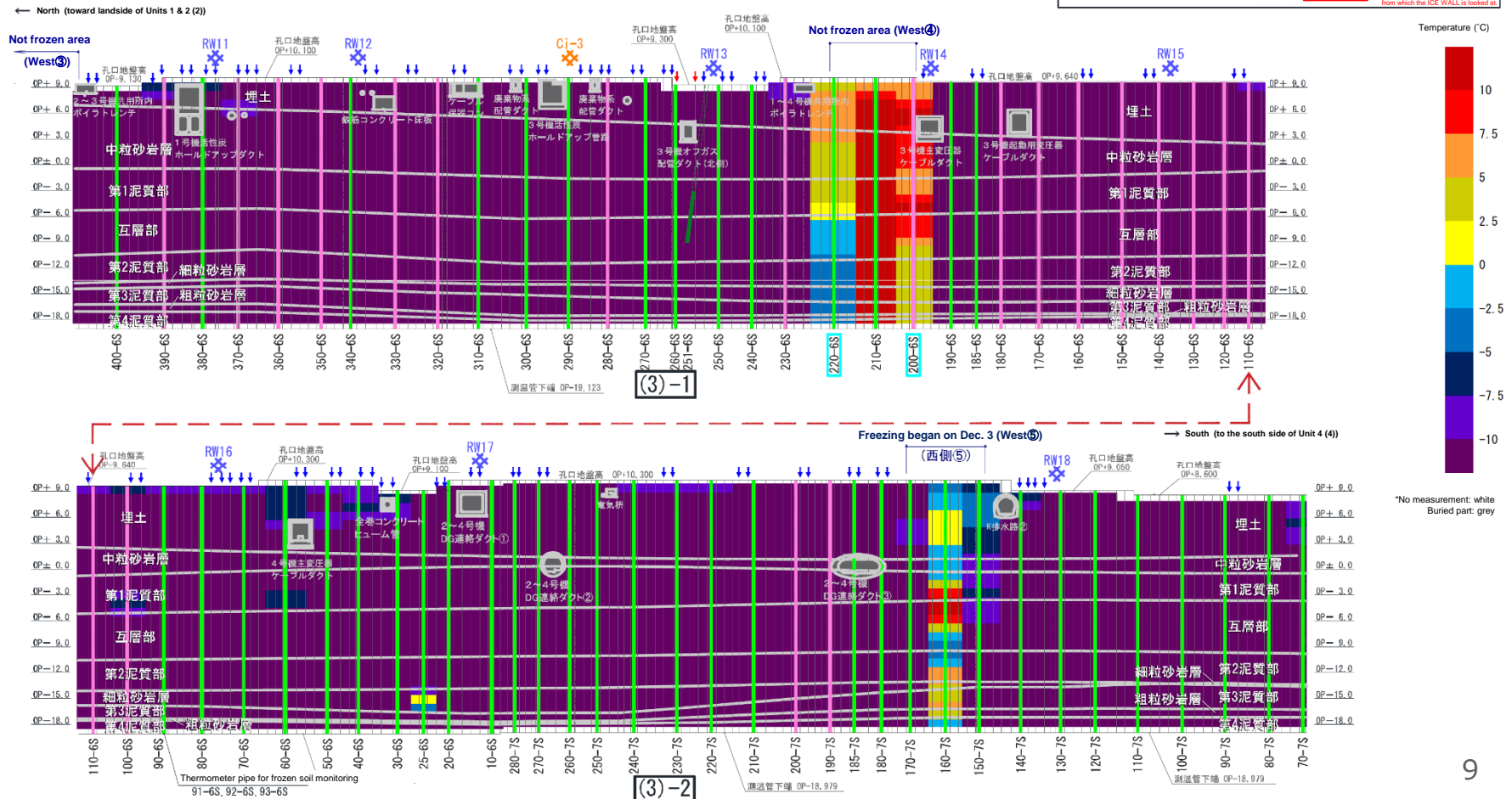
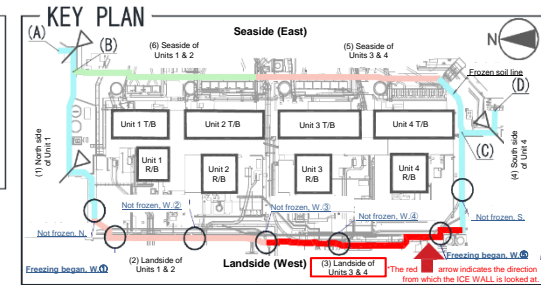
■ Distribution map of soil temperatures

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

(Temperature data as of February 14 at 7 a.m.)

Legend

- Thermometer pipe for outside of the frozen soil line
- Thermometer pipe within the frozen soil line
- Diagonally installed thermometer pipe for the soil freezing pipes installed in multiple lines
- Thermometer pipe for not frozen areas management
- Corner of frozen soil line
- RW (recharge well)
- Ci (medium-grained sandstone layer within the frozen soil line)
- Soil freezing pipes installed in a single line (advanced freezing)
- Soil freezing pipes installed in multiple lines management
- Frozen areas on the seaside and a part of the north side



For Reference: Distribution map of soil temperatures (east side of Units 3-4)



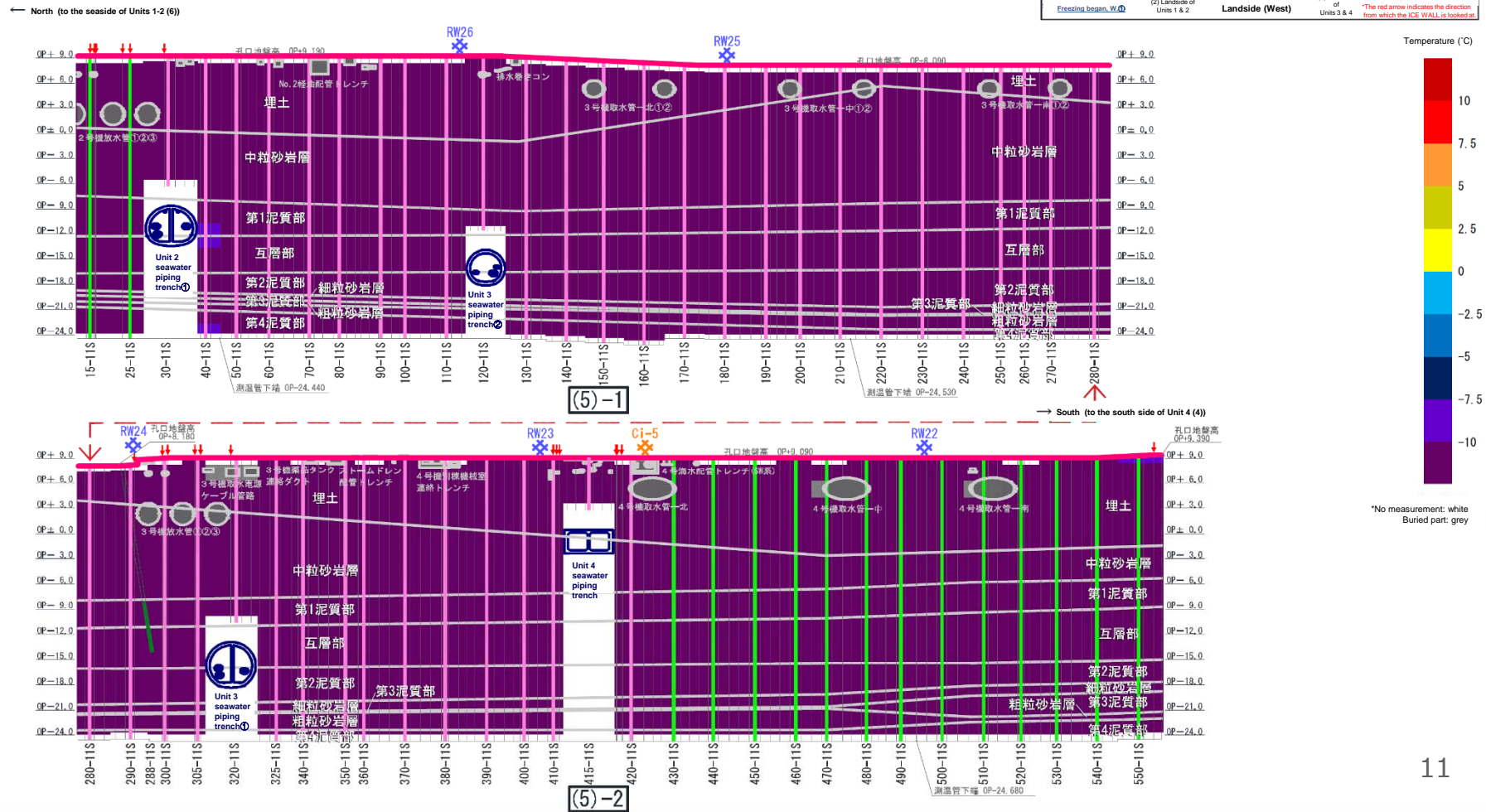
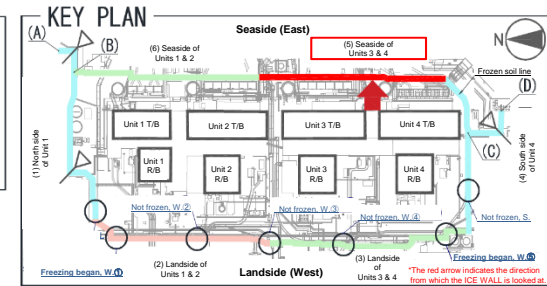
■ Distribution map of soil temperatures

(5) Seaside of Units 3-4 (west side: viewed from within frozen soil)

(Temperature data as of February 14 at 7 a.m.)

Legend

- Thermometer pipe for outside of the frozen soil line
- Thermometer pipe within the frozen soil line
- Diagonally installed thermometer pipe for the soil freezing pipes installed in multiple lines
- Thermometer pipe for not frozen areas management
- Corner of frozen soil line
- RW (recharge well)
- CI (medium-grained sandstone layer within the frozen soil line)
- Soil freezing pipes installed in a single line (advanced freezing)
- Soil freezing pipes installed in multiple lines
- Frozen areas for the seaside and a part of the north side



For 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 within frozen soil)

(Temperature data as of February 14 at 7 a.m.)

Legend

- Thermometer pipe for outside of the frozen soil line
- Thermometer pipe within frozen soil line
- Diagonally installed thermometer pipe for the soil freezing pipes installed in multiple lines
- Thermometer pipe for not frozen areas management
- Corner of frozen soil line
- RE (recharge well)
- CI (medium-grained sandstone layer within frozen soil line)
- Soil freezing pipes installed in a single line (advanced freezing)
- Soil freezing pipes installed in multiple lines management
- Frozen areas for the seaside and a part of the north side

