<Reference>

Fukushima Daiichi Nuclear Power Station

Modification for the Dose Evaluation at the Site Boundary

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TEPCO 東京電力

Dose evaluation: Main modification points

In accordance with the adding of tanks etc., the radiation dose at the site boundary changed.

- Radiation sources added (Tank G3 area and J1 area)

→Taking addition of radiation source (Tank G3 area and J1 area) etc. into account, the radiation dose was evaluated.

*As for some radiation sources (Tank G6 area, filtrate tanks etc.), the radiation source strength was revised to substantial values.

- Evaluation method modified

→Establishing many evaluation points on the site boundary, and evaluation conducted

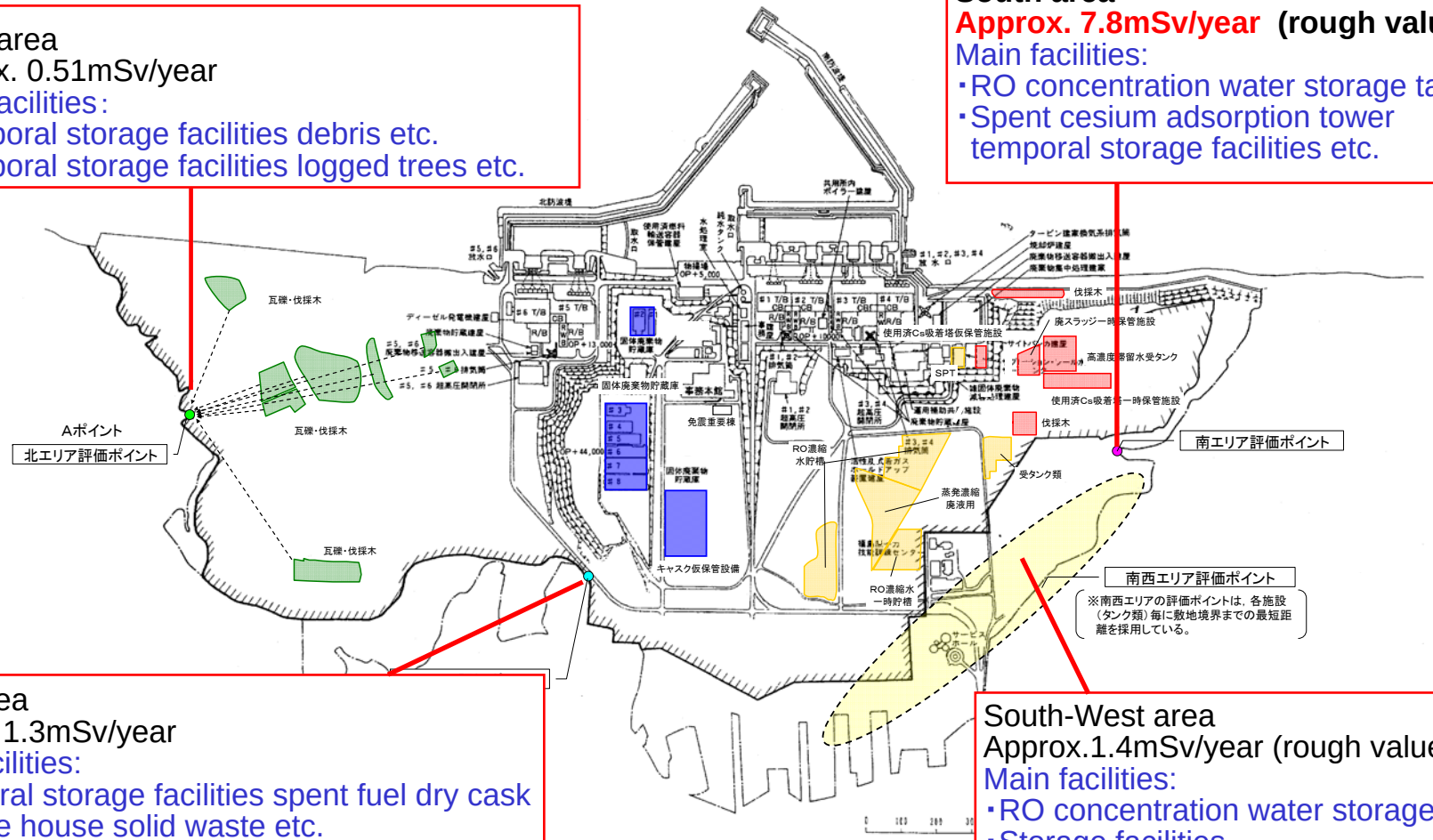
→The height difference on the ground (elevation) taken into account, and evaluation conducted at each point

1. Current evaluation

There are 4 areas in the implementation plan at present, and the highest evaluation value of the radiation dose is adopted as the effective dose **(Approx.7.8mSv/year).**

North area
Approx. 0.51mSv/year
Main facilities:
・Temporal storage facilities debris etc.
・Temporal storage facilities logged trees etc.

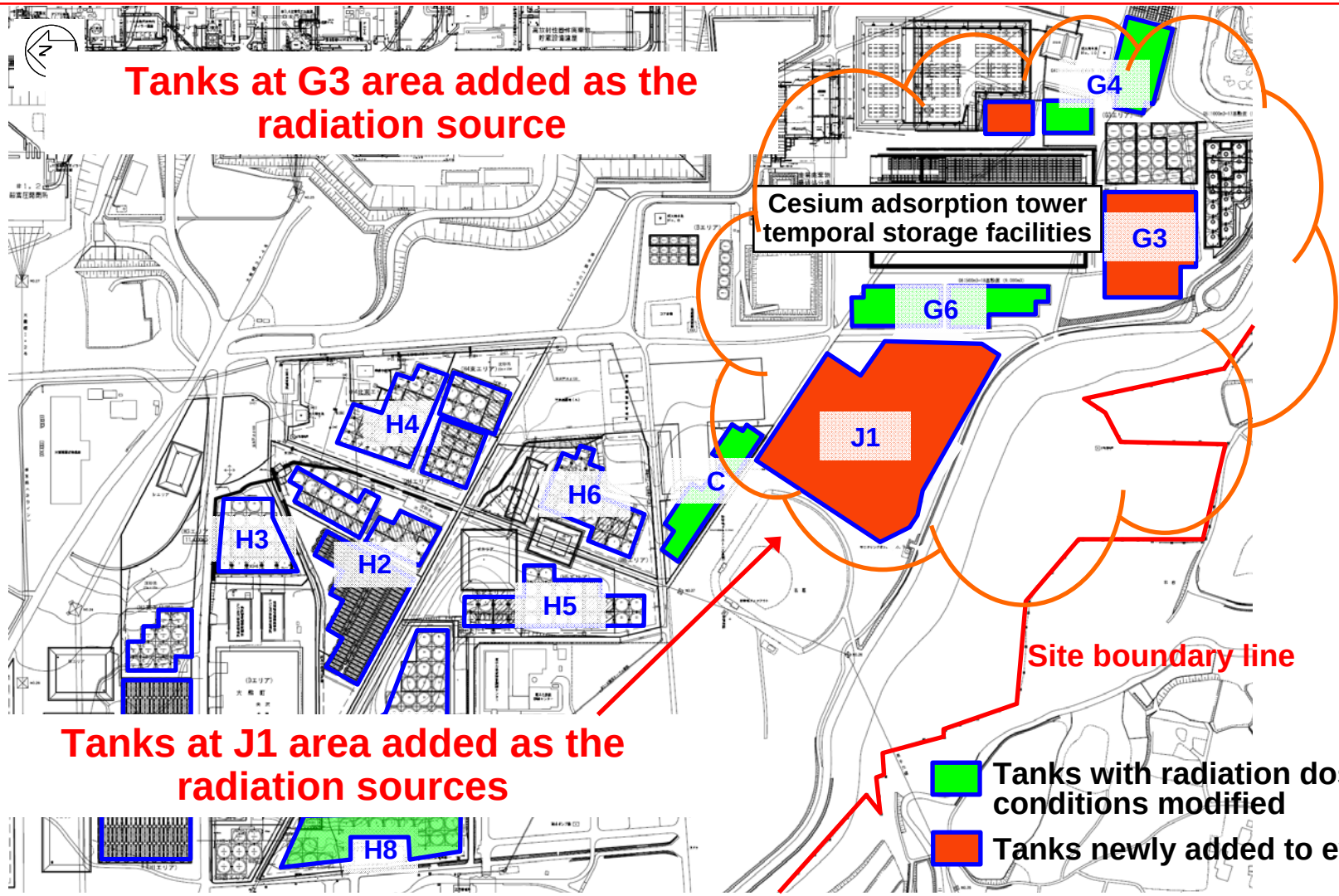
South area
Approx. 7.8mSv/year (rough value)
Main facilities:
・RO concentration water storage tank
・Spent cesium adsorption tower temporal storage facilities etc.



West area
Approx. 1.3mSv/year
Main facilities:
・Temporal storage facilities spent fuel dry cask
・Storage house solid waste etc.

South-West area
Approx.1.4mSv/year (rough value)
Main facilities:
・RO concentration water storage tank
・Storage facilities
・Logged trees and debris etc temporal storage facilities etc.

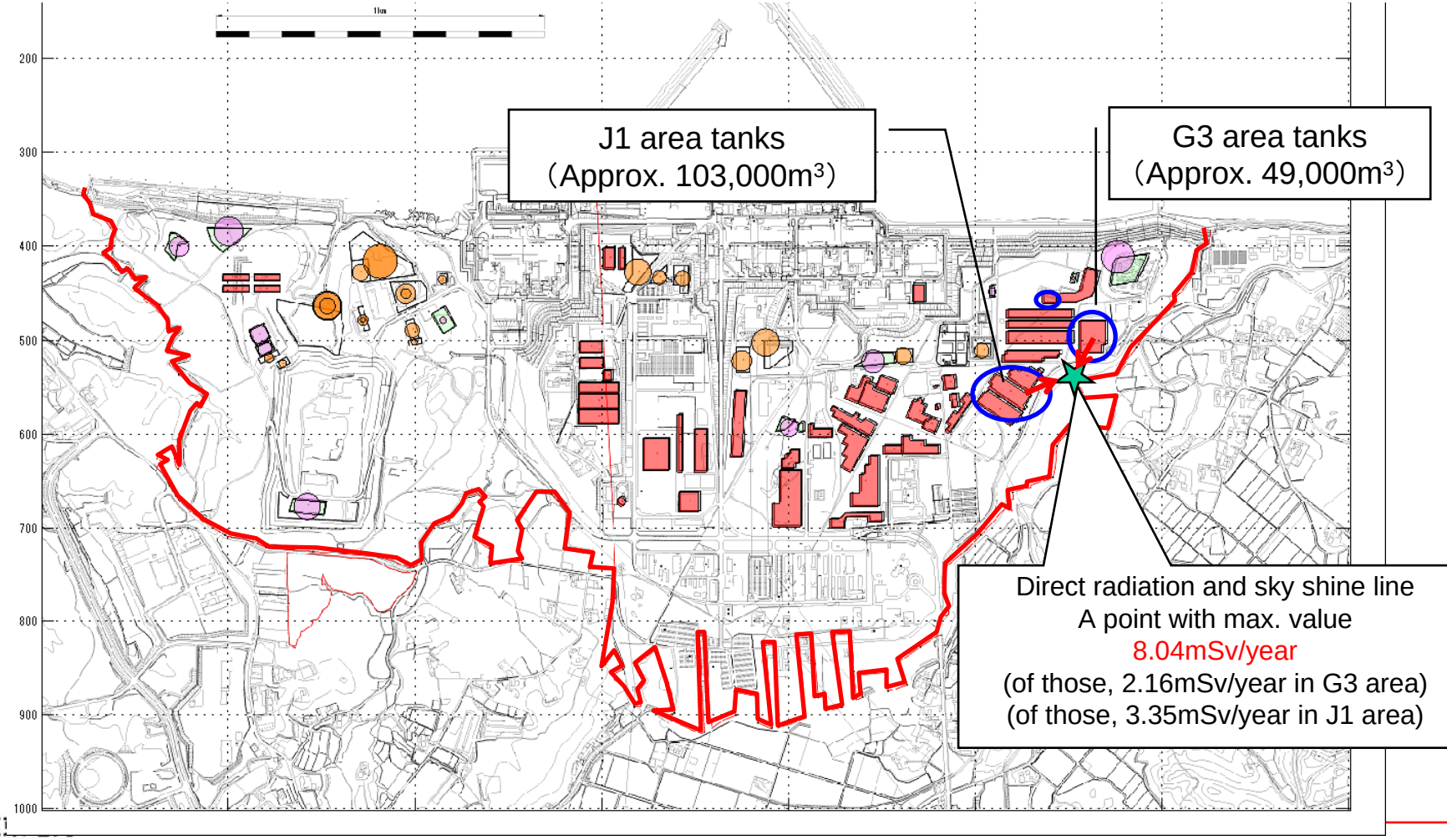
2. Addition of radiation sources etc. (distribution of tank areas)



- In addition, there were some changes made regarding 1)the radiation dose condition for storage houses of solid wastes, 2)the amount of storage at Buildings 1 and 2, and 3)the radiation source condition for the height of pile-up at the temporal storage area for debris etc., all which do not contribute to the dose evaluation value.

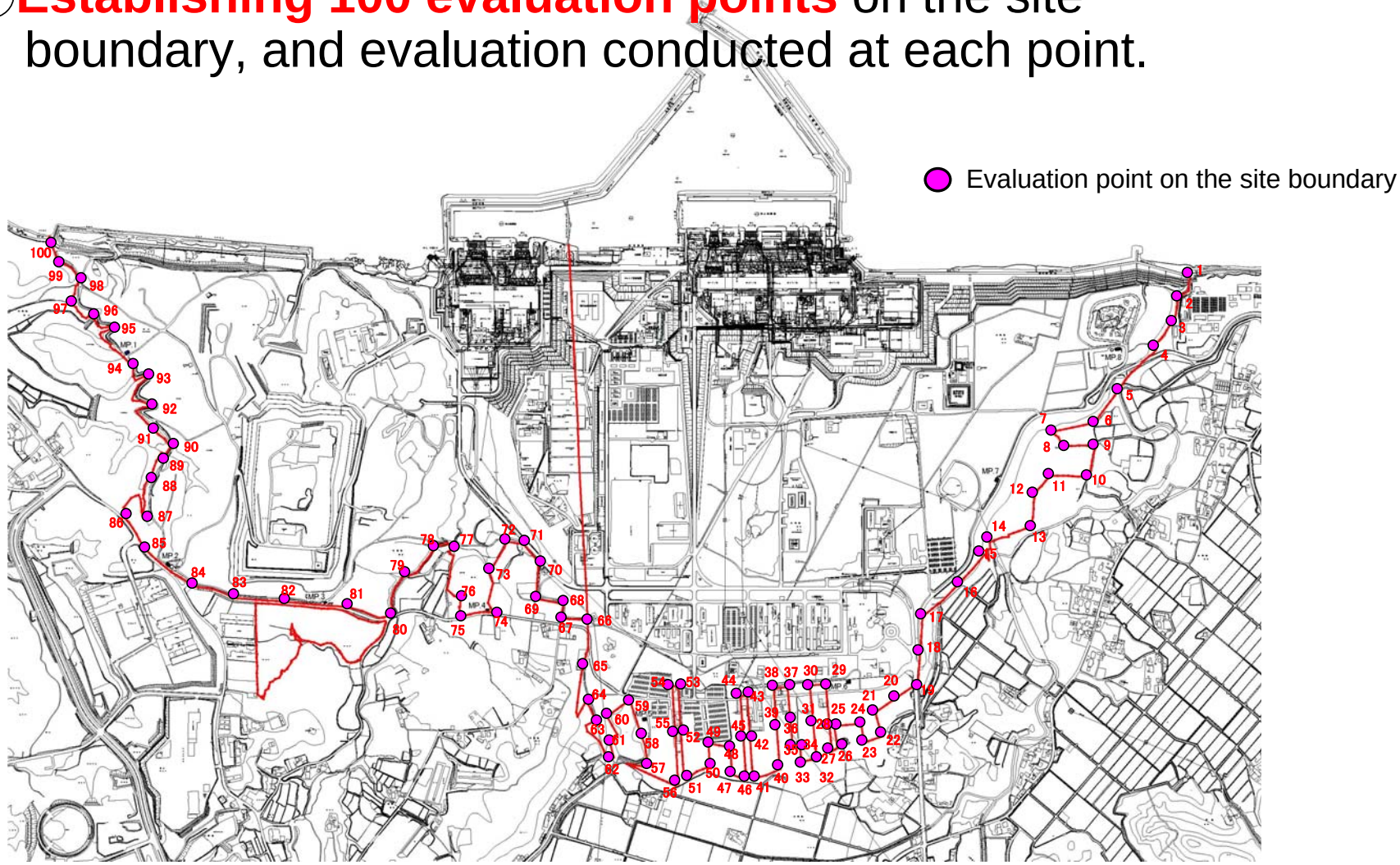
3. Results of the dose evaluation

- After 1)adding the tanks at G3 and J1 areas, and 2)taking the elevation into account, the highest value is **approx. 8.04mSv/year** in the south side of the site.



4. Modified evaluation method (considering evaluation)

①**Establishing 100 evaluation points** on the site boundary, and evaluation conducted at each point.



・Extracting inflection points on the site boundary

5. Modification for evaluation method (considering elevation)

[Evaluation method]

As for the elevation on the ground, the evaluation is conducted as follows.

- **Where the evaluation point is located higher than the radiation source**

  These evaluation points are evaluated with the elevation considered.

- **Where the evaluation point is located lower than the radiation source**

  These evaluation points are evaluated with the difference in the elevation taken into account.

  The difference of the elevation will not be considered at some radiation sources* where contribution is extremely low.

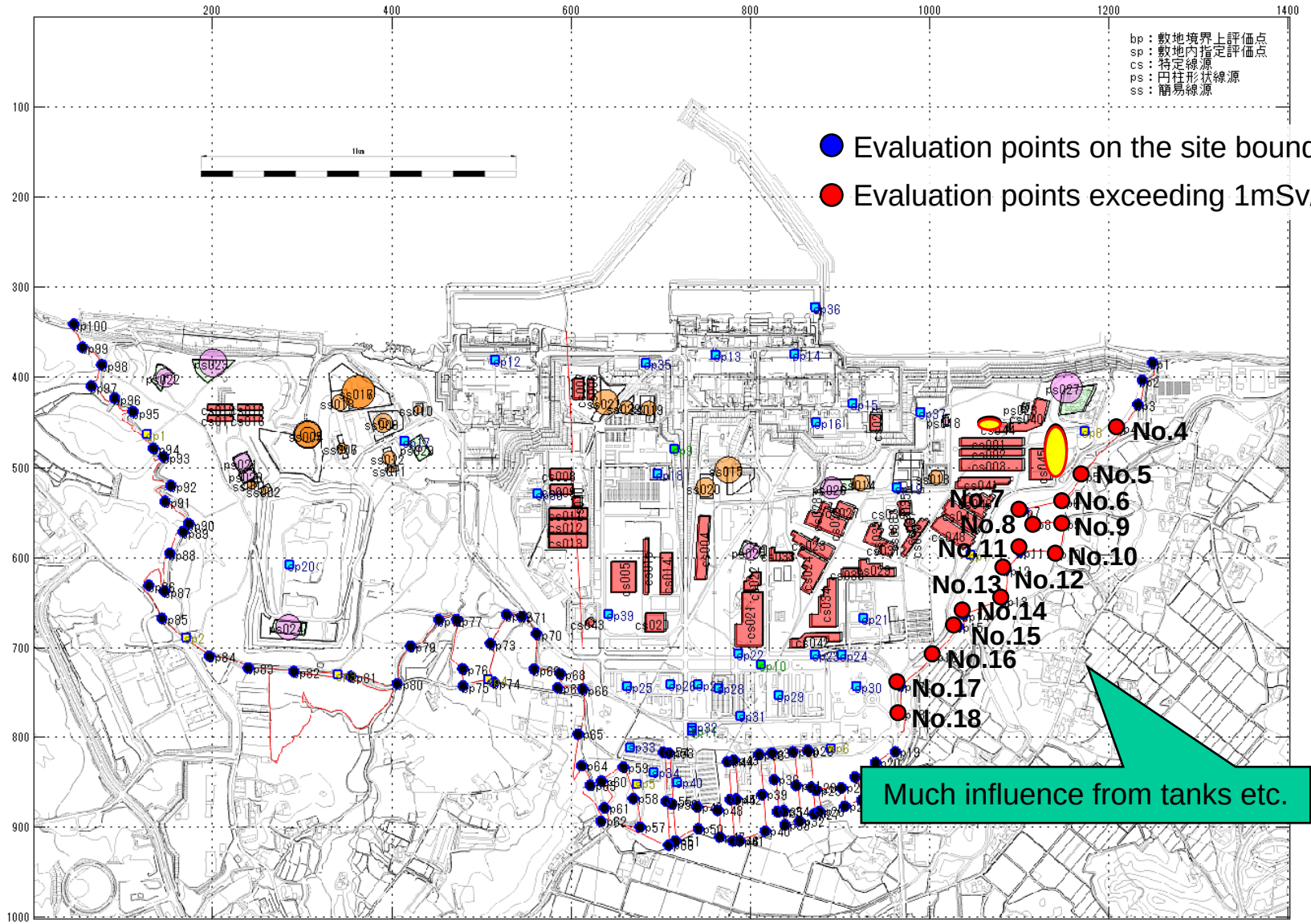
*‘Radiation sources with low radioactivity strength’ or ‘radiation sources with small difference in the elevation’ does not influence on the results of the evaluation, because the distance causes a bigger damping effects than the elevation effect.

6. Summary (Modification points of the evaluation at present)

	Current evaluation and modification points	
	Modification for radiation sources etc.	Evaluation method
（Current evaluation ） 7.8mSv/year	–	・4 areas to be evaluated ・No consideration for elevation
（After modified） 8.04mSv/year	・G3 tanks added ・J1 tanks added ・ The radiation source strength was revised to substantial values. (・ Radiation dose condition at solid wastes storage house) (・The height of piling some debris etc modified)	・Several points on the site boundary to be evaluated ・Consideration for elevation

*As soon as ready, a request to change the implementation plan will be submitted.

(Reference) Evaluation points where the radiation dose exceeds 1mSV/year on the site boundary



(Reference) Main radiation sources with a large contribution at the evaluation points exceeding 1mSv/year on the site boundary

	No.4	No.5	No.6	No.7	No.8	No.9	No.10
	1.07	3.20	3.92	8.04	4.68	2.22	1.43
Main radiation sources with a large contribution	RO concentrated water storage tank(16)	RO concentrated water storage tank(G3)	RO concentrated water storage tank(G3)	RO concentrated water storage tank(J1)	RO concentrated water storage tank(J1)	RO concentrated water storage tank(G3)	RO concentrated water storage tank(J1)
	0.42	1.94	2.30	3.35	1.95	1.08	0.54
	RO concentrated water storage tank(G3)	RO concentrated water storage tank(16)	RO concentrated water storage tank(J1)	RO concentrated water storage tank(G3)	RO concentrated water storage tank(G3)	RO concentrated water storage tank(J1)	RO concentrated water storage tank(G3)
	0.36	0.59	0.54	2.16	1.32	0.50	0.36
	Temporal storage area (T)	RO concentrated water storage tank(J1)	RO concentrated water storage tank(16)	RO concentrated water storage tank(14)	RO concentrated water storage tank(14)	RO concentrated water storage tank(16)	RO concentrated water storage tank(14)
	0.099	0.21	0.45	1.16	0.57	0.23	0.23

(Note) The numerical value on the lower part shows the actual dose of the evaluation point or the calculated dose which is contributed from each radiation source (Unit: mSv/year)

(Reference) Main radiation sources with a large contribution at the evaluation points exceeding 1mSv/year on the site boundary

	No.11	No.12	No.13	No.14	No.15	No.16	No.17	No.18
	3.67	3.40	1.63	2.04	1.80	1.52	2.32	1.06
Main radiation sources with a large contribution	RO concentrated water storage tank (J1) 2.26	RO concentrated water storage tank (J1) 2.16	RO concentrated water storage tank (J1) 0.79	RO concentrated water storage tank (J1) 0.63	RO concentrated water storage tank (J1) 0.42	RO concentrated water storage tank (6) 0.33	RO concentrated water storage tank (12) 0.80	RO concentrated water storage tank (12) 0.36
	RO concentrated water storage tank (G3) 0.36	RO concentrated water storage tank (13) 0.30	RO concentrated water storage tank (13) 0.20	RO concentrated water storage tank (6) 0.34	RO concentrated water storage tank (6) 0.35	RO concentrated water storage tank (12) 0.31	RO concentrated water storage tank (15) 0.63	RO concentrated water storage tank (15) 0.33
	RO concentrated water storage tank (14) 0.33	RO concentrated water storage tank (14) 0.19	RO concentrated water storage tank (6) 0.12	RO concentrated water storage tank (13) 0.30	RO concentrated water storage tank (13) 0.25	RO concentrated water storage tank (15) 0.17	RO concentrated water storage tank (6) 0.30	RO concentrated water storage tank (6) 0.11

(Note) The numerical value on the lower part shows the actual dose of the evaluation point or the calculated dose which is contributed from each radiation source (Unit: mSv/year)