



Response to Review Panel Comments on the Draft Subsurface Intake Feasibility Guidance Tool

April 14, 2015

Response to Comments



This presentation provides an overview of our response to the Panel's comments.

A table that lists the Panel's comments and our responses is available as a handout and from the NWRI website.

1. General Comments
2. Weighting Scoring System
3. List of Inputs
4. Level 1 Fatal Flaws
5. Level 1 Challenges
6. Scoring Matrix
7. Levels 2 and 3 Matrix
8. Public Comments

The Panel's report includes 10 general comments. Our responses are summarized below:

3. Explanation about intended users and purpose of tool will be added.

- 3&9. The definition of "feasibility" is derived from that promulgated by the California Coastal Commission (Seawater Desalination and the California Coastal Act, 2004) and CEQA. We clarify this and acknowledge that other definitions of feasibility and other regulatory requirements may apply in locations other than California.



Responses to additional general comments (continued):

- 5&51. We agree that assessment of economic feasibility may be appropriate and beneficial before Level 2 and 3 analyses and are revising the guidance manual accordingly.
6. We agree that pilot testing can be an important component of a feasibility evaluation and can be conducted as part of Level 2 or 3 analyses.
7. The guidance manual will be beta tested by applying it to the El Segundo Site.
8. All the recommended terminology revisions will be adopted (e.g. “subsurface seawater intake”).

Our responses to the Panel's comments on the Weighting Scoring System are summarized below:

11. Narrative explanation of the weights will be added.
- 12&13. The matrix will have default weights, for which an explanation and justification will be provided in the tool. The user may change the default weights. It will be clarified that only the default weights have been peer reviewed.
46. For several of the challenges categories, the weights depend on the particular SSI (e.g., vulnerability to sea level rise). A single weight cannot be provided for each challenge.
15. The option to rate the quality (and certainty) of the user input is being added.

Our responses to the Panel's comments on the List of Inputs are summarized below:

15. The request for inputs will be questions
e.g., *"What is the Proposed Total SSI Production Rate?"*
16. A detailed description of each input will be provided.
- 17,18, 25,29 The tool will calculate the required number of SSI units, linear beach front and offshore/onshore area based on user inputs of capacity per unit, linear beach front per unit, land per unit, and proposed total SSI production rate.

Default values will be provided for these inputs that can be overridden by the user.

List of Inputs (2)



Our responses to the Panel's comments on the List of Inputs are summarized below:

- 20&38. Turbidity will be added to the list of inputs under the "Operation (Intake)" category.
- 43. The "general ease of maintenance" will be added under Operation (Intake)" category
(e.g., vertical well = 0 and HDD well = 2)
- 44&54. The practicability to perform a pilot test will be added under the "Risk" category (e.g., vertical well = 0 and water tunnel = 2)
- 19,21, 22,23, 24,26, 36. Change to Wave Height, Erosion/Beach Stability, Vulnerability to Sea Level Rise, Land Type inputs is pending further information from the panel.

Our responses to the Panel's comments on Fatal Flaws are summarized below:

27. The CEQA fatal flaw will be removed.

Remaining fatal flaws:

land types;

available beach front; and

available area.

28&30. Issues related to sea level rise or flooding are included as challenges, but not as fatal flaws, because they can be mitigated.

Our responses to the Panel's comments on Challenges are summarized below:

40. Environmental Challenges category will be removed.

Challenges in this category that are technical in nature (e.g. SSI influence on inland pumping and contaminant plumes) remain in a category called "Potential Inland Interference".

41. Challenge on proximity of contaminant plumes and interference with pumping will be not applicable for HDD wells.

31-35. The panel's suggestions will be incorporated:

- Staging requirements will be added (31)
- Threshold for wave height will be 3 feet (32)
- Depth to seabed "at planned construction site" will be clarified (33)
- Inconsistency between fatal flaw and challenge will be removed (34)
- The period for which sea level rise should be considered will be modified to 40 years from project initiation (35)

Our responses to the Panel's on comments on the Scoring Matrix are summarized below:

- 37. The default value for potential for clogging will be dependent on the SSI (e.g., vertical well = 0 and seabed gallery = 1).
- 49. The default value for feedwater quality will be 0 (not challenging).
- 45. The scoring remains with higher score meaning higher challenge.
- 47&48. Explanation about the scoring system and normalization will be added

Level 2 and 3 Matrix



Our responses to the Panel's comments on the Level 2 and Level 3 Matrix are summarized below:

- 53. The Level 2 and 3 matrix will be separated into two matrices.
- 52&53. More description will be added on the Level 2 and 3 matrices and the benefit of additional site-specific data and testing.



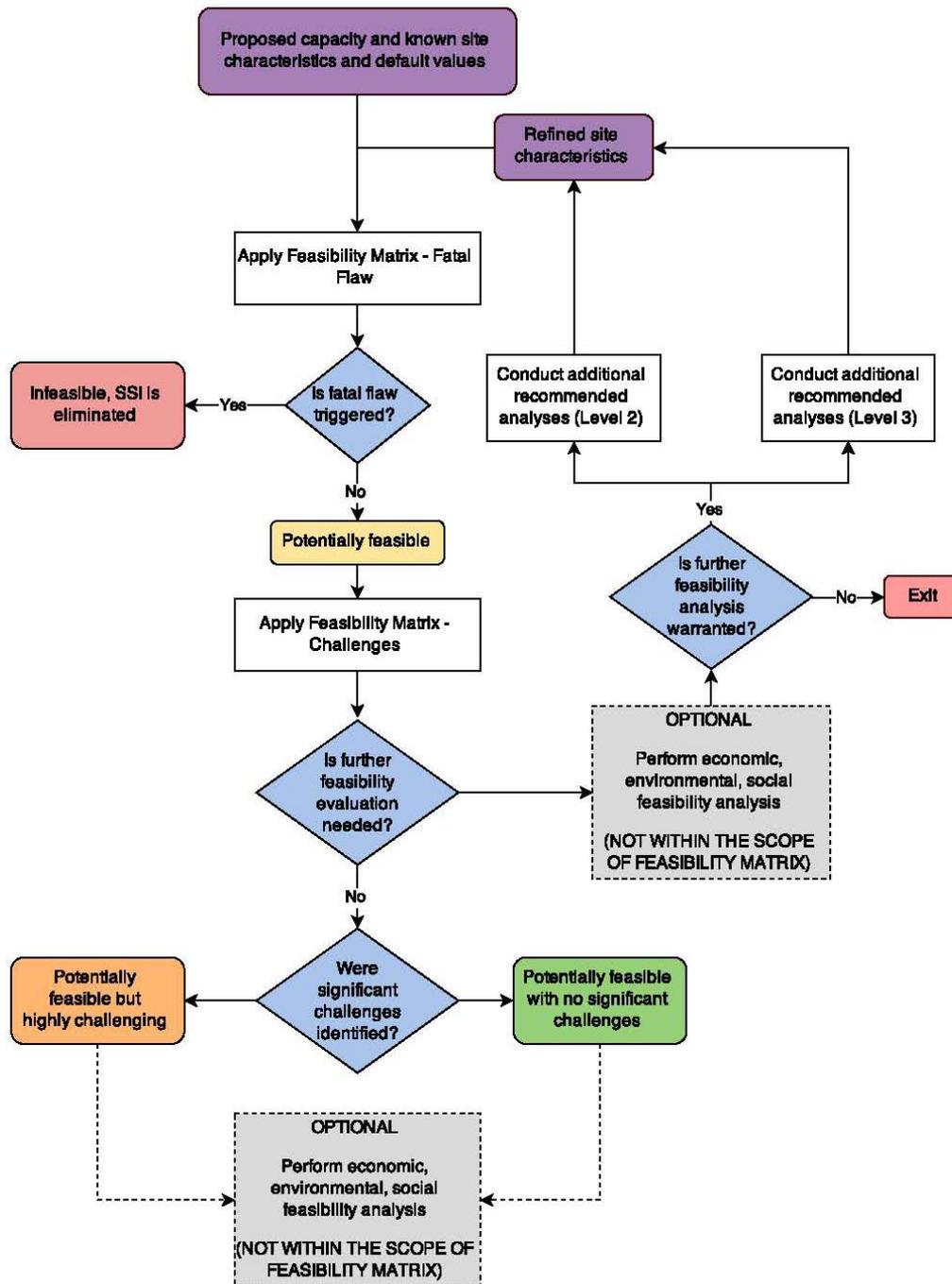
Our responses to the Public Comments are summarized below:

- Explanation about intended users and purpose of tool will be added.
- Additional information will be added in the tool and the guidance manual, based on public comments. For example:
 - Ranney wells;
 - Site-Specific Level 2 and 3 evaluation;
 - Maintenance; and
 - Ratio of sea water and inland groundwater.

This concludes the overview of our responses to the Panel's Comments. A Table listing each comment and response is provided as a handout and available from the NWRI website.

Extra Slides Follow





Overview of Tool as Flow Chart

(available from NWRI website)

25 Inputs for Feasibility Assessment Revised to Question Format



1. Land setting (e.g. beach, bay, cliff)
2. Required production capacity
3. Land take per SSI unit (length of coastline)
4. Land take per SSI unit (area of beach)
5. Number of SSI units needed
6. Available coastline length
7. Available land area (onshore and offshore)
8. CEQA approvable?
9. Available area for construction (e.g. drilling)
10. Topography of construction zone
11. Slope of construction zone
12. Significant wave height
13. Depth to seafloor
14. Transmissivity of subsurface collection interval
15. Overlying conductance (hydraulic connection to sea)
16. Location relative to 30-yr predicted sea level
17. Rate of change of beach width over 30 years
18. Sedimentation Rate (seafloor sediment)
19. Saturation of index of selected minerals (feedwater quality)
20. Silt Density Index (turbidity of feedwater)
21. Potential for contamination of feedwater
22. Protected species/habitat present
23. Potential for conflict with existing land use
24. Existing or planned production from, or injection in, nearby aquifer
25. Presence of contaminant plume(s) in the vicinity

25 Inputs for Feasibility Assessment



1. What is the dominant **land type**?
2. What is the **required capacity** for the desalination plant?
3. What is the required linear **beach front per unit**?
4. What is the required **area per unit**?
5. What is the expected **capacity per unit**?
6. What is the **available length** of beach?
7. What is the **area of available land** onshore and offshore?
8. What is the **available area for drilling, construction and staging**?
10. What is the **topography** in the vicinity of the planned construction site?
11. What is the **slope** of the beach?
12. What is the typical significant **wave height** at the planned site?
13. What is the **depth** at the seaward end of the planned gallery?
14. What is the **Transmissivity** of subsurface collection interval?
15. What is the **conductance** of the sediment overlying the collection interval? (hydraulic connection to sea)
16. Is the **elevation of the SSI** infrastructure within the predicted **40-year sea level rise**?
17. What is the **rate of change of beach width** over 30 years?
18. What is the **sedimentation rate** (seafloor sediment)?
19. What is the **saturation index** of precipitates (iron oxide, manganese oxide and calcium carbonate) (feedwater quality)?
20. What is the feedwater **turbidity**?
21. What is the **Silt Density Index** (SDI) of the feedwater?
22. Would the feedwater be considered **extremely impaired** by DHS?
23. What is the **existing/planned production/injection rate** from the inland aquifer?
24. What is the **safe yield** of nearby aquifer?
25. Any existing **contaminant plumes** less than 5000 ft from the Site?