

# PUGET SOUND URBAN TREE CANOPY AND STORMWATER MANAGEMENT: A REPORT COMPARING USDA FOREST SERVICE I-TREE HYDRO AND WASHINGTON STATE DEPARTMENT OF ECOLOGY WESTERN WASHINGTON HYDROLOGY MODEL - UPDATES AND REVISIONS

Below are updates and revisions for the January, 2019 printing of the report.

*Pages 1-2:* Added comma after Patrick Saal. Corrected funding partners credits. Fixed line breaks between Project Contributors.

*Pages 3-4:* Updated Table of Contents page numbering.

*Page 6:* Table 1 updated Mi<sup>2</sup> to sq. miles and changed 3AB to 3B.

*Page 8:* Removed space before period in second paragraph.

*Page 9:* Added “the” before Pacific Northwest in i-Tree Reference City sidebar. In subheading and pullout box updated reference from “Stormwater Management Models” to “Hydrology Models.” In last paragraph removed “to help users and” and inserted “and provide recommendations for future use of these models.”

*Page 10:* Changed “use” to “used” in second bullet list item. Removed extra “e” in i-Tree Eco in first bullet list item. Changed all instances of “gauge” to “gage.”

*Page 11:* In Table 2, changed initial capital case for Tree Canopy to lower case. Added question marks as grammatically appropriate. Aligned descriptions to left instead of center and removed unnecessary manual line breaks.

*Page 12:* Updated statistics and populations for all 4 cities.

*Page 13:* In second bulleted list, changed “deciduous” to “Deciduous” and “coniferous” to “Coniferous”

*Page 14:* Removed “↩” from “surface↩ water.”

*Page 15:* Updated title of Table 8 from “Rolled up Model Comparison” to “Summary of i-Tree Hydro and WWHM Comparison.”

*Page 16:* Changed capitalization from “parameter inputs” to “Parameter Inputs.”

*Page 17:* Changed title of figure 4 from “Land Cover Input example for i-Tree Hydro” to “i-Tree Hydro Land Cover Input Example.” Changed “accuracy” to “accurate” in Land Cover paragraph. Changed “species, the tree” to “species. The tree” and “user defined” to “user-defined” and added “of an” after “One example” in third paragraph.

*Page 18:* Changed “entered as either, a DEM or TI file, a simulation” to “entered as either a DEM or TI file. A simulation” in third paragraph.

*Page 19:* Changed title of Figure 6 from “Soil Default Value in i-Tree Hydro” to “i-Tree Hydro Soil Default Values.”

*Page 21:* In first paragraph, added “of an” after “One example” and changed “users need” to “user’s need” in first paragraph. Changed title of Figure 7 from “Advanced Parameters” to “i-Tree Hydro Advanced Parameters.”

*Page 23:* Capitalized scenario 1A in first paragraph. Changed title of Figure 8 from “i-Tree Hydro land cover inputs shown in Executive Summary” to “i-Tree Hydro Land Cover Inputs.” Changed title of Figure 9 from “i-Tree Hydro Executive Summary results outputs” to “i-Tree Hydro Results Outputs.”

*Page 24:* Added “see Table 16” after output and before period in first paragraph. Moved Table 16 to before WWHM heading.

*Page 25:* In third paragraph, changed “PNW region” to “Pacific Northwest.” In fifth paragraph, updated “Pages 32-39” to “Pages 31-38” and added “basin” after “drainage.” In title of Table 17, changed “with 100% DCIA at Neighborhood Scale” to “for Scenario at the Neighborhood Scale with 100% DCIA.” Removed colon from “provides: higher” in Direct Modeling Comparison paragraph.

*Page 26:* In first paragraph, replaced “amount of total runoff” with “total runoff volume.” Changed “do not” to “does not” in second paragraph. Removed “Figure 10 13. Direct Model Comparison Graphs..” paragraph before Figure 10. Updated title of Figure 10 by adding “for existing Land Cover and Scenario 1A over a 6-year period at the Neighborhood Scale and with 100% DCIA.” Updated title of Figure 11 by adding “for existing Land Cover and Scenario 1A over a 6-year period at the Neighborhood Scale and with 100% DCIA” and pushed to page 27.

*Page 27:* Updated title of Figure 12 by adding “for existing Land Cover and Scenario 1A over a 6-year period at the Neighborhood Scale and with 100% DCIA.” Updated title of Figure 13 by adding “for existing Land Cover and Scenario 1A over a 6-year period at the Neighborhood Scale and with 100% DCIA.”

*Pages 28-29:* Changed “pages 31-41” to “pages “31-38.” Changed “(Base TC% / Impervious % at scale” to “Base Case % TC, Base Case % Imp)” in headers of Tables 18, 19 and 20. Changed “Scenario” to “Results for Each Scenario (Percent Change from Base Case)” in left side column of Tables 18, 19 and 20. Updated title of Table 20 from “Neighborhood Management Scenario Results” to “Neighborhood Scale Management Scenario Results” and moved title to page 29 with table.

For a detailed list of revisions and to access the fully updated and revised version of the report go to <http://kingcd.org/2019/03/21/i-tree-hydro-technical-report-revisions>

*Page 29:* Changed “if existing trees meet” to “if the existing trees met” in first paragraph. In second paragraph, changed “project” to “evaluation” and “PNW “Pacific Northwest.” Updated “269,704” to “317,189” in fourth bullet list item. In second bulleted list, changed “15,533 gallons” to 24,688 gallons” in third list item.

*Page 30:* Updated “269,704” to “317,189” in Table 21.

*Page 31:* Added title “i-Tree Hydro Results for the City of Kent for the Existing Scenario, Scenario 21, and Scenario 2B” to Figure 14 and reformatted the figure description paragraph to correct style. Added title “WWHM Results for the City of Kent for the Existing Scenario, Scenario 2A, and Scenario 2B” to Figure 15 and reformatted the paragraph to correct style and changed “page 29” to “page 32” in figure description paragraph. Changed “Both graphs” to “Figures 14 and 15.” Removed comma after Scenario 2A.

*Page 32:* In Table 22, capitalized “City” and removed “spatial.” Fixed line breaks in table headers. Removed “City of Kent Spatial Scales” from legend of Figure 16.

*Page 33:* Added title “i-Tree Hydro Results for the City of Kirkland for the Existing Scenario, Scenario 2A, and Scenario 2B” to Figure 17 and reformatted the figure description paragraph to correct style. Added title “WWHM Results for the City of Kirkland for the Existing Scenario, Scenario 2A, and Scenario 2B” to Figure 18 and reformatted the paragraph to correct style and changed “page 31” to “page 34” in figure description paragraph. Changed “Both graphs” to “Figures 17 and 18.” Removed comma after Scenario 2A.

*Page 34:* In Table 23, capitalized “City” and removed “spatial.” Fixed line breaks in table headers. Removed “City of Kirkland Spatial Scales” from legend of Figure 19.

*Page 35:* Added title “i-Tree Hydro Results for the City of Snohomish for the Existing Scenario, Scenario 2A, and Scenario 2B” to Figure 20 and reformatted the figure description paragraph to correct style. Changed “Both graphs” to “Figures 20 and 21.” Removed comma after Scenario 2A. Capitalized “Scenario 2B.” Added title “WWHM Results for the City of Snohomish for the Existing Scenario, Scenario 2A, and Scenario 2B” to Figure 21 and reformatted the paragraph to correct style and changed “page 33” to “page 34” in figure description paragraph. Changed “Scenarios 1A through 2B relative change results show the amount” to “Relative changes for Scenarios 1A through 2B show that the.” Changed “the decrease in total runoff volume” to “that total runoff volume decreased.”

*Page 36:* In Table 24, capitalized “City” and removed “spatial.” Fixed line breaks in table headers. Removed “City of Snohomish Spatial Scales” from legend of Figure 22.

*Page 37:* Added title “i-Tree Hydro Results for the City of Tacoma for the Existing Scenario, Scenario 2A, and Scenario 2B” to Figure 23 and reformatted the figure description paragraph to correct style. Changed “Both graphs” to “Figures 23 and 24.” Removed comma after Scenario 2A. Capitalized “Scenario 2B.” Added title “WWHM Results for the City of Tacoma for the Existing Scenario, Scenario 2A, and Scenario 2B” to Figure 24 and reformatted the paragraph to correct style and changed “page 35” to “page 38” in figure description paragraph. Changed “Scenarios 1A through 2B relative change results show the amount” to “Relative changes for Scenarios 1A through 2B show that the.” Changed “the decrease in total runoff volume” to “that total runoff volume decreased.”

*Page 38:* In Table 25, capitalized “City” and removed “spatial.” Fixed line breaks in table headers. Removed “City of Tacoma Spatial Scales” from legend of Figure 22.

*Page 39:* Deleted “and water quality simulation results” in first paragraph. In second paragraph, changed “Leaf Area Index” to “leaf area index” and “Herbacious Land” to “herbaceous land.” In Table 26 title, changed “city spatial scale” to “City Scale.” Changed “Model (low, medium, high)” to “Model (Low, Medium, High)” in table header. Changed “Soil” to “Soil” in row header.

*Page 40:* In Table 27 title, changed “city spatial scale” to “City Scale.” Changed “Forested Land” to forested land.” Changed “Lawn” to lawn.” Changed “Impervious” to “impervious.”

*Page 42:* Changed “Page XX” to “page 18” in last paragraph.

*Page 43:* Changed instances of “gauge” to “gage” in first paragraph.

*Page 45:* Added “i-Tree” before “Eco” in i-Tree Eco paragraph. Added “i-Tree” before “Landscape” and changed “which” to “that” in i-Tree Landscape paragraph.

*Page 46:* Added “i-Tree” before “Eco” in i-Tree Eco paragraph. Change “City” to “city” in second i-Tree Hydro paragraph under Scale.

*Page 47:* Added “i-Tree” before “Hydro” in i-Tree Hydro paragraph.

*Page 48:* Added semi-colon after “impervious area” in first paragraph.

*Page 74:* Changed “WHMM Hydro Total Avoided Runoff” to “WHMM Total Avoided Runoff” and updated “0 Gal/6years” to “0 Gal/6 years” in Partial Scale Results: Kensington Heights table.

*Page 78:* Changed “WHMM Hydro Total Avoided Runoff” to “WHMM Total Avoided Runoff” and updated “11,182 Gal/6years” to “11,182 Gal/6 years” in Partial Scale Results: Veridian table.

*Page 82:* Changed “WHMM Hydro Total Avoided Runoff” to “WHMM Total Avoided Runoff” and updated “4,445 Gal/6years” to “4,445 Gal/6 years” in Partial Scale Results: Wetland Near Cady Park table.

*Page 86:* Changed “WHMM Hydro Total Avoided Runoff” to “WHMM Total Avoided Runoff” and updated “269,704 Gal/6years” to “317,189 Gal/6 years” in Partial Scale Results: Fireman’s Park table.

For a detailed list of revisions and to access the fully updated and revised version of the report go to <http://kingcd.org/2019/03/21/i-tree-hydro-technical-report-revisions>