

Final tide zone node point locations for OPR-N438-NRT3-2003, Sheet F00488.

Format: Tide Station (in recommended order of use)
 Average Time Correction (in minutes)
 Range Correction
 Longitude in decimal degrees (negative value denotes Longitude West),
 Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone CR60	943-9201	+6	1.00
-122.80393 45.868985			
-122.803822 45.860216			
-122.83661 45.829399			
-122.782104 45.829772			
-122.7672 45.855002			
-122.770156 45.861761			
-122.773752 45.870418			
-122.80393 45.868985			
Zone CR68	943-9201	+18	1.00
-122.83661 45.829399			
-122.846732 45.817412			
-122.817123 45.787125			
-122.796352 45.788336			
-122.792067 45.7892			
-122.775074 45.794939			
-122.782104 45.829772			
-122.83661 45.829399			
Zone CR69	943-9201	+30	1.00
-122.792067 45.7892			
-122.775074 45.794939			
-122.760253 45.772367			
-122.752815 45.757649			
-122.773911 45.753956			
-122.792067 45.7892			
Zone CR71	943-9201	+36	1.00
-122.752815 45.757649			
-122.749259 45.724665			
-122.754575 45.71497			
-122.773327 45.716612			
-122.776329 45.729964			

-122.773911 45.753956
-122.752815 45.757649

Zone CR73	943-9201	+48	1.00
-122.773327 45.716612			
-122.754575 45.71497			
-122.752232 45.697315			
-122.751061 45.681708			
-122.782704 45.678011			
-122.782117 45.696904			
-122.773327 45.716612			

Zone CR75	943-9201	+60	1.00
-122.777306 45.663222			
-122.782704 45.678011			
-122.751061 45.681708			
-122.751349 45.667157			
-122.741101 45.65418			
-122.756337 45.642671			
-122.768643 45.638149			
-122.782706 45.64637			
-122.777306 45.663222			

Zone CR77	943-9221	-18	0.92
-122.782706 45.64637			
-122.809342 45.631893			
-122.829247 45.62157			
-122.804583 45.610637			
-122.777321 45.613978			
-122.768643 45.638149			
-122.782706 45.64637			

Zone CR78	943-9221	-12	0.93
-122.804583 45.610637			
-122.777321 45.613978			
-122.756118 45.591803			
-122.775159 45.579952			
-122.804583 45.610637			

Zone CR79	943-9221	-12	0.96
-122.775159 45.579952			
-122.756118 45.591803			
-122.717606 45.577218			
-122.742273 45.559892			
-122.775159 45.579952			

Zone CR80	943-9221	-6	0.97
-122.709387 45.534959			
-122.742273 45.559892			
-122.717606 45.577218			
-122.668277 45.559893			
-122.709387 45.534959			
Zone CR81	943-9221	0	1.00
-122.709387 45.534959			
-122.668277 45.559893			
-122.651308 45.519067			
-122.679023 45.515752			
-122.709387 45.534959			
Zone CR82	943-9221	0	1.01
-122.679023 45.515752			
-122.651308 45.519067			
-122.639962 45.486214			
-122.679127 45.484292			
-122.679023 45.515752			
Zone CR83	943-9221	+6	1.03
-122.679127 45.484292			
-122.639962 45.486214			
-122.631765 45.449044			
-122.670929 45.445199			
-122.673274 45.459223			
-122.679127 45.484292			
Zone CR85	944-0083	-12	1.02
-122.756337 45.642671			
-122.737586 45.627871			
-122.715898 45.616743			
-122.695387 45.639769			
-122.741101 45.65418			
-122.756337 45.642671			
Zone CR86	944-0083	0	1.00
-122.715898 45.616743			
-122.695387 45.639769			
-122.662159 45.62487			
-122.679867 45.603384			
-122.705125 45.61209			
-122.715898 45.616743			

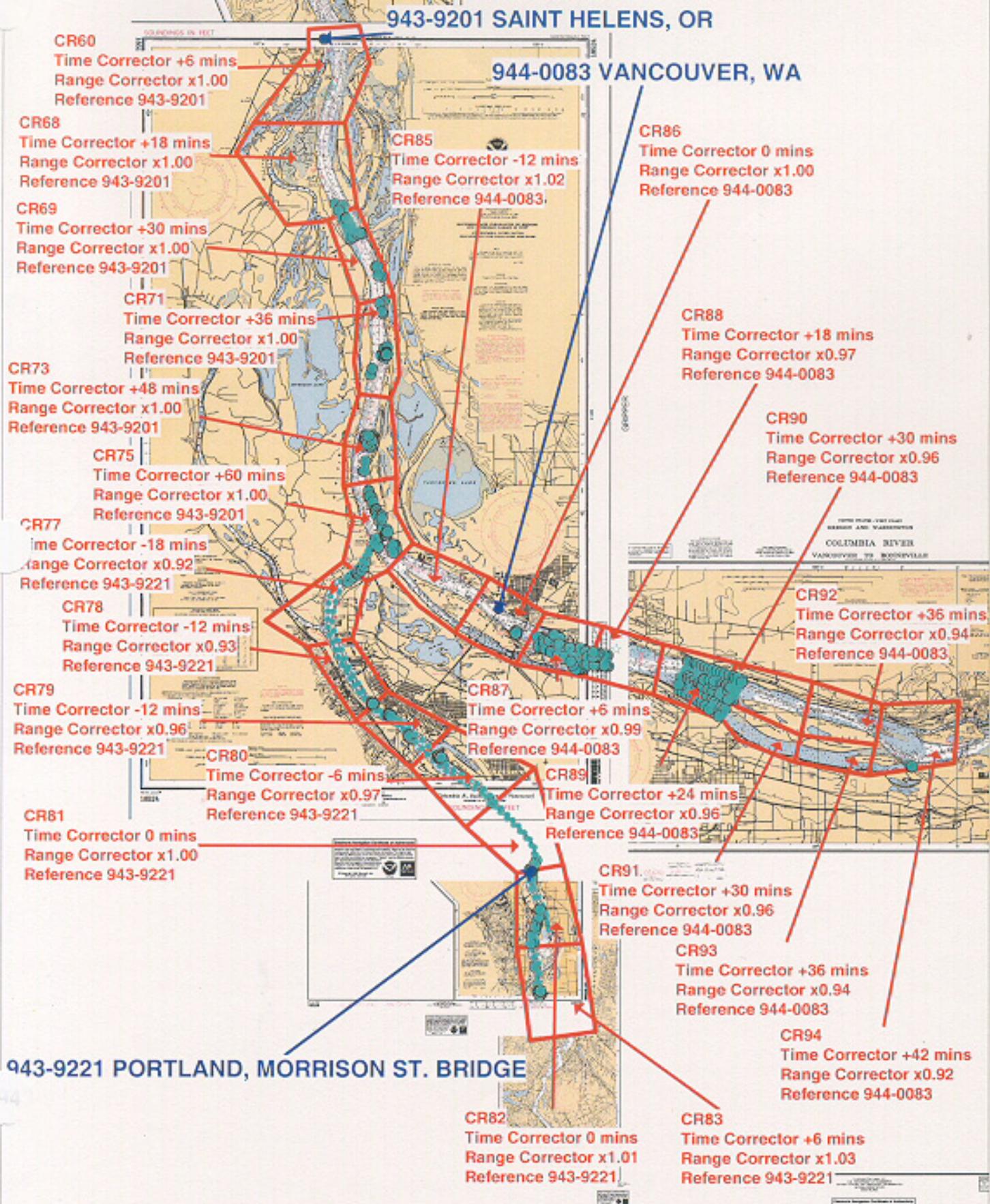
Zone CR87	944-0083	+6	0.99
-122.679867 45.603384			
-122.662159 45.62487			
-122.627447 45.61938			
-122.639037 45.59814			
-122.679867 45.603384			
Zone CR88	944-0083	+18	0.97
-122.627447 45.61938			
-122.591744 45.611785			
-122.597745 45.590726			
-122.639037 45.59814			
-122.627447 45.61938			
Zone CR89	944-0083	+24	0.96
-122.591744 45.611785			
-122.597745 45.590726			
-122.556791 45.580198			
-122.554123 45.589189			
-122.548789 45.604065			
-122.591744 45.611785			
Zone CR90	944-0083	+30	0.96
-122.554123 45.589189			
-122.548789 45.604065			
-122.5033 45.59621			
-122.508034 45.581567			
-122.510363 45.573735			
-122.548424 45.585858			
-122.554123 45.589189			
Zone CR91	944-0083	+30	0.96
-122.556791 45.580198			
-122.554123 45.589189			
-122.548424 45.585858			
-122.510363 45.573735			
-122.514088 45.562501			
-122.547639 45.571795			
-122.556791 45.580198			
Zone CR92	944-0083	+36	0.94
-122.5033 45.59621			
-122.461446 45.586717			
-122.465799 45.569908			
-122.510363 45.573735			

-122.508034 45.581567
-122.5033 45.59621

Zone CR93	944-0083	+36	0.94
-122.510363 45.573735			
-122.465799 45.569908			
-122.470326 45.55683			
-122.514088 45.562501			
-122.510363 45.573735			

Zone CR94	944-0083	+42	0.92
-122.461446 45.586717			
-122.41573 45.588073			
-122.418587 45.562077			
-122.470326 45.55683			
-122.465799 45.569908			
-122.461446 45.586717			

Final Tidal Zoning for OPR-N438-NRT3-2003 Sheet F00488, Columbia River, WA/OR



Tides and Water Levels

Port Instructions define sixty tide zones within the project area. Tide corrector values, referenced to the primary tide station at Astoria, OR (943-9040), are provided in the zoning file “N438NRT32002CORP” which is included with the project data.

Three reference stations were used during this survey: St. Helens, OR (943-9201), Vancouver, WA (944-0083) and Morrison St. Bridge, OR (943-9221)

Verified, six-minute water levels relative to Columbia River Datum were downloaded from the relevant station via the NOAA, NOS, CO_OPS web site <http://www.opsd.nos.noaa.gov/cgi-bin/prelimqry.pl>. These were imported into a text file on the local computer and appended to the CARIS tide file, 9439040.tid. Water level correctors were applied to all hydrographic data in CARIS using the tide utility and the zoning file, N438NRT32002CORP.zdf. ⁷