# WRIA 9 Growth Projections Summary of Methods

The WRIA 9 Watershed Restoration and Enhancement Committee is tasked with estimating the consumptive use from new permit-exempt domestic withdrawals over the planning horizon (The 20-year period beginning on January 19, 2018 and ending on January 18, 2038). The first step in that task is to estimate the number of new permit-exempt domestic well connections (PE wells[[1]](#footnote-2)). **GeoEngineers estimates 633 new permit-exempt domestic well connections in WRIA 9 over the planning horizon.** The Committee can decide to apply a “safety factor” after estimating consumptive use.

WRIA 9 includes parts of unincorporated King County and 15 incorporated cities. The methods used to estimate new wells in unincorporated and incorporated areas in WRIA 9 are summarized below.

## King County – Unincorporated area

* King County developed one growth projection scenario based on historic building permit data.
* King County used the average number of building permits per year in WRIA 9 (80) for the 18 year period (2000-2017) multiplied by the historic percent of homes using permit-exempt wells (36.3%) to come up with the estimate of 29 new permit-exempt wells per year in the WRIA 9 portion of rural unincorporated King County. The 20-year estimate of new PE wells is 578.
  + For all building permits, King County looked at parcel information from the Assessor’s office, which lists the water source as public or private (private water sources are wells), and then used this information to come up with a percent of buildings that rely on wells.
  + The “other” category for water service info includes parcel information with “unknown” listed for water source (likely vacant land) and where the building permit data and parcel attribute data did not match up. King County used the “other” category to calculate an error of 6% (of the total number of building permits).
  + The building permit data for 2000-2017 includes both periods of high growth and periods of low growth. King County compared this data with information from Vision 2040 and population data and is confident in using the average of this time period to project into the future.
  + The two growth percent maps show the historic distribution of growth between the stream basins and WRIA 9 proposed subbasins. Based on the WRIA 9 proposed subbasins, most of the rural growth happened in the Lower Middle, Mid Middle and Covington subbasins- 17-18% of the growth. Soos Creek, Jenkins Creek and Newaukum Creek received 11-12% of the growth.
  + The building permit maps shows building permit locations for 2000-2017.
  + King County used the time period 2000-2017 because those data were available.
* King County is still working on the developable lands/rural capacity analysis and expects to have something to share with the workgroup in September.
* To estimate the King County 20 year well projection by stream basin, GeoEngineers used the historic data (2000-2017) for average number of building permits per year in WRIA 9 (80) and the historic distribution of building permits by subbasin to estimate the average building permits per year for each subbasin. The average building permits per year is then multiplied by the historic percent of homes on wells to estimate the average number of wells per year. The 6% error is added to the average number of wells per year, and then calculated for the 20-year planning horizon.

## GeoEngineers - Incorporated area (UGA)

* GeoEngineers did a spot check for wells from the Ecology well log database that plot within the Urban Growth Area. In WRIA 9, 58 wells plot within the UGA for 1998-2007 and 35 wells plot within the UGA for 2008-2018. GeoEngineers checked about 70% of those wells by looking at the well logs and noting whether the wells were identified as being for domestic, irrigation, or other purposes (test, industrial, errors, etc.). About 23% of the wells were for domestic use.
* GeoEngineers took the number and distribution of wells from the 1998-2018 data and projected the same rate and distribution by subbasin for the 20-year planning horizon. The estimate of domestic wells within the UGA over a 20-year period is 20.

1. "PE wells" is used to refer to new homes associated with new permit-exempt wells and also new homes added to existing wells on group systems relying on permit-exempt wells. [↑](#footnote-ref-2)