Suwannee River Water Management District
Small-Area Population Projection
Methods and Results

Prepared For

Suwannee River Water Management District
TWA 19/20-031.009

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INTRODUCTION

Population is an essential component of water use forecasting and water supply planning. Florida's official population projections are available from the Bureau of Economic and Business Research (BEBR) at state and county levels. However, the spatial distribution of projected population within counties are not available, making reliable projections for cities, utilities or other smaller areas impossible. The Suwannee River Water Management District (District) needs more spatially precise data to estimate and forecast population for smaller geographies to support planning decisions. In addition, the population estimated and projected by BEBR does not include seasonal residents, which will be produced by this project.

The purpose of this project is to provide small-area population projections for the six western counties within the District that make up the Western Planning Region, including Dixie, Jefferson, Lafayette, Levy, Madison, and Taylor Counties. The foundation for this work was performed in prior TWA 19/20-031.008, "Population Estimation and Build-out Projection Model Development," which developed the parcel-level population estimates and build-out forecast. This TWA used those data to develop the small-area population projections, which will be described in detail here. In addition, the methods used in the prior TWA will be covered to provide a comprehensive understanding of the entire process. These estimates and projections will provide the foundation for water supply planning and permitting within the Western Planning Region.

COUNTY BUILD-OUT SUBMODELS

The geographic information system (GIS) based "County Build-out Models" were developed for each of the six counties that are entirely or partly within the District's Western Planning Region. Using a combination of property appraiser, 2020 Census and BEBR data, current (2020) parcel-level population was estimated. Those estimates were then controlled at city and county levels to the 2020 Census counts. Using those data in combination with future land use, historical development densities, planned developments, wetlands, and infrastructure considerations, maximum residential development (or "build-out") was forecasted at the property parcel level.

Parcels

GIS parcel layers and county tax roll databases were obtained from each county property appraiser's office. Parcel geometry was checked for irregular topology, particularly overlaps and fragments. Parcel tables were checked for errors, particularly non-unique parcel identifiers and missing values. Required tax roll table fields include actual year built, Florida Department of Revenue (DOR) land use code, and the total number of existing residential units for each parcel. In cases where values or fields were missing, other relevant information was extrapolated and used as a surrogate. For example, a combination of 2020 Census data and BEBR's annual surveys of large group quarters facilities (like prisons) were used to identify the number of residential units (and population) in some institutional parcels.

U.S. Census Data

Some of the essential attribute information to translate parcels to population in the County Build-out Submodels was derived from data from the newly released 2020 Decennial Census. Average housing unit occupancy and average household size by census tract was calculated and then transferred to the underlying parcel data. These data were used to calculate the average population per housing unit, and that enabled the parcel-level estimation of population from parcel-based housing unit estimates. In cases where property appraiser data were missing or incomplete, other data were used. For example, because mobile home parks without individually platted parcels may not contain the number of units within the property appraiser data, the number of residential units for some of the parks had to be estimated using a hand count from recent imagery. Also, BEBR or Census Bureau population surveys of group quarters facilities were sometimes used in place of unit-based estimates from the property appraiser data.

Future Land Use

Future land use maps were essential elements of the County Build-out Submodels. These maps helped guide where and at what density residential development could occur. Future land use maps are a part of the local government comprehensive plans required for all local governments by Chapter 163, Part II, Florida Statutes. They are typically developed by the local government's planning department, or, in some cases, a regional planning council on behalf of the local government. The planning horizons are a minimum of 10 years, and they often extend for 15 to 20 years into the future. Although these future land use maps may be revised over time, they reflect the most up-to-date plan for future growth areas and densities. The latest available future land use maps were obtained, and land uses and associated densities were assigned to the underlying parcels in the County Build-out Submodels.

Each land parcel in the County Build-out Submodels received a future land use designation. In places where parcels overlapped multiple future land use areas, the parcel was assigned the future land use class within which its centroid fell. Build-out population was modeled only for future land use classes that allow residential development (which include agriculture and mixed use, and can sometimes include commercial and other uses not typically associated with residential development).

Development typically does not occur at the maximum densities allowed for each future land use category, so recent development densities were considered a better proxy for future densities than the maximum allowable density. For this reason, the County Build-out Submodels reflect the median density of recent development for each future land use category in the specific incorporated place. For example, if a city's medium density residential future land use designation allows up to 8 housing units per acre, but the median density of units built over the last 20 years is 5.7 housing units per acre, the submodel assumed future densities at 5.7 housing units per acre for that future land use designation in that city. Typically, the median density calculation was limited to the last 20 years of development within each unique combination of land use and jurisdiction, as more recent development was deemed a better proxy for future densities than older development.

In some cases, limiting the historical data to the last 20 years resulted in too small a sample, so either county average values were used (extended beyond the jurisdiction) or a longer base period was used (not limited to the last 20 years). In those cases, the determination of which sample to use depended upon the heterogeneity of the category across county jurisdictions, the heterogeneity of historical densities prior to the last 20 years, and our professional judgement. In some cases, where very few or no historical examples of residential parcels fell within a future land use category, a density from a similar future land use within the county (with sufficient historical samples) was used as a surrogate. Also, vacant or open parcels less than one acre in size were typically considered single family residential, with one housing unit as the maximum allowable density.

Wetlands

Wetlands (including surface water) are an important consideration when modeling a county's build-out. Certain wetland types were identified that would be difficult and expensive to convert to residential development. These areas were identified and applied to the appropriate County Build-out Submodel. The wetland types are listed in Table 1.

Table 1. Wetland land cover types used in the County Build-out Submodels

Code	Description	Code	Description
5100	Streams and waterways	5600	Slough waters
5200	Lakes	6110	Wetland Hardwood Forests
5250	Marshy Lakes	6120	Mangrove swamp
5300	Reservoirs	6170	Mixed wetland hardwoods
5400	Bays and estuaries	6180	Cabbage palm wetland
6181	Cabbage palm hammock	6410	Freshwater marshes
6200	Wetland Coniferous Forest	6420	Saltwater marshes
6210	Cypress	6430	Wet prairies
6220	Pond pine	6440	Emergent aquatic vegetation
6250	Hydric pine flatwoods	6460	Mixed scrub-shrub wetland
6300	Wetland Forested Mixed	6500	Non-vegetated Wetland

Wetland GIS data (using the above classifications) were overlaid with a county's land parcels. The area of wetlands within parcels were calculated and recorded as the water area for that parcel. If the area covered by water within a parcel exceeded 0.5 acres, it was subtracted from the total area of the parcel feature to determine the relative developable area in that parcel. There were exceptions to this rule. In some cases, parcels with little or no developable area after wetlands were removed were already developed, thus the estimated unit total was not reduced by the wetland acreage. In other cases, inaccurate wetland delineations were overridden, such as when a newly platted residential parcel was shown to be covered by a wetland. In such a case, the parcel was considered developable by the submodel.

Administrative Boundaries

Each parcel in the County Build-out Submodels was also attributed with several administrative boundaries, including:

1. County and city name (or unincorporated area) from the 2020 Census,
2. Water management district boundaries, and
3. SRWMD Permit ID and utility name.

These attributes enable queries and summaries of the county submodels by any combination of these boundaries.

Build-out Density Calculation

Using GIS overlay techniques, attributes of the census, future land use, wetlands, and administrative boundaries were attributed to each county's parcel data to develop the County Build-out Submodels. These submodels estimate current population and forecast the maximum population by parcel at build-out. Figure 1 is an example of a portion of Taylor County shaded by maximum housing units per acre at build-out. Lower unit densities are depicted in yellow and higher ones in brown. Unshaded areas are parcels that are not residential.

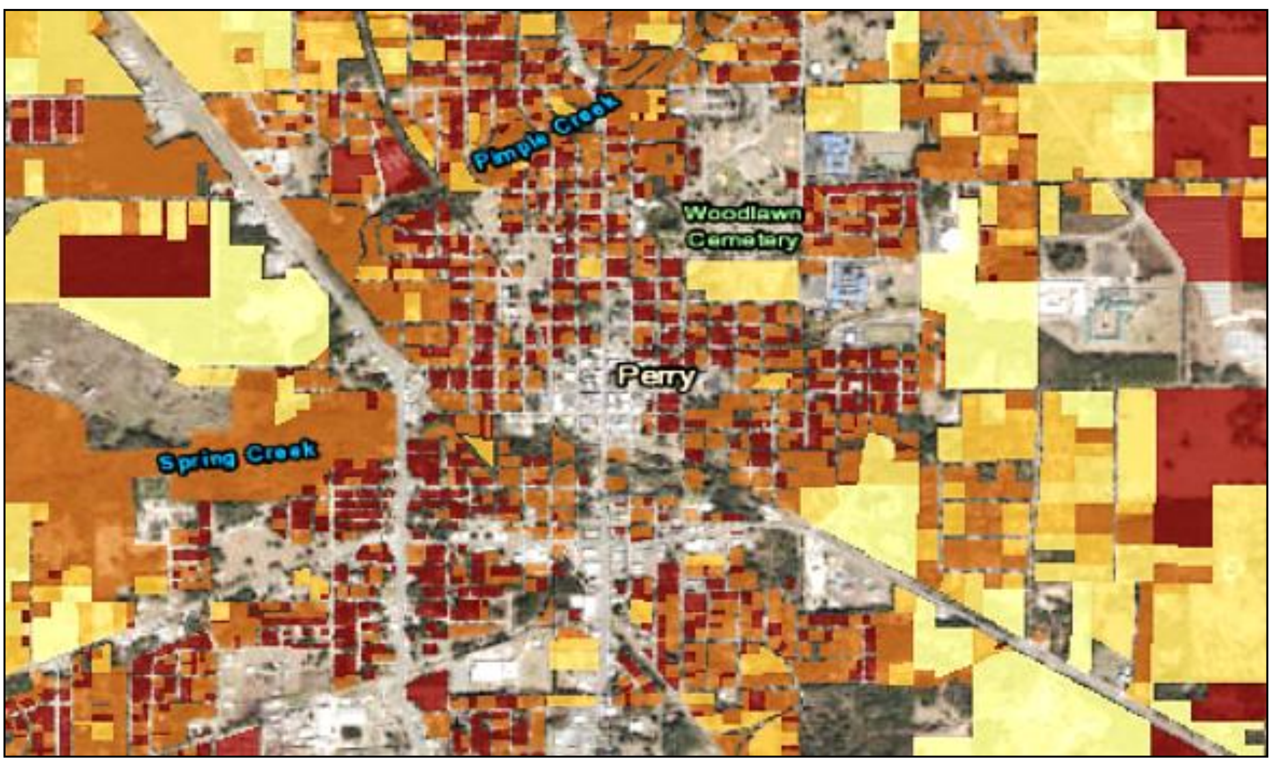

Figure 1. Taylor County Build-out Density Submodel around Perry

GROWTH DRIVERS SUBMODEL

The Growth Drivers Submodel is a district-wide, raster (cell-based) GIS model representing the likelihood of development. The submodel is a continuous surface of 10-meter cells containing values of 0-100, with '100' having the highest development potential and '0' having the lowest development potential. It influences the GSAPF Model by factoring in the attraction of certain spatial features, or growth drivers on development. These drivers were identified from transportation and land use/land cover data. They included the following:

1. Proximity to roads and interchanges prioritized by level of use (with each road type modeled separately)
2. Proximity to planned developments
3. Proximity to existing commercial development (based on parcels with commercial land use codes deemed attractors to residential growth)
4. Proximity to existing residential development
5. Proximity to coastal and inland waters

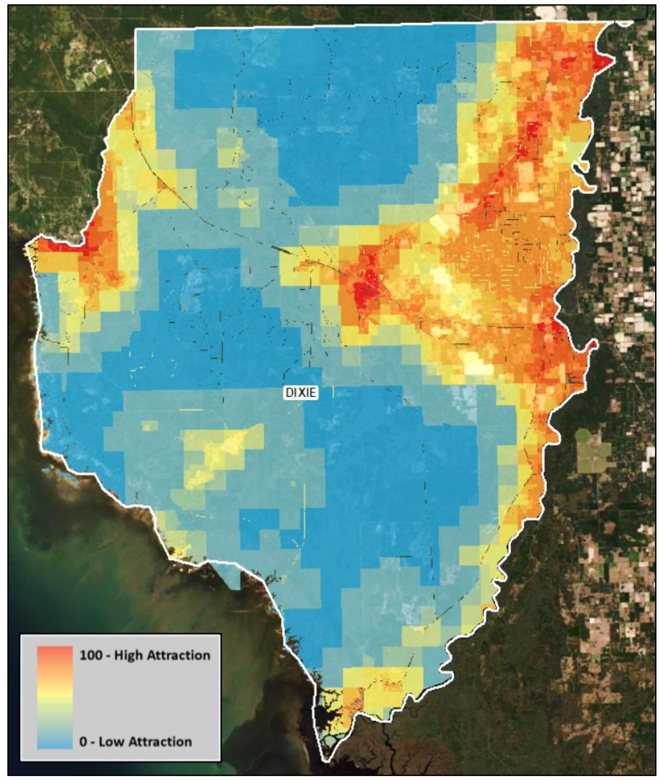

Figure 2. Dixie County Growth Drivers Submodel

Figure 2 depicts the Growth Drivers Submodel for Dixie County, with high development potential in red, moderate development potential in yellow and low development potential in blue. Data used for generating the Growth Drivers Submodel and their sources are listed in Table 2 below.

Table 2. GIS datasets used in the Growth Drivers Submodel

Growth Driver	Data Source
Roads and Limited Access Road Interchanges	Florida Department of Transportation (FDOT) Major Roads: Functional Classification (FUNCLASS), and FDOT Limited Access Road Interchanges
Existing Residential Land Uses	County Property Appraiser Parcel Data
Selected Existing Commercial Land Uses	County Property Appraiser Parcel Data
Coastal and Inland Waters	SRWMD Land Cover Data, and Florida Geographic Data Library (FGDL) Coastline Data
Planned developments	Multiple sources, including Regional Planning Councils, local governments, SRWMD and GIS Associates

Each of the drivers listed in Table 2 were used as independent variables in a logistic regression equation. Dependent variables included existing residential units built during or after 1995 as the measure of “presence”, and large undeveloped vacant parcels outside of large, planned developments were used to measure “absence”. The resulting equation could then be applied back to each of the regional grids resulting in a single regional grid with values 0 through 100, for which a value of 0 represented the lowest relative likelihood of development, and a value of 100 represented the highest relative likelihood of development.

This seamless, “regional” submodel covers all the counties that are all or partially within the District, plus a one-county buffer to account for growth drivers outside the District that could influence growth within the District. Each county was then individually reclassified to stretch its mean driver values between 0 and 100, to better differentiate the highest values relative to the rest of the county.

This submodel was then used by the Small-Area Population Projection Model to rank undeveloped parcels based on their development potential, which is explained in the “Growth Calculation Methodology” section. Note that growth may still occur in areas assigned relatively low values from this model based on the historical growth trends. This model helps guide projected growth within census tracts and when the county Model projection totals are below the BEBR targets.

GEOSPATIAL SMALL-AREA POPULATION FORECASTING MODEL

The Small-Area Population Forecasting Model integrates the County Build-out Submodels and the Growth Drivers Submodel with the GISA Population Projection Engine™, which makes the projection calculations using a combination of those submodels, historic growth trends, and growth controls from BEBR’s county-level forecasts.

Historic Growth Trends

The historic growth trends were based on historic population counts from the 1990, 2000, 2010, and 2020 censuses. For 1990, 2000, and 2010, census block population counts were summarized at the 2020 tract level, and combined with the 2020 tract population counts. These counts were used to produce eleven tract level projections using five different demographic extrapolation methods using multiple base periods. The length of the base was adjusted to roughly match the length of the projection horizon, so for a 20-year horizon, 20 years of historical data were used to establish the growth trends. The number of trend calculations varied based on the length of the base period used, and the highest and lowest calculations were discarded to moderate the effects of extreme projections. The remaining projections were then averaged.

The five demographic extrapolation methods for projecting population utilized by the model were Linear, Exponential, Constant Share, Share-of-Growth and Shift-Share. The Linear and Exponential techniques employ a bottom-up approach, extrapolating the historic growth trends of each census tract with no consideration for the county's overall growth. The Constant Share, Share-of-Growth and Shift-Share techniques employ a ratio allocation, or top-down approach, allocating a portion of the total projected county population or growth to each census tract based on that census tract's percentage of county population or growth over the historical period. Each of the five methods is a good predictor of growth in different situations and growth patterns, so using a combination of all five was the best way to avoid the largest possible errors resulting from the least appropriate techniques for each census tract within the six counties. This approach is similar to BEBR's county population forecast methods, but the base periods and the number of projections are somewhat different because annual estimates are not available at the tract level.

The calculations associated with the five statistical methods are described on the following pages. The launch year was 2020, and the projections were made for 2025, 2030, 2035, 2040, 2045, and 2050.

1. **Linear Projection Method:** The Linear Projection Method assumes that the change in the number of persons for each census tract will be the same as during the base period (Rayer and Wang, 2022). Three linear growth rate calculations were made, 1990 to 2000, 2000 through 2020, and 2010 through 2020. In the three Linear methods (LIN), population growth was calculated using the following formulas:

$$LIN1 = \frac{(TractPop2020 - TractPop1990)}{30} * 5$$

$$LIN2 = \frac{(TractPop2020 - TractPop2000)}{20} * 5$$

$$LIN3 = \frac{(TractPop2020 - TractPop2010)}{10} * 5$$

2. **Exponential Projection Method:** The Exponential Projection Method assumes that population will continue to change at the same percentage rate as during the base period (Rayer and Wang, 2022). One calculation was made from 2010 through 2020. In the Exponential method (EXP), population growth was calculated using the following formula:

$$EXP = (TractPop2020 * e^{5r}) - TractPop2020$$

$$Where, r = \frac{ln\frac{TractPop2020}{TractPop2010}}{10}$$

3. **Constant Share Projection Method:** The Constant Share Projection Method assumes that each census tract's percentage of the county's total population (CntyPop) will be the same as over the base year (Rayer and Wang, 2022). One calculation was made using the 2020 share of county population. In the Constant Share method (CS), population growth was calculated using the following formula (using 2020–2025 as an example):

$$CS = \frac{TractPop2020}{CntyPop2020} * (CntyPop2025 - CntyPop2020)$$

4. **Share-of-Growth Projection Method**: The Share-of-Growth Projection Method assumes that each census tract's percentage of the county's total growth will be the same as over the base period (Rayer and Wang, 2022). However, if population change is negative at the tract level and positive at the county level (or vice versa), higher county-level projections would result in larger declines in tract projections. This is counterintuitive, so the "Plus-minus" variant of the Share-of-Growth Method was used (Rayer, 2015). Three Share-of-Growth (SOG) calculations were made, 1990 through 2020 2000 through 2020, and 2010 through 2020. Population growth was calculated using the following formulas <u>if</u> the changes in growth over the base period for the tract and county were both positive or both negative (using 2020–2025 as an example):

$$SOG = \left[\frac{SOG}{CntyPop2025 - CntyPop2020}\right] * \left[\begin{array}{l} \left[CntySum\left[\frac{ABS(SOG)}{CntyPop2025 - CntyPop2020}\right]\right] \\ + \left[1 - CntySum\left[\frac{SOG}{CntyPop2025 - CntyPop2020}\right]\right] \end{array}\right] \div \left[CntySum\left[\frac{ABS(SOG)}{CntyPop2025 - CntyPop2020}\right]\right] * (CntyPop2025 - CntyPop2020)$$

Where,

$$SOG1 = \frac{(TractPop2020 - TractPop1990)}{(CntyPop2020 - CntyPop1990)} * (CntyPop2025 - CntyPop2020)$$

$and\ ABS = Absolute\ Value$

Where,

$$SOG2 = \frac{(TractPop2020 - TractPop2000)}{(CntyPop2020 - CntyPop2000)} * (CntyPop2025 - CntyPop2020)$$

$and\ ABS = Absolute\ Value$

Where,

$$SOG3 = \frac{(TractPop2020 - TractPop2010)}{(CntyPop2020 - CntyPop2010)} * (CntyPop2025 - CntyPop2020)$$

$and\ ABS = Absolute\ Value$

If the changes in growth over the base period were negative at the tract level and positive at the county level or vice versa, the population growth was calculated using the following formulas (using 2020–2025 as an example):

$$SOG = \left[\frac{SOG}{CntyPop2025 - CntyPop2020}/5\right] * \left[\begin{matrix}\left[CntySum\left[\frac{ABS(SOG)}{CntyPop2025 - CntyPop2020}\right]\right] \\ + \left[1 - CntySum\left[\frac{SOG}{CntyPop2025 - CntyPop2020}\right]\right]\end{matrix}\right] \div \left[CntySum\left[\frac{ABS(SOG)}{CntyPop2025 - CntyPop2020}\right]\right] * (CntyPop2025 - CntyPop2020)$$

$$\begin{aligned}&Where,\\ &SOG1 = \frac{(TractPop2020 - TractPop1990)}{(CntyPop2020 - CntyPop1990)} * (CntyPop2025 - CntyPop2020)\\ &and\ ABS = Absolute\ Value\end{aligned}$$

$$\begin{aligned}&Where,\\ &SOG2 = \frac{(TractPop2020 - TractPop2000)}{(CntyPop2020 - CntyPop2000)} * (CntyPop2025 - CntyPop2020)\\ &and\ ABS = Absolute\ Value\end{aligned}$$

$$\begin{aligned}&Where,\\ &SOG3 = \frac{(TractPop2020 - TractPop2010)}{(CntyPop2020 - CntyPop2010)} * (CntyPop2025 - CntyPop2020)\\ &and\ ABS = Absolute\ Value\end{aligned}$$

6. **Shift-Share Projection Method:** The Shift-Share Projection Method assumes that each census tract's percentage of the county's total annual growth will change by the same annual amount as over the base period (Rayer and Wang, 2022). Three Shift-Share calculations were made, 1990 through 2020, 2000 through 2020, and 2010 through 2020. In the three Shift-Share Projection Method (SSH) calculations, population growth was calculated using the following formulas (using the five years from 2020–2025 as an example):

$$SSH_1 = \left[\frac{TractPop2020}{CntyPop2020} + \left[\frac{\left(\frac{TractPop2020}{CntyPop2020} - \frac{TractPop1990}{CntyPop1990}\right)}{30} * 5\right]\right] * \begin{pmatrix} CntyPop2025 \\ -CntyPop2020 \end{pmatrix}$$

$$SSH_1 = \left[\frac{TractPop2020}{CntyPop2020} + \left[\frac{\left(\frac{TractPop2020}{CntyPop2020} - \frac{TractPop2000}{CntyPop2000}\right)}{20} * 5\right]\right] * \begin{pmatrix} CntyPop2025 \\ -CntyPop2020 \end{pmatrix}$$

$$SSH_2 = \left[\frac{TractPop2020}{CntyPop2020} + \left[\frac{\left(\frac{TractPop2020}{CntyPop2020} - \frac{TractPop2010}{CntyPop2010}\right)}{10} * 5\right]\right] * \begin{pmatrix} CntyPop2025 \\ -CntyPop2020 \end{pmatrix}$$

7. **Average of the Projection Extrapolations:** Because the number of trend calculations varied based on the length of the base period used, different combinations of projections were averaged for different forecast years.
   a. For 2025 and 2030 projections, five calculations with base periods up to 10 years were used. The lowest and highest of the five were excluded to moderate the most extreme results of the census tracts within the six-county area, and the remaining three were averaged.
   b. For 2035 and 2040, eight calculations with base periods up to 20 years were used. The two lowest and two highest of the eight were excluded, and the remaining four were averaged.
   c. For 2045 and 2050, eleven calculations with base periods up to 30 years were used. The three lowest and three highest of the eleven were excluded, and the remaining five were averaged.

   The 2045 and 2050 projections, which included all calculations and base periods, were calculated using the following formula:

$$AVG = \frac{\begin{array}{c}(LIN1 + LIN2 + LIN3 + EXP + CS + SOG1 + SOG2 + SOG3 + SSH1 + SSH2 + SSH3) \\ -(MIN1 + MIN2 + MIN3 + MAX1 + MAX2 + MAX3)\end{array}}{5}$$

Where,
$MIN1 - MIN3$ *are the three lowest growth calculations for each tract, and*
$MAX1 - MAX3$ *are the three highest growth calculations for each tract.*

Growth Calculation Methodology

The Population Projection Engine™ then automated growth calculations using the historic growth trends and queries of the County Build-out Submodels and the Growth Drivers Submodel. The methodology for calculating growth for each projection increment included the following steps:

1. Apply the tract-level projected growth to parcels within each tract, distributing growth to parcels with the highest driver values first.
2. Check growth projections against build-out population, and reduce any projections exceeding build-out to the build-out numbers.
3. After projecting growth for all census tracts within a particular county, summarize the resulting growth and compare it against countywide BEBR target growth. This step led to two scenarios:
   a. If the Small-Area Population Forecasting Model's projections exceeded the BEBR target growth, reduce the projected growth for all tracts by the percentage that the projections exceeded the BEBR target.
   b. If the Small-Area Population projection model's projections were less than the BEBR target, develop parcels with the highest growth driver values and available capacity until the BEBR target growth is reached.

Counties that are partially within another water management district were processed in their entirety and controlled to the BEBR-based target growth.

SEASONAL POPULATION ESTIMATES

In addition to the permanent residents (counted by the census and estimated and projected by BEBR), estimates of seasonal population were made. Seasonal population was estimated using a combination of 2010 census data (as the relevant 2020 census variables are not yet available) and data from a prior study conducted by the Southwest Florida Water Management District (SWFWMD) on the proportion of the year seasonal residents spend in Florida and the average household size of seasonal residents.

Housing units that were vacant for seasonal, recreational, or occasional use from the 2010 census by census tract were multiplied by a seasonal resident average household size of 1.90 and multiplied by the average proportion of the year seasonal residents spend in Florida for non-beach destination counties (56.7%), per SWFWMD. Those seasonal estimates were added to the 2010 census population counts by tract, and the total (permanent + seasonal) population was divided by the permanent population to create a seasonal ratio. This ratio was then multiplied times the 2020 census count and 2025-2050 projections to derive peak seasonal population estimates and projections, which also included the permanent population.

DELIVERABLES

Finally, the parcel level estimates and projections were summarized by water utility service area boundaries that SRWMD maintains in GIS format. These summaries were exported to a Microsoft Excel spreadsheet to facilitate the review and distribution of the results.

The final deliverables were provided in multiple formats, including:

1. GIS – Esri file geodatabase with polygon feature class containing parcel level results for the six counties
2. Tabular – Excel spreadsheet summaries by county, place, and utility service area

The GIS outputs are useful for quality assuring the results and inputs, for maintaining the model inputs over time, and for graphically depicting projected patterns of current population and potential future growth.

The tabular deliverables were summaries of the parcel-level results by county and place, and also by permit and utility service area. Note that these service area population summaries may include some self-supplied populations (or populations with private wells) that reside within them.

Figure 3 below is a dot density map that depicts parcels with current (2020) population with gray dots and parcels with projected population growth (2020-2050) with red dots. One dot equates to one person.

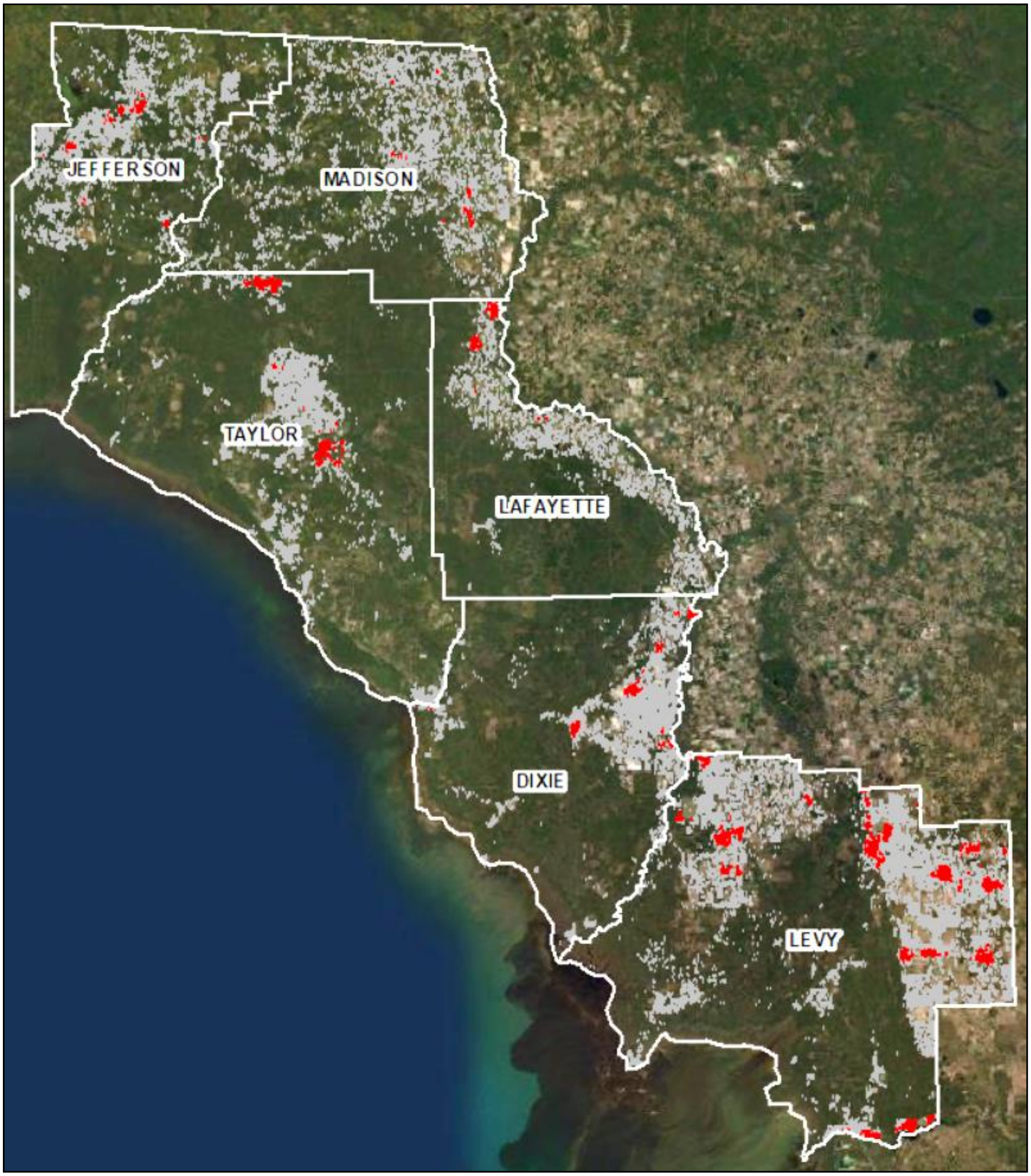

Figure 3. SRWMD forecasted population growth map

Tables 3 and 4 below provide the population summaries by county and place. Table 3 includes permanent residents only, and Table 4 includes permanent and peak seasonal residents.

Table 3. County and place summaries of permanent residents

COUNTY	PLACE	POP20	POP25	POP30	POP35	POP40	POP45	POP50
Dixie	Cross City	1,689	1,835	1,963	2,047	2,089	2,171	2,216
Dixie	Horseshoe Beach	165	165	165	165	165	165	165
Dixie	Unincorporated	14,905	15,100	15,272	15,388	15,446	15,564	15,619
Jefferson	Monticello	2,589	2,791	2,861	2,913	2,945	2,982	3,023
Jefferson	Unincorporated	11,921	12,309	12,439	12,587	12,655	12,718	12,777
Lafayette	Mayo	1,055	1,055	1,055	1,055	1,055	1,055	1,055
Lafayette	Unincorporated	7,171	7,145	7,345	7,445	7,545	7,645	7,645
Levy	Bronson	1,140	1,540	1,751	1,836	1,877	1,899	1,909
Levy	Cedar Key	687	687	687	687	687	687	687
Levy	Chiefland	2,316	2,573	2,761	2,874	2,978	3,086	3,176
Levy	Fanning Springs	704	843	941	1,025	1,096	1,151	1,195
Levy	Inglis	1,476	1,509	1,563	1,623	1,669	1,696	1,711
Levy	Otter Creek	108	108	108	108	108	108	108
Levy	Unincorporated	32,920	34,241	35,216	35,952	36,804	37,531	38,240
Levy	Williston	2,976	3,212	3,384	3,507	3,592	3,654	3,681
Levy	Yankeetown	588	588	588	588	588	588	593
Madison	Greenville	746	746	746	746	746	746	746
Madison	Lee	375	487	523	549	576	576	576
Madison	Madison	2,912	2,924	2,926	2,926	2,926	2,926	2,926
Madison	Unincorporated	13,935	14,143	14,205	14,280	14,352	14,352	14,352
Taylor	Perry	6,898	6,898	6,898	6,898	6,898	6,898	6,899
Taylor	Unincorporated	14,898	14,302	14,502	14,602	14,602	14,702	14,801
	TOTALS	122,174	125,200	127,900	129,800	131,400	132,900	134,100

Table 4. County and place summaries of permanent and peak seasonal residents

COUNTY	PLACE	POP20_S	POP25_S	POP30_S	POP35_S	POP40_S	POP45_S	POP50_S
Dixie	Cross City	1,706	1,854	1,982	2,067	2,109	2,192	2,238
Dixie	Horseshoe Beach	230	230	230	230	230	230	230
Dixie	Unincorporated	16,861	17,074	17,264	17,391	17,455	17,584	17,646
Jefferson	Monticello	2,629	2,833	2,904	2,957	2,989	3,026	3,067
Jefferson	Unincorporated	12,111	12,506	12,639	12,789	12,858	12,923	12,983
Lafayette	Mayo	1,124	1,124	1,124	1,124	1,124	1,124	1,124
Lafayette	Unincorporated	7,499	7,480	7,683	7,785	7,887	7,989	7,989
Levy	Bronson	1,158	1,564	1,778	1,864	1,906	1,928	1,939
Levy	Cedar Key	759	759	759	759	759	759	759
Levy	Chiefland	2,357	2,619	2,810	2,925	3,031	3,141	3,233
Levy	Fanning Springs	720	862	963	1,049	1,122	1,178	1,223
Levy	Inglis	1,721	1,760	1,823	1,893	1,946	1,978	1,996
Levy	Otter Creek	119	119	119	119	119	119	119
Levy	Unincorporated	34,150	35,541	36,561	37,325	38,208	38,961	39,694
Levy	Williston	3,002	3,239	3,413	3,537	3,623	3,685	3,713
Levy	Yankeetown	686	686	686	686	686	686	691
Madison	Greenville	770	770	770	770	770	770	770
Madison	Lee	388	504	540	567	595	595	595
Madison	Madison	2,933	2,945	2,947	2,947	2,947	2,947	2,947
Madison	Unincorporated	14,356	14,572	14,636	14,713	14,788	14,788	14,788
Taylor	Perry	7,013	7,013	7,013	7,013	7,013	7,013	7,015
Taylor	Unincorporated	16,260	15,699	15,913	16,024	16,024	16,137	16,250
	TOTALS	128,553	131,753	134,558	136,534	138,190	139,754	141,008

Tables 5 and 6 below provide the population summaries by consumptive use permit and utility service area. Table 5 includes permanent residents only, and Table 6 includes permanent and peak seasonal residents. Additional summaries are available in the spreadsheet accompanying this report entitled SRWMD Population Summaries.xlsx.

Table 5. Permit and utility summaries of permanent residents

CUP	UTILITY	POP20	POP25	POP30	POP35	POP40	POP45	POP50
216823	CROSS CITY TOWN OF	4,672	4,858	5,020	5,128	5,181	5,285	5,336
217129	HORSESHOE BEACH UTILITIES	166	166	166	166	166	166	166
216831	SUWANNEE TOWN OF	911	911	911	911	911	911	911
220310	NCRWA - OLD TOWN	840	849	864	873	881	896	913
7093	MONTICELLO CITY OF	4,773	5,131	5,252	5,351	5,401	5,450	5,506
218662	JEFFERSON COMMUNITIES WATER SYSTEM - LAMONT	211	250	263	276	283	290	297
7135	JEFFERSON COMMUNITIES WATER SYSTEM INC - LLOYD	5,601	5,684	5,713	5,764	5,797	5,834	5,865
216851	MAYO TOWN OF	1,040	1,040	1,040	1,040	1,040	1,040	1,040
216830	BRONSON UTILITY CITY OF	1,140	1,540	1,751	1,836	1,877	1,899	1,909
216821	CEDAR KEY WATER & SEWER DISTRICT	815	815	815	815	815	815	815
216826	CHIEFLAND CITY OF	3,398	3,849	4,175	4,363	4,500	4,634	4,743
220310	FANNING SPRINGS TOWN OF	660	797	894	978	1,049	1,104	1,148
216656	OTTER CREEK TOWN OF	108	108	108	108	108	108	108
216642	FOWLERS BLUFF WTR ASSOC	222	222	222	222	222	222	222
217177	MANATEE UTILITIES	549	549	550	558	600	634	652
220497	UNIVERSITY OAKS MHP	848	848	848	848	848	848	848
217127	GREENVILLE TOWN OF	744	744	744	744	744	744	744
218663	LEE TOWN OF	483	665	721	771	822	822	822
216506	MADISON CITY OF	6,410	6,422	6,425	6,428	6,430	6,430	6,430
219588	CHERRY LAKE UTILITIES	318	318	318	318	318	318	318
216835	PERRY CITY OF	6,835	6,835	6,835	6,835	6,835	6,835	6,837
220484	BIG BEND WATER AUTHORITY	1,547	1,547	1,547	1,547	1,547	1,547	1,547
221166	TAYLOR COASTAL WATER & SEWER DISTRICT	157	157	157	157	157	157	157
	TOTALS	42,449	44,306	45,339	46,037	46,532	46,989	47,334

Table 6. Permit and utility summaries of permanent and peak seasonal residents

CUP	UTILITY	POP20_S	POP25_S	POP30_S	POP35_S	POP40_S	POP45_S	POP50_S
216823	CROSS CITY TOWN OF	4,701	4,888	5,052	5,160	5,214	5,320	5,371
217129	HORSESHOE BEACH UTILITIES	232	232	232	232	232	232	232
216831	SUWANNEE TOWN OF	1,271	1,271	1,271	1,271	1,271	1,271	1,271
220310	NCRWA - OLD TOWN	1,098	1,108	1,123	1,134	1,142	1,158	1,176
7093	MONTICELLO CITY OF	4,852	5,216	5,340	5,441	5,491	5,541	5,598
218662	JEFFERSON COMMUNITIES WATER SYSTEM - LAMONT	214	254	267	281	288	295	302
7135	JEFFERSON COMMUNITIES WATER SYSTEM INC - LLOYD	5,672	5,755	5,784	5,835	5,869	5,906	5,937
216851	MAYO TOWN OF	1,108	1,108	1,108	1,108	1,108	1,108	1,108
216830	BRONSON UTILITY CITY OF	1,158	1,564	1,778	1,864	1,906	1,928	1,939
216821	CEDAR KEY WATER & SEWER DISTRICT	901	901	901	901	901	901	901
216826	CHIEFLAND CITY OF	3,462	3,923	4,255	4,447	4,587	4,724	4,835
220310	FANNING SPRINGS TOWN OF	675	815	915	1,000	1,073	1,130	1,175
216656	OTTER CREEK TOWN OF	119	119	119	119	119	119	119
216642	FOWLERS BLUFF WTR ASSOC	256	256	256	256	256	256	256
217177	MANATEE UTILITIES	562	562	562	571	614	649	667
220497	UNIVERSITY OAKS MHP	862	862	862	862	862	862	862
217127	GREENVILLE TOWN OF	768	768	768	768	768	768	768
218663	LEE TOWN OF	499	687	745	797	850	850	850
216506	MADISON CITY OF	6,456	6,468	6,471	6,474	6,476	6,476	6,476
219588	CHERRY LAKE UTILITIES	338	338	338	338	338	338	338
216835	PERRY CITY OF	6,950	6,950	6,950	6,950	6,950	6,950	6,952
220484	BIG BEND WATER AUTHORITY	1,893	1,893	1,893	1,893	1,893	1,893	1,893
221166	TAYLOR COASTAL WATER & SEWER DISTRICT	192	192	192	192	192	192	192
	TOTALS	44,239	46,131	47,183	47,895	48,399	48,865	49,217

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