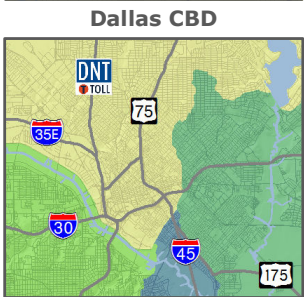
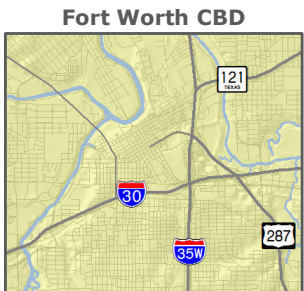
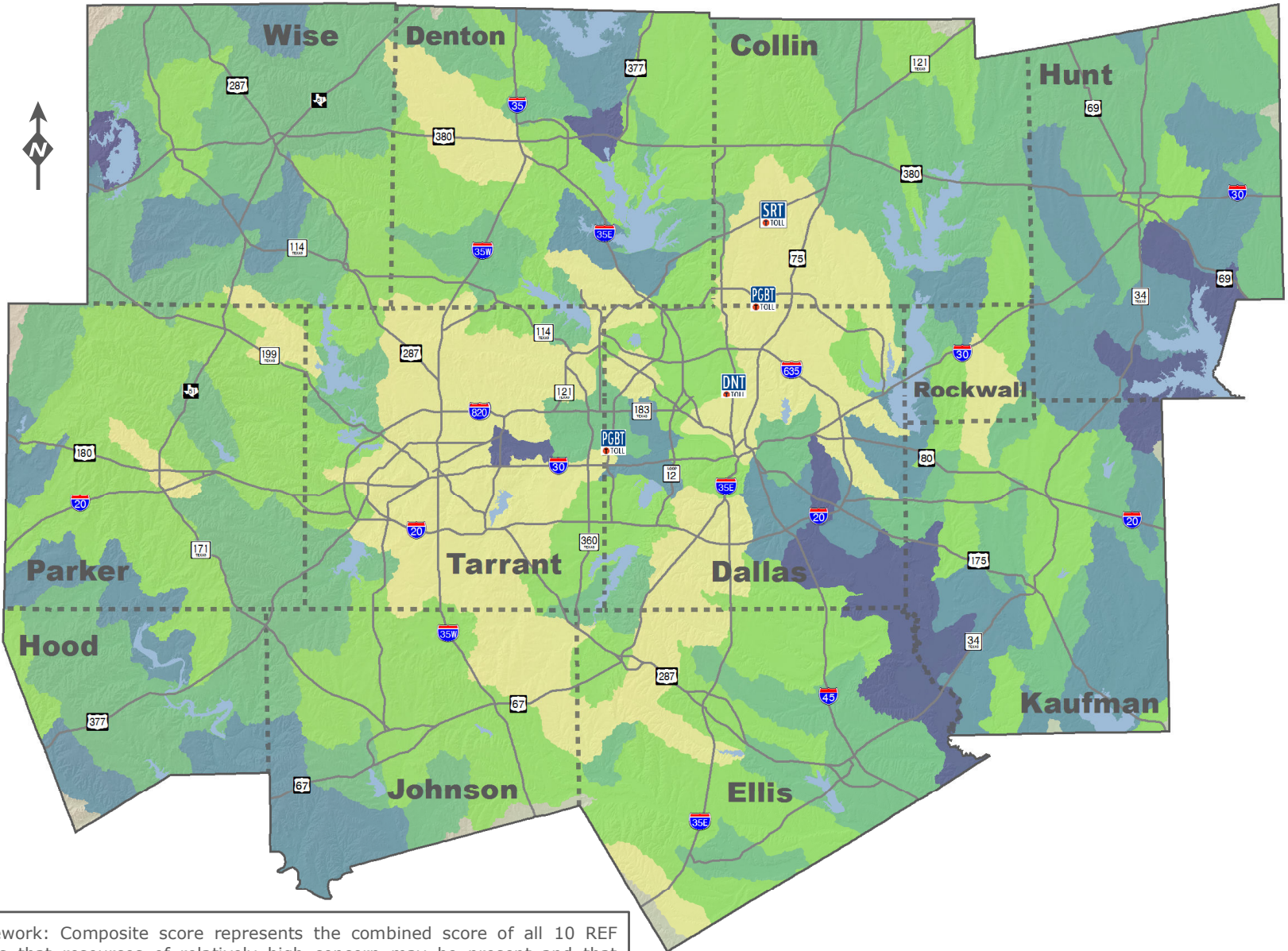
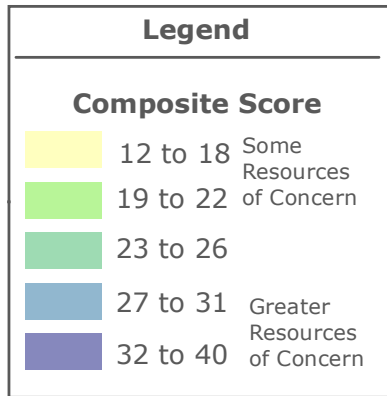


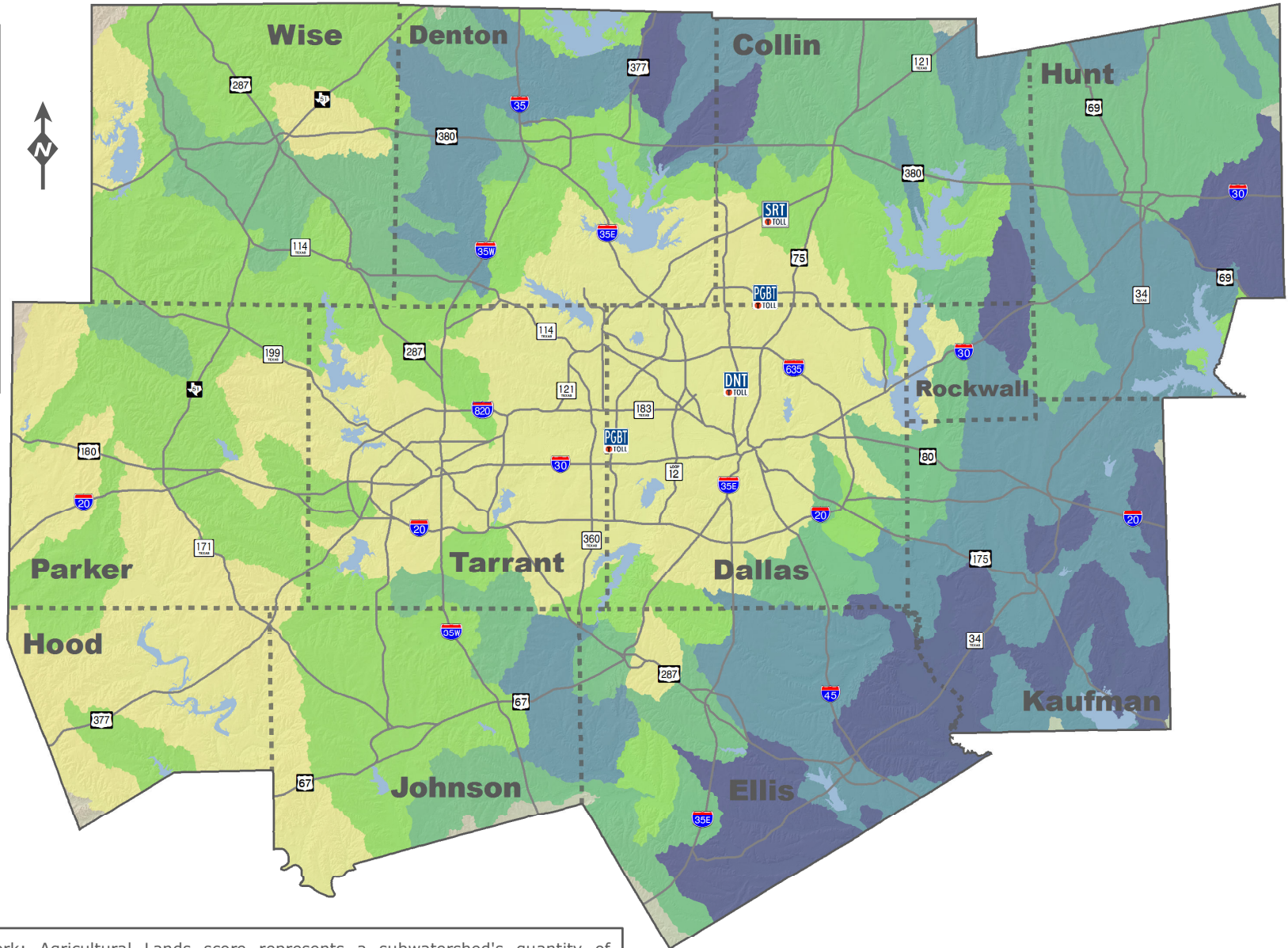
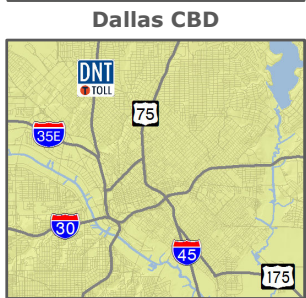
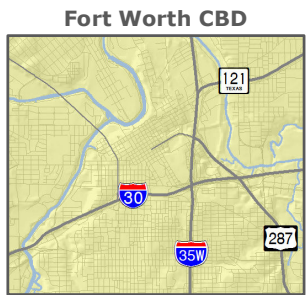
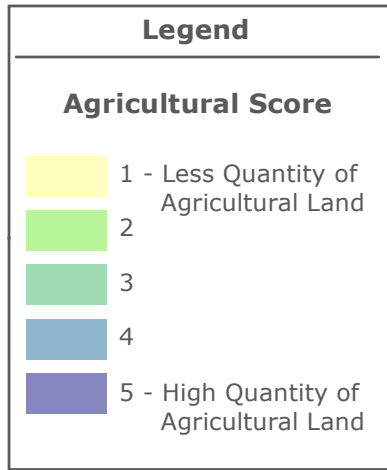
# Regional Ecosystem Framework: Composite



The Regional Ecosystem Framework: Composite score represents the combined score of all 10 REF layers. A higher score indicates that resources of relatively high concern may be present and that additional review, documentation, and consultation with the applicable agency may be needed. The REF layers include: Green Infrastructure (Wildlife Habitat, Natural Areas, Agricultural Land); Water Quality and Flooding (Impaired Water Segments, Flood Zones, Surface Water Quantity, and Wetlands); and Ecosystem Value (Rarity, Diversity, and Ecosystem Sustainability). Data sources include the Texas GRID and EPA Region 6 Regional Ecosystem Assessment Protocol data. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).



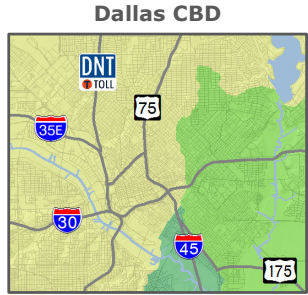
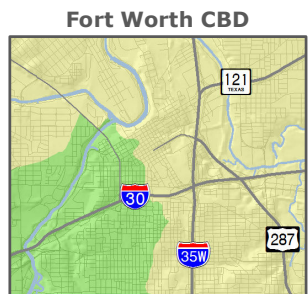
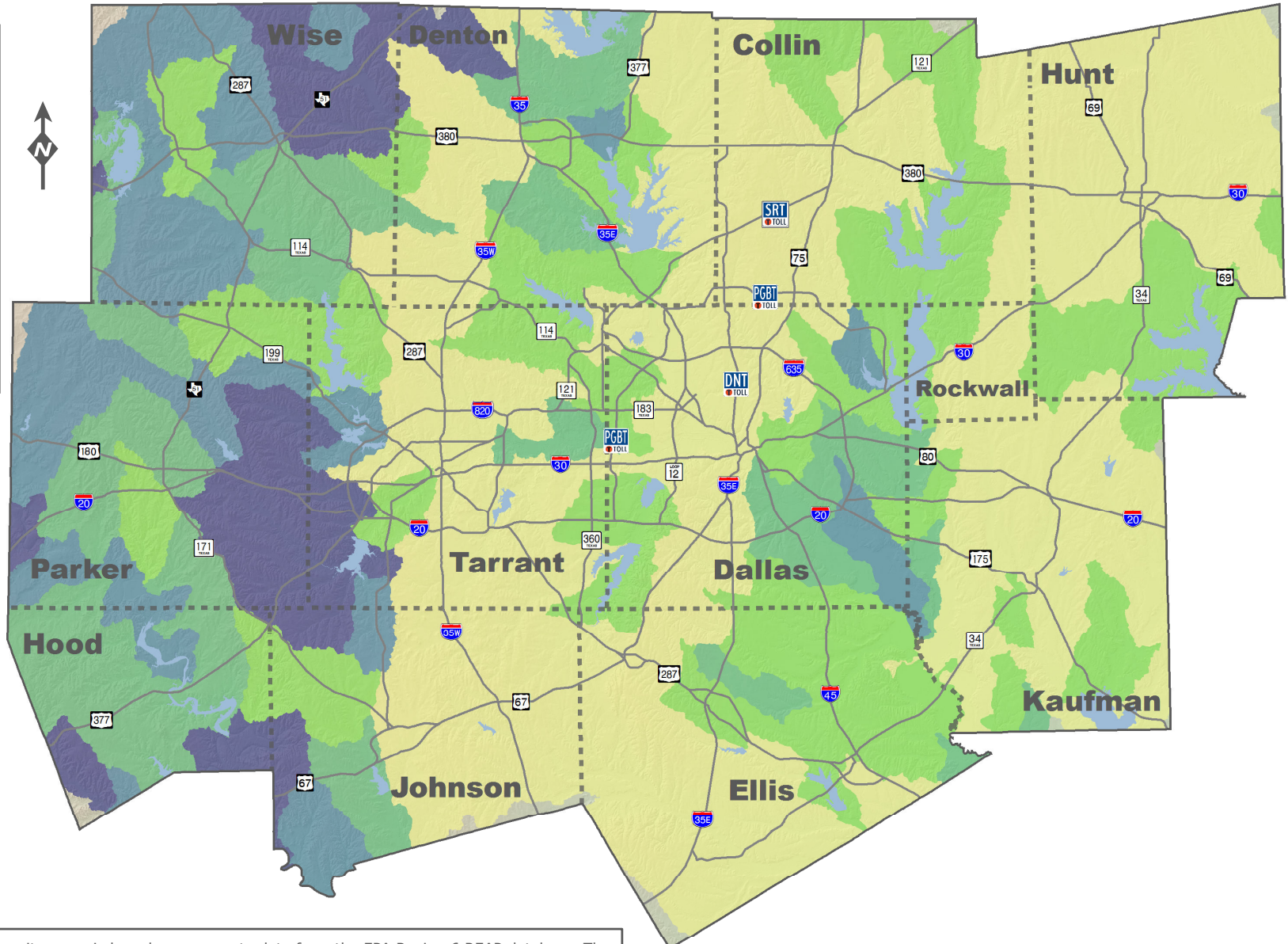
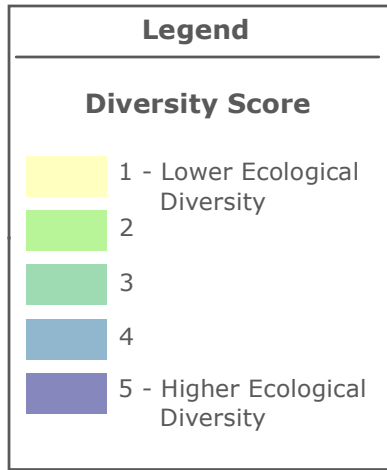
# Regional Ecosystem Framework: Agricultural Lands



The Regional Ecosystem Framework: Agricultural Lands score represents a subwatershed's quantity of agricultural lands classified as 2011 NLCD Pasture/Hay and Cultivated Crops. The data is computed based on the percentage of an individual cell identified as agricultural land and assigned a score of 1 (<20% of grid cell) to 5 (>50% of grid cell). The cell scores in each subwatershed boundary are averaged resulting in a subwatershed value of 1 to 5. A higher percentage of agricultural land cover within an area may indicate a greater potential for concerns under the Prime Farmland Act. Data sources include the Texas GRID data. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

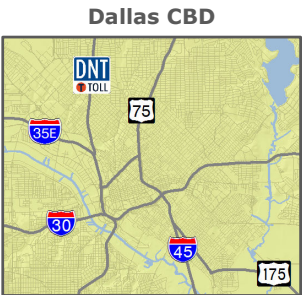
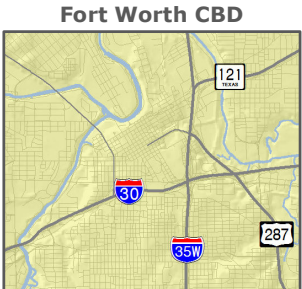
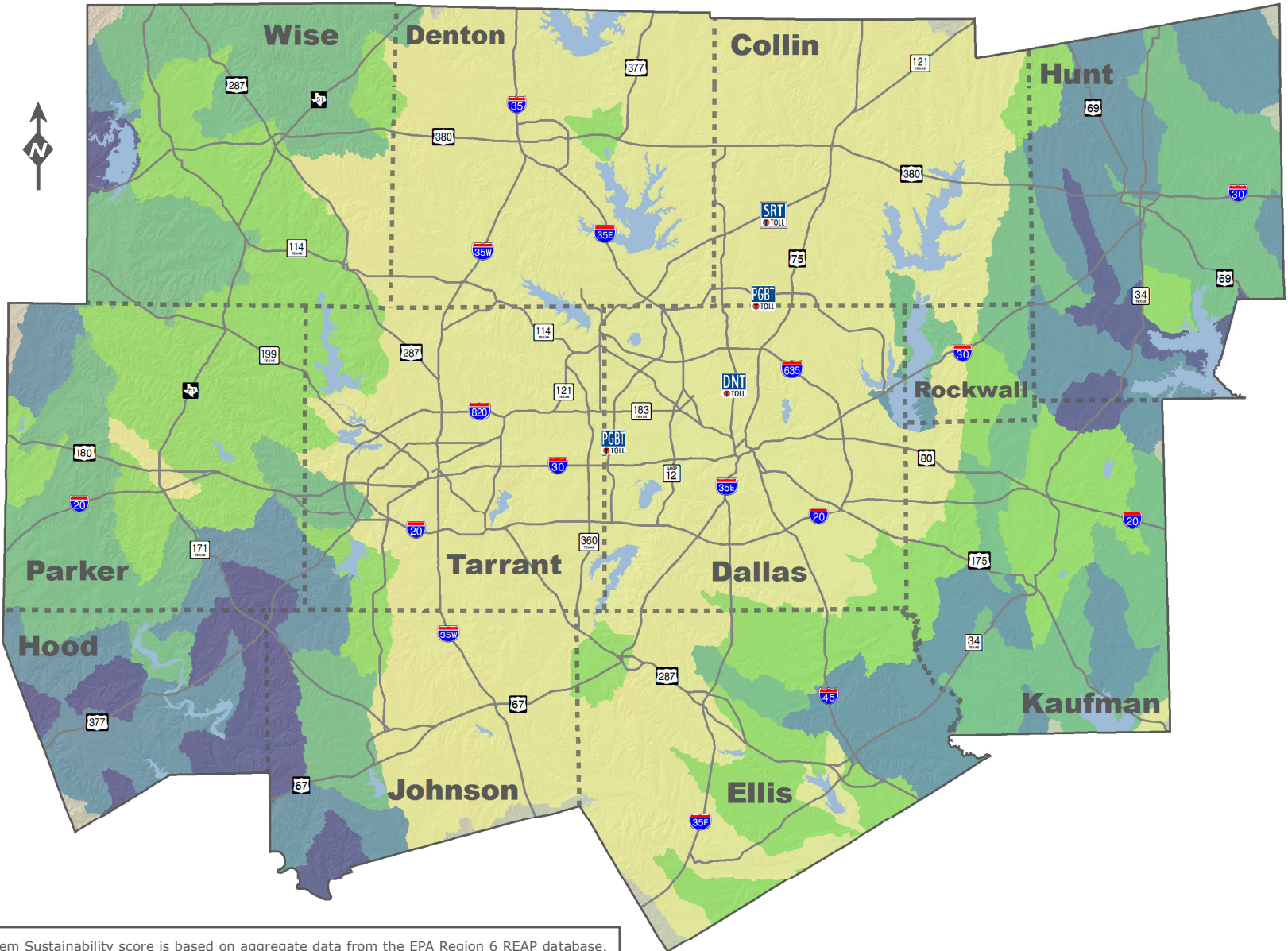
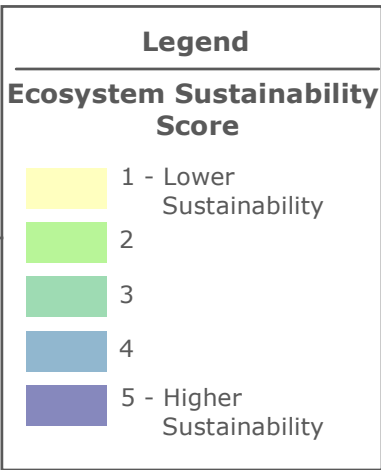


# Regional Ecosystem Framework: Diversity



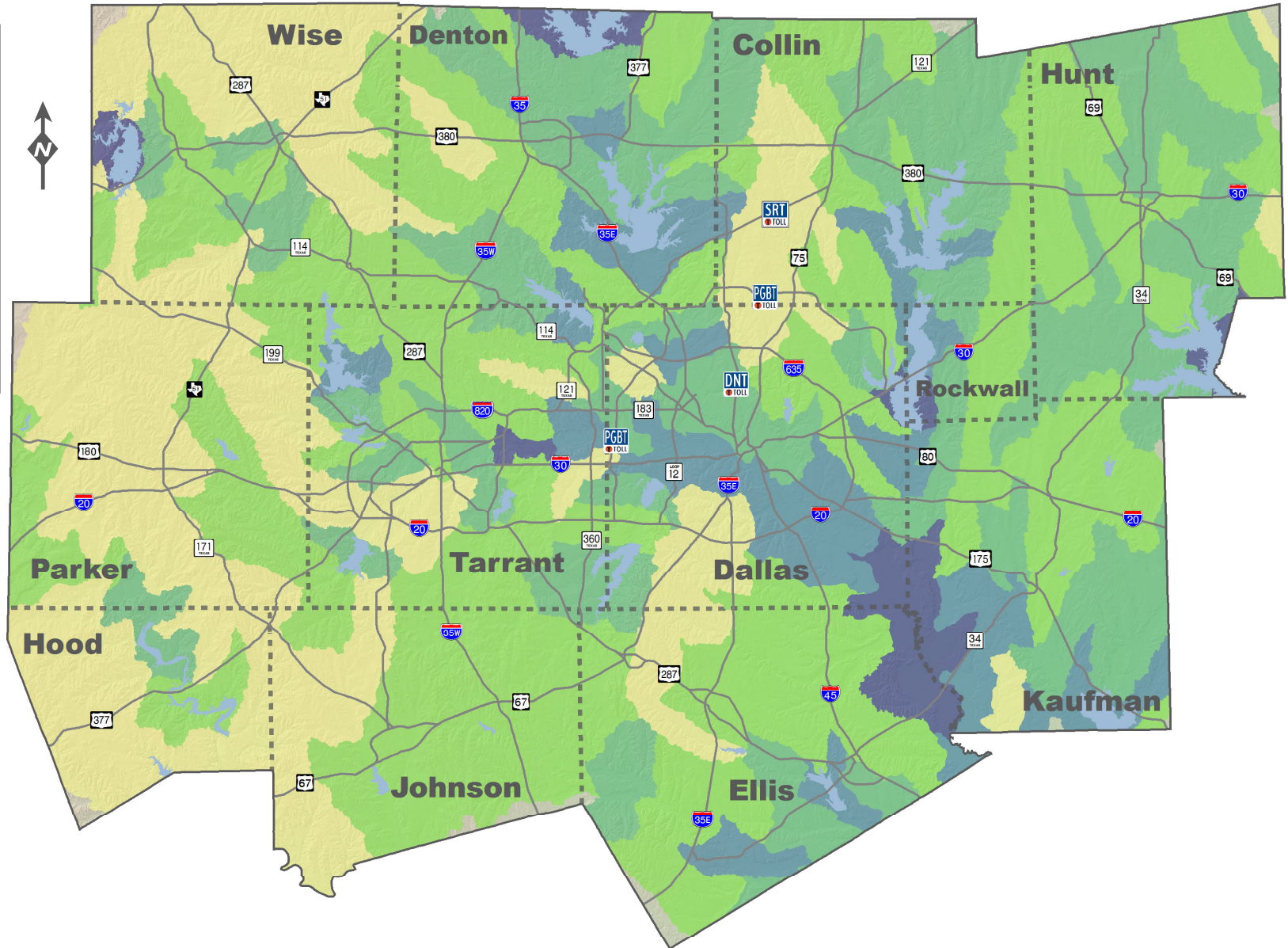
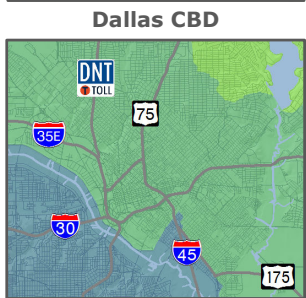
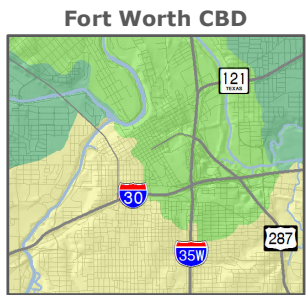
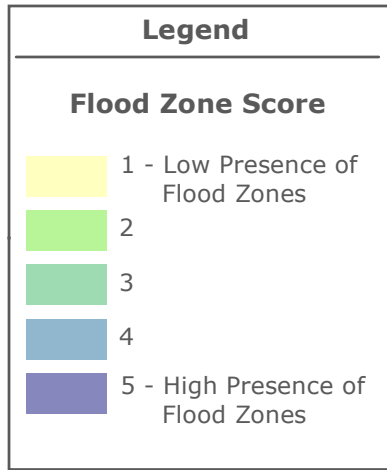
The Regional Ecosystem Framework: Diversity score is based on aggregate data from the EPA Region 6 REAP database. The REAP Diversity Layer was calculated using a 0.25 km<sup>2</sup> grid which used the mean of four diversity sub-layers and rescaled them from 0 to 100. The four sub-layers used to calculate the REAP Diversity include: Appropriateness of Land Cover, Contiguous Size of Undeveloped Area, Shannon Land Cover Diversity, and Ecologically Significant Stream Segments. The REF calculates the subwatershed scores by averaging the individual REAP grid cells (scored 1 to 5, with 5 being the top 1% most diverse polygons) to determine an overall value of 1 to 5 for each subwatershed. Higher scores indicate a higher level of diversity in the overall subwatershed and should be used for screening purposes. The REAP was originally calculated for ecoregions. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

# Regional Ecosystem Framework: Ecosystem Sustainability



The Regional Ecosystem Framework: Ecosystem Sustainability score is based on aggregate data from the EPA Region 6 REAP database. The REAP Sustainability Layer was calculated using a 0.25 km<sup>2</sup> grid which used the mean of 11 Sustainability sub-layers and rescaled them from 0 to 100. The Sustainability Layer consists of 11 measures that can be loosely grouped into fragmentors and stressors. Fragmentors include contiguous land cover type, regularity of ecosystem boundary, appropriateness of land cover, waterway obstruction, and road density. Stressors include airport noise, Superfund National Priority List and State Superfund Sites, water quality, air quality, RCRA, Treatment-Storage-Disposal Sites, Corrective Action and State Voluntary Cleanup Program Sites, and urban/agricultural disturbance. The REF calculates the subwatershed scores by averaging the individual REAP Sustainability grid cells to determine an overall value of 1 to 5 for each subwatershed. Higher scores indicate a higher level of sustainability or resilience. Resilience is the state of the environment in terms of stability and how resistant to disturbance an area is (Begon et al. 1986). The REAP was originally calculated for ecoregions. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

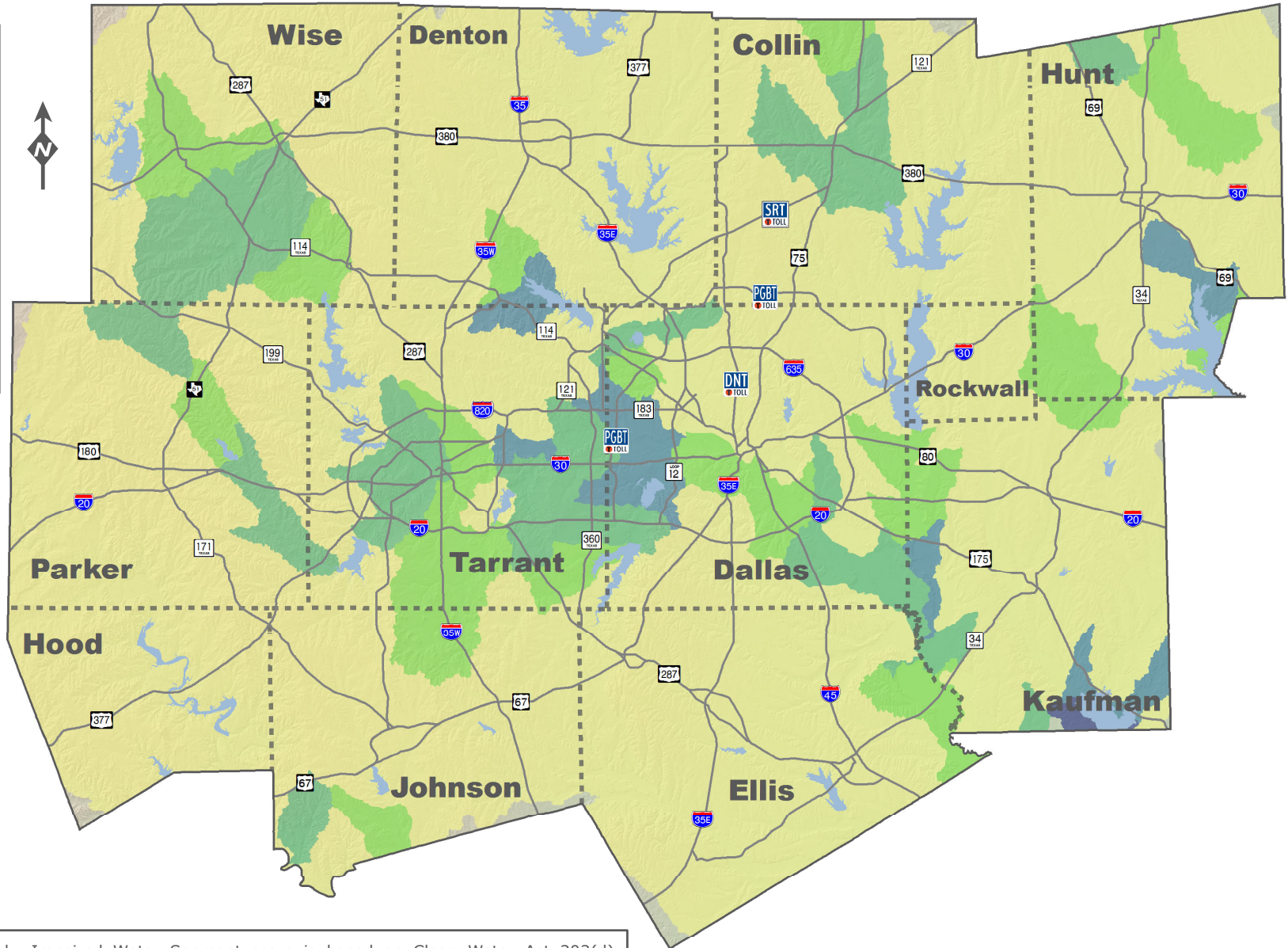
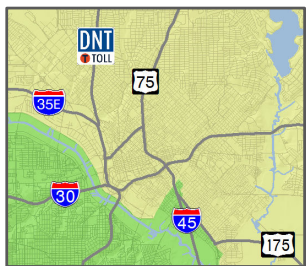
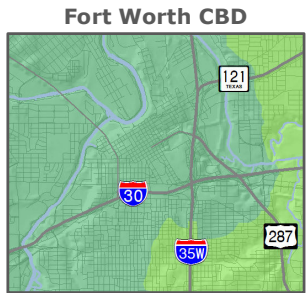
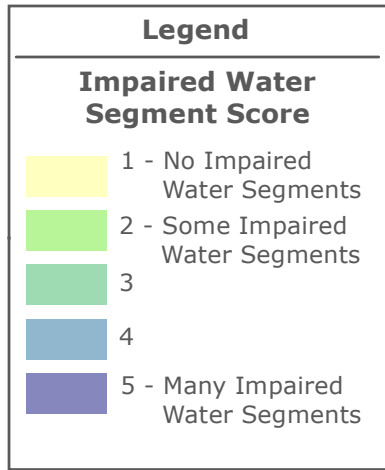
# Regional Ecosystem Framework: Flood Zones



The Regional Ecosystem Framework: Flood Zone score includes 100 year and 500 year floodplains. The data is computed based on the percentage of an individual cell within the floodplain and assigned a score of 1 (<20% of the grid cell) to 5 (>50% of the grid cell). The cell scores in each subwatershed boundary are averaged resulting in a subwatershed score of 1 to 5. Data sources include the Texas GRID which used FEMA DFIRM flood data. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).



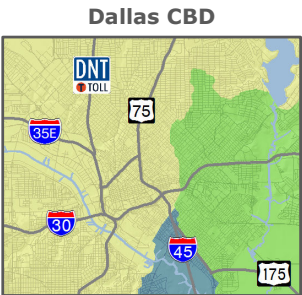
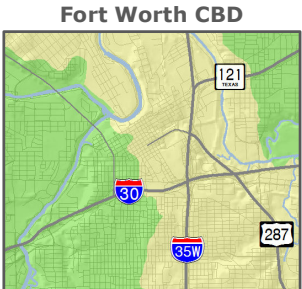
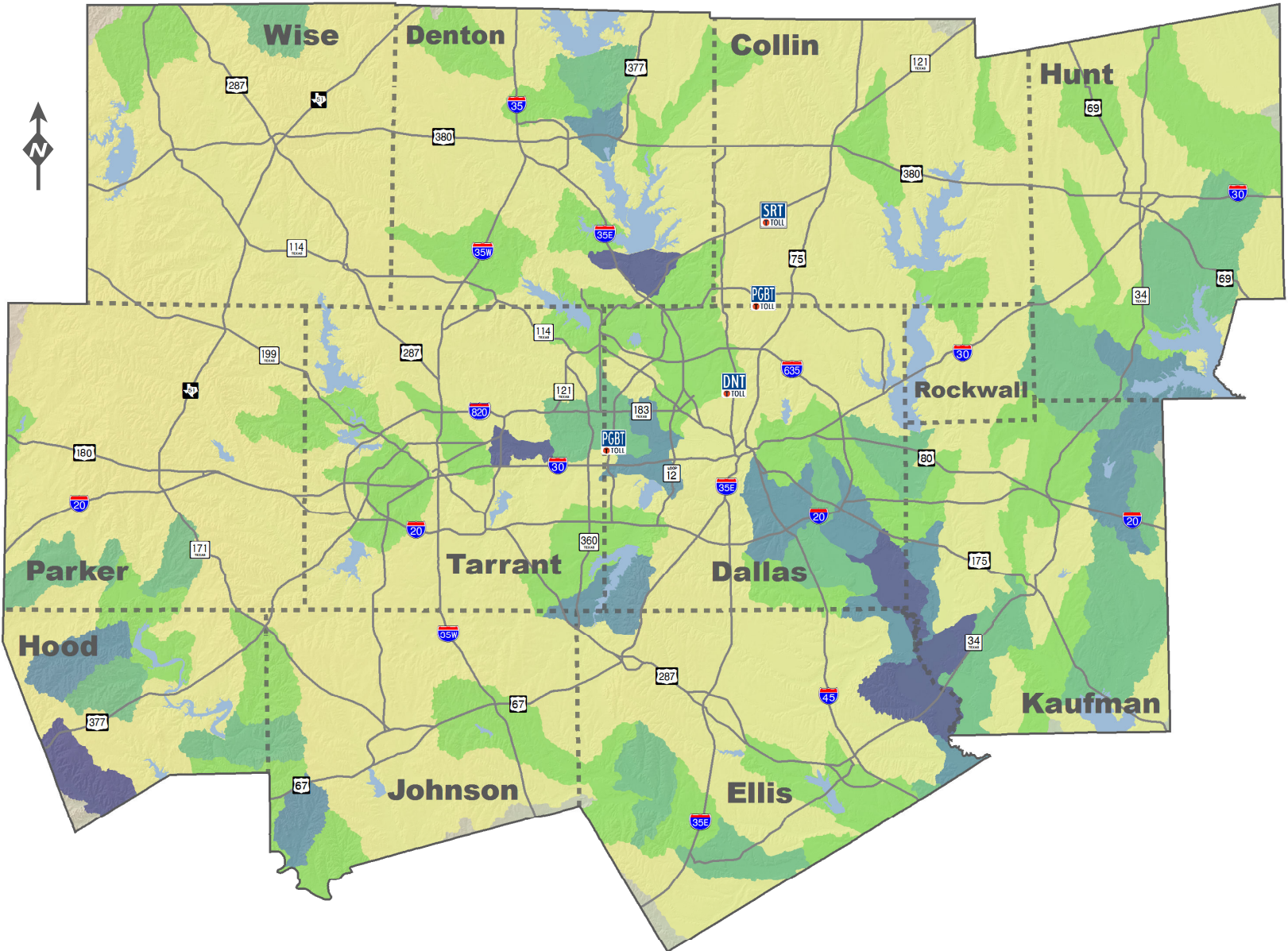
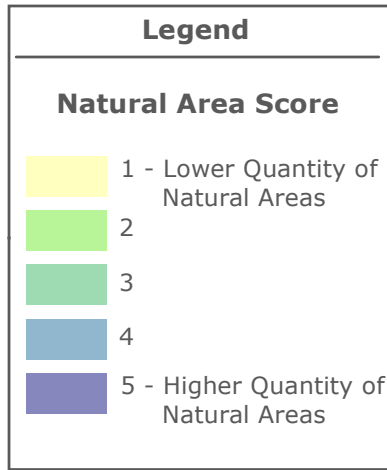
# Regional Ecosystem Framework: Impaired Water Segments



The Regional Ecosystem Framework: Impaired Water Segment score is based on Clean Water Act 303(d) Segments State Priority Data. The data is based on whether an individual cell has an impaired water segment (Score = 5) or not (Score = 1). The cell scores in each subwatershed boundary are averaged resulting in a subwatershed score of 1 to 5, which is why there are some subwatersheds that score between 2 to 4. It can be assumed that any subwatershed above a 1 has impaired water segments, but a score closer to 5 indicates a greater quantity of impaired segments in a subwatershed. Data sources include the Texas GRID data. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

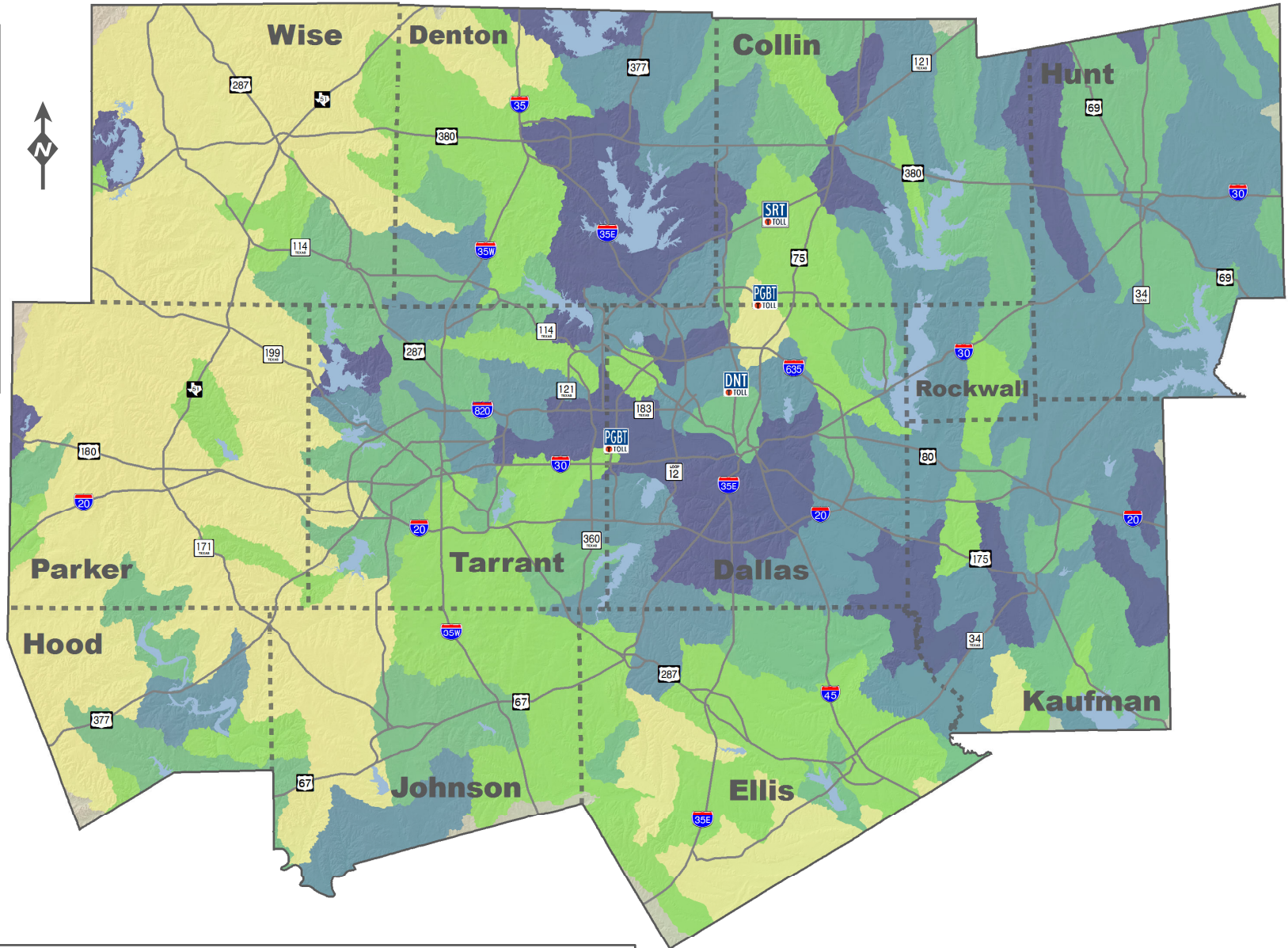
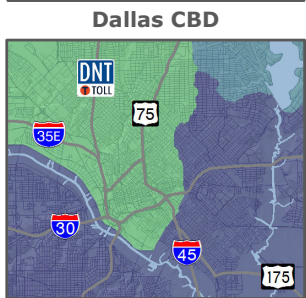
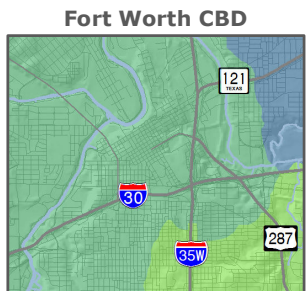
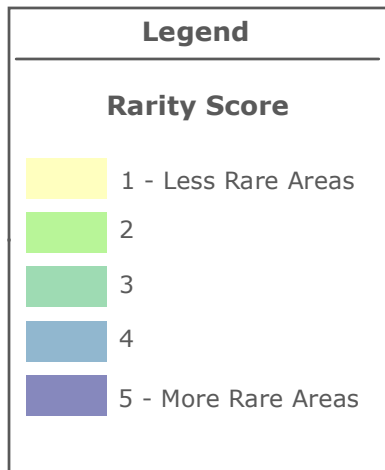


# Regional Ecosystem Framework: Natural Areas



The Regional Ecosystem Framework: Natural Areas score as defined by North Texas 2050 "generally reflect floodplains, major public parks and open spaces, shores along major lakes and potential connections between these natural assets." The percentage of natural areas present in a subwatershed is assigned a score of 1 to 5. Data sources include NCTCOG 2007 aerial photography and North Texas 2050. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

# Regional Ecosystem Framework: Rarity

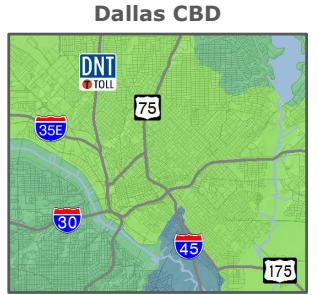
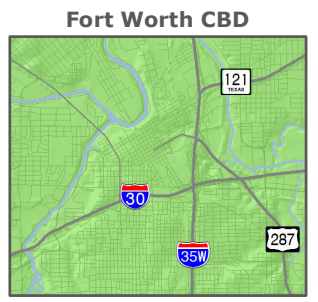
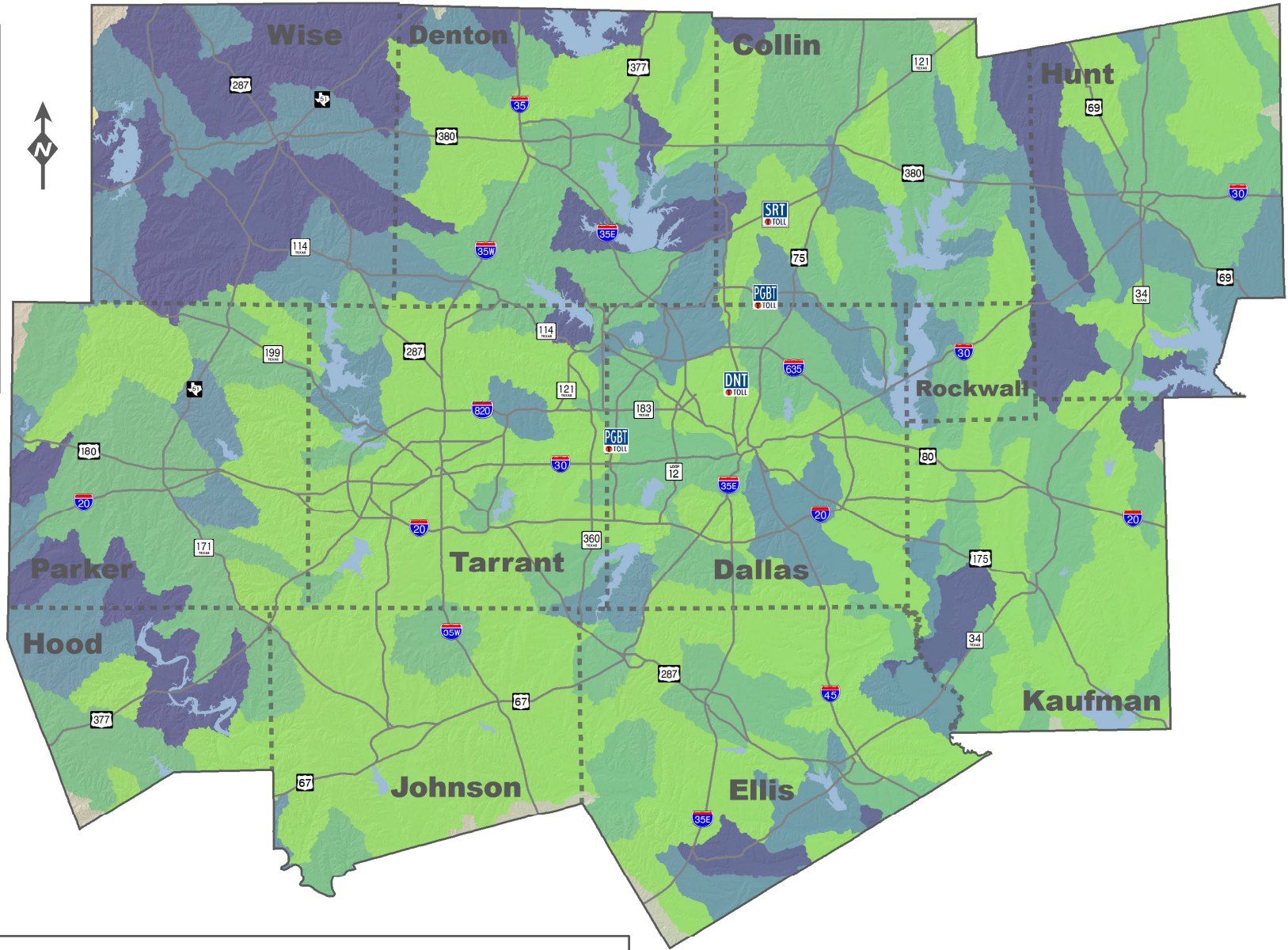
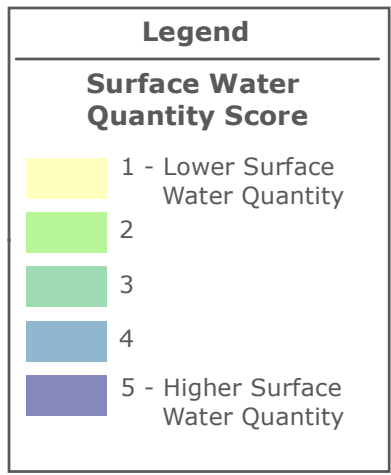


The Regional Ecosystem Framework: Rarity score is based on aggregate data from the EPA Region 6 REAP database. The REAP Rarity Layer was calculated using a 0.25 km<sup>2</sup> grid which used the mean of four Rarity sub-layers and rescaled them from 0 to 100. The four sub-layers used to calculate the REAP Rarity Layer include: Vegetation Rarity, Natural Heritage Rank, Taxonomic Richness, and Rare Species Richness. The REF calculates the subwatershed scores by averaging the individual REAP Rarity grid cells to determine an overall value of 1 to 5 for each subwatershed. Higher scores indicate a higher level of rarity in the overall subwatershed and should be used for screening purposes. The REAP was originally calculated for ecoregions. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).



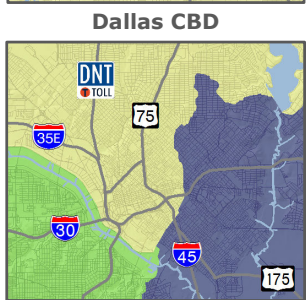
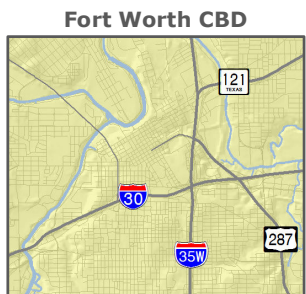
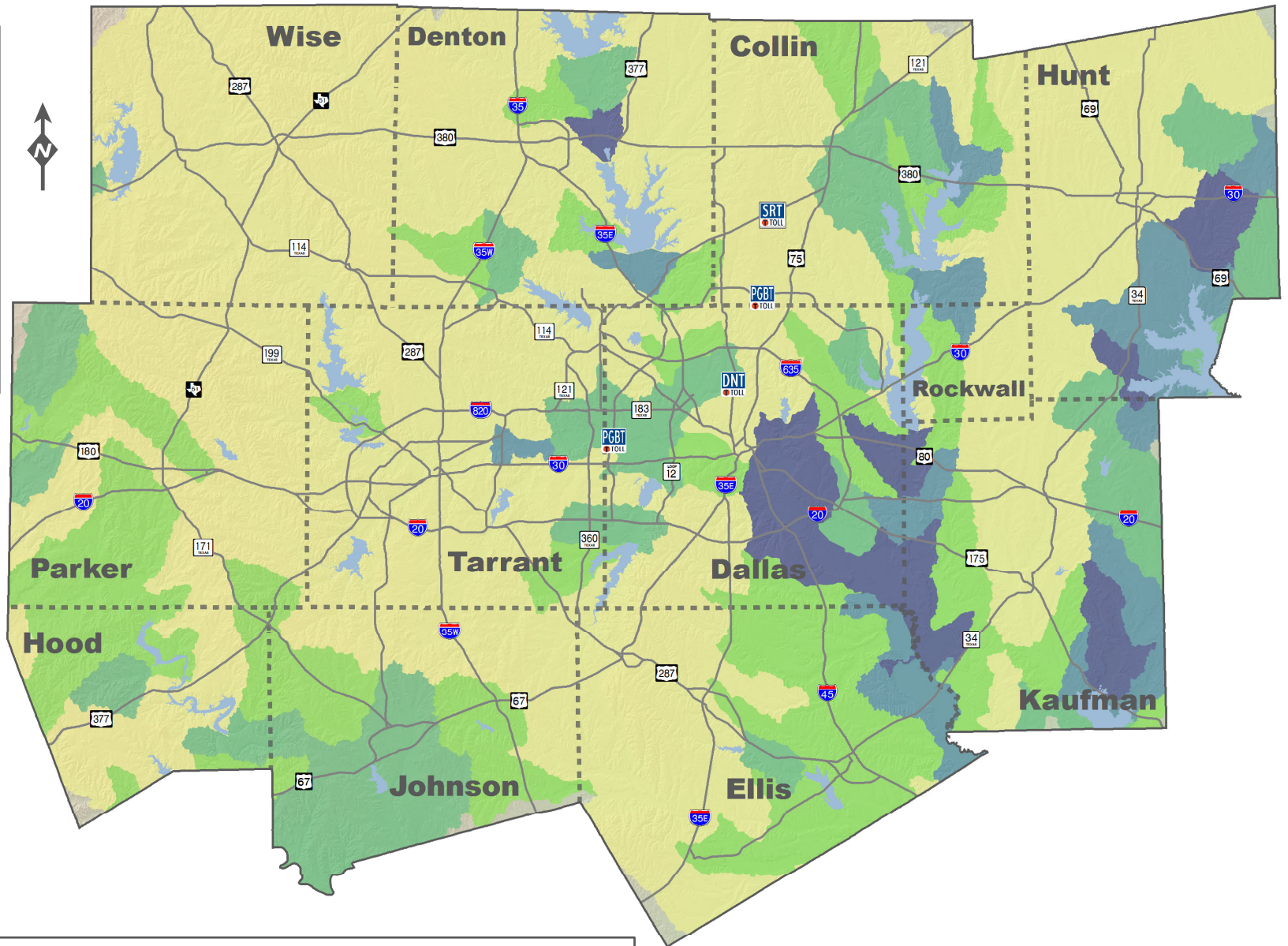
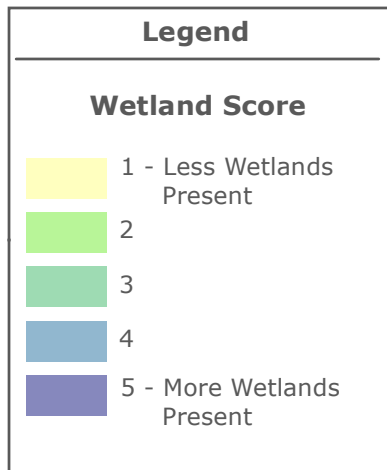


# Regional Ecosystem Framework: Surface Water Quantity



The Regional Ecosystem Framework: Surface Water Quantity score describes the quantity of surface waters present in a subwatershed. The cell scores in each subwatershed boundary are averaged resulting in a subwatershed score of 1 to 5. Surface waters are calculated for segment and shoreline distances for streams, rivers, and lakes. The more surface water areas present, the higher potential for ecological impacts. Data sources include the Texas GRID data. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

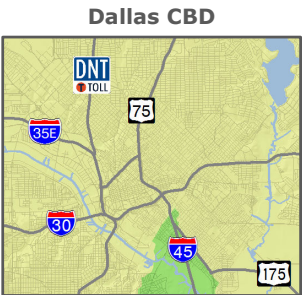
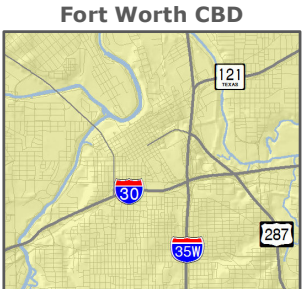
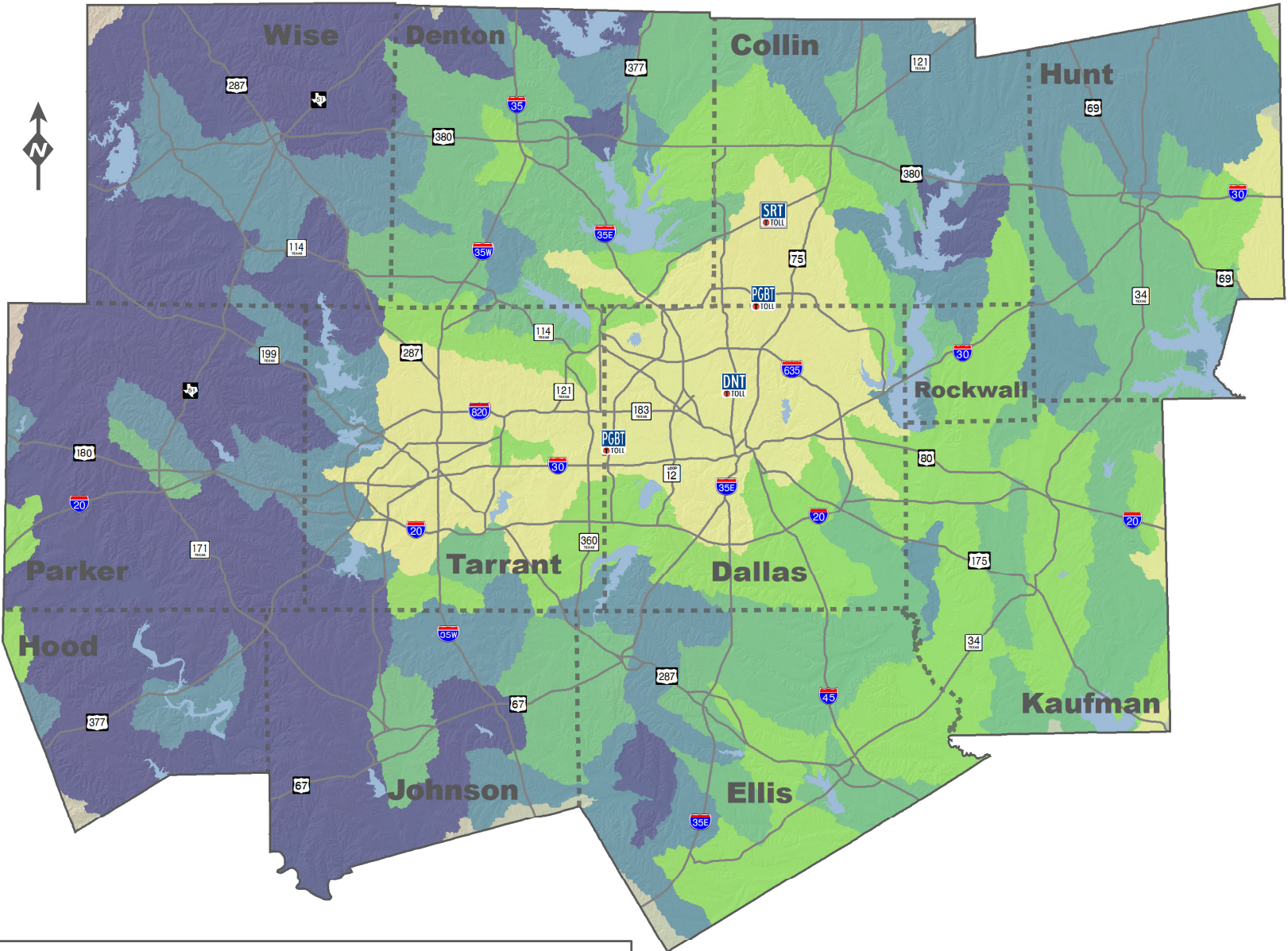
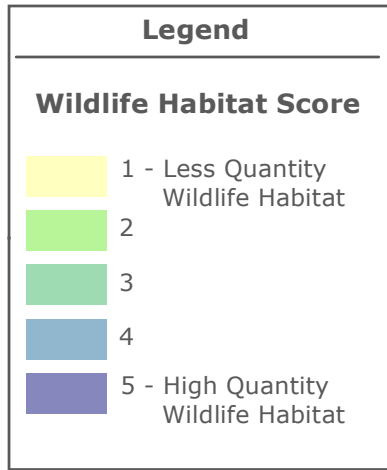
# Regional Ecosystem Framework: Wetlands



The Regional Ecosystem Framework: Wetlands score represents a subwatershed's quantity of 2011 NLCD Woody Wetlands and Emergent Herbaceous Wetlands. The cell scores in each subwatershed boundary are averaged resulting in a subwatershed score of 1 to 5. Data sources include the Texas GRID data. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).



# Regional Ecosystem Framework: Wildlife Habitat



The Regional Ecosystem Framework: Wildlife Habitat score is based on wildlife habitat represented by 2011 NLCD Forestlands, Shrublands, Grasslands, Wetlands, and Open Water. The data is based on the percentage of an individual cell identified as wildlife habitat and assigned a score of 1 (<20% of grid cell) to 5 (>50% of grid cell). The cell scores in each subwatershed boundary are averaged resulting in a subwatershed score of 1 to 5. Data sources include the Texas GRID data. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information on the calculations for this layer, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

# Regional Ecosystem Framework: Unified Subwatershed Map

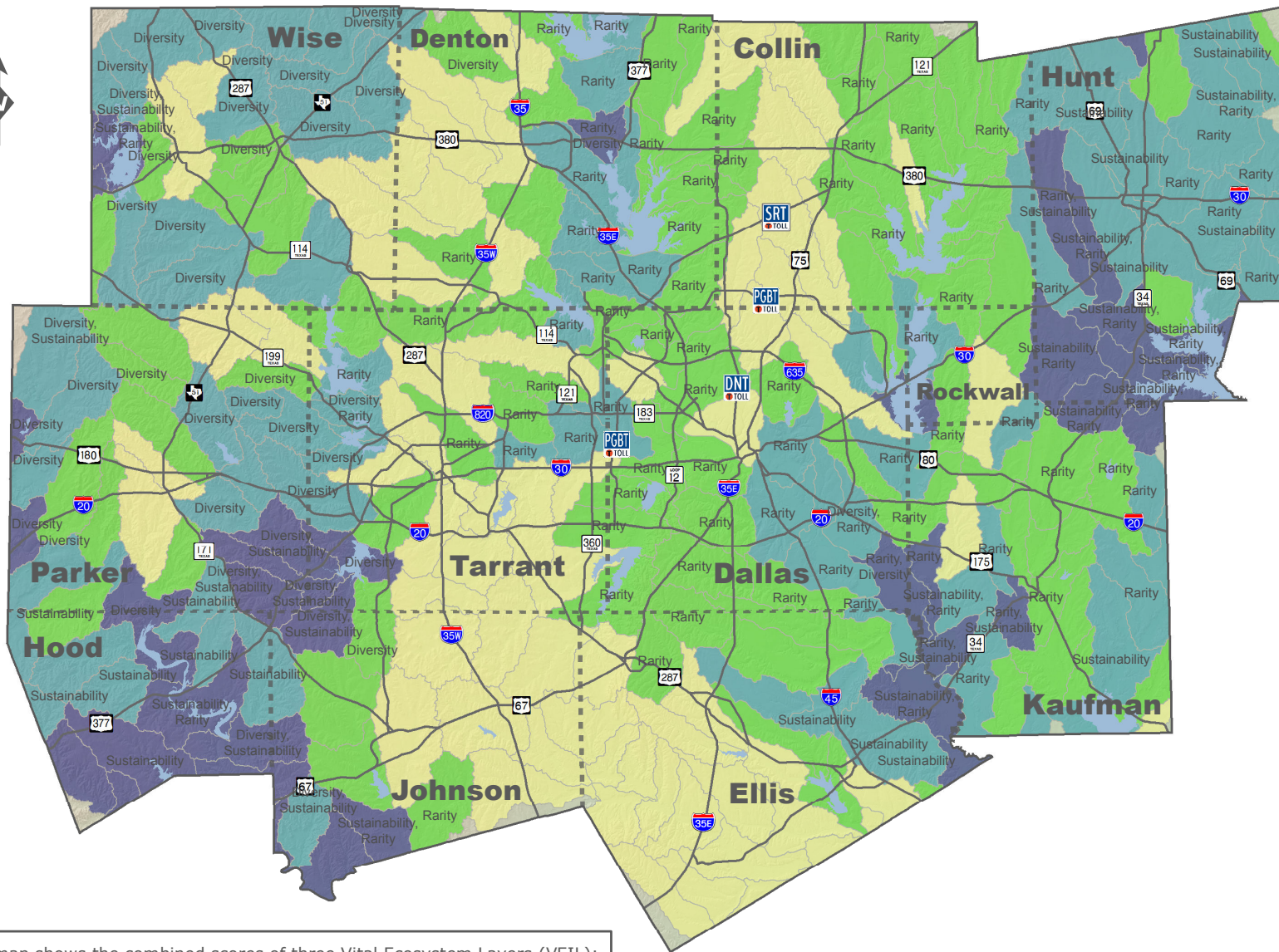
## Ecosystem Value

### Legend

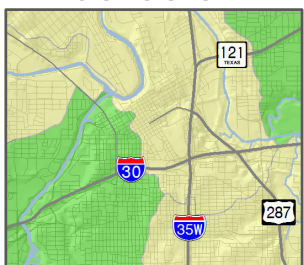
#### Combined Ecosystem Value Score\*

	3 to 5	Some Ecosystem Value
	6 to 7	
	8 to 9	
	10 to 13	Greatest Ecosystem Value

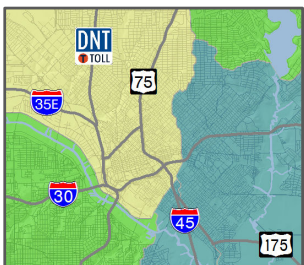
\*Includes scores for Diversity, Ecosystem Sustainability, and Rarity layers.



#### Fort Worth CBD



#### Dallas CBD



The Subwatersheds by Ecosystem Value map shows the combined scores of three Vital Ecosystem Layers (VEIL): REAP Diversity, Ecosystem Sustainability, and Rarity. The methodology for how the Diversity, Ecosystem Sustainability, and Rarity layers are calculated are described in the respective REF maps. The minimum combined score is 3 and the maximum combined score is 15. The subwatersheds are displayed using natural breaks. Subwatersheds are labeled if the individual VEIL layer has a score of 4 or 5, indicating a higher presence of this particular ecosystem attribute. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).



# Regional Ecosystem Framework: Unified Subwatershed Map

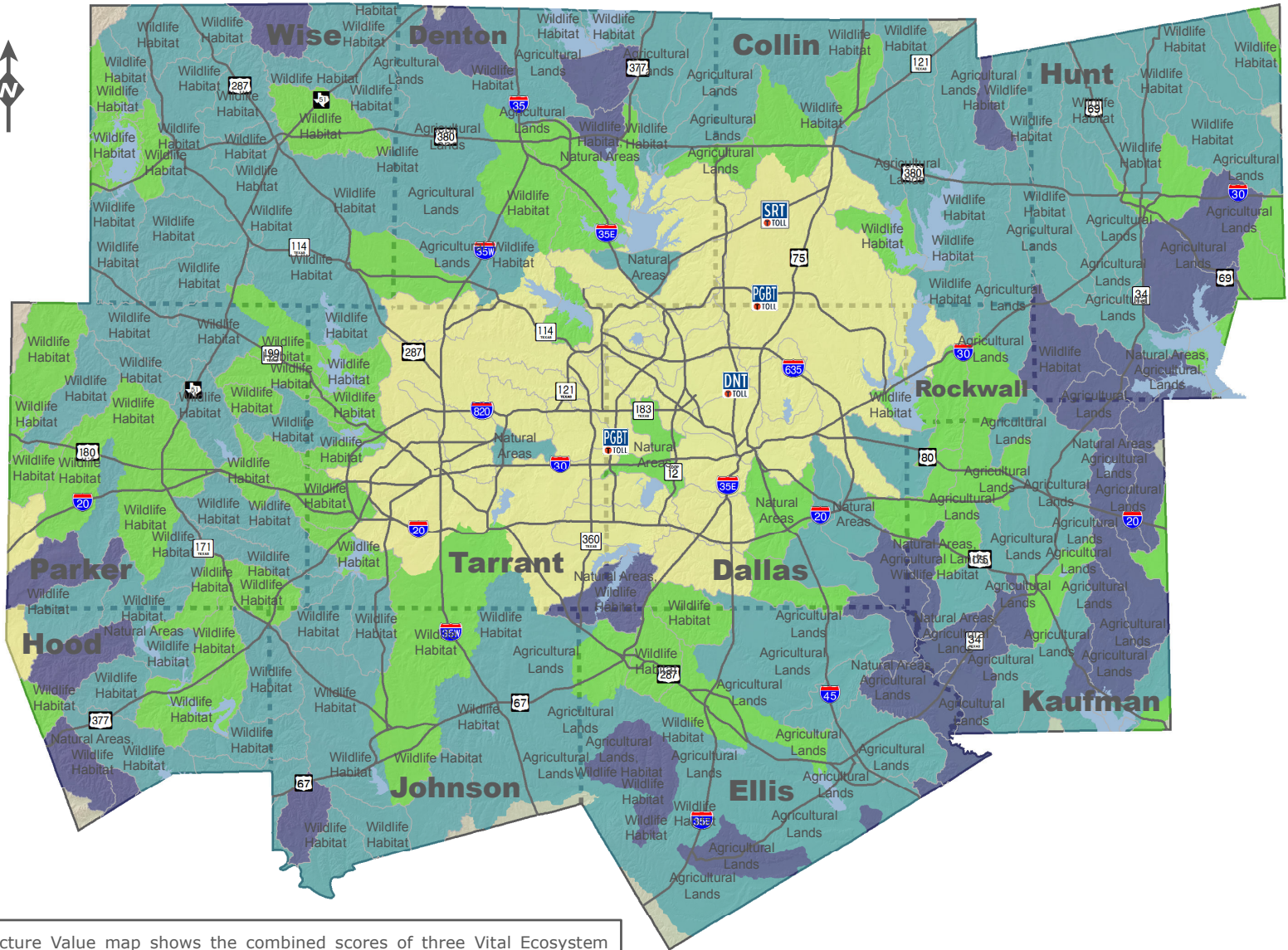
## Green Infrastructure

### Legend

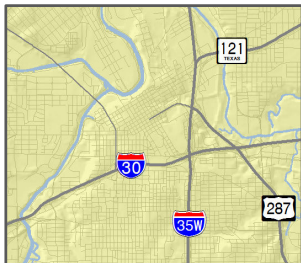
#### Combined Green Infrastructure Score\*

	3 to 5	Some Green Infrastructure
	6 to 7	
	8 to 9	More Green Infrastructure
	10 to 12	

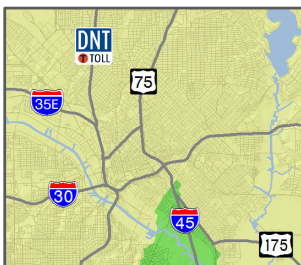
\*Includes scores for Wildlife Habitat, Agricultural Lands, and Natural Areas layers.



#### Fort Worth CBD



#### Dallas CBD







The Subwatersheds by Green Infrastructure Value map shows the combined scores of three Vital Ecosystem Information Layers (VEIL): Wildlife Habitat, Agricultural Lands, and Natural Areas. The methodology for how the Wildlife Habitat, Agricultural Lands, and Natural Areas layers are calculated are described in the respective REF maps. The minimum combined score is 3 and the maximum combined score is 15. The subwatersheds are displayed using natural breaks. Subwatersheds are labeled if the individual VEIL layer has a score of 4 or 5, indicating a higher presence of this particular ecosystem attribute. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).



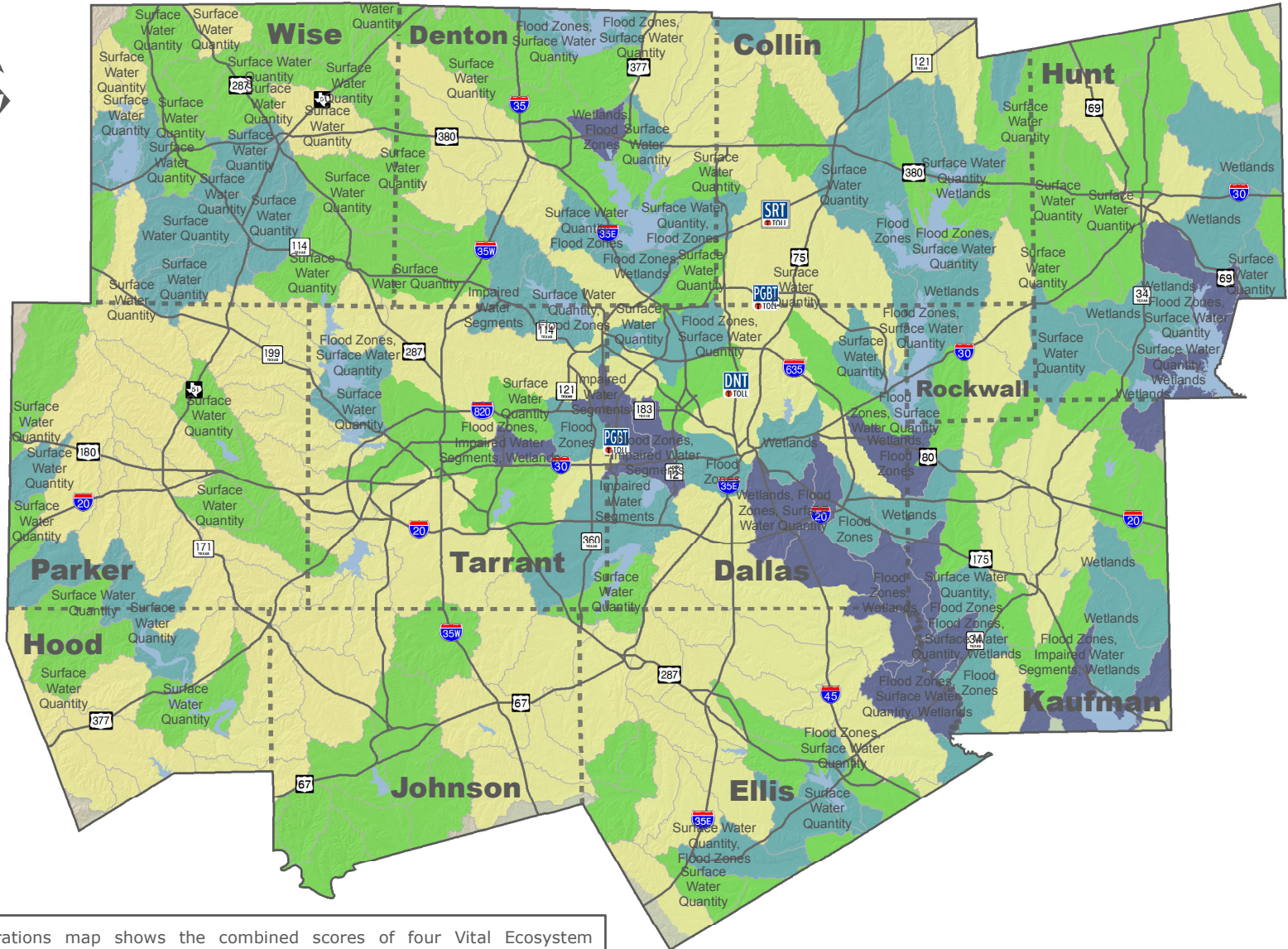
# Regional Ecosystem Framework: Unified Subwatershed Map

## Water Considerations

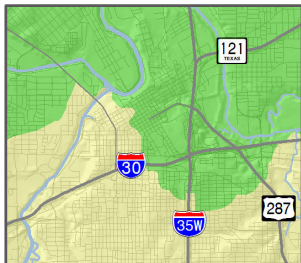
### Legend

Combined Water Considerations Score*	
	4 to 7 Some Water Considerations
	8 to 9
	10 to 12 More Water Considerations
	13 to 18

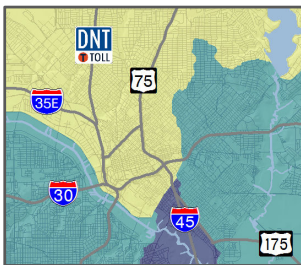
\*Includes scores for Surface Water Quantity, Flood Zones, Impaired Water Segments, and Wetlands layers.



Fort Worth CBD



Dallas CBD



The Subwatersheds by Water Considerations map shows the combined scores of four Vital Ecosystem Information Layers (VEIL): Surface Water Quantity, Flood Zones, Impaired Water Segments, and Wetlands. The methodology for how the Surface Water Quantity, Flood Zones, Impaired Water Segments, and Wetlands layers are calculated are described in the respective REF maps. The minimum combined score is 4 and the maximum combined score is 20. The subwatersheds are displayed using natural breaks. Subwatersheds are labeled if the individual VEIL layer has a score of 4 or 5, indicating a higher presence of this particular ecosystem attribute. This information has been developed for the Dallas-Fort Worth MPA for use in long-range planning. These scores are meant to be used as a preliminary screening tool for potential impact identification. For more information, please visit [www.nctcog.org/REF](http://www.nctcog.org/REF).

