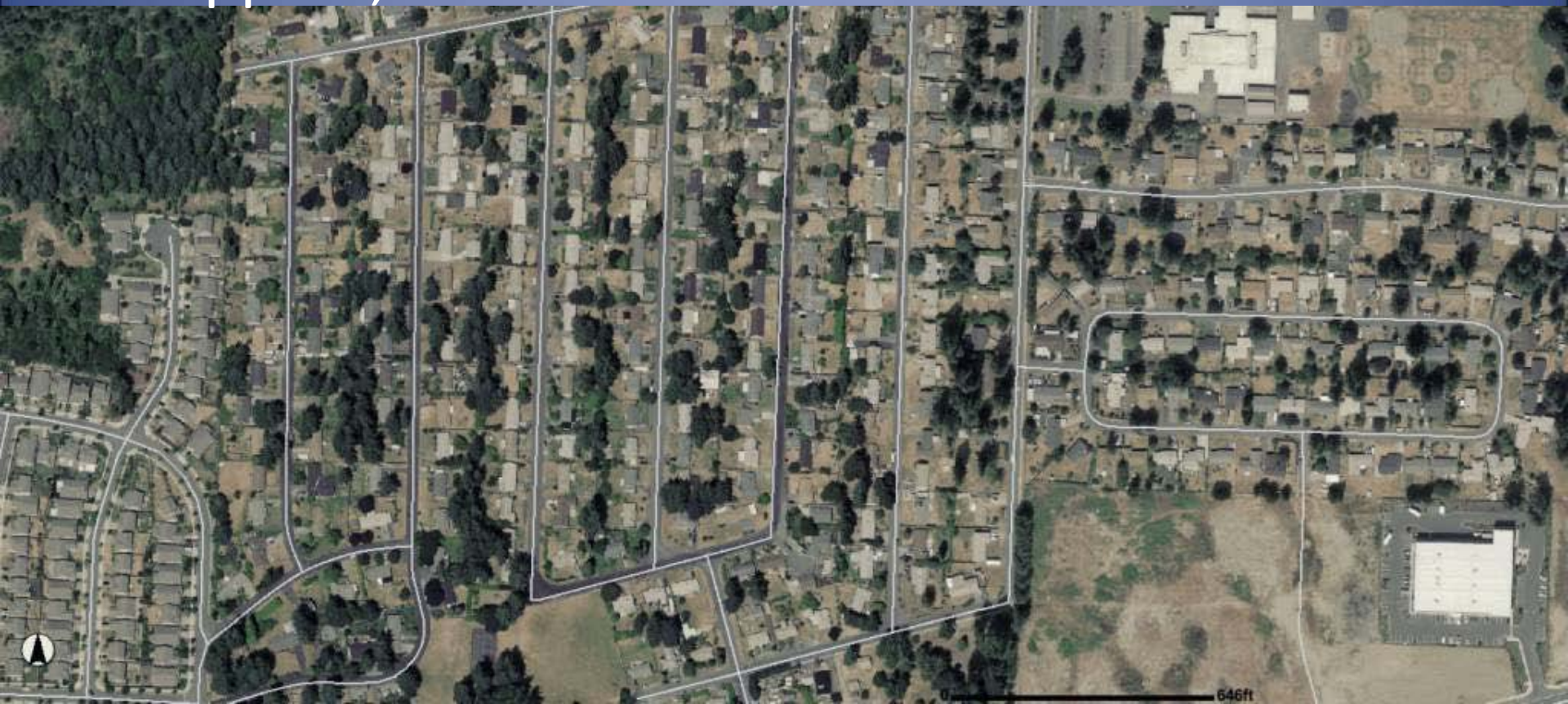
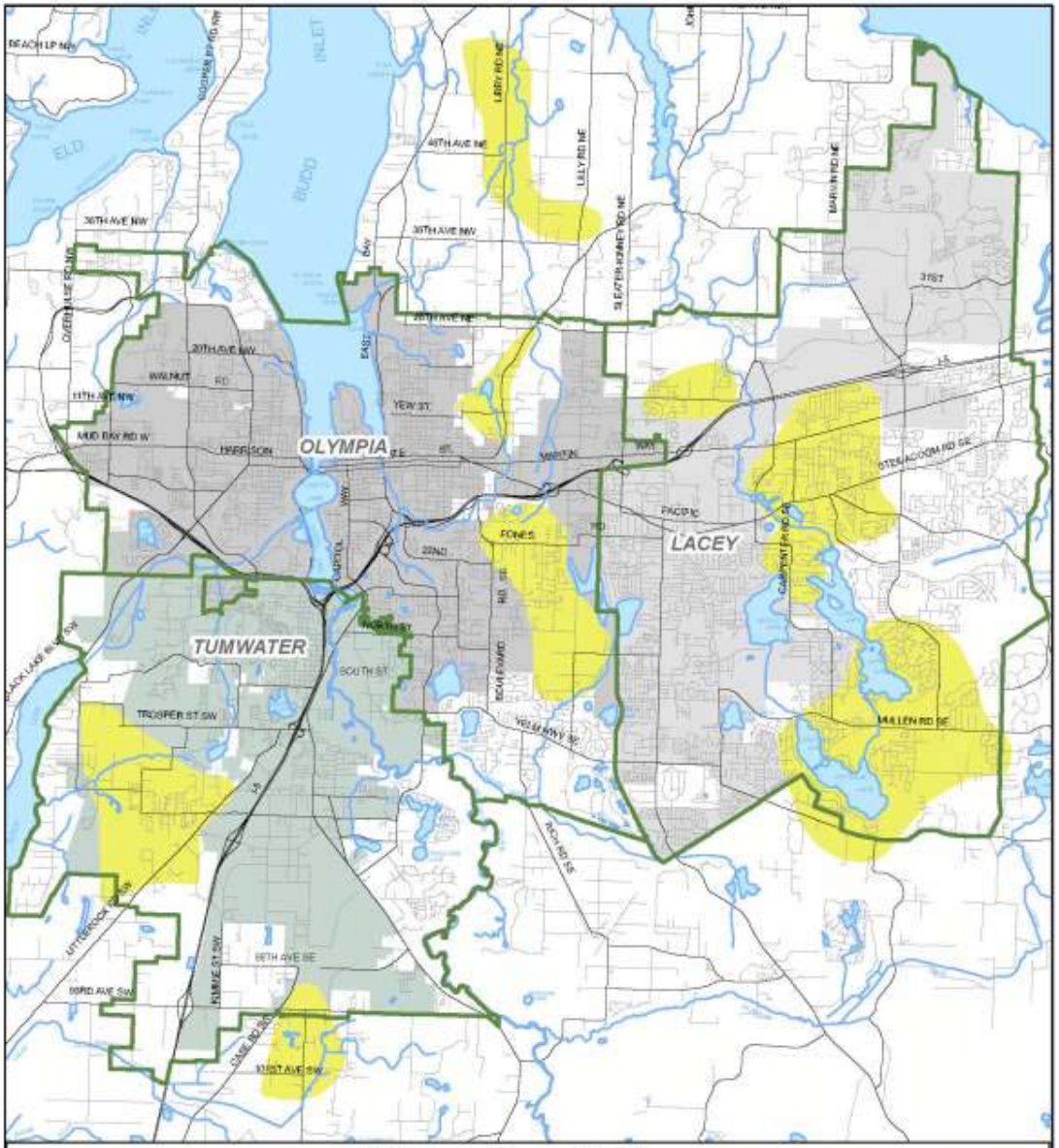
Urban Septic Assessment Project

Protecting Public Health & Water Quality

What's the problem?

High density septic systems in urban area are polluting surface & ground water, causing loss of shellfish harvest areas, drinking water supplies, & water recreation.





Urban Growth Area
High Nitrate Concentration

Thurston GeoData Center

High Nitrate Levels

Urban Growth Area

Stream

N

W E

S

0 1 2 4

Miles

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How many Septic System?

	Within City	Within UGA
Olympia	1,859	2,223
Lacey	1,470	8,683
Tumwater	9,89	1,639
TOTALS	**4,318**	**12,545**
URBAN SEPTICS	**16,863**	

Quarter Acre Lot Size
Often Include Multi-Family Use

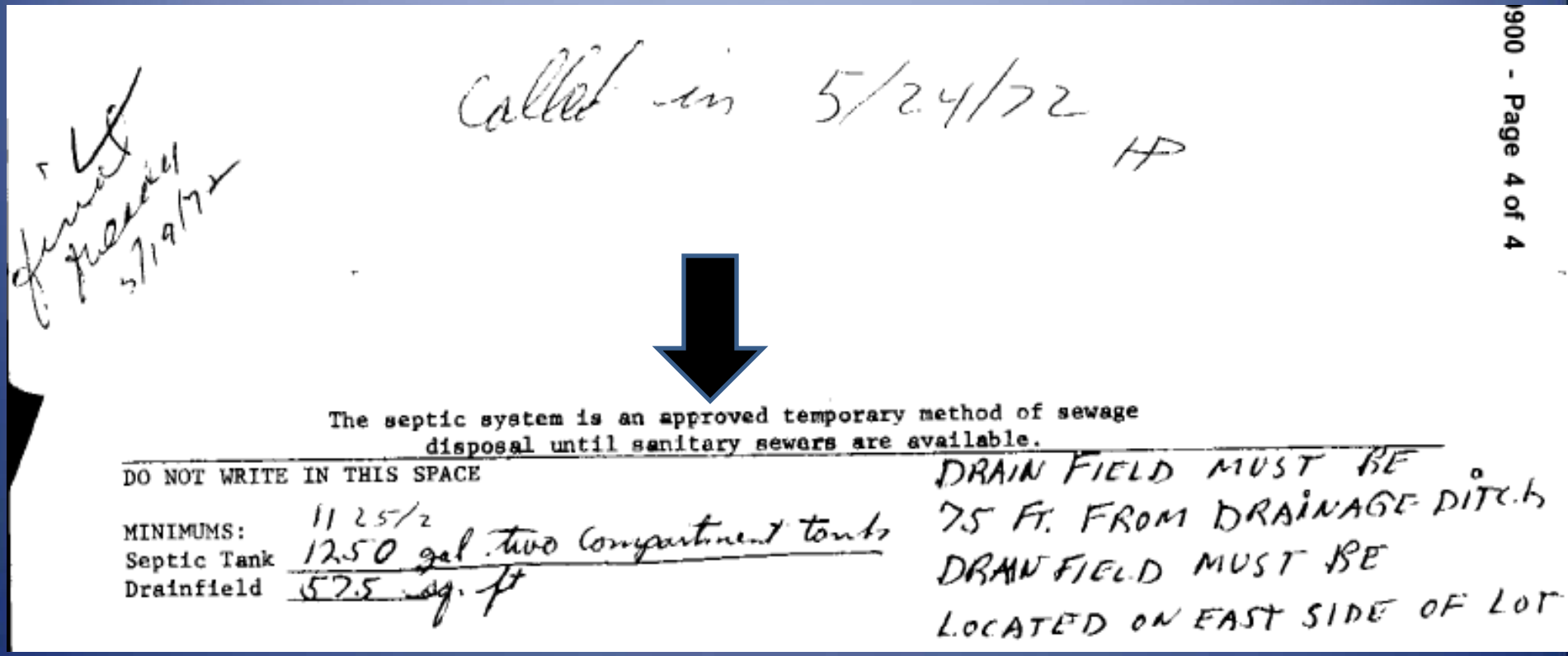
Multi-Family Use Generates Higher Volumes of Septic Effluent

Large Community Septic Systems Serve Whole Neighborhoods

Small Lots Have Limited Area for Septic Repairs

Many Near Sensitive Areas

Interim Solution Until Sewer



Called in 5/24/72 HD

...900 - Page 4 of 4

The septic system is an approved temporary method of sewage disposal until sanitary sewers are available.

DO NOT WRITE IN THIS SPACE

MINIMUMS: 1125/2
Septic Tank 1250 gal. two compartment tank
Drainfield 575 sq. ft

DRAIN FIELD MUST BE 75 FT. FROM DRAINAGE DITCH
DRAIN FIELD MUST BE LOCATED ON EAST SIDE OF LOT

Sewers in the UGA

- **Regional LOTT**
  - Operate wastewater treatment facilities
  - Manage regional sewer lines & pump stations
- **City Sewer Utilities**
  - Comprehensive & Sewer Utility Plans **assume eventual sewer** to all in UGA
- **County Health Dept**
  - Address public health threats
  - Permit septic systems
  - Manage septic system maintenance

Challenges to Conversion

- **New sewers funded by new development**
- **Conversions are costly**
  - $30,000+ per house is common
- **No incentive for neighborhoods to convert**
  - Septics fail one at a time
  - Allowed to repair if sewer is >200 ft away

Sewered & Septic Areas Intermixed

Treated Wastewater Quality

	LOTT Reclaimed Water[1]	Budd WWTP Effluent[1]	Septic Tank Effluent[2]
Volume	**2 mgd**	**11 mgd**	**4-6 mgd**
Total Nitrogen (mg/L)	**5**	**5**	**40 – 100**
Fecal Coliform (colonies/100ml)	**0**	**6 - 285**	**Millions**
BOD (mg/L)	**3**	4	**140 - 200**

[1] Personal Communication, LOTT Staff, June 2011
[2] US EPA, "Onsite Wastewater Treatment Systems Manual", February 2002

Summary

- Too many septic systems degrading water resources
- Conventional OSS technology can't significantly reduce the impact
- No strategy to facilitate sewer extension to existing neighborhoods

Regional Septic Work Group Formed 2011

- *GOAL:*

  "Protect public health, ground & surface water resources, & environment by assuring that sewage from on-site sewage systems is properly managed in the northern Thurston County region."

WORK PLAN

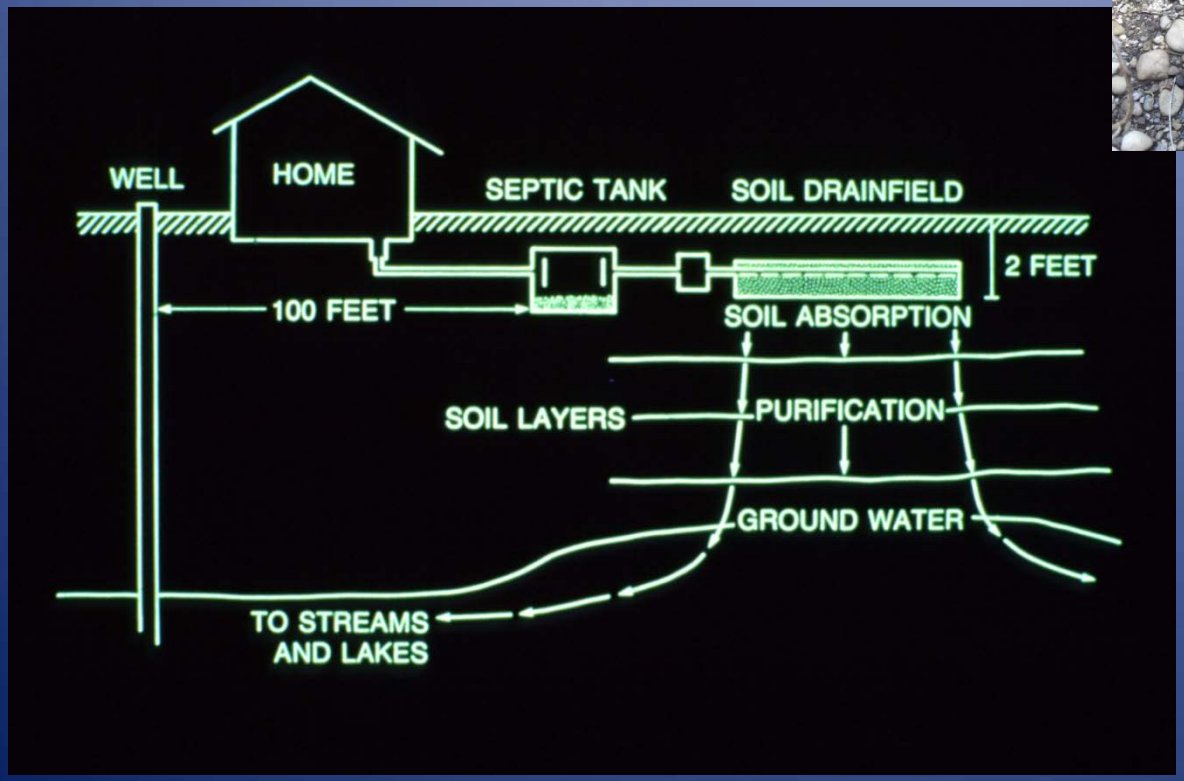
- Establish criteria for prioritizing areas
- Identify priority areas
- Develop case studies
- Identify barriers
- Review legal and finance mechanisms
- Develop options for conversion program
- Present findings to Elected Officials

Criteria to Identify Priority Areas

- Septic Density?
- Sewage volumes?
- Within Critical Aquifer Recharge Area?
- Soil Type?
- Water Quality Violations?
- Flood Hazard Areas?
- Within Marine Recovery Areas?
- Legal Directives?
- Septic Age?

Ground Water Risk Factors:

1. High Density Septic Systems
2. Very Coarse Soil
3. In Wellhead Protection Area



Surface Water Risk Factors:

1. High Density Septic Systems
2. Slowly Permeable Soils
3. Within 100’ of surface water or stormwater system

Urban Area Septic System Analysis

Septic Density Analysis - Septic Parcel to Neighborhood Relationship

Reported Septic Parcel with at Least One Reported ERU/Septic

Neighborhood with at Least One Reported ERU/Septic

Mapped Sewer Lines

Urban Growth Area

0 0.25 0.5 1

Miles

NORTH

* Neighborhood Density Calculation Method
1. Identified parcel served by septic systems based on city and county data and inventories.
2. Assigned number of residential units or equivalent residential units (ERUs) to each septic parcel based on land use codes (single family, commercial, multi-family) and county permit records. For non-residential parcels, an ERU is defined as 450 gallons per day of sewage.
3. Grouped individual parcels into neighborhoods based on subdivision plats and phases of subdivisions, or lots in an area with similar characteristics
4. Used total number of ERUs within a neighborhood divided by total acres within the neighborhood to calculate density , as ERUs/acre.
5. Assigned each neighborhood a density score of 1 through 4, based on the calculated ERUs per acre.

Map Created by kah on 6/13/2013

Urban Area Septic System Analysis

Neighborhood Septic Density Analysis

Density Criteria*

- 1: =< 1 ERU/Acre OR Low
- 2: >1 to <2 ERUs/Acre OR Medium
- 3: 2 to <4 ERUs/Acre OR High
- 4: => 4 ERUs/Acre OR Very High

Urban Growth Area

City Boundary

0 0.25 0.5 1 Miles

NORTH

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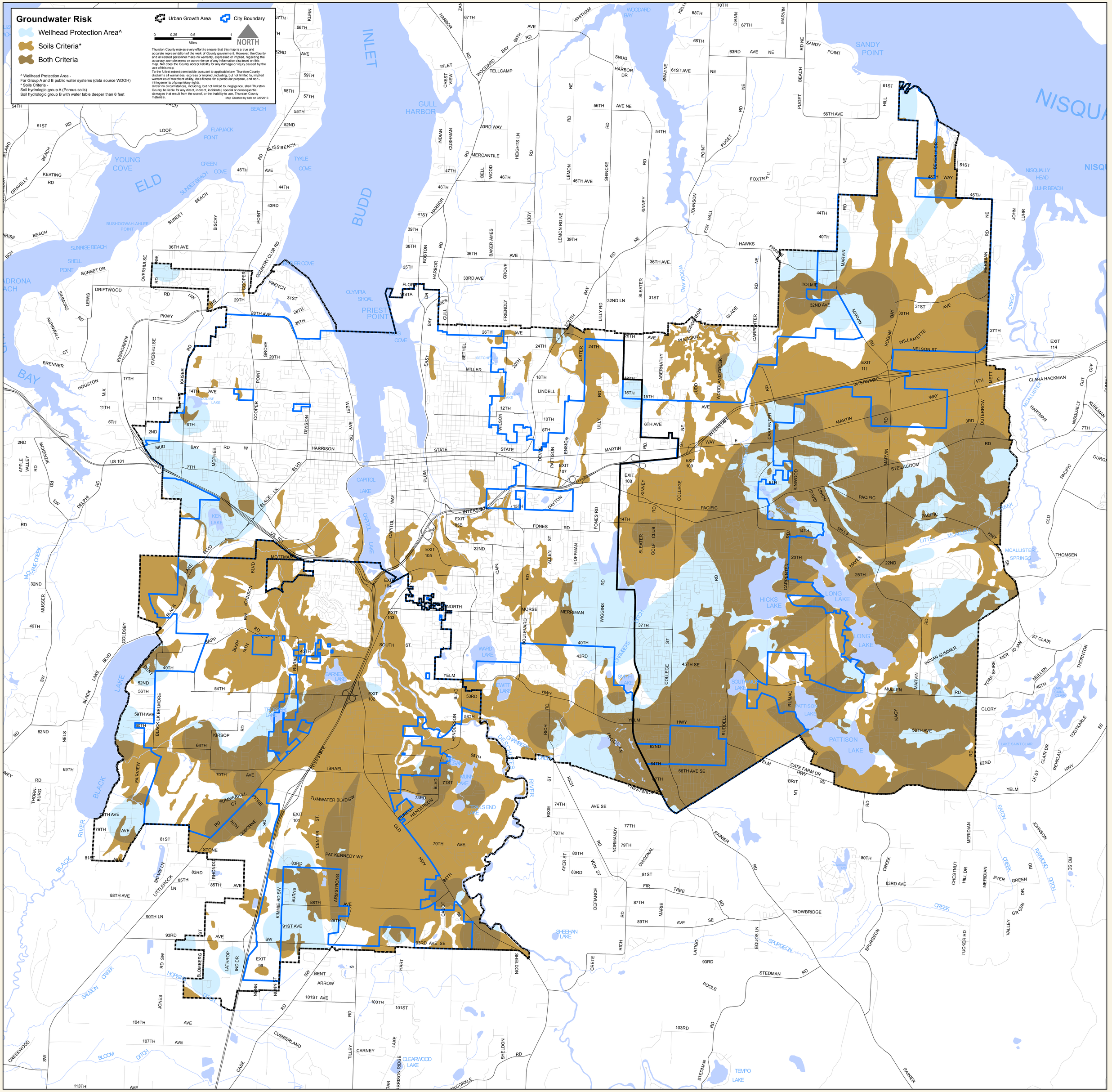
OLYMPIA, LACEY & TUMWATER SEPTIC ANALYSIS



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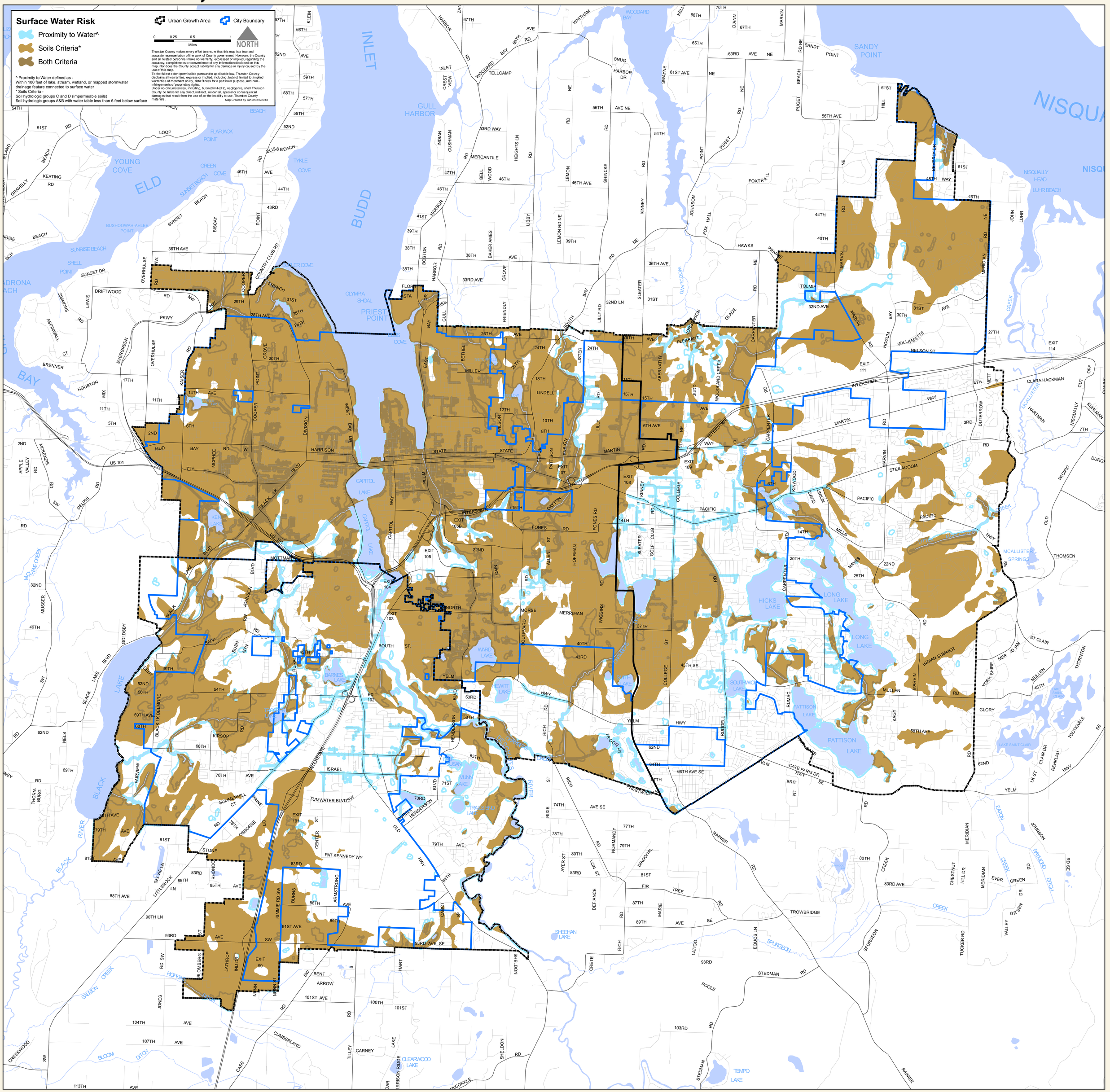

Urban Area Septic System Analysis

Groundwater Risk Categories - Neighborhoods

Groundwater & Density Overall Score

- No Septic Parcels Reported
- 1 - Low Density
- 2 - Low + 1 Risk Category OR Medium
- 3 - Low + 2 Risk Categories OR Medium + 1 Risk Category OR High
- 4 - Medium + 2 Risk Categories OR High + 1 Risk Category OR Very High
- 5 - High + 2 Risk Categories OR Very High + 1 Risk Category
- 6 - Very High + 2 Risk Categories

Groundwater Criteria
Wellhead Protection Area -
For Group A and B public water systems (data source WDOH)
Soils Criteria -
Soil hydrologic group A (Porous soils)
Soil hydrologic group B with water table deeper than 6 feet
Neighborhood Density Calculation Method
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Urban Growth Area
City Boundary

0 0.25 0.5 1
Miles

NORTH

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Urban Area Septic System Analysis

High Risk Surface Water & Groundwater Scores

Neighborhood Density Overall Score

- 5 - High + 2 Risk Categories OR Very High + 1 Risk Category
- 6 - Very High + 2 Risk Categories

Surface Water Criteria
Proximity to Water defined as -
Within 100 feet of lake, stream, wetland, or mapped stormwater drainage feature connected to surface water
Soils Criteria -
Soil hydrologic groups C and D (Impermeable soils)
Soil hydrologic groups A and B with water table less than 6 feet below surface

Groundwater Criteria
Wellhead Protection Area -
For Group A and B public water systems (data source WDOH)
Soils Criteria -
Soil hydrologic group A (Porous soils)
Soil hydrologic group B with water table deeper than 6 feet

Neighborhood Density Calculation Method
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