SCDHEC Environmental Surveillance Oversight Program 2007 Data Summary

Presented To The SRS Citizens Advisory Board

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ESOP Video
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Program Goals

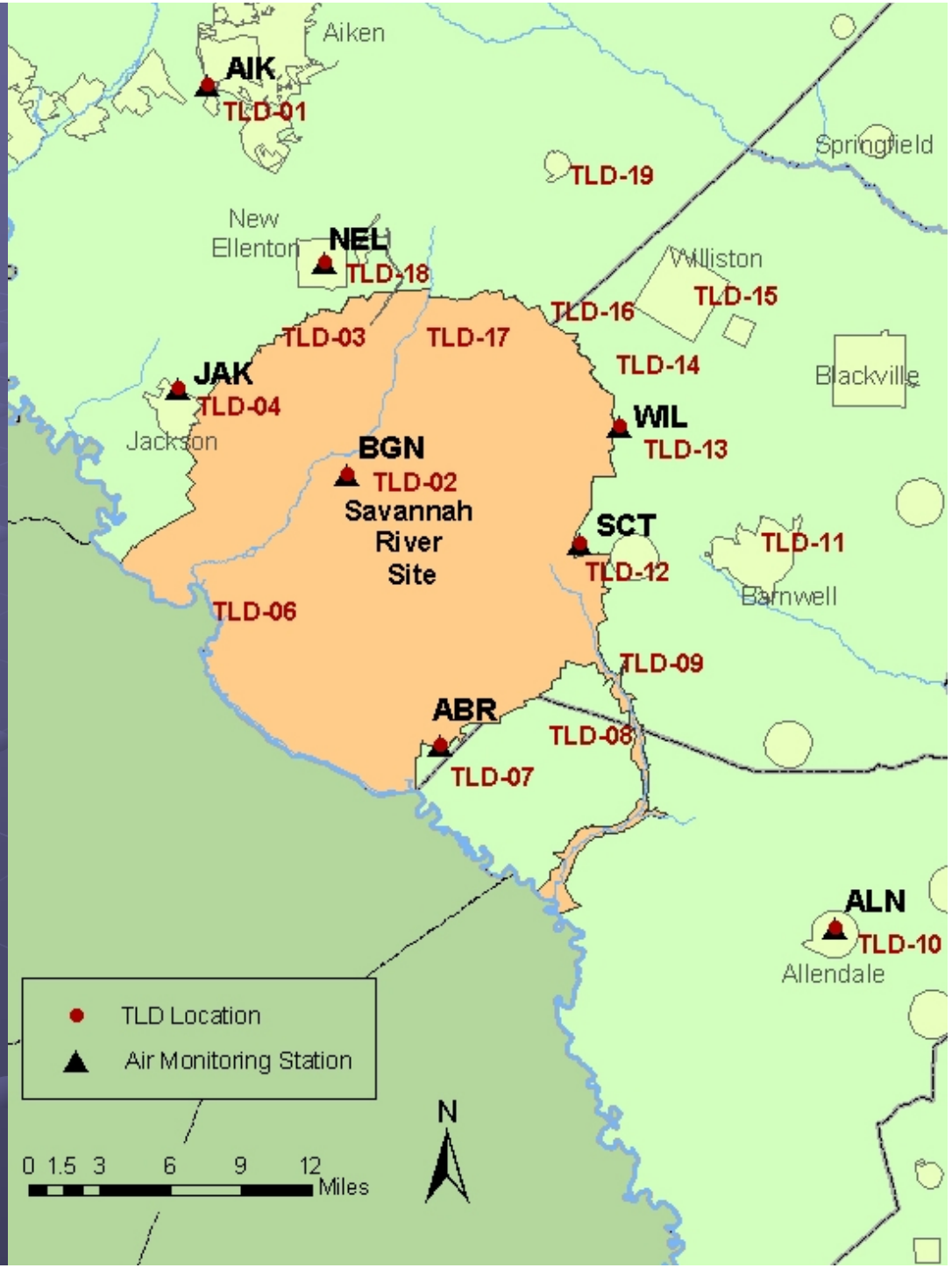
- Monitor pathways for human exposure
- Conduct sampling and analyses of primary contaminants
- Compare results with SRS
- Summarize findings and make recommendations to SRS
- Provide reports to Public on findings

Summary-2007 Data

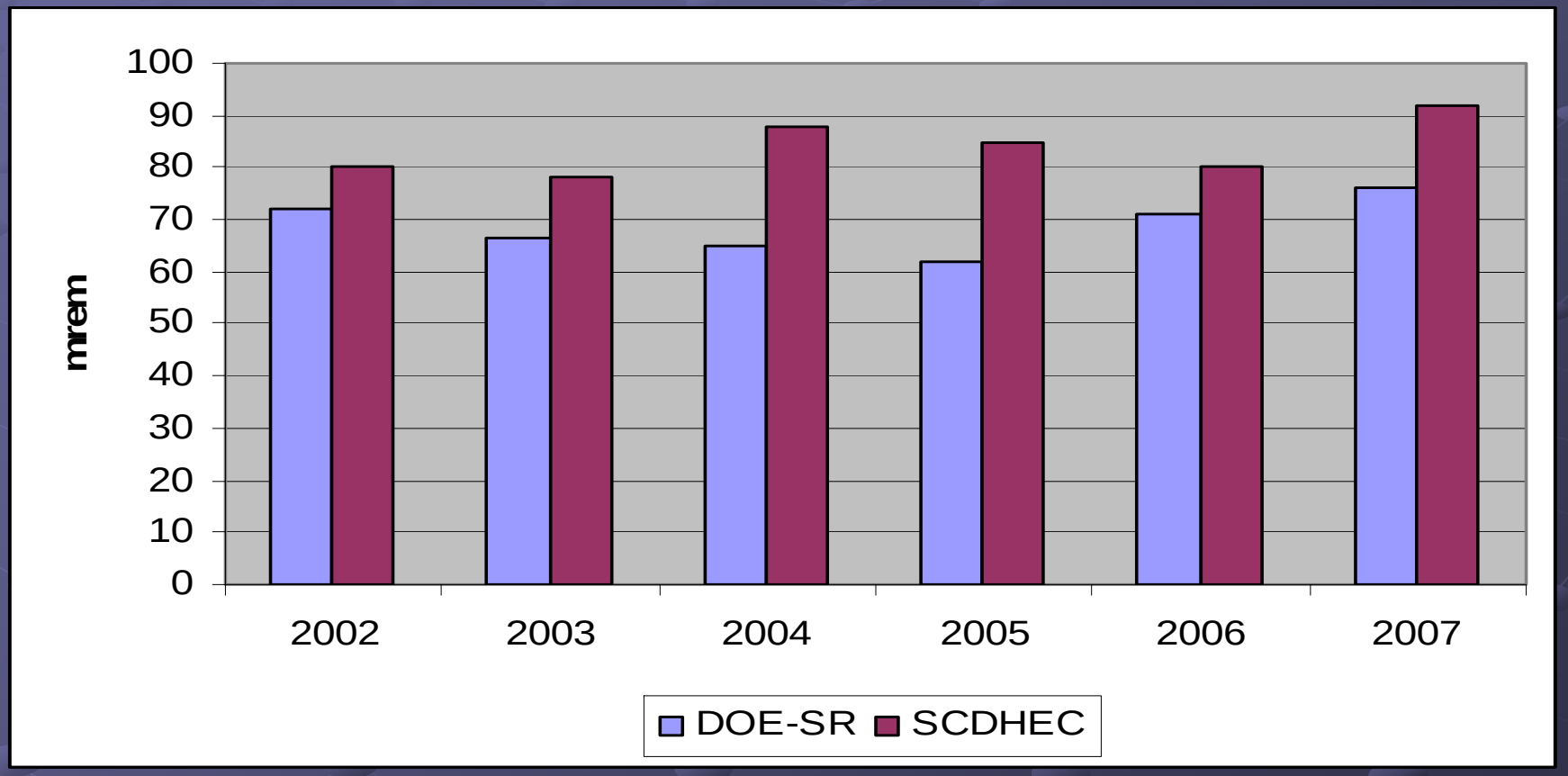
- Over 6600 Samples collected and 36,000 analyses performed
- No Surprises for 2007
- Tritium continues as largest release constituent
- Releases detected from SRS at very low levels
- Preliminary DHEC results similar to SRS reported results
- Generally, trends show decreases

Air Monitoring

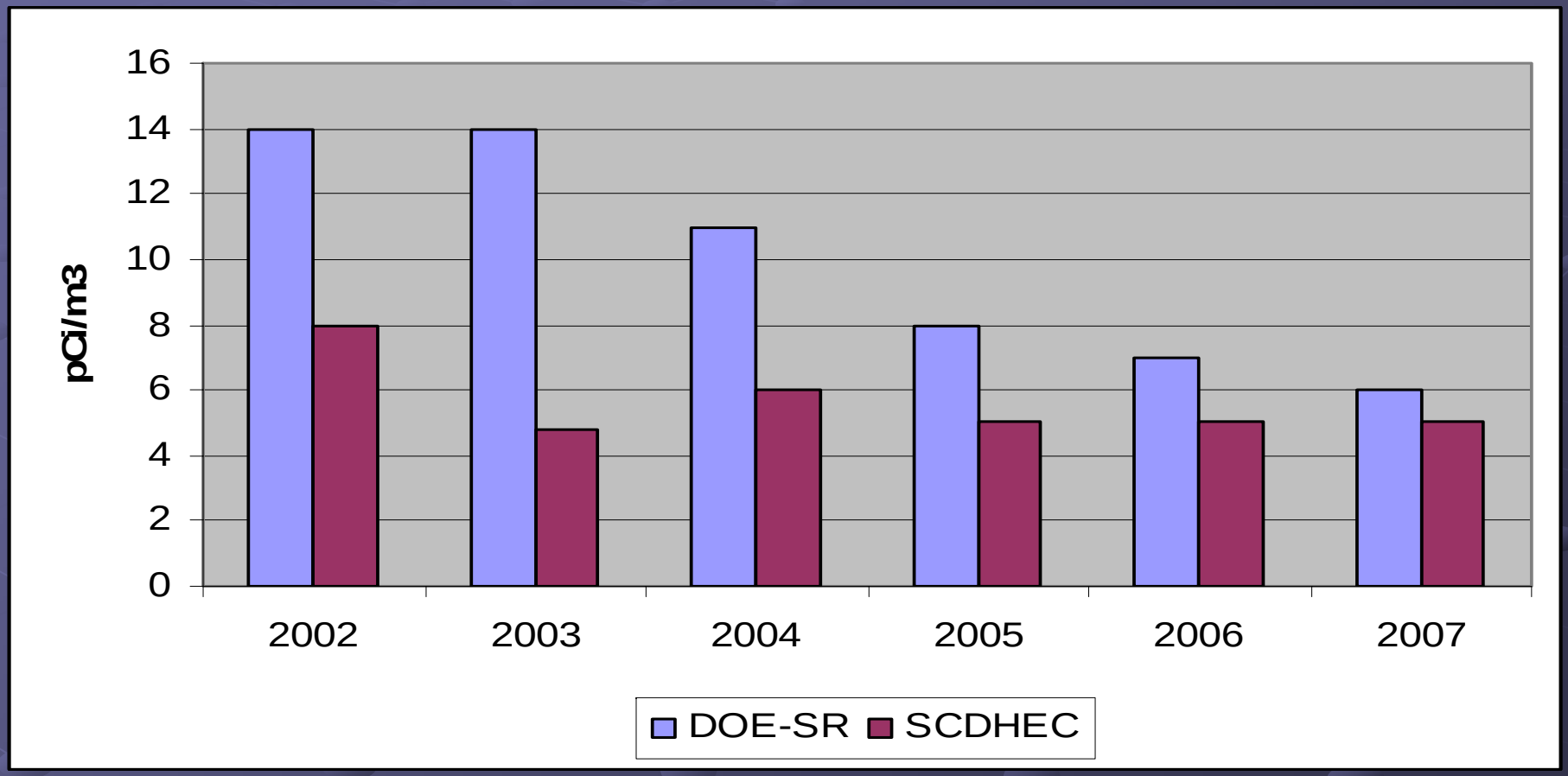
- 8 locations
- Particulates
- Precipitation
- Atmospheric moisture
- Weekly, monthly



Average Ambient Beta/Gamma at the SRS perimeter (TLD's)

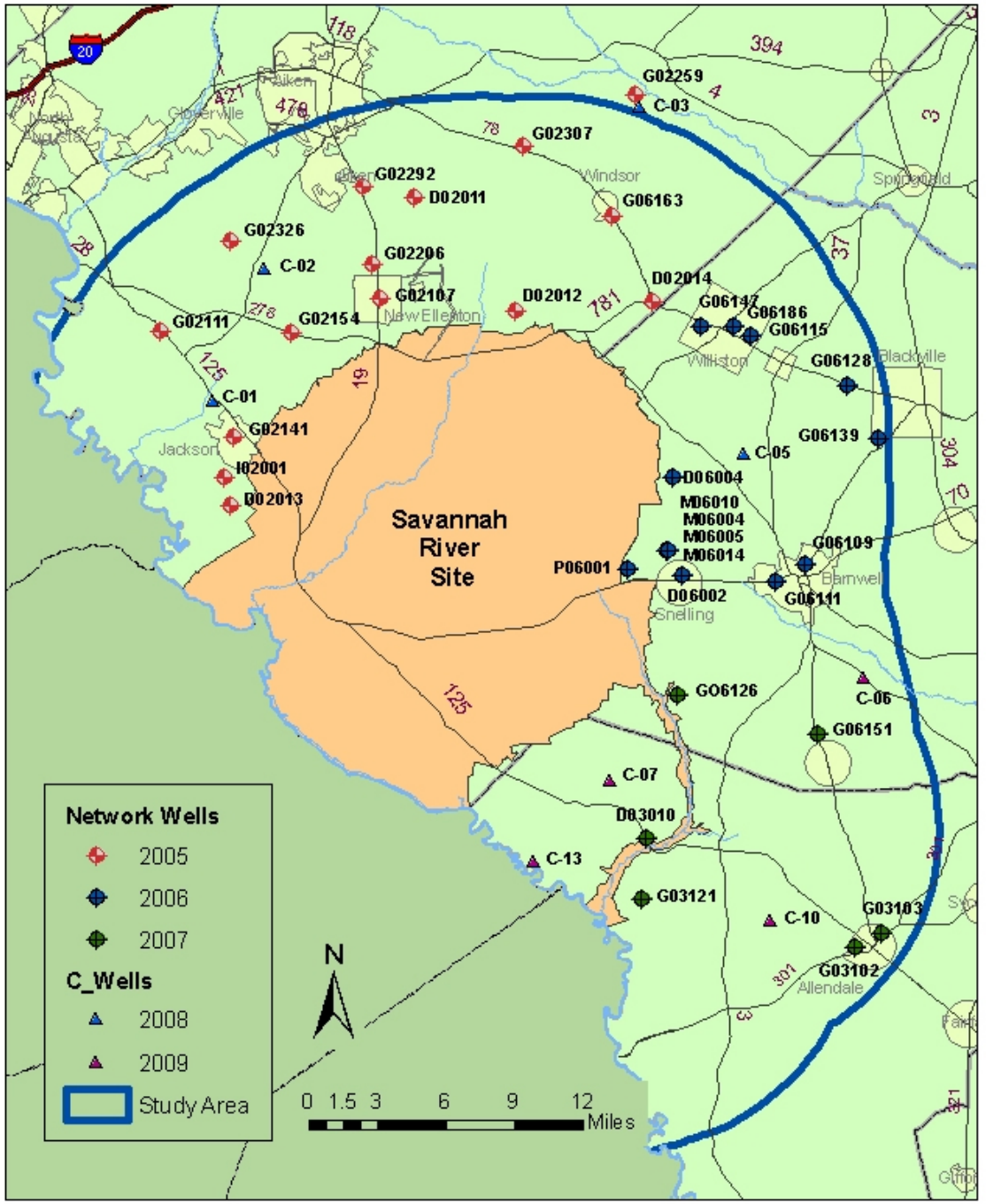


Average Tritium at the SRS perimeter.



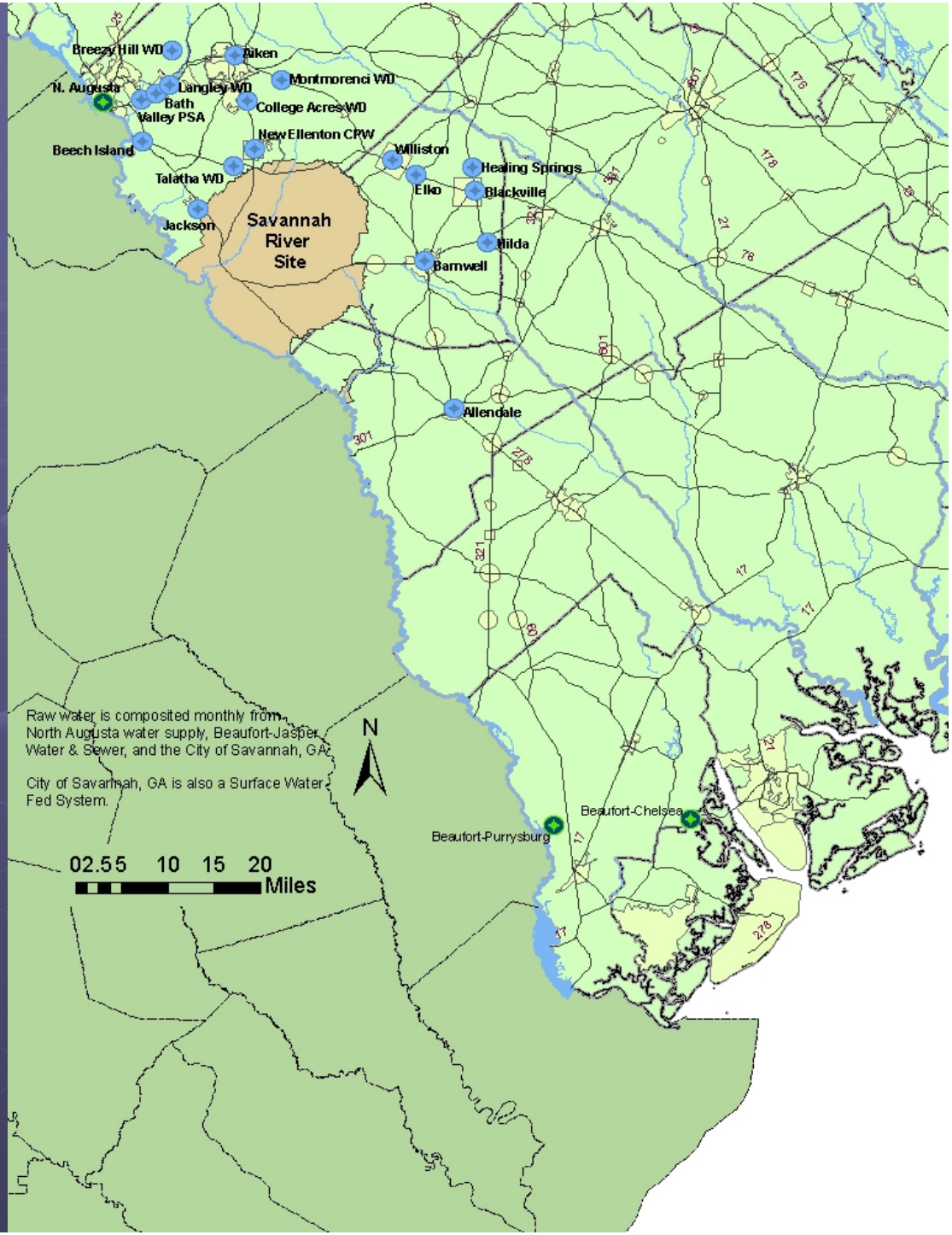
Groundwater Monitoring

- Network of ~ 80 potable and non-potable wells.
- Depths range from shallow to ~ 1400 feet below surface.
- Basic water quality parameters, wet chemistry, metals and radionuclides.



Drinking Water Monitoring

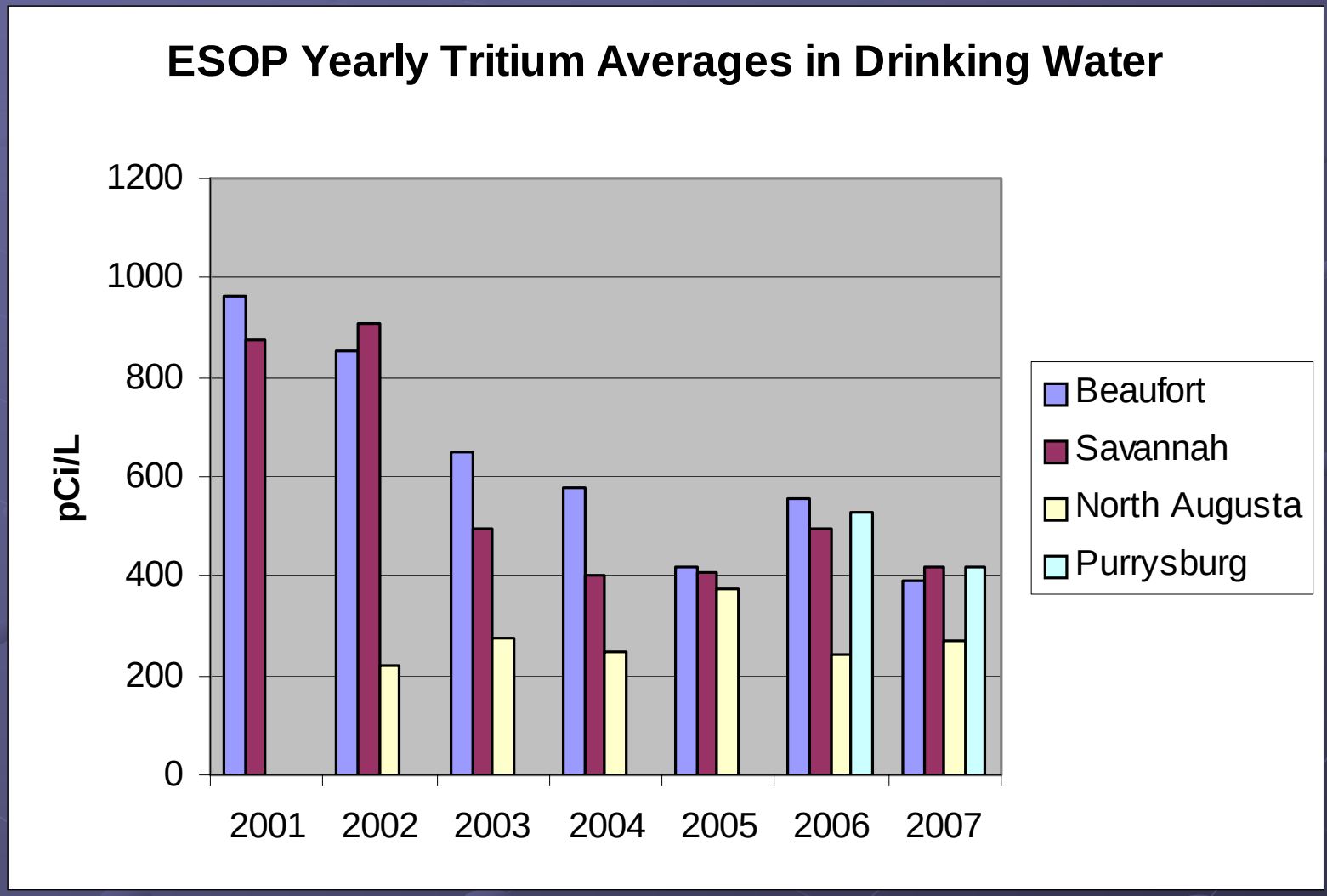
- 18 Groundwater Fed Systems
- 4 Surface Water Fed Systems.



Drinking Water

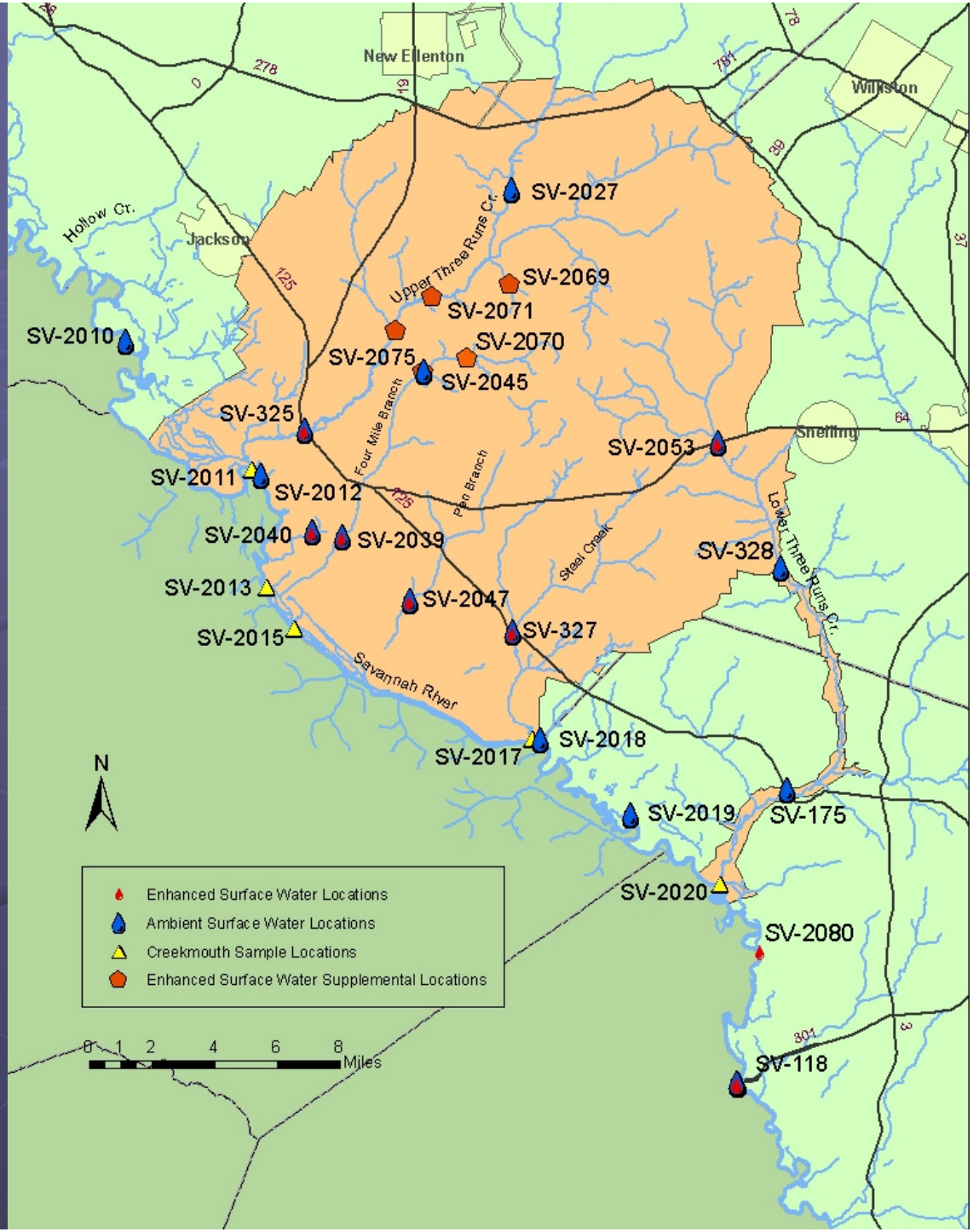
- Gross Alpha was detected in two surface water systems and four ground water systems.
- Non-volatile Beta was detected in N. Augusta and both Beaufort/Jasper intakes.
- Tritium detection levels are following a historical downward trend
- No gamma-emitting radionuclides were detected above there respective MDAs.
- Levels consistent with historical data and below MCLs

Tritium Trends for Surface Water Fed Systems

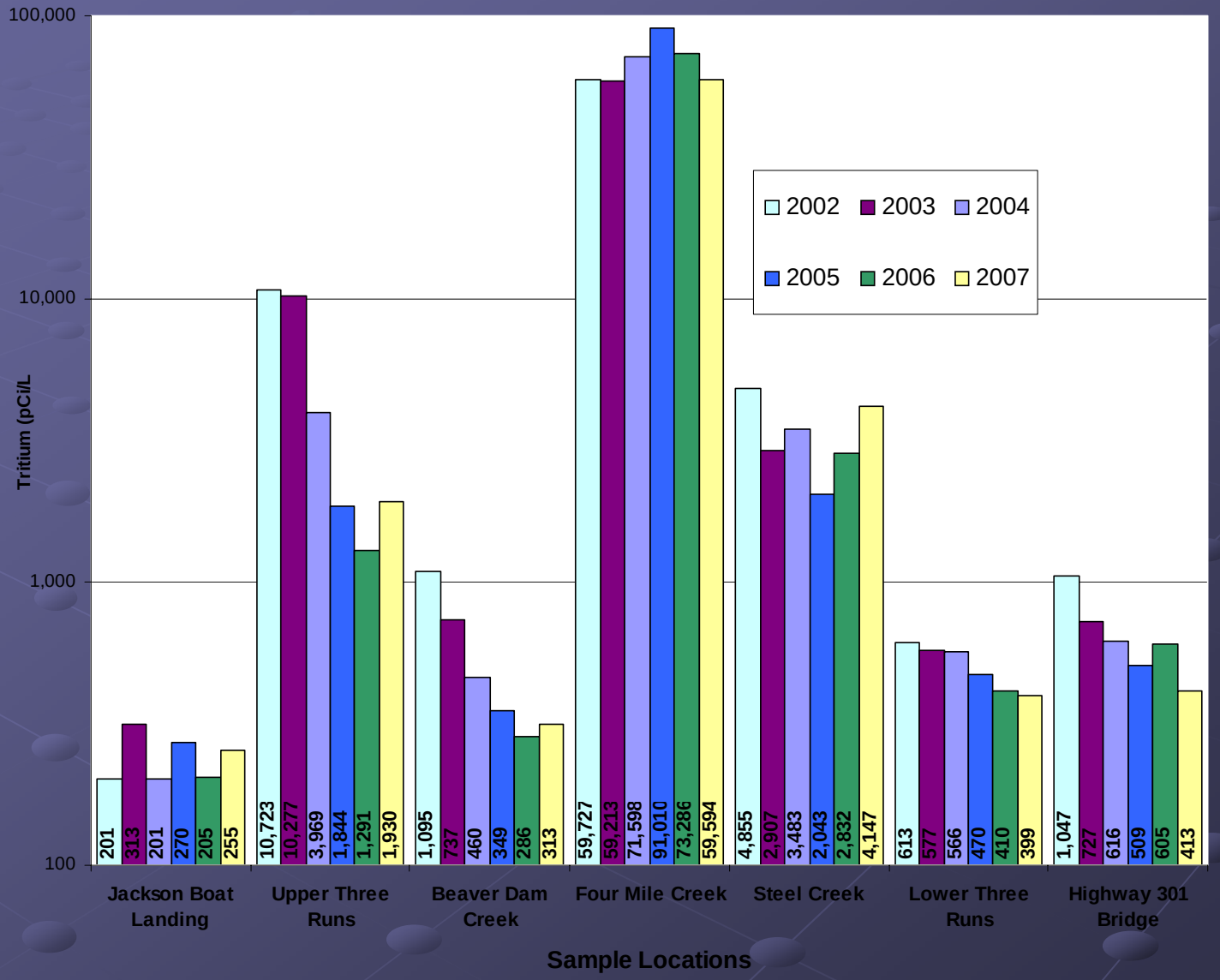


Radiological Monitoring of Surface Water

- ~20 locations within and outside SRS boundary
- 5 Creekmouth locations – Public exposure

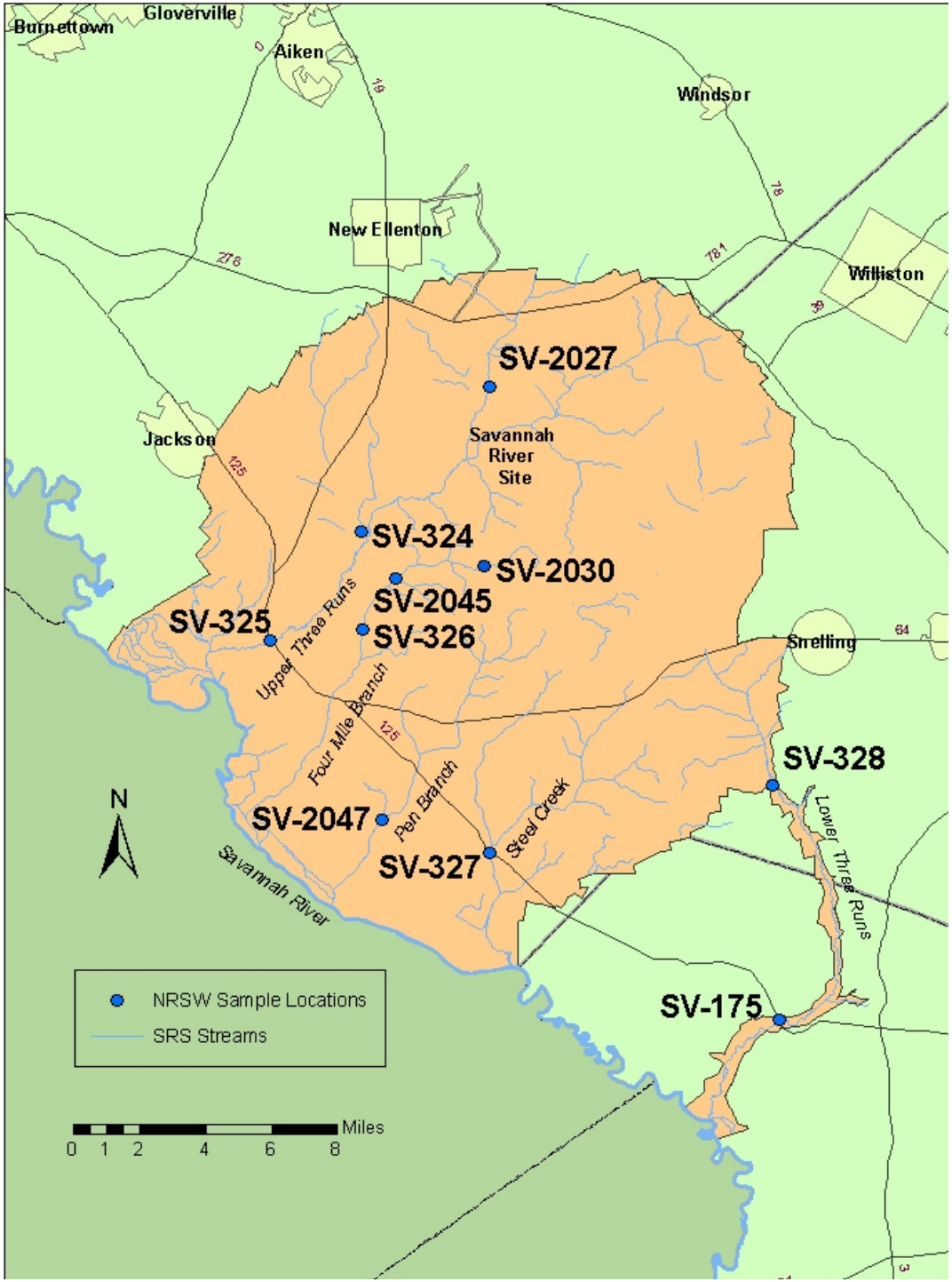


2002-2007 ESOP Mean Tritium Data Trends



Non-Radiological Surface Water

- 10 Locations
- Sampled Monthly

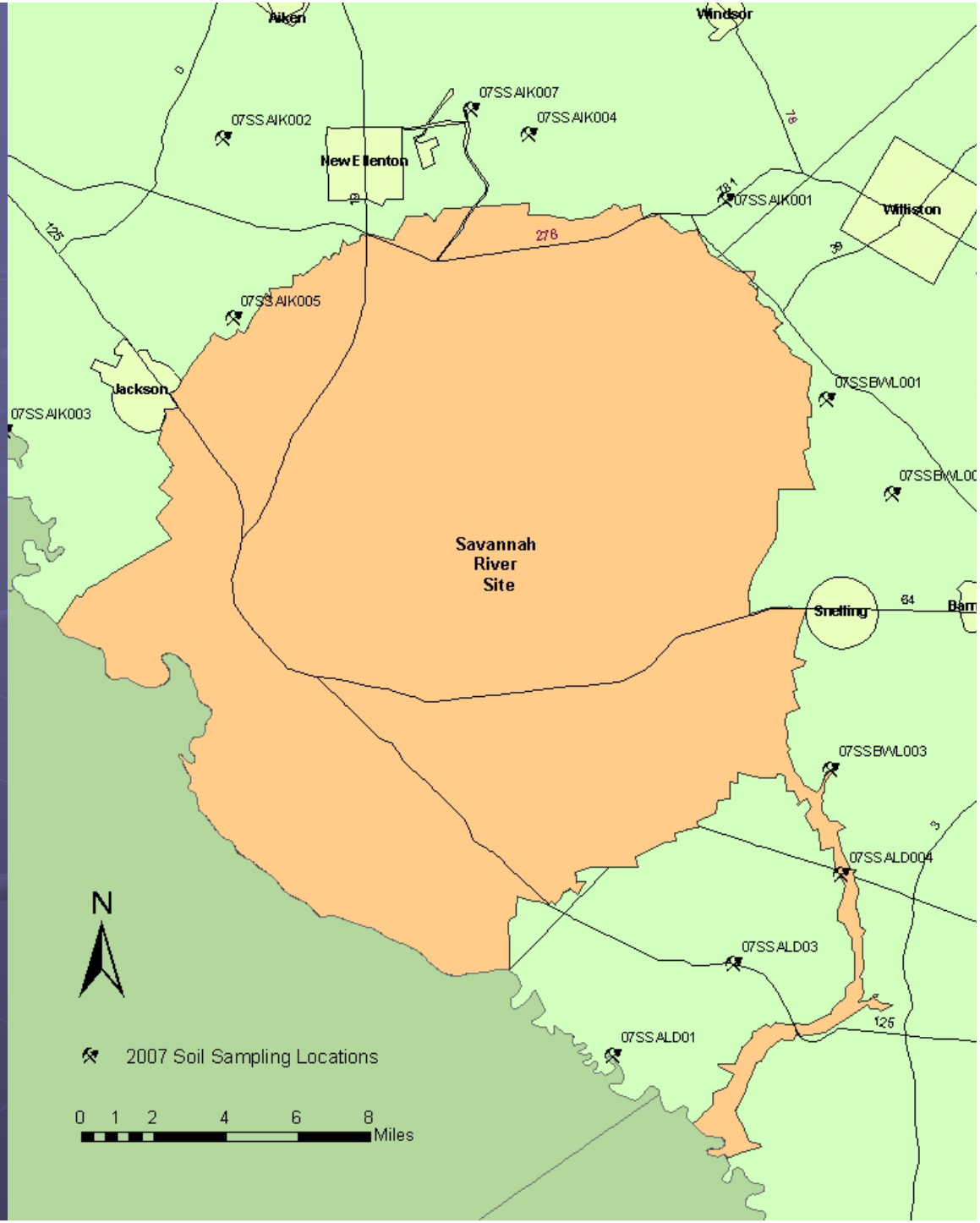


Non-Rad Surface Water

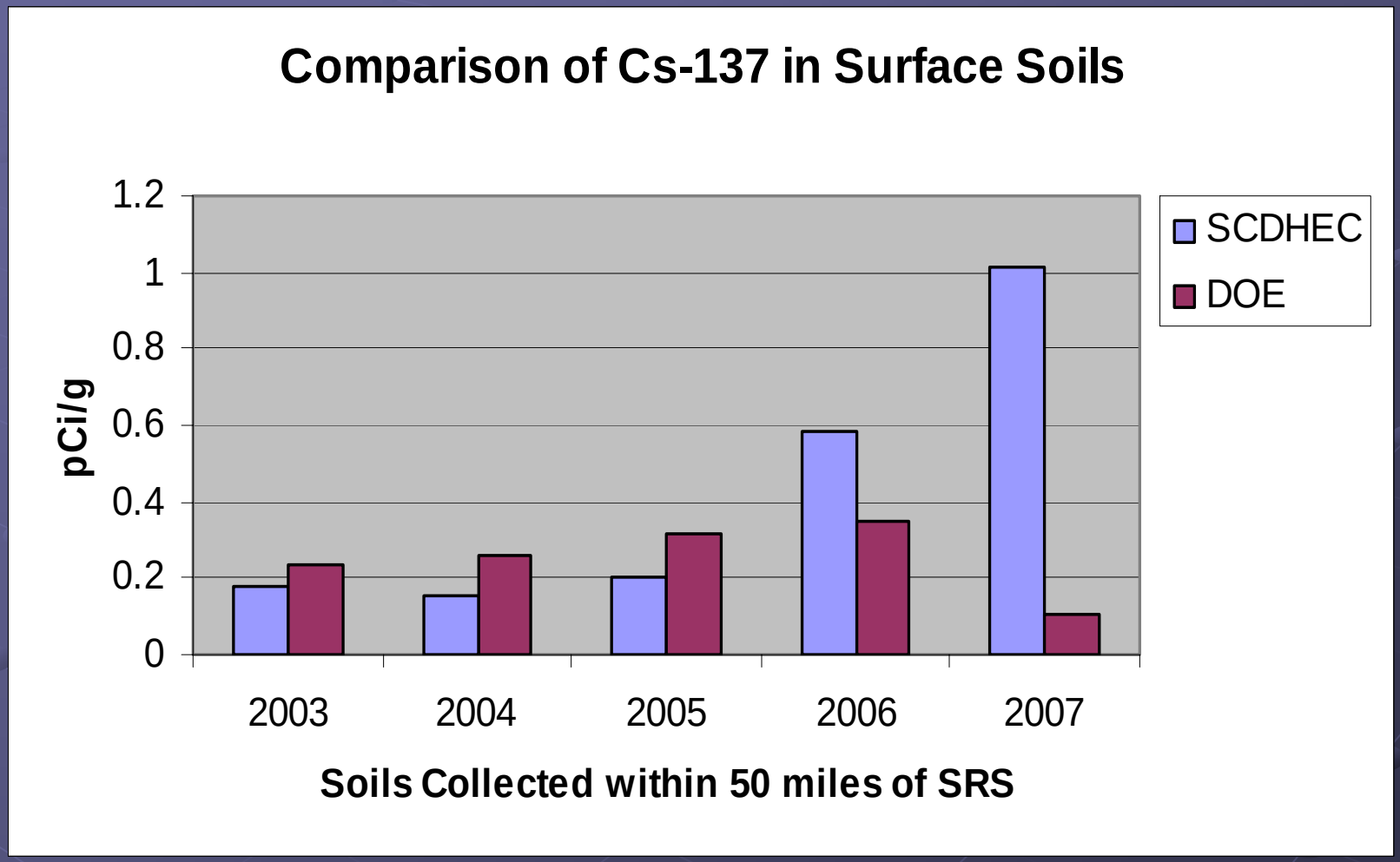
- On the SRS compares **favorably** with the South Carolina Freshwaters standard.
- No MCL's exceeded South Carolina Drinking Water Standards.
- Samples are analyzed monthly for;
  - **Temperature, pH, and Dissolved Oxygen, Turbidity, Alkalinity, Biochemical Oxygen Demand, Fecal Coliform, Total Suspended Solids, Ammonia, Nitrite-Nitrate, Total Phosphorus, and Total Kjeldahl Nitrogen**.
- Samples are analyzed semiannually for;
  - **Heavy Metals, Total Organic Carbon (TOC), and Volatile Organic Compounds**.
- Samples are analyzed annually for;
  - **Pesticides and PCBs**.

Surface Soil Monitoring

- 17 samples from the SRS perimeter including riverbank soil samples from Savannah River boat landings.
- Additional background samples were collected away from the site for statistical purposes.

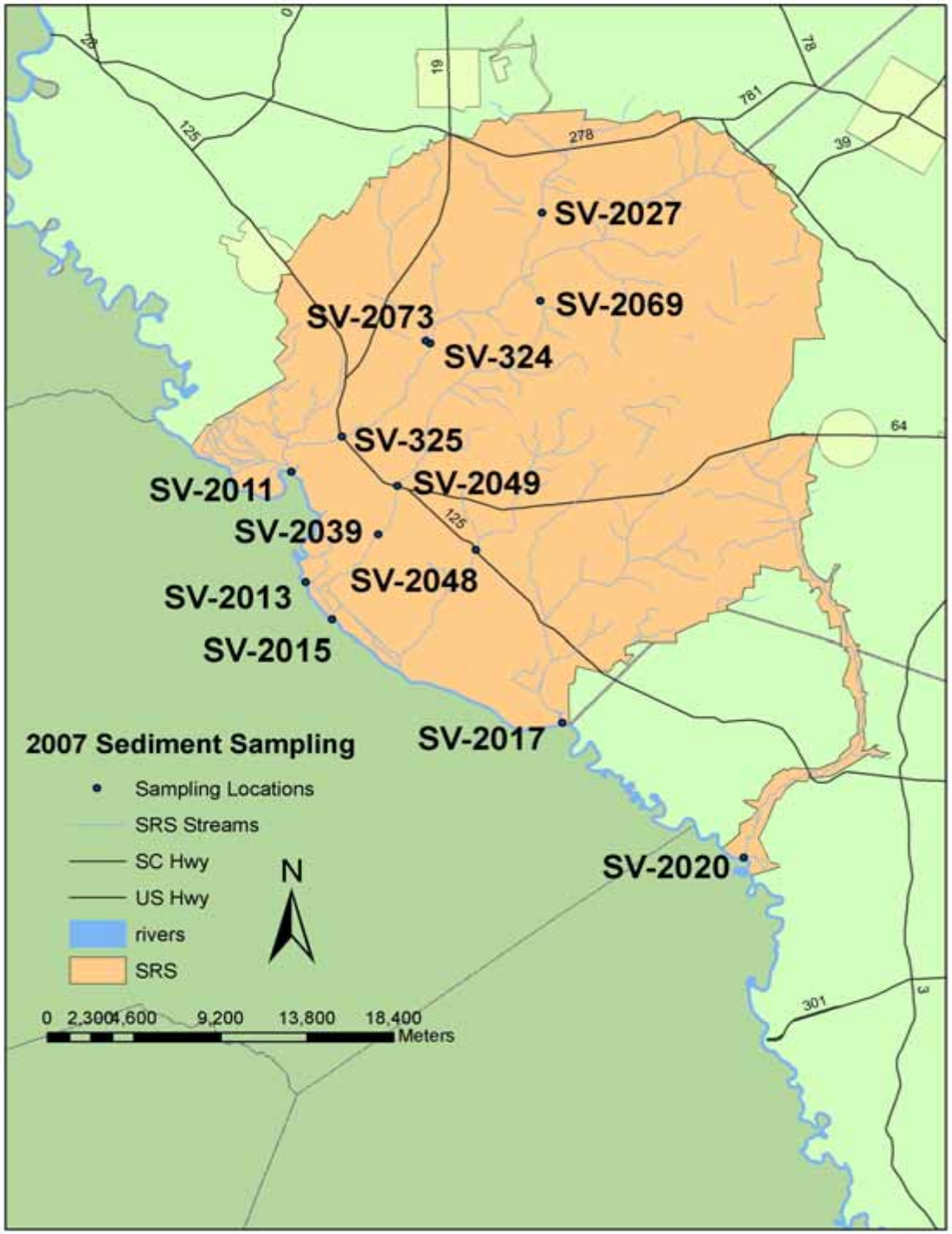


Surface Soil Cs-137 Trends

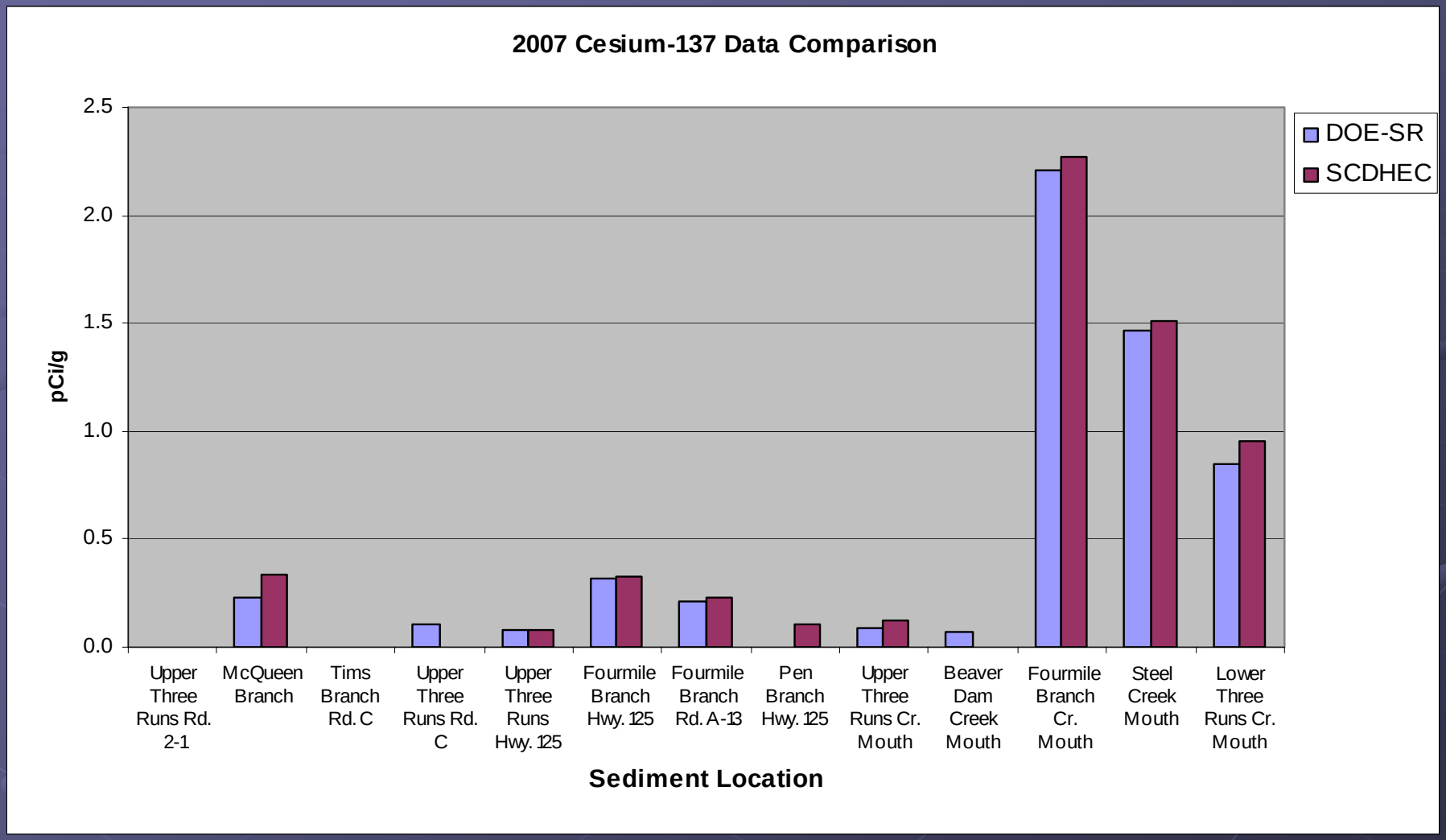


2007 Sediment Monitoring

- 27 samples from the SRS perimeter and 11 background samples were collected.
- 7 samples from SRS stormwater basins were collected.
- 13 samples from SRS streams and the Savannah River were collected.

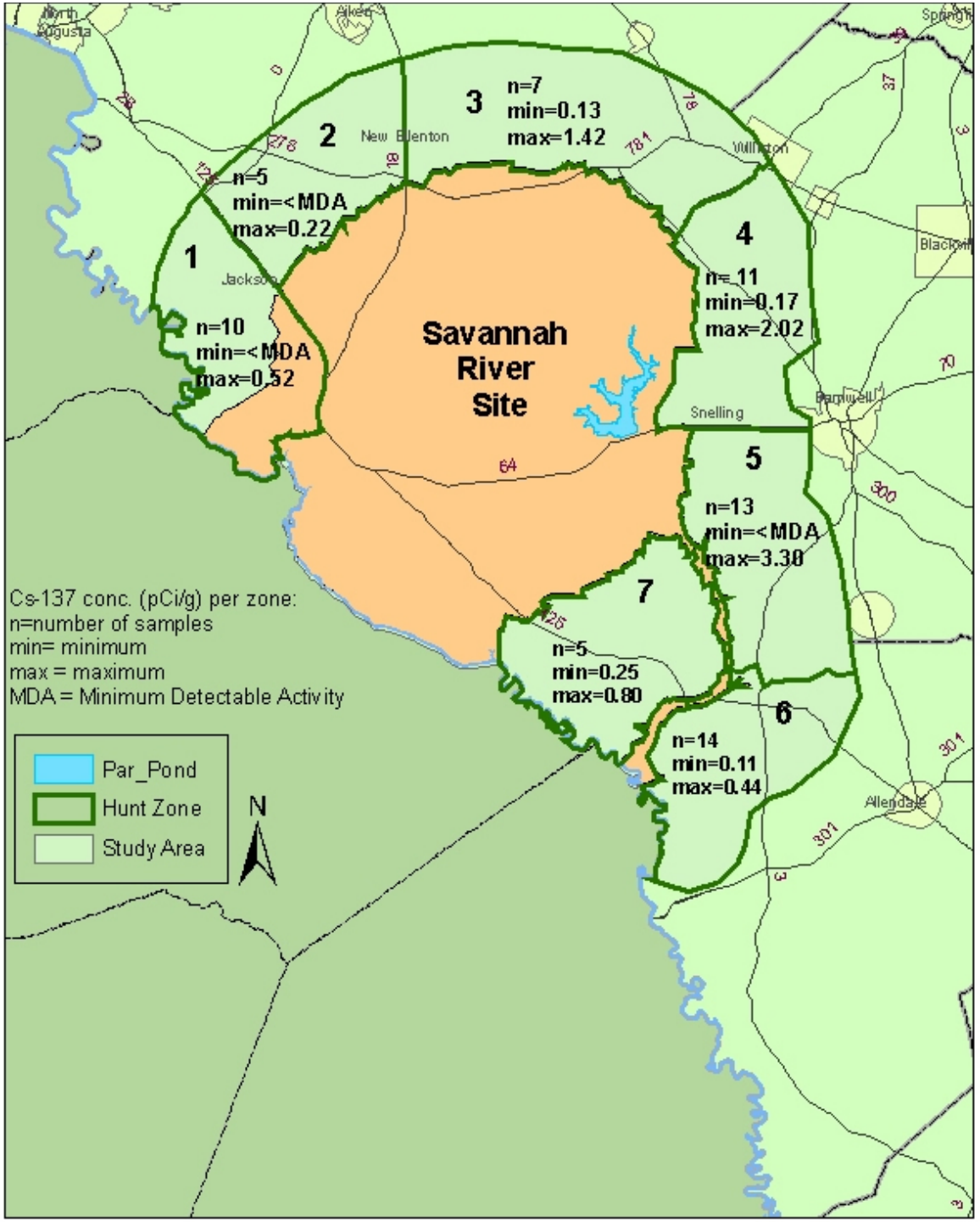


Sediment Data Comparison

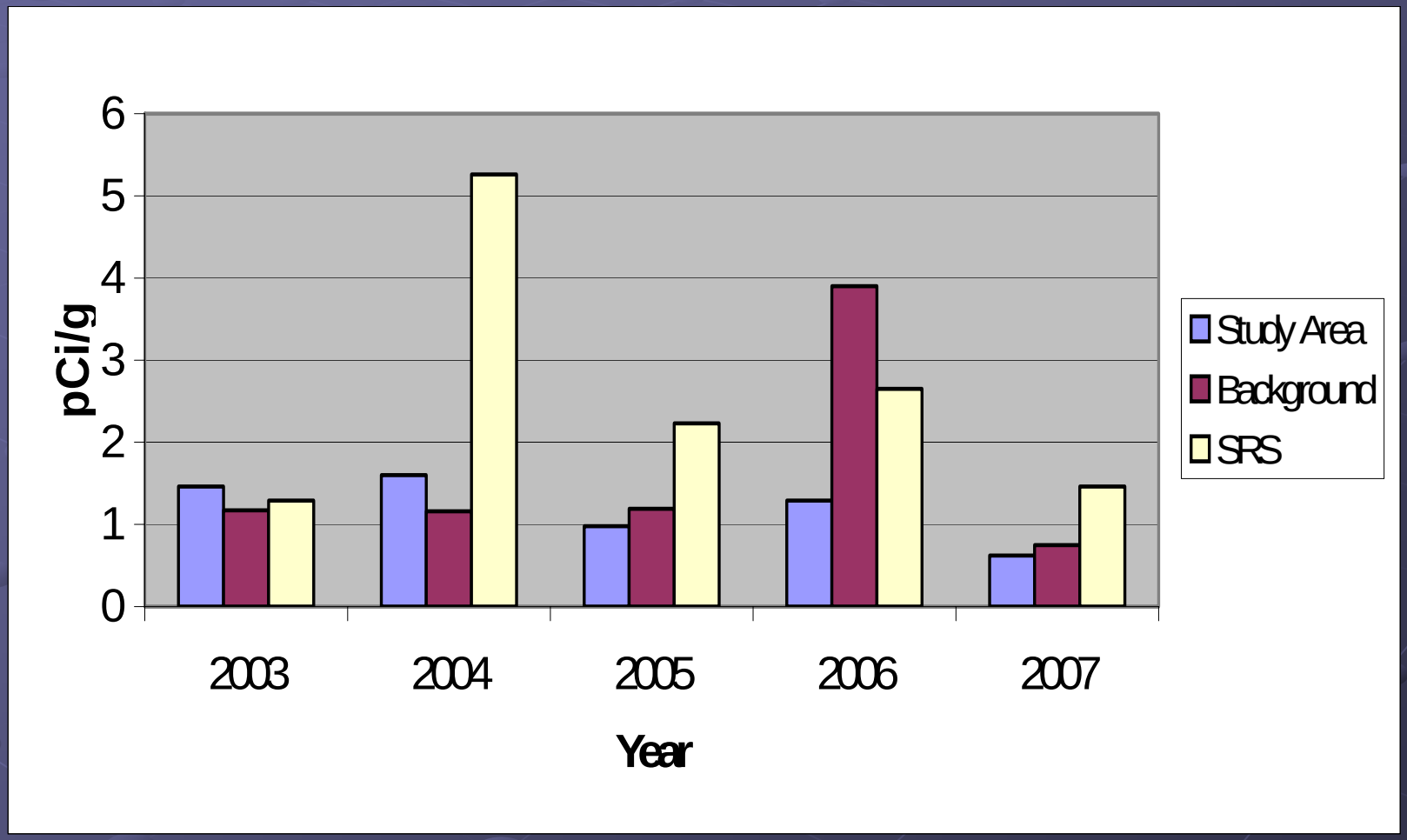


Deer Hunt Locations

- 65 Perimeter samples collected within 5 miles of SRS
- 20 Background samples collected (120 miles NE of SRS)
- No Hogs were collected in 2007

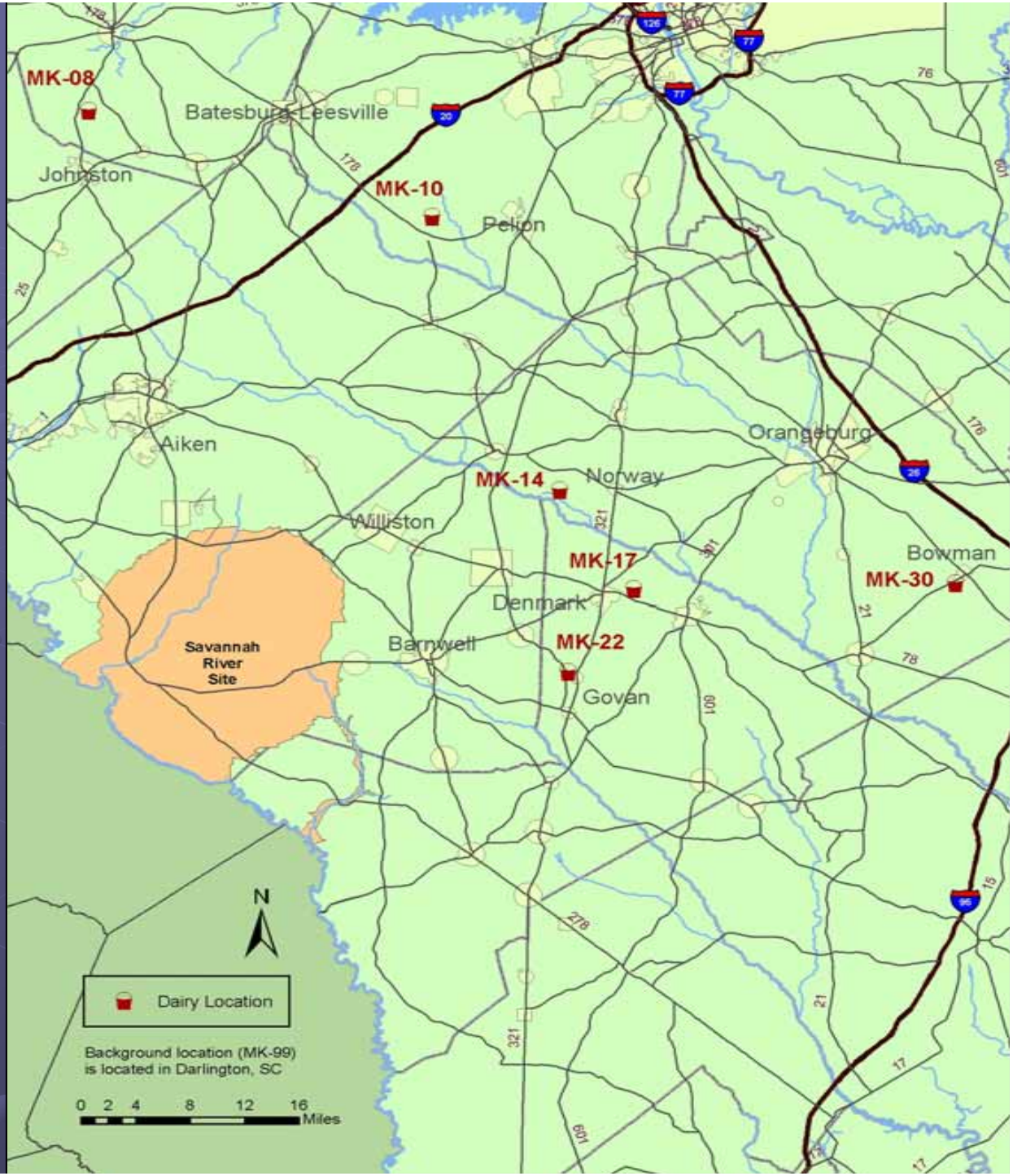


Average Cs-137 Concentration in Deer 2003-2007

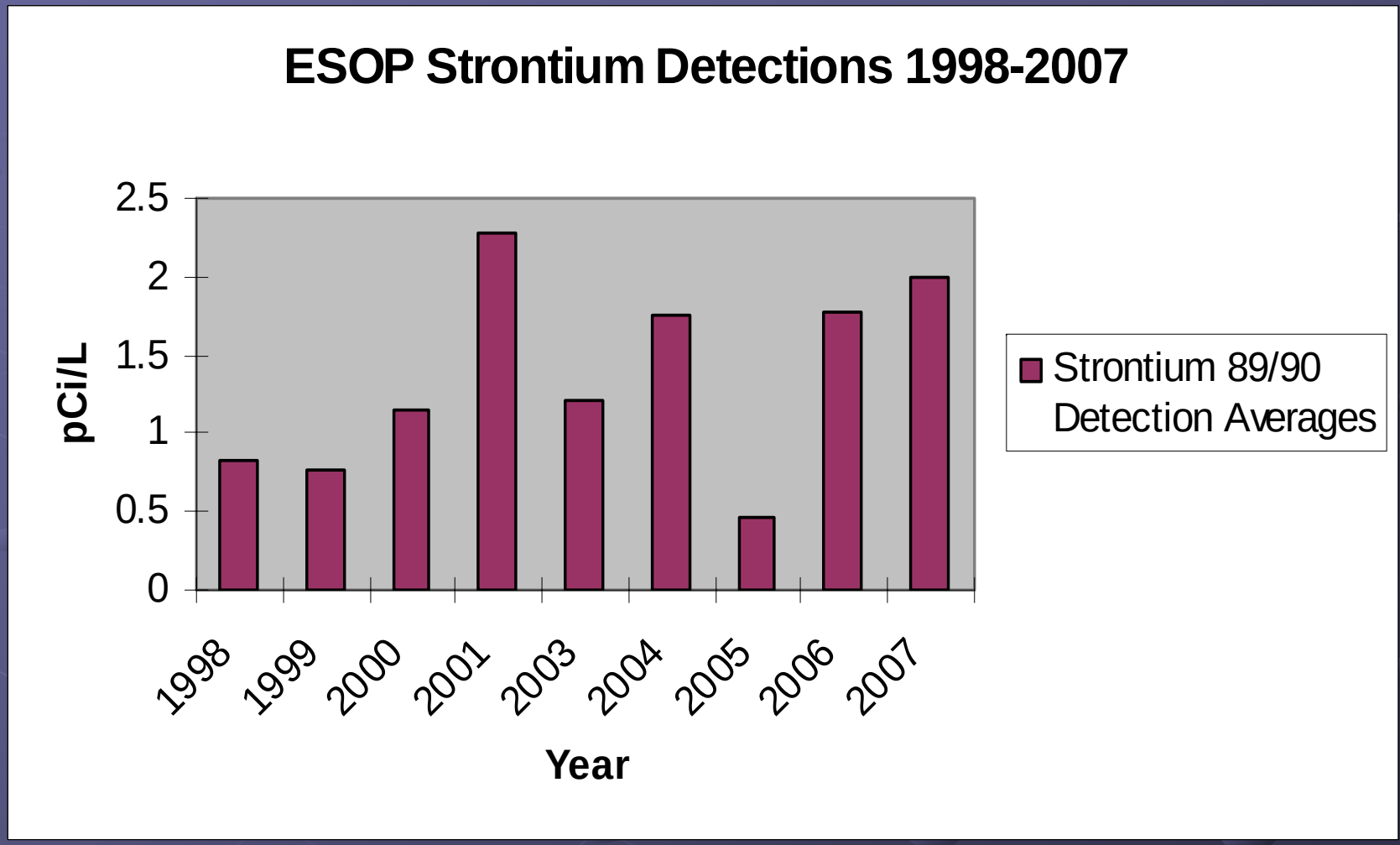


Dairy Milk Sampling

- 7 Sampling Locations (2 background)
- No gamma-emitting radionuclides were detected.
- Tritium was not detected.
- Sr-89/90 was detected in five of seven locations (avg. 2.0 +/- 0.93 pCi/L) .



Milk - Sr 89/90 pCi/L



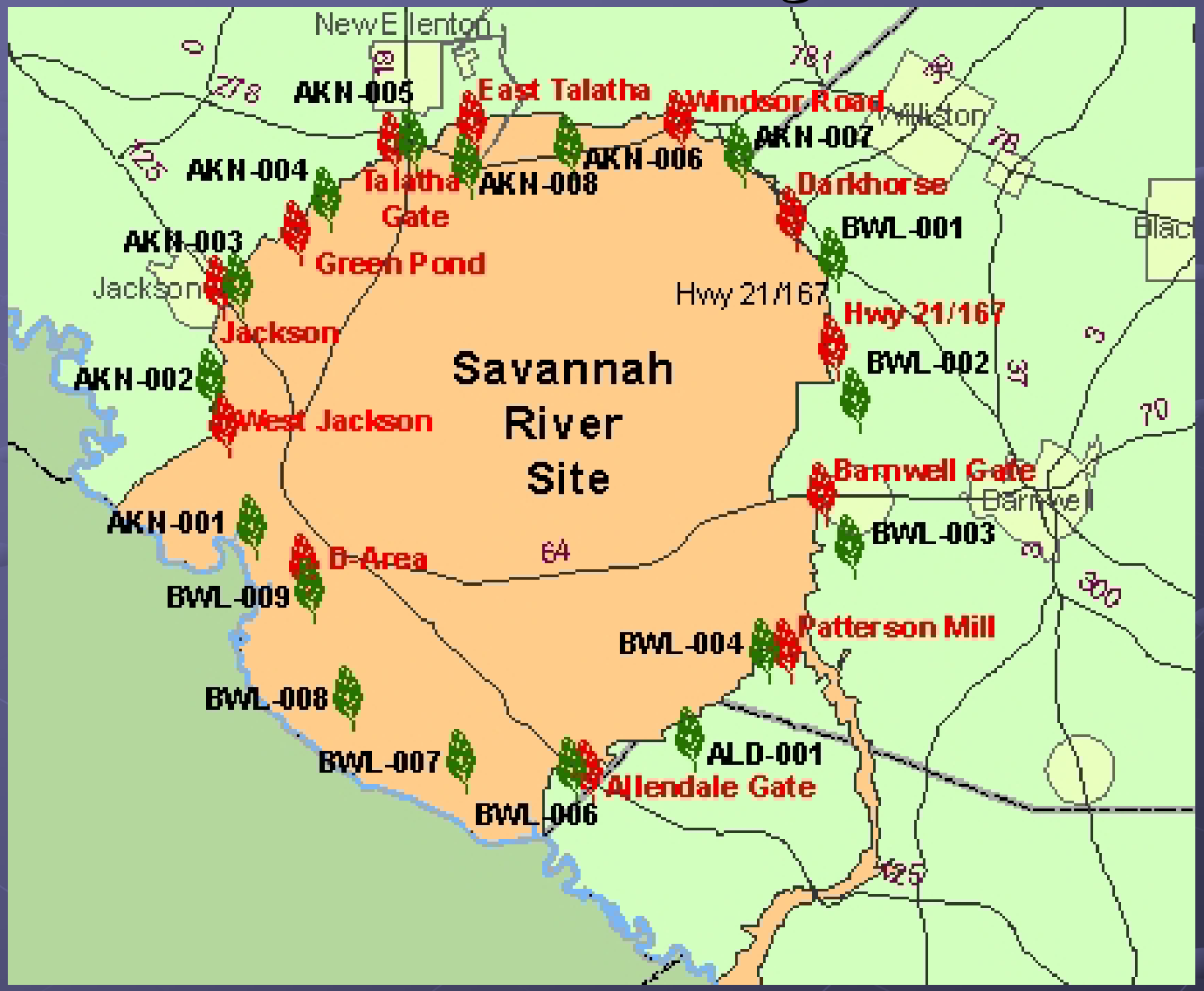
- Strontium was not detected above MDA in 2002

Edible Vegetation Monitoring

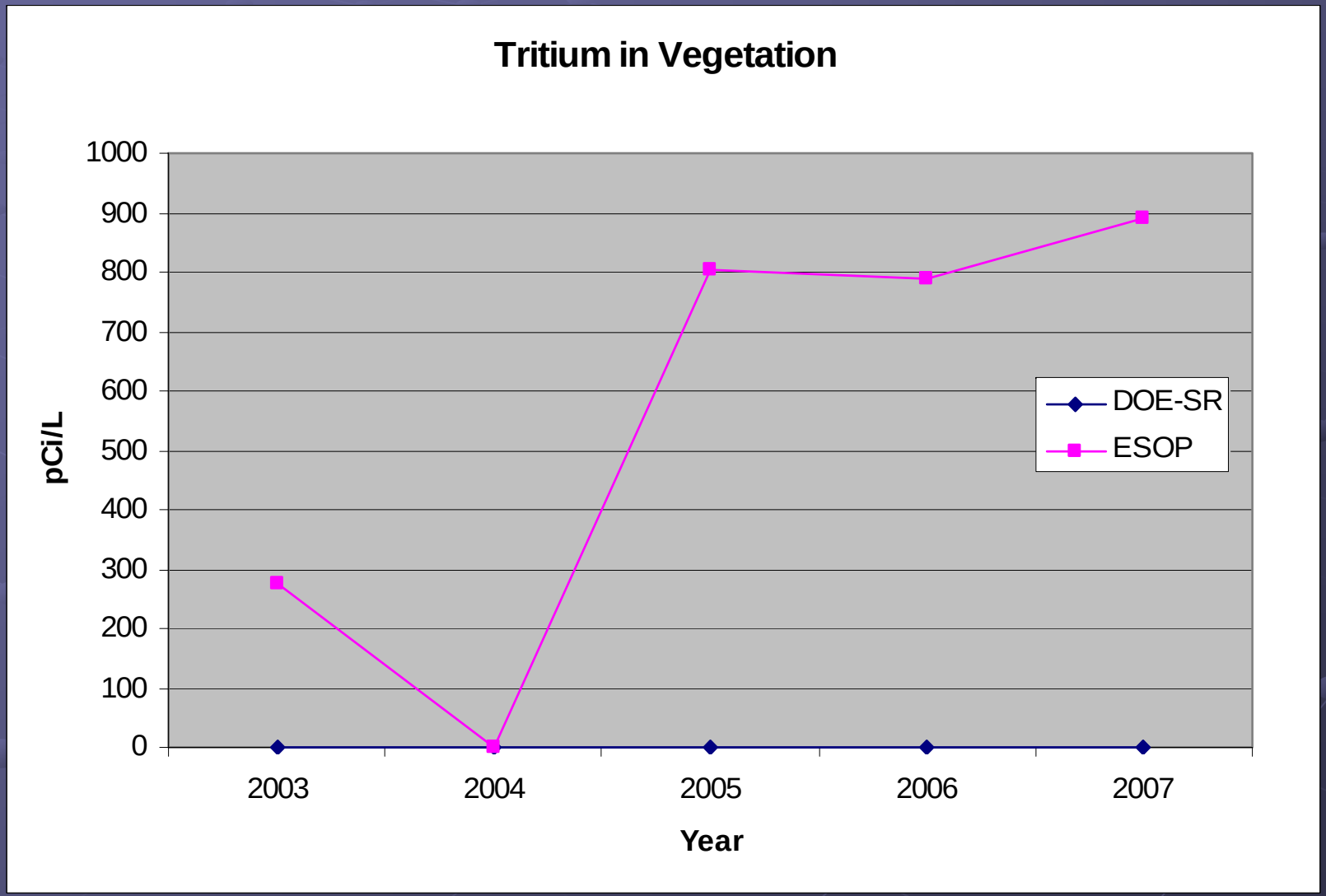
- 41 samples collected from 33 locations.
- Fruits-plums, watermelon, peaches
- Vegetables-greens, corn, soybeans
- Analyze for gamma-emitting radionuclides, Tritium, Strontium 89/90
- Both programs are similar in sampling schemes and data

Seasonal

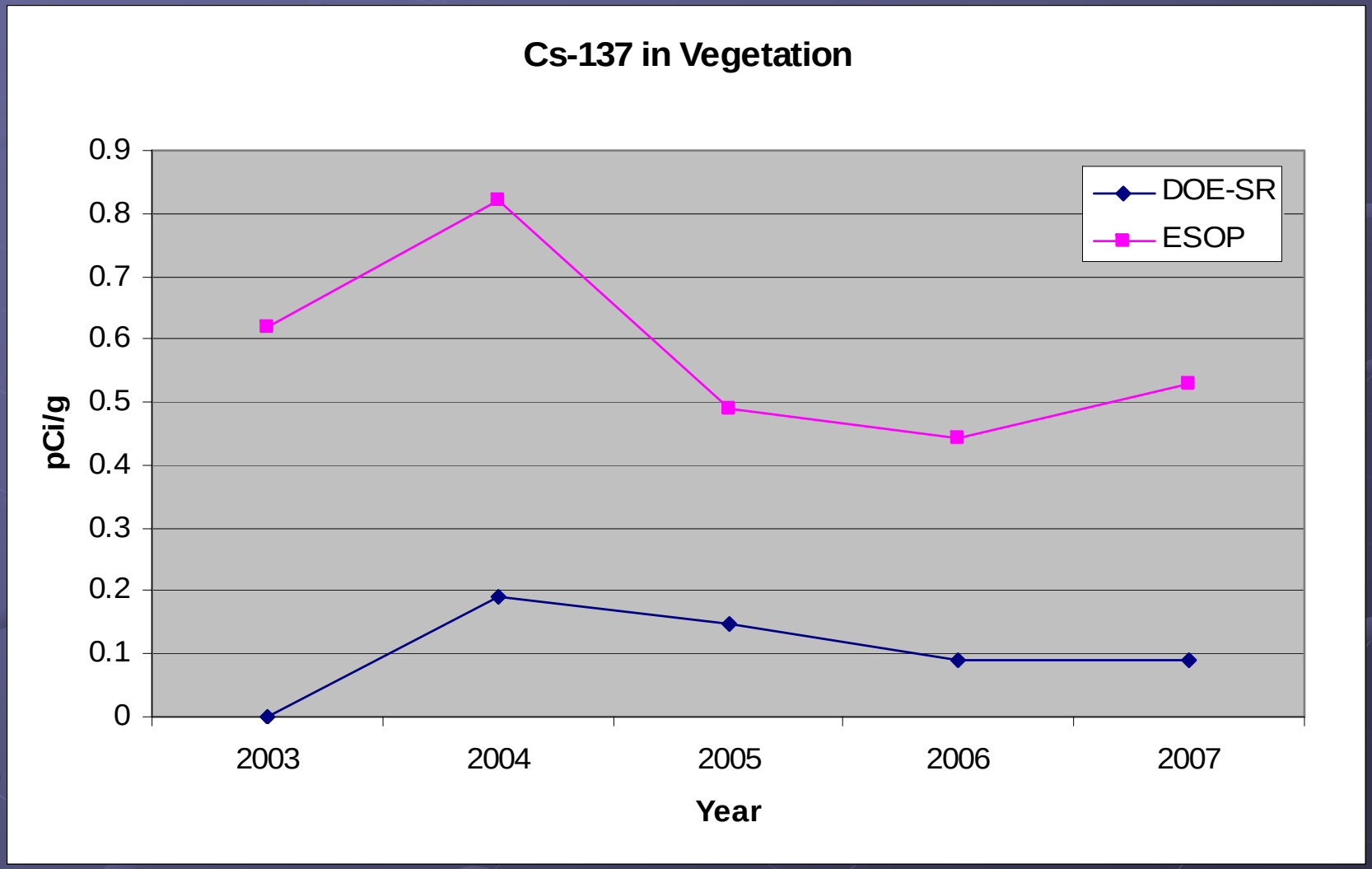
Non-edible Vegetation Perimeter Monitoring Locations



ESOP/DOE-SR Tritium in Vegetation 2003-2007

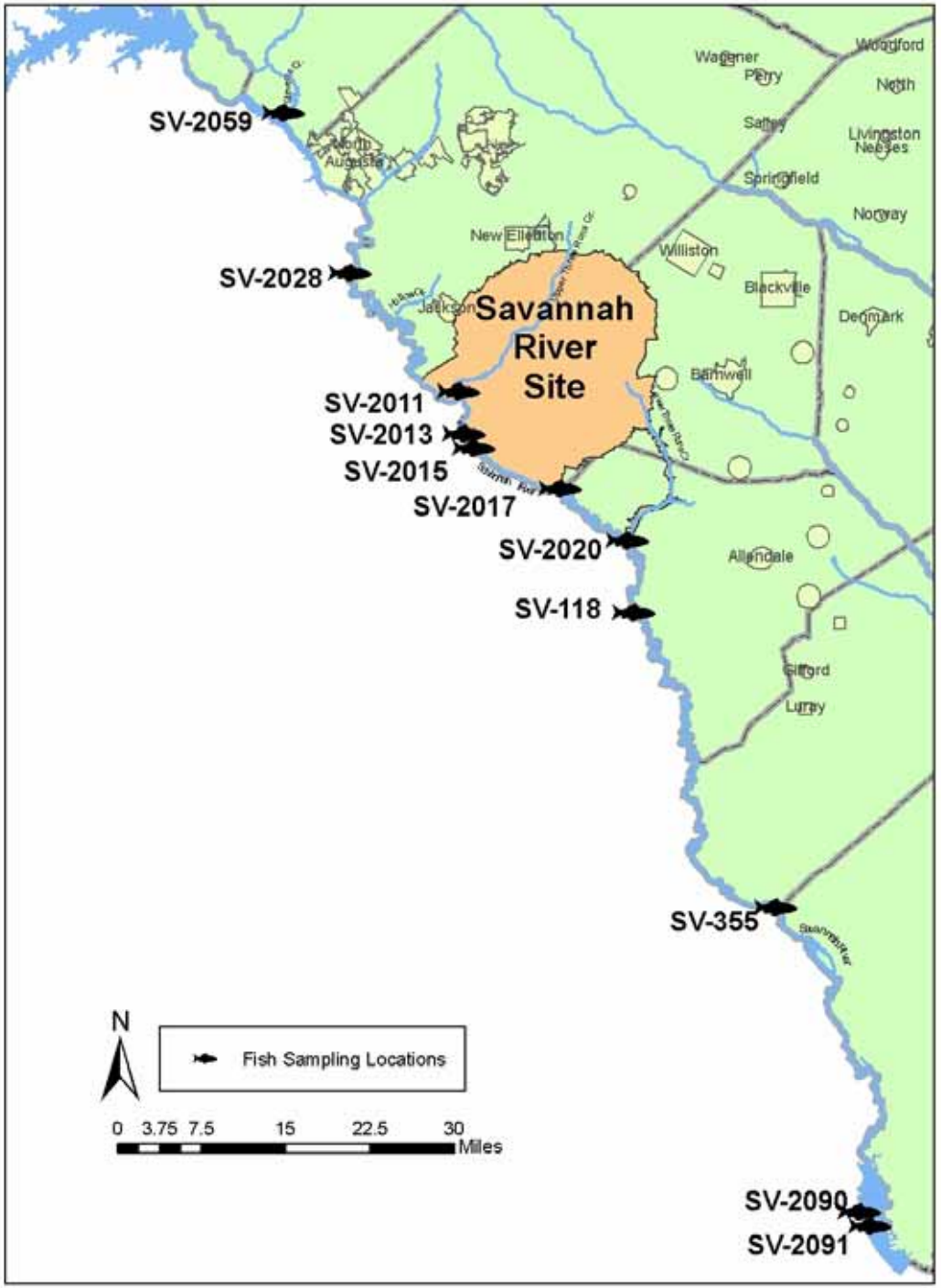


ESOP/DOE-SR Cesium-137 in Vegetation 2003-2007



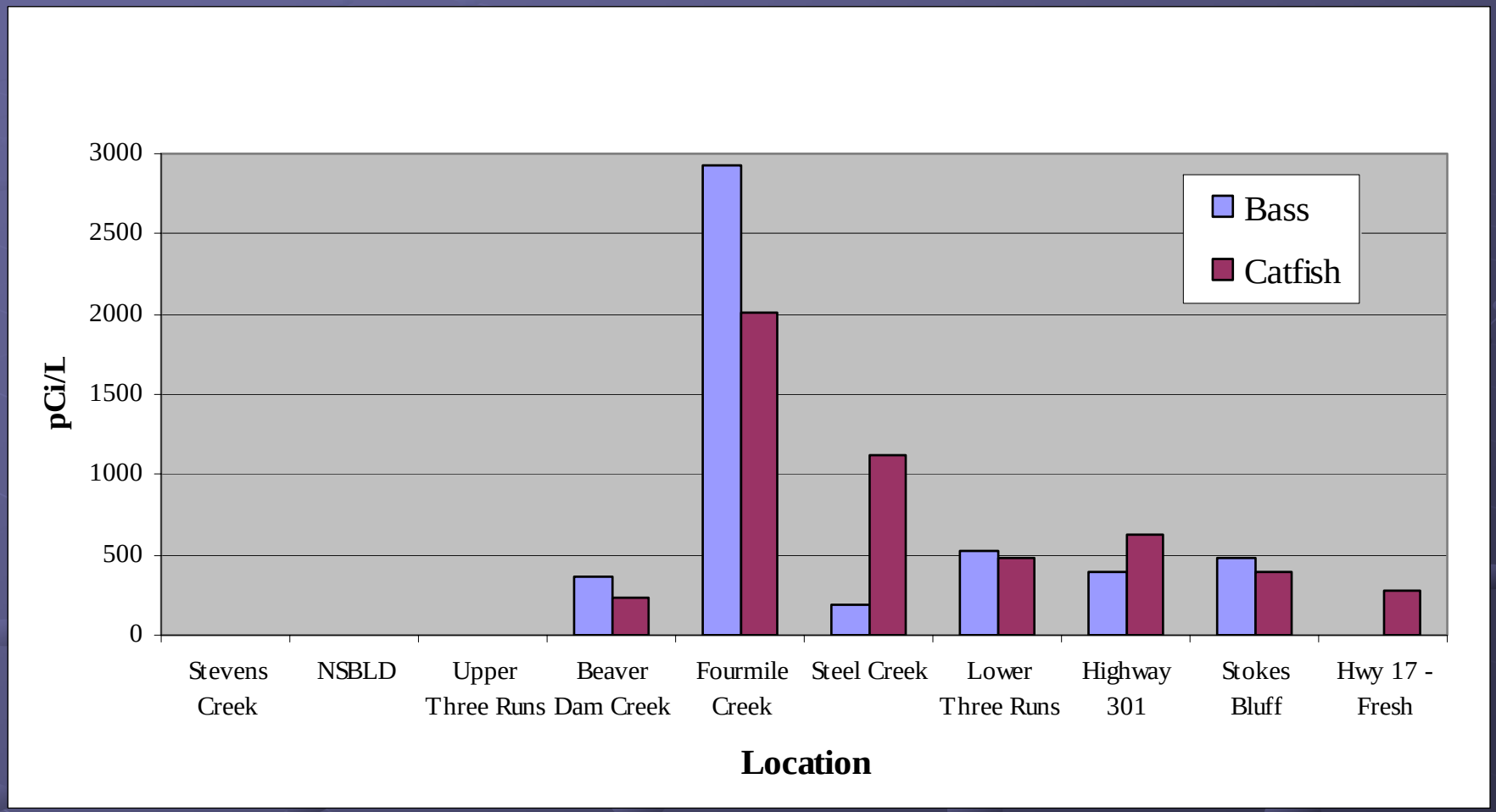
Fish Sampling

- 10 locations collected annually (5 of each species at each location).
- Tritium and gamma-emitting radionuclides.
- Selected composites analyzed for Sr-89,90.

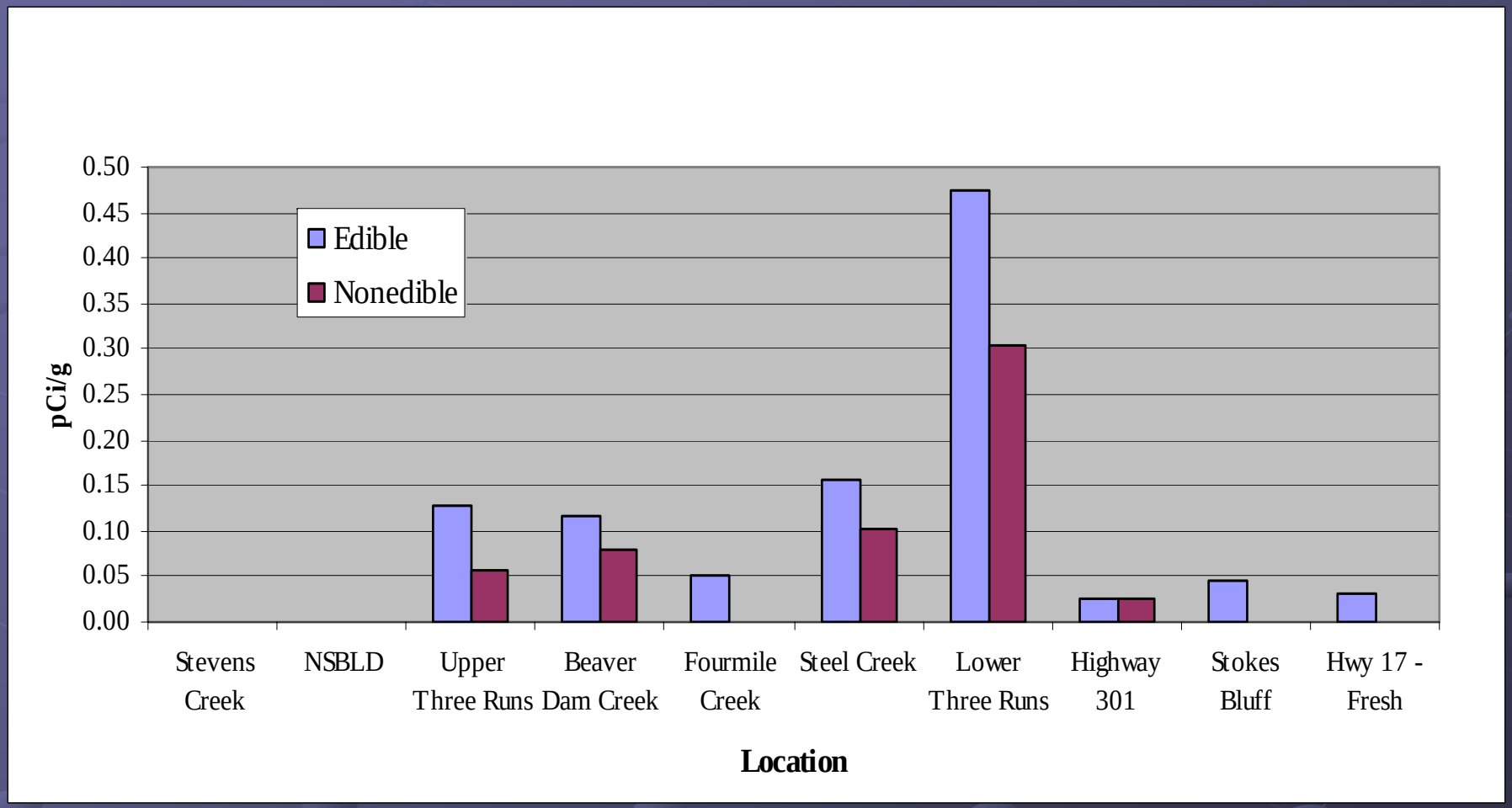


Tritium in Fish Composites, 2007

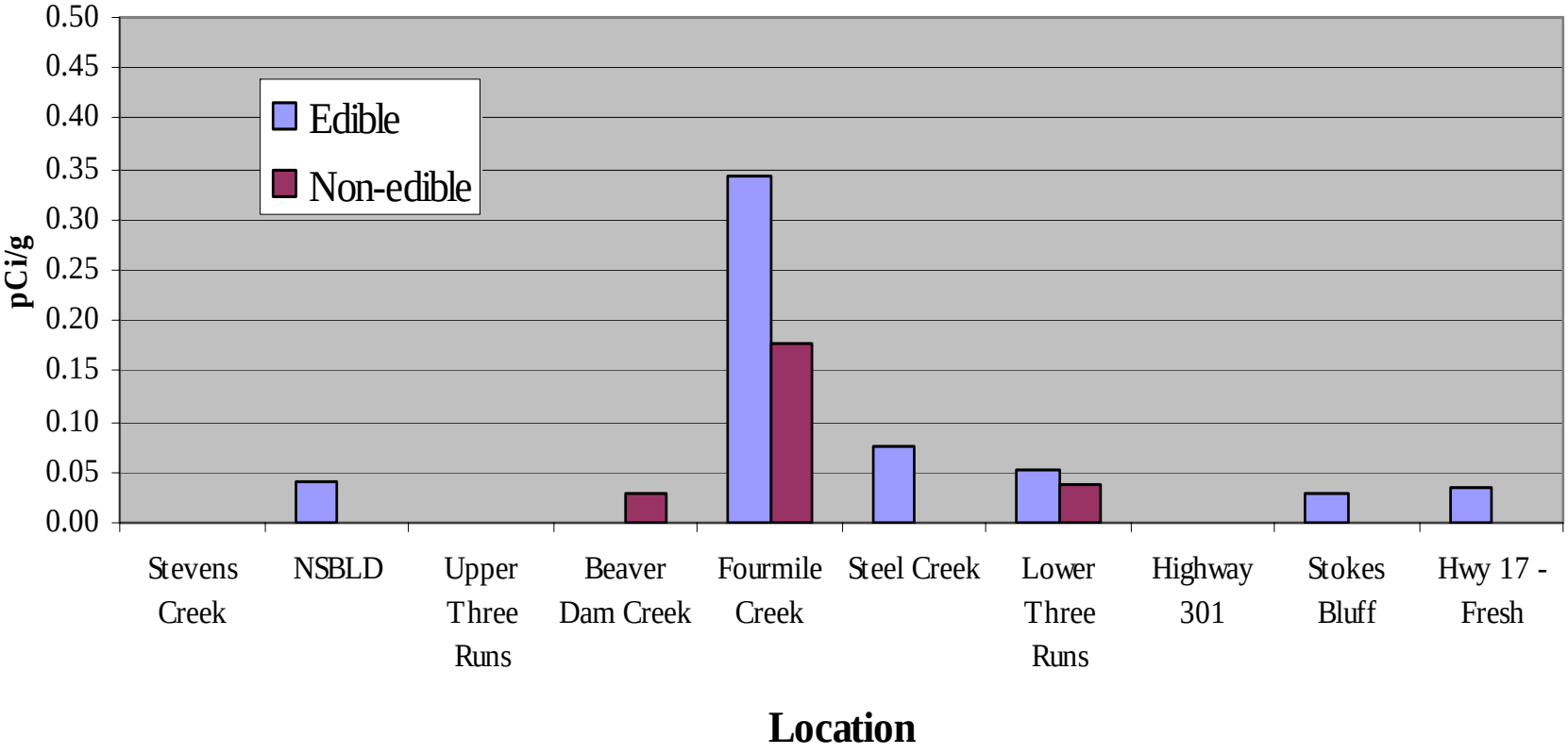
No pickerel samples analyzed for tritium (not enough tissue available)
Tritium not detected in drum, trout, or mullet



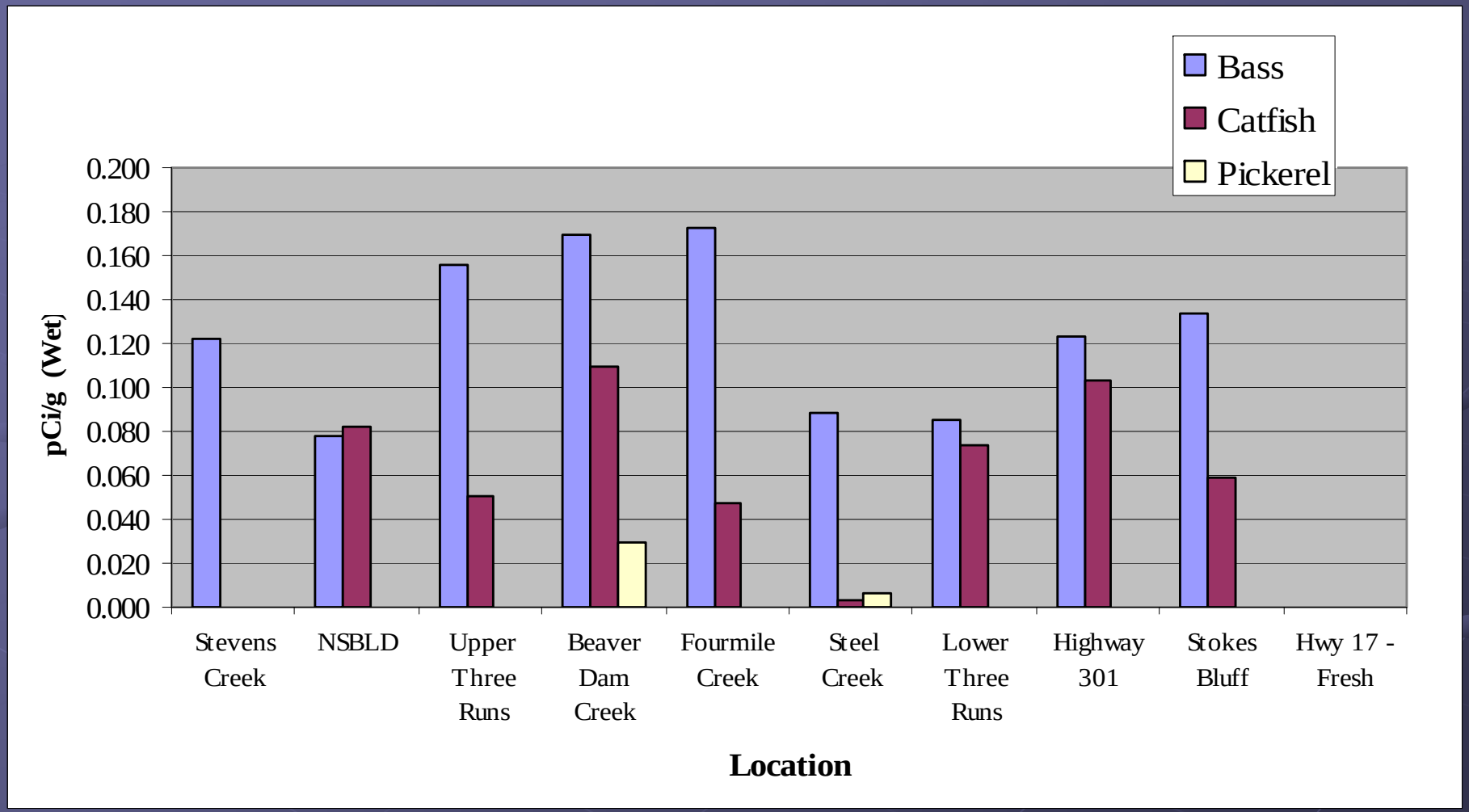
Cesium-137 in Bass Composites, 2007



Cesium-137 in Catfish Composites, 2007



Strontium-89,90 in Fish Composites, 2007



ESOP /DOE-SR Dose Comparisons 2007

- MEI - Maximally Exposed Individual – 5.68 mrem/yr (SRS MEI 16.72 mrem/yr)
- Public exposure scenario -0.16 mrem /yr (no sediments, soil, fish or deer) (SRS all pathway 0.10 mrem/yr.)
- Farmer scenario – 0.58 mrem/yr (includes, sediments, soils and max well water dose)
- Offsite Sportsman scenario – 1.01 mrem/yr (uses average deer dose) (SRS offsite hunter 1.90 mrem/yr)

END