Appendix 5-4: STA Soil Monitoring Results

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Soil monitoring is an important aspect of environmental condition assessment in the Everglades Stormwater Treatment Areas (STAs). Soil biogeochemistry has a major role in controlling phosphorus concentrations in the overlying water. The amount and stability of phosphorus stored in the soil influences the flux rate and release into the overlying water column. Also, unconsolidated floc can resuspend into the water column during wind and high flow events, and cause an increase in phosphorus concentrations in the water column. Floc resuspension also affects water column clarity and therefore affects aquatic vegetation.

During Water Year 2011 (WY2011) (May 1, 2010–April 30, 2011), STA-1W samples were collected from June–August 2010, and STA-3/4 samples were collected from January–May 2010. Soil samples were collected at pre-selected grid locations, spaced at 1,333 feet x 1,333 feet. These were the same locations sampled in the previous two sampling events. Intact cores were collected by driving a 10 centimeter (cm) diameter stainless steel corer into the soil profile while driving in the corer; a serrated knife was used to cut around the outside perimeter of the corer to reduce soil compaction. Soil cores were extruded in the field and the top 0–10 cm layer was collected. All samples were cleared of vegetation, roots, rocks, and shells, and then placed in waterproof plastic bags. The bags were then packaged in an ice cooler for transport to the laboratory where they were stored at 4ºC prior to analysis. Soil samples were analyzed for total phosphorus, total nitrogen, total carbon, total calcium, bulk density, and ash free dry-weight. **Figures 1** through **6** show the spatial distribution of the parameters that were measured.

[1] Critigen, Palm Beach Gardens, FL

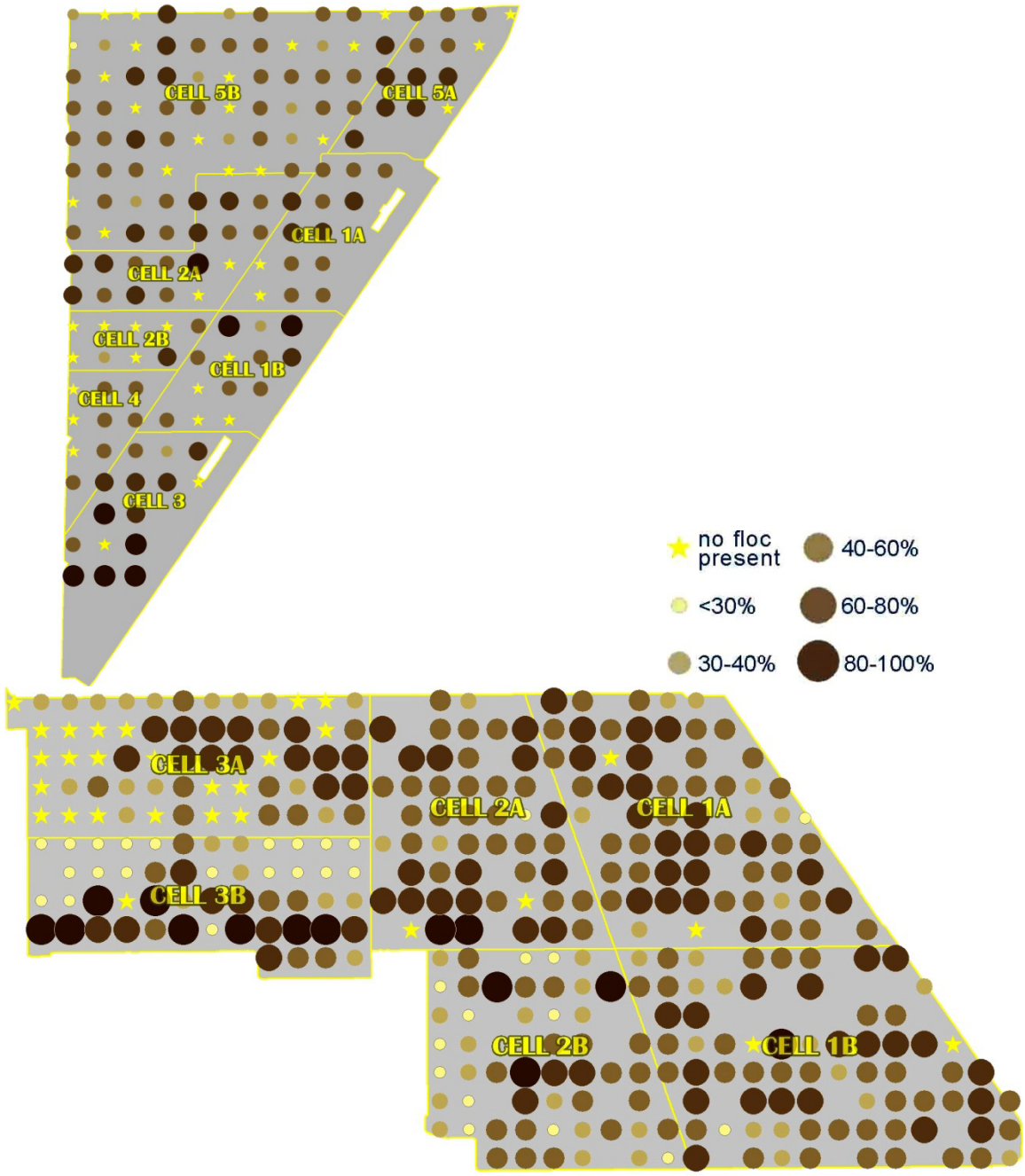

Figure 1. Ash-free dry weight of floc in Stormwater Treatment Area 1W (STA-1W) and STA-3/4 in Water Year 2011 (WY2011) (May 1, 2010–April 30, 2011).

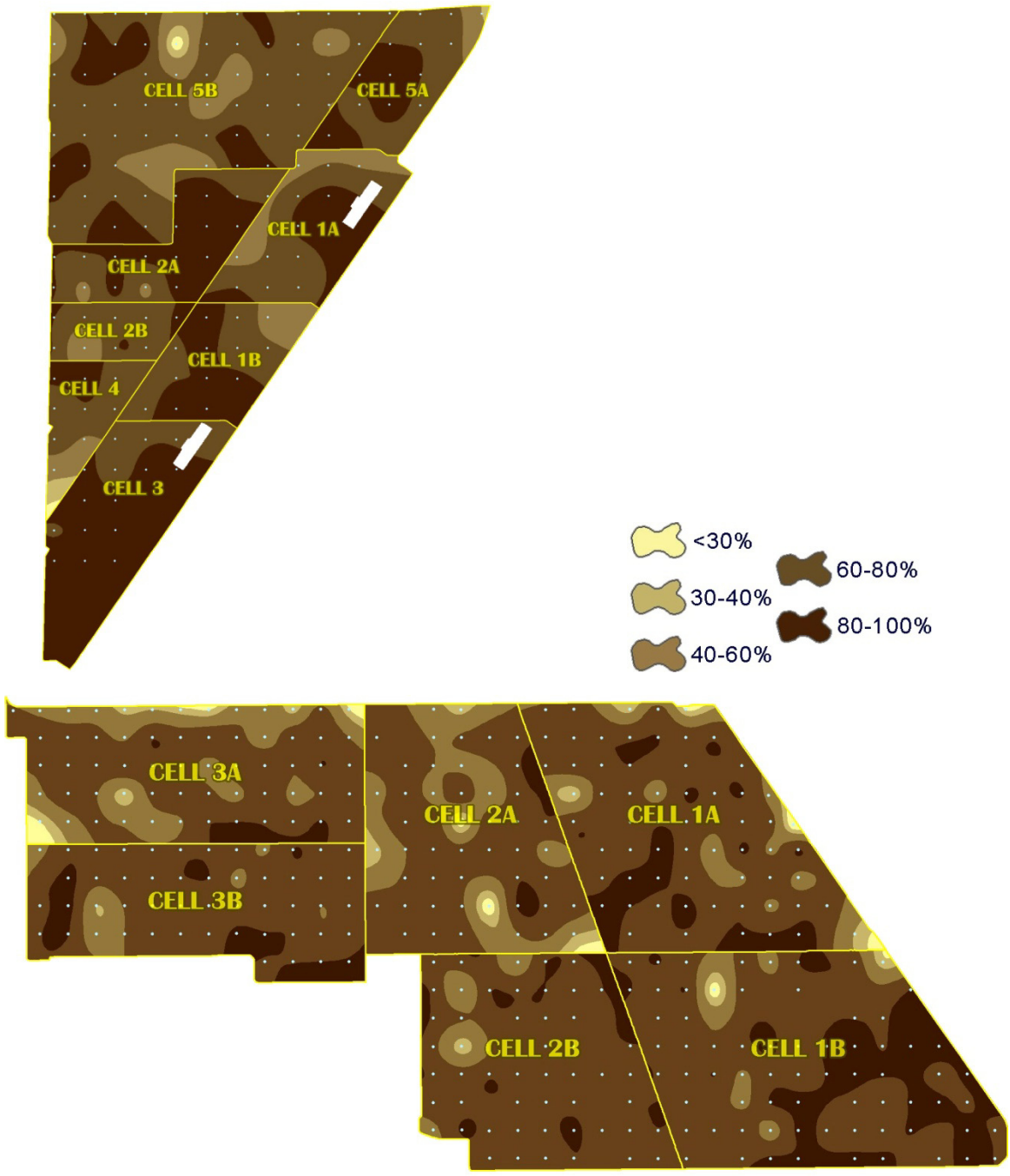

Figure 2. Ash-free dry weight of soil in STA-1W and STA-3/4 in WY2011**.**

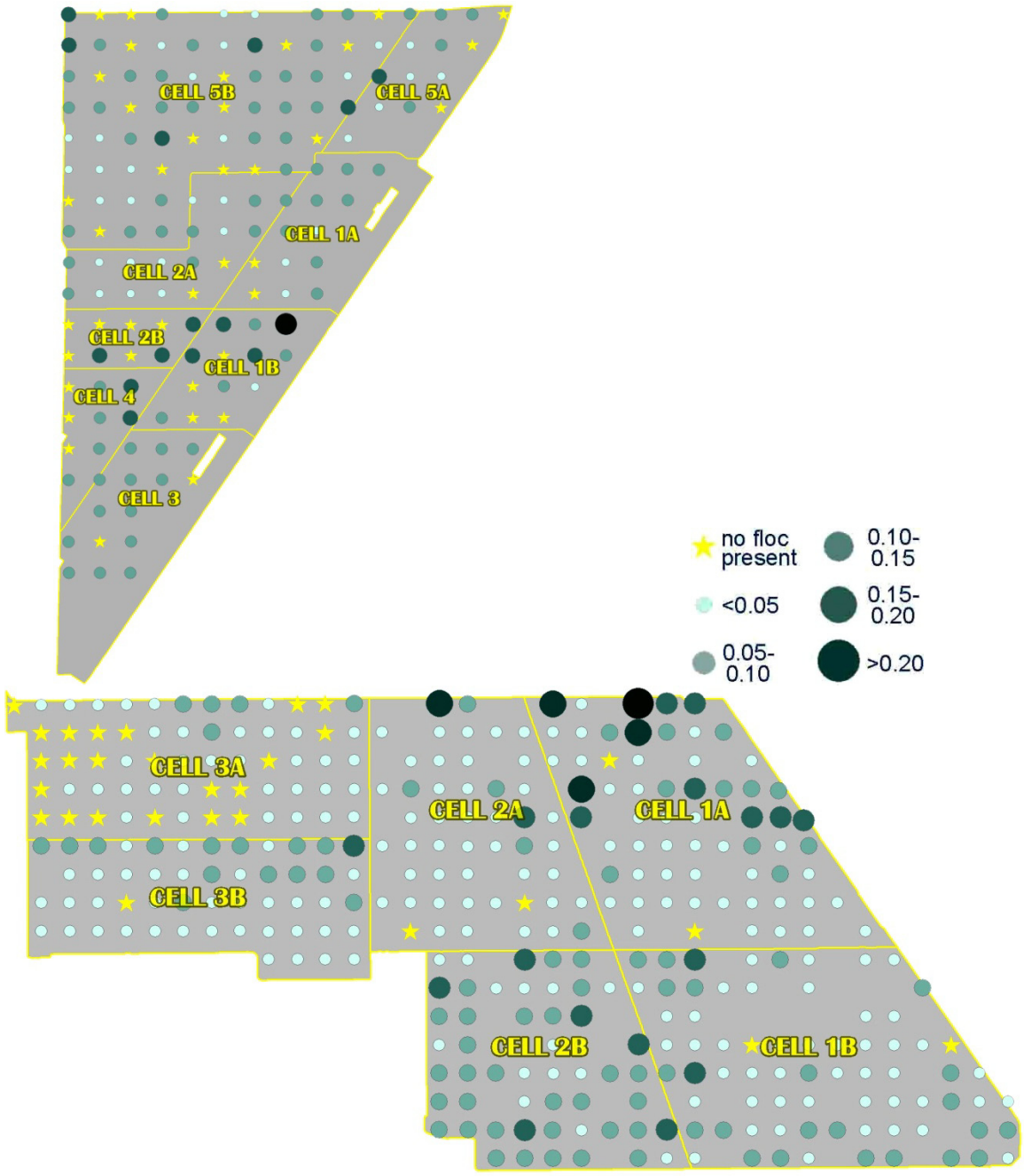

Figure 3. Bulk density of floc in STA-1W and STA-3/4 in WY2011**.**

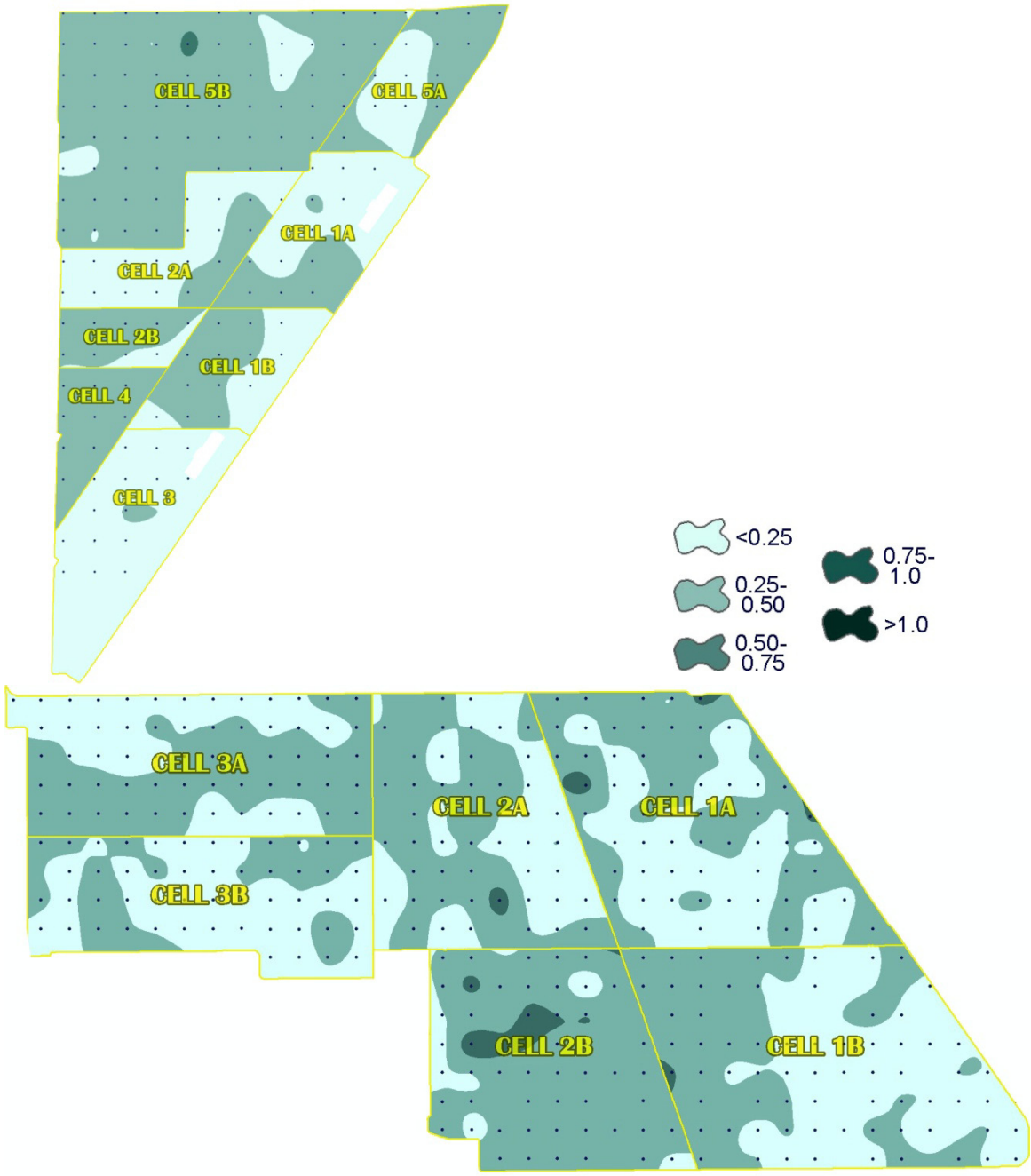

Figure 4. Soil bulk density in STA-1W and STA-3/4 in WY2011.

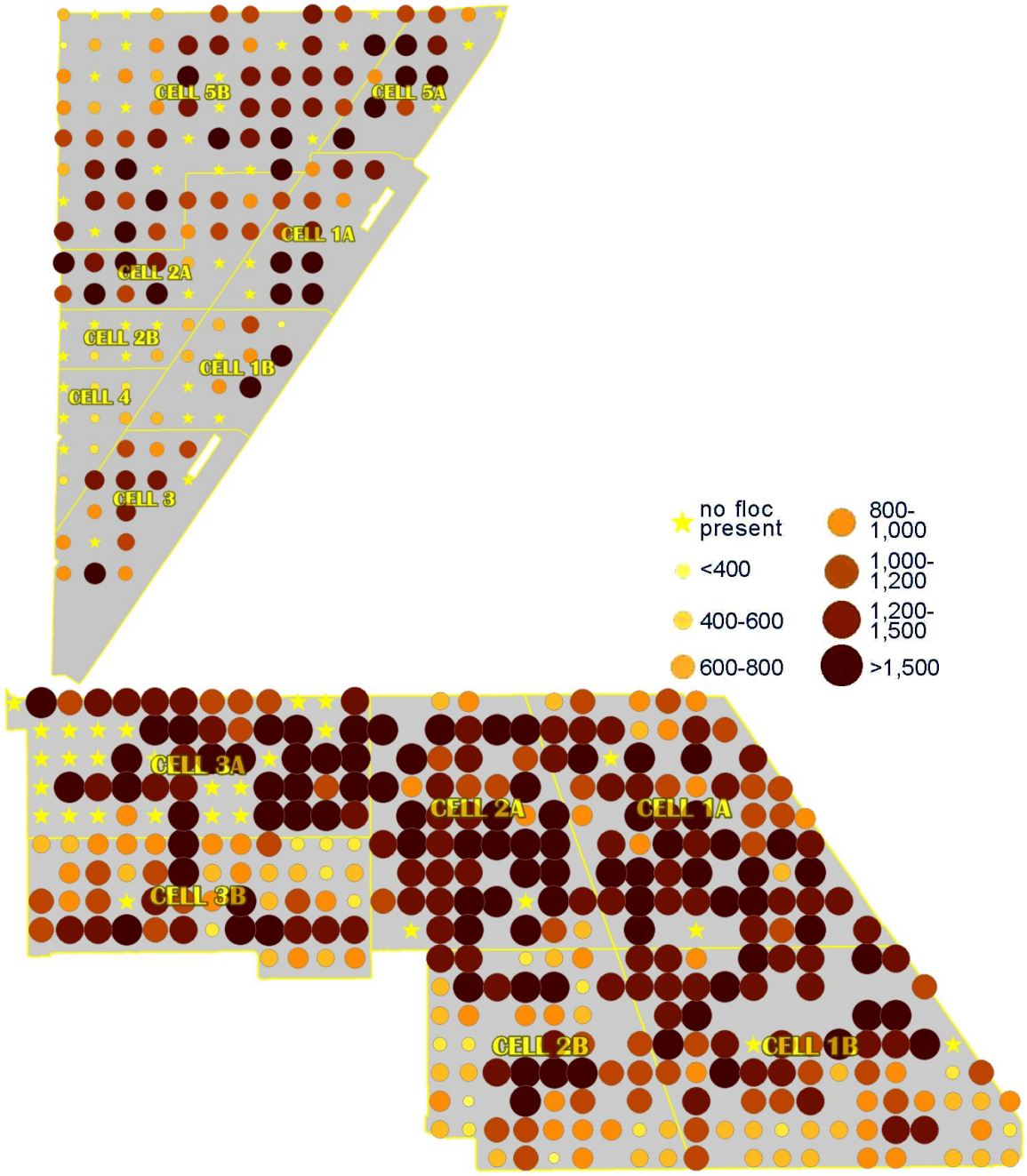

Figure 5. Floc total phosphorus in STA-1W and STA-3/4 in WY2011.

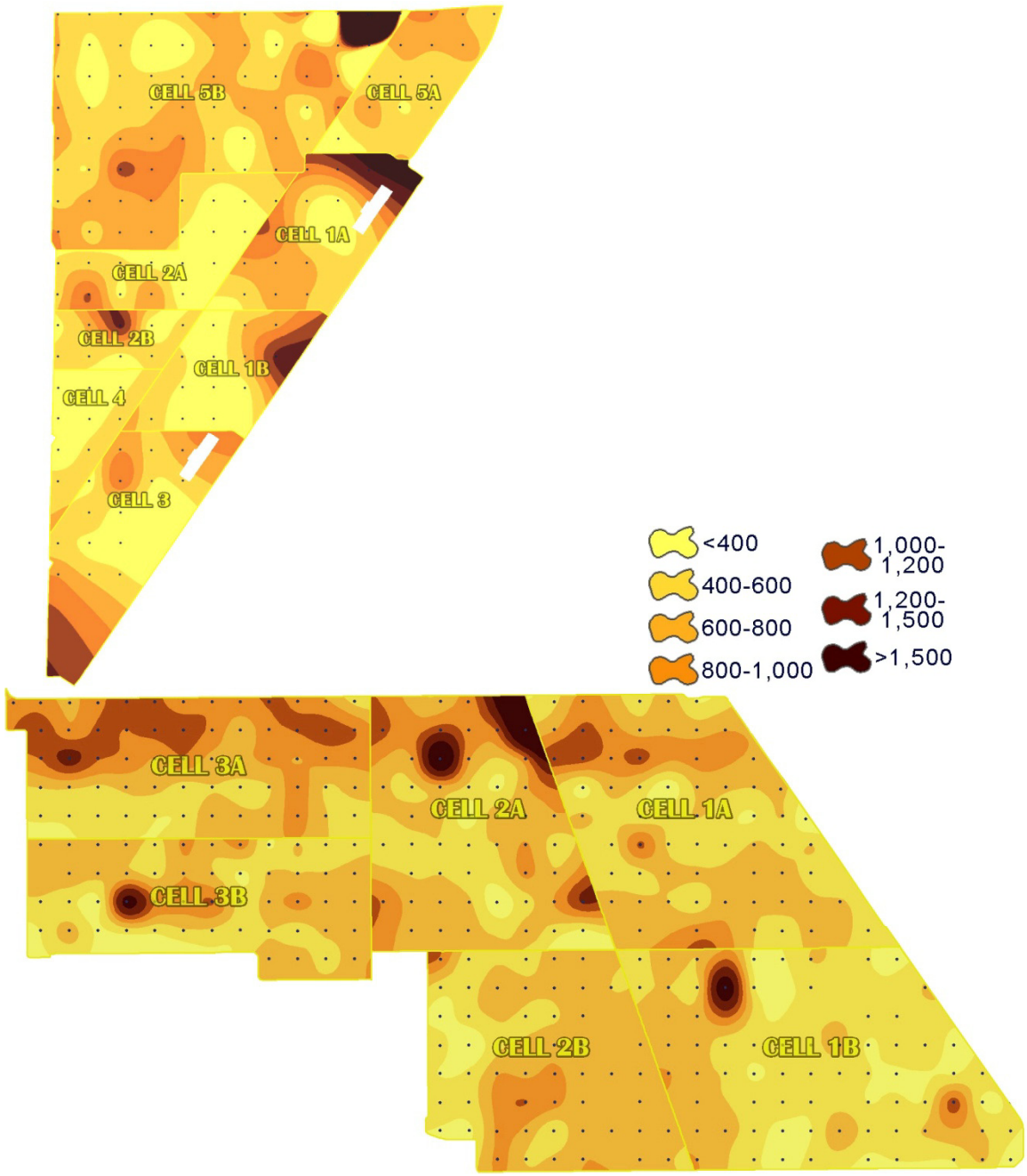

Figure 6. Soil total phosphorus in STA-1W and STA-3/4 in WY2011.