Initial Land Use and Wastewater Classification for 2017 Mid-point Assessment

1. **Developed**
   a. Impervious developed
      i. Connected vs. Disconnected (connection via storm drain or proximity to waterway)
         1. Regulated vs. Unregulated (inside vs outside MS4/CSO)
            a. Open space, Low-density Residential, High-density Residential, Mixed Commercial/Industrial/Residential, Institutional
   b. Pervious developed (e.g., turf grass, landscaped areas, and woodlands)
      i. Connected vs. Disconnected (connection via storm drain or proximity to waterway)
         1. Regulated vs. Unregulated (inside vs outside MS4/CSO)
            a. Open space, Low-density Residential, High-density Residential, Mixed Commercial/Industrial/Residential, Institutional
               i. Turf vs Wooded
                  1. Turf fertilizer leaching and runoff risk categories (unfertilized, low risk, high risk based on soil and slope characteristics)
                  2. Urban tree canopy vs Rural woodlands
   c. Roads
      i. Urban/Suburban vs Rural
         1. 1-lane, 2-lane, 4-6 lanes, 8+ lanes (to infer impervious area and size of medians and shoulders)
      ii. Federal vs. state vs. other (to assign responsibility)
      iii. Traffic volume ranges (linked to dry atmospheric deposition)
   d. Construction
      Note: Analyze sediment/erosion control permits and revisit current approach using annual change in impervious cover * factor representing disturbed acreage that is permitted.
2. **Extractive**
   a. Disturbed permitted acreage
   b. Distinguished by type: quarries/gravel pits, surface coal mines, and reclaimed mines
   c. Shale gas pads and associated infrastructure
3. **Natural**
   a. Upland Forests (with unmanaged understory- differentiated by species/age/"health")
      i. Floodplain forests
      ii. Riparian forests
      iii. Harvested (undergoing managed succession)
   b. Lowlands/ wetlands (currently considered "Woody/Open" in Phase 5.3.2)
      i. Floodplain wetlands
      ii. Forested wetlands
      iii. Emergent/tidal wetlands
   c. Water (all non-tidal water area)
4. **Agriculture**
   Note: The classes below represent what is currently used in Phase 5.3.2. The Ag Workgroup is considering decoupling management systems from the crop types in the land

use data. This would result in a simpler land use classification and just reflect major crop types derived from the NASS Cropland Data Layer and annual NASS reported acreages.

  a. High Till (i.e., conventional tillage)

      i. Manure (e.g., corn, soybeans, wheat, barley, dry beans, and more)

        1. Nutrient management (request to drop this distinction)

        2. No nutrient management

      ii. No manure (e.g., cotton, tobacco, Irish potatoes, orchards, and vegetables)

        1. Propose revising this land use (VA comments)

        2. Nutrient management (request to drop this distinction)

        3. No nutrient management

  b. Low Till (i.e., conservation tillage)

      i. Manure (e.g., corn, soybeans, wheat, barley, dry beans, and more)

      ii. Nutrient management (request to drop this distinction)

  c. Hay

      i. Nutrients applied (e.g., tame and small grain hay, failed cropland)

      ii. No nutrients (e.g., wild hay, idle cropland, fallow land)

      iii. Nutrient management (request to drop this distinction)

      iv. Alfalfa

        1. Nutrient management (request to drop this distinction)

        2. No nutrient management

  d. Pasture

      i. Nutrient management (request to drop this distinction)

      ii. No nutrient management

      iii. Degraded riparian (i.e., unfenced riparian pasture)

  e. Nursery (separate in-house production from field rows)

  f. Animal Feeding Operations (converted to acres based on animal density assumptions)

      i. Regulated (CAFOs)

      ii. Unregulated (AFOs)

5. Wastewater

  a. Population on Sewer

      i. Improve maps of areas served by sewer and relate areas to individual plants and their efficiencies.

  b. Households on septic

      i. Distinguish different types of systems: commercial/retail, mass drain fields, failing systems, and direct discharges

      ii. Adjust soil attenuation rates based on distance to waterways

      iii. Examine relationship between household size assumptions, # of systems, and loads.