Land Cover/Land Use Update Data

The Update Process developed by RS&GIS:

1. Verify original 1978 MIRIS data
2. Acquire and process recent imagery
3. Interpretation
4. Quality assurance / quality control
   - Interpretation re-checks
   - Field checks

The update process begins by first taking a step back to 1978 and verifying the original MIRIS land use/land cover data. The purpose of this step is to correct gross interpretation errors such as misclassified, omitted, or incorrectly drawn polygons. The original 1978 aerial photography is referenced during this process to ensure that the data interpretation is based upon the appropriate lu/lc time period.

The second step is imagery acquisition and processing. The year of the update is dependent upon the most recent aerial photography available. In most cases, the 1998/1999 National Aerial Photography Program (NAPP) imagery, flown by the U.S. Geological Survey for the entire state of Michigan, is the most current and readily available. In some cases a local government unit may fly their own imagery,
consequently producing more recent update data. After the imagery is acquired, the aerial photos are ortho-rectified. Ortho-rectification is the process of bringing images into the Geographic Information System (GIS) environment by removing distortion errors and placing them into a known coordinate space. Once the photos are ortho-rectified, they are mosaicked, or seamed together into one image, so that each survey township can be viewed in its entirety.

With the data preparation complete, the lu/lc update process can begin. The verified 1978 data is overlaid on the current township mosaic, becoming the foundation for the update. The 1978 polygons are interpreted for change based upon the land use or land cover being shown on the imagery beneath. With the exception of minor modifications in the classification system, the original MIRIS mapping standards are adhered to, thereby keeping the two data sets consistent.

The update generally spans a minimum of a twenty year period; therefore, there are typically numerous lu/lc changes in the landscape. These changes generally fall into two categories: boundary changes and classification changes. Boundary changes are those which involve a change of area, but not classification. For example, farmsteads becoming larger due to the addition of new barns or a reduction in forest size after trees are harvested. Conversely, classification changes represent a change in the lu/lc landscape. Classification changes can be split into two categories: succession and new land use/land cover. Succession is the process of natural change taking place such as, fallow cropland converting to grassland or neglected Christmas tree plantations becoming
overgrown and maturing into pine. New land use/land cover is conversion of one lu/lc type into a completely new lu/lc type, for instance, the construction of a golf course in a former cropland environment.

Land cover/land use based solely on air photo interpretation can be difficult to classify and somewhat subjective. For example, it is often difficult to distinguish between an active farmstead and a single family home that was previously a farmstead. Both structures may be surrounded by cropland and/or pasture and have multiple barns in the vicinity. In such cases, these “questionable” polygons are flagged for the ground-truthing/field checking process.
After the initial interpretation is complete, a rigorous quality assurance/quality control (QA/QC) process ensues to ensure that the final data meets national map accuracy standards. First, the data is re-checked by a different interpreter to verify the initial interpretation and counter-balance any subjectivity. Second, 5% of the township polygons are randomly selected and field checked. If the results from the 5% check do not meet national map accuracy standards, the data is reinterpreted and another 5% field check is completed. Once the data has been field checked and any misinterpretations have been corrected, it is organized and burned to CD for data release.

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