

PROPOSED MICHIGAN LAND COVER/USE CLASSIFICATION SYSTEM

1 URBAN & BUILT UP

11 Residential

- 111 Multi-Family: High Rise
 - 1111 High Density
 - 1112 Medium Density
 - 1113 Low Density

- 112 Multi-Family: Low Rise
 - 1121 High Density, apartment
 - 1122 Medium Density, apartment
 - 1123 Low Density, apartment
 - 1124 High Density, townhouse
 - 1125 Medium Density, townhouse
 - 1126 Low Density, townhouse

- 113 Single Family Duplex
 - 1131 High Density
 - 1132 Medium Density
 - 1133 Low Density
 - [1134] Non-Farm Residence * (see category 291 for farmsteads)
 - 1135 Mobile Home
 - 1136 Seasonal Dwelling
 - 1139 Other

- 115 Mobile Home Park
 - 1151 High Density
 - 1152 Medium Density
 - 1153 Low Density

- 116 Group and Transient Quarters
 - 1161 Rooming and boarding houses
 - 1162 Membership lodging
 - 1163 Residence halls and dormitories
 - 1164 Retirement homes and orphanages
 - 1165 Religious quarters
 - 1166 Residential hotels
 - 1167 Hotels, tourist courts, motels
 - 1168 Migrant quarters
 - 1169 Other

- 119 Other Residential

*Where numbers are bracketed, the class will ordinarily be mapped by the number to which cross-reference is made. The bracketed numbers are included primarily to facilitate aggregation on the national level.

12 Commercial, Services, Institutional

- 121 Primary/Central Business District
 - 1211 Commercial
 - 1212 Services
 - 1213 Health
 - 1214 Educational
 - 1215 Religious
 - 1216 Correctional
 - 1217 Military
 - 1218 Government administration and services
 - 1219 Other commercial, services, and institutions

- 122 Shopping Center
 - 1221 Commercial
 - 1222 Services
 - 1223 Health
 - 1224 Educational
 - 1225 Religious
 - 1226 Correctional
 - 1227 Military
 - 1228 Government administration and services
 - 1229 Other commercial, services, and institutions

- 123 Strip Development
 - 1231 Commercial
 - 1232 Services
 - 1233 Health
 - 1234 Educational
 - 1235 Religious
 - 1236 Correctional
 - 1237 Military
 - 1238 Government administration and services
 - 1239 Other commercial, services, and institutions

- 124 Secondary/Neighborhood Business District
 - 1241 Commercial
 - 1242 Services
 - 1243 Health
 - 1244 Educational
 - 1245 Religious
 - 1246 Correctional
 - 1247 Military
 - 1248 Government administration and services
 - 1249 Other commercial, services, and institutions

- 125 Other Commercial and Services
 - 1251 Grain, feed, and seed
 - 1252 Livestock sales
 - 1258 Other commercial
 - 1259 Other services

- 126 Other Institutional
 - 1263 Health
 - 1264 Education
 - 1265 Religious
 - 1266 Correctional
 - 1267 Military
 - 1268 Government administration and services
 - 1269 Other

- 127 Indoor Cultural, Public Assembly, and Recreation
 - 1271 Indoor cultural
 - 1272 Indoor public assembly
 - 1273 Indoor recreation

13 Industrial

- 131 Primary Metal Production (milling, smelting, forging)
 - 1311 Blast furnaces and steel mills
 - 1312 Steel wire products
 - 1313 Cold rolled sheet, strip and bars
 - 1314 Steel pipe and tube
 - 1315 Iron and steel foundries
 - 1316 Smelting and refining
 - 1317 Rolling, drawing and extruding
 - 1318 Nonferrous foundries
 - 1319 Other primary metal industries

- 132 Petrochemicals (storage, refining, etc.)
 - 1321 Industrial inorganic and organic chemicals
 - 1322 Plastics and manmade fibers
 - 1323 Biological, medicinal and pharmaceutical drugs
 - 1324 Soaps and detergents
 - 1325 Perfumes, cosmetics and toilet preparations
 - 1326 Paints, varnish, enamels, agricultural chemicals, explosives
 - 1327 Petroleum refining and related industries
 - 1328 Tire and rubber manufacturing
 - 1329 Other petrochemical industries

- 133 Primary Wood Processing (lumber, pulp, paper)
 - 1331 Logging camps and logging contractors
 - 1332 Sawmills and planing mills
 - 1333 Millwork, plywood and related products
 - 1334 Wooden container manufacturing
 - 1335 Pulp Mill
 - 1336 Paperboard mill
 - 1337 Paperboard containers and boxes
 - 1338 Building board and building paper
 - 1339 Other primary wood processing

- 134 Stone, Clay, Glass (cement, brick, etc.)
 - 1341 Flat glass manufacturing
 - 1342 Glass and glassware
 - 1343 Cement, hydraulic
 - 1344 Structural and clay products, brick
 - 1345 Pottery and related products
 - 1346 Concrete, gypsum and plastic products
 - 1347 Cut stone and stone products
 - 1348 Abrasive, asbestos and miscellaneous nonmetallic mineral products
 - 1349 Other stone, clay, glass products

- 135 Metal Fabrication (secondary manufacturing)
 - 1351 Ordnance and accessories
 - 1352 Machinery (except electrical)
 - 1353 Electrical Machinery
 - 1354 Motor vehicle equipment
 - 1355 Aircraft and parts
 - 1356 Ship and boat building
 - 1357 Railroad equipment
 - 1358 Other transportation equipment
 - 1359 Other metal fabrication

- 136 Non-metal Fabrication
 - 1361 Food and kindred products
 - 1362 Textile mill products
 - 1363 Apparel, fabrics, leather
 - 1364 Furniture and fixtures
 - 1365 newspaper, books, commercial publishing and printing
 - 1366 Bookbinding and printing trade services
 - 1367 Engineering and scientific instruments
 - 1368 Optical, surgical, and dental instruments
 - 1369 Other non-metal manufacturing

- 139 Other (miscellaneous)

14 Transportation, Communication, Utilities

- 141 Air Transportation
 - 1411 Commercial aviation
 - 1412 General aviation
 - 1413 Military
 - 1419 Other
 - 1421 Active yard
 - 1422 Station or terminal
 - 1423 Abandoned right-of-way
 - 1424 Active track

- 142 Rail Transportation
 - 1421 Active Yard
 - 1422 Station or terminal
 - 1423 Abandoned right-of-way
 - 1424 Active Track
 - 1429 Other

- 143 Water Transportation
 - 1431 Port facilities
 - 1432 Lock and dam
 - 1439 Other

- 144 Road Transportation
 - 1441 Limited and controlled access expressway
 - 1442 5 or more lanes
 - 1443 4 lanes
 - 1444 3 lanes
 - 1445 2 lanes
 - 1446 Truck terminal
 - 1447 Bus terminal
 - 1449 Other

- 145 Communications (areas of towers, etc)
 - 1451 Telephone
 - 1452 Telegraph
 - 1453 Television
 - 1454 Radio
 - 1459 Other

- 146 Utilities
 - 1461 Electric production and transmission
 - 1462 Gas storage and transmission
 - 1463 Petroleum storage and transmission
 - 1464 Solid waste disposal and transfer
 - 1465 Sewage treatment and transmission
 - 1466 Water treatment and transmission
 - 1469 Other

[15] Map Industrial Parks under appropriate category in Commercial, Services and Institutional (12) or Industrial (13)

16 Mixed

17 Extractive

- 171 Open Pit
 - 1711 Sand and gravel
 - 1712 Rock quarry
 - 1713 Coal (strip)
 - 1714 Iron
 - 1719 Other

- 172 Shaft
 - 1721 Salt
 - 1722 Iron
 - 1723 Gypsum
 - 1724 Copper and associated metals
 - 1729 Other

- 173 Wells
 - 1731 Oil
 - 1732 Gas
 - 1733 Salt
 - 1739 Other

- 179 Other Extractive

19 Open and Other

- 191 Outdoor Cultural
 - 1911 Botanical gardens and arboretums
 - 1912 Zoos
 - 1913 Other

- 192 Outdoor Public Assembly
 - 1921 Amphitheaters
 - 1922 Drive-in movies
 - 1923 Stadiums
 - 1924 Racetracks
 - 1925 Fairgrounds
 - 1926 Amusement parks
 - 1929 Other
- 193 Outdoor Recreation
 - 1931 Landscaped and aesthetic areas
 - 1932 Play, games, and athletics
 - 1933 Sports areas
 - 1934 Other land-activities
 - 1935 Water-dependent recreation
- 194 Cemeteries

2 AGRICULTURAL

21 Cropland, Rotation and Permanent Pature

- 211 Cultivated Cropland
 - 2111 Row Crops
 - 2112 Small Grains
 - 2119 Other
- 212 Hay, Rotation and Permanent Pasture
 - 2121 Hay
 - 2122 Rotation Pasture
 - 2123 Permanent pasture
 - 2129 Other

22 Orchards, Bush-Fruits, Vineyards and Ornamental Horticulture

- 221 Tree Fruits
 - 2211 Apples
 - 2212 Cherries
 - 2213 Peaches
 - 2214 Pears
 - 2215 Plums and prunes
 - 2219 Other
- 222 Bush-Fruits and Vines
 - 2221 Strawberries
 - 2222 Raspberries
 - 2223 Blueberries
 - 2224 Grapes
 - 2229 Other
- 223 Ornamental Horticulture
 - 2231 Sod
 - 2232 Floriculture
 - 2233 Nurseries
 - 2239 Other

23 Confined Feeding Operations

- 231 Livestock
 - 2311 Beef
 - 2312 Dairy
 - 2313 Swine
 - 2319 Other
- 232 Poultry
 - 2321 Chickens
 - 2322 Turkeys
 - 2329 Other
- 239 Other

(28) Inactive Land (these plant communities will be mapped under herbaceous rangelands (31))

29 Other Agricultural Land

- 291 Farmsteads
 - 2911 Farmstead with active residence
 - 2912 Farmstead without active residence
- 292 Greenhouses and Mushroom Houses
 - 2921 Vegetables
 - 2922 Flowers
 - 2923 Mushrooms
 - 2929 Other
- 293 Racetracks
- 299 Other

3 RANGELAND

31 Herbaceous Rangeland

- 311 Upland Herbaceous Rangeland
 - 3111 Bluegrasses predominate
 - 3112 Quackgrass predominates
 - 3113 Bluestems, upland sedges, dewberry mosses, and lichens
 - 3114 Beach grass predominates
 - 3119 Other upland herbaceous openings
- 312 Lowland Herbaceous Rangeland
 - 3121 Reed canary grass predominates
 - 3122 Clover predominates
 - 3123 Red top predominates
 - 3124 Sedges predominates
 - 3125 Blue-joint predominates
 - 3129 Other lowland herbaceous openings

32 Shrub Rangeland

- 321 Upland Shrub Rangeland
 - 3211 Briars predominate
 - 3212 Dogwood predominates
 - 3213 Hazel predominates
 - 3214 Juneberry predominates
 - 3215 Sumac predominates
 - 3216 Thornapple predominates
 - 3217 Viburnum predominates
 - 3218 Sweet fern
 - 3219 Other upland shrublands

- 322 Lowland Shrub Rangelands (for level III use wetlands 612)

4 FOREST LAND

41 Broadleaved Forest (generally deciduous)

- 411 Upland Hardwoods
 - 4111 Sugar maple predominates
 - 4112 Red maple predominates
 - 4113 Elm predominates
 - 4114 Beech predominates
 - 4115 Yellow birch predominates
 - 4116 Cherry predominates
 - 4117 Red oak predominates
 - 4118 Other upland hardwoods

- 412 Aspen, White Birch, and Associated Species
 - 4121 Trembling aspen predominates
 - 4122 Bigtooth aspen predominates
 - 4123 Balm-of-gilead predominates
 - 4124 White birch predominates

- 413 Lowland Hardwoods
 - 4131 Ash predominates
 - 4132 Elm predominates
 - 4133 Red maple predominates
 - 4139 Other lowland hardwoods

42 Coniferous Forest

- 421 Upland Conifers
 - 4211 White pine predominates
 - 4212 Red pine predominates
 - 4213 Jack pine predominates
 - 4214 Scotch pine predominates
 - 4215 White spruce predominates
 - 4219 Other

- 422 Lowland Conifers
 - 4221 Cedar predominates
 - 4222 Black spruce predominates
 - 4223 Tamarack predominates

- 4224 Balsam fir-white spruce association predominates
- 4225 Balsam fir predominates
- 4229 Other

43 Mixed Conifer-Broadleaved Forest

- 431 Upland Hardwoods and Pine Associations
 - 4311 Sugar maple predominates
 - 4312 Red maple predominates
 - 4313 Elm predominates
 - 4314 Beech predominates
 - 4315 Yellow birch predominates
 - 4316 Cherry predominates
 - 4317 Red Oak predominates
 - 4318 White oak predominates
 - 4319 Undifferentiated broadleaved or deciduous forest

- 432 Aspen, Birch with Conifer Associations
 - 4321 Trembling aspen predominates
 - 4322 Bigtooth aspen predominates
 - 4323 Balm-of-gilead predominates
 - 4324 White birch predominates

- 433 Lowland Hardwoods with Cedar, Spruce, Tamarack etc., Associations
 - 4331 Ash predominates
 - 4332 Elm predominates
 - 4333 Red maple predominates
 - 4339 Other lowland hardwoods

- 434 Upland Hardwoods with Cedar, Spruce, Tamarack, etc., Associations
 - 4341 White pine predominates
 - 4342 Red pine predominates
 - 4343 Jack pine predominates
 - 4349 Other

- 435 Lowland Conifers with Maple, Elm, Ash, Aspen, Birch, etc., Associations
 - 4351 Cedar predominates
 - 4352 Black spruce predominates
 - 4353 Tamarack predominates
 - 4354 Spruce - balsam - birch association
 - 4355 Balsam fir predominates
 - 4356 White spruce predominated
 - 4359 Other

5 WATER

51 Streams and Waterways

- 511 Small Streams and Rivers
- 512 Medium Streams and Rivers
- 513 Large Streams and Rivers

52 Lakes

- 521 Ponds
- 522 Small Lake
- 523 Small Lake

- 524 Medium Lake
- 525 Medium Lake
- 526 Large Lake
- 527 Large Lake
- 528 Very Large Lake
- 529 Very Large Lake

53 Reservoirs

- 531 Ponds
- 532 Small Reservoirs
- 533 Small Reservoirs
- 534 Medium Reservoirs
- 535 Medium Reservoirs
- 536 Large Reservoirs
- 537 Large Reservoirs
- 538 Very Large Reservoirs
- 539 Very Large Reservoirs

54 Great Lakes

6 WETLANDS

61 Forested (wooded) Wetlands

- 611 Wooded Swamps (mapped under forestry categories 412, 422, 433, 435)
- 612 Shrub Swamps
 - 6121 Alder predominates
 - 6122 Dogwood, viburnum and willow associations
 - 6123 Sweetgale-bogbirch associations
 - 6124 Leatherleaf predominates
 - 6125 Willow-buttonbush associations (> 50% cover: > 6 in. water)
 - 6126 Willow-buttonbush associations (< 50% cover: > 6 in. water)
 - 6127 Water willow predominates
 - 6128 Standing dead trees, shrubs, and stumps
 - 6129 Other

62 Non-Forested (non-wooded) Wetlands

- [621] Marshland Meadow (Grazed meadows will be mapped under permanent pasture 2123. Ungrazed meadows will be mapped lowland herbaceous rangeland 312.)
- 622 Mudflats
- 623 Shallow Marshes
 - 6231 Cattail predominates
 - 6232 Bur reed, bulrushes, sedges, blue-joint
 - 6233 Smartweed, mud plantain, pickerel weed, arrow arum, and arrowhead
 - 6239 Other
- 624 Deep Marshes
 - 6241 Cattail predominates
 - 6242 Bur reed, rushes and sedges
 - 6243 Smartweed, mud plantain, pickerel weed, arrow arum, and arrowhead
 - 6244 Water lily, watershield, and lotus

6249 Other

[625] Open Water (refer to Water 5)

7 BARREN

71 Salt Flats (not applicable to Michigan)

72 Beaches and Riverbanks

721 Sand beach
722 Gravel beach
723 Riverbanks
729 Other

73 Sand Other than Beaches

731 Sand dunes
739 Other

74 Bare Exposed Rock

741 Rock knobs
742 Escarpments
743 Shoreline rock outcrop
744 Riverbank
749 Other

75 Transitional Areas

79 Other

8 TUNDRA (not applicable to Michigan)

9 PERMANENT SNOW AND ICE (not applicable to Michigan)

Definitions For Urban And Built Up*

1 Urban & Built Up

Urban and built-up land comprises areas of intensive use with much of the land covered by structures. Included in this category are cities, town, villages, strip developments along highways, transportation, power, and communications facilities, and such isolated units as mills, mines, and quarries, shopping centers, and institutions.

As development progresses, small blocks of land of less intensive and non-conforming use may be isolated in the midst of built-up areas and will generally be included in the (1) category. Agricultural, forest, or water areas on the fringe of urban and built-up areas will not be included except where they are a part of low-density urban development. The urban and built-up land category takes precedence over others when the criteria for more than one category are met. Thus, residential areas that have sufficient tree cover to meet forest land criteria will be placed in the residential category.

11 Residential

Residential land uses range from high density, represented by the multiple-unit structures of urban cores, to low density, where houses are on lots of more than an acre, on the periphery of urban expansion. Linear residential developments along transportation routes extending outward from urban areas should be included as residential appendages to urban centers, but care must be taken to distinguish them from commercial strips in the same locality. Residential development along shorelines is also linear and sometimes extends back only one residential parcel from the shoreline to the first road.

Areas of sparse residential land use will be included under another category. In some places, the boundary will be clear where new housing developments abut against intensively used agricultural areas, but the boundary may be vague and difficult to discern when residential development is sporadic, or occurs in small isolated units over an extended period of time in areas of mixed or less intensive uses. A careful evaluation of density and the overall relation of the area to the total urban complex must be made. Residential sections may also be included in other use categories where they are integral parts of the other use. Housing on military bases, at colleges and universities, living quarters for laborers near a work base or lodging for employees of agricultural field operations or resorts are often difficult to identify and may be placed within the institutional, industrial, agricultural, or commercial categories.

Multi-family, medium to high-rise

This category includes all multi-family and apartment structures of 4 or more stories. Included are apartments, condominiums, and the like, whether in complexes or as single structures. It is inclusive of lawns, parking areas, and small-area recreational facilities. These areas should also be included under categories 112, 113, 114 and 115.

* Levels I and II definitions were taken from Anderson, James R., Ernest E. Hardy, and John T. Roach, A Land-Use Classification System for Use with remote-Sensor Data. U.S. Geological Survey, circular 671, pp. 7-15. Anderson, Hardy, and Roach's definitions were then modified to meet Michigan needs. Level III and IV definitions are either from existing functional definitions or were developed by Committee. Standard Land Use Coding Manual (SLUC) categories and, when appropriate, Standard Industrial Code (SIC) categories have been included with definitions for reference by the reader for the Urban category.

111 High density

A development containing an average gross density of 35 or more dwelling units per acre.

1112 Medium density

112 Multi-family, low-rise

This is similar to 111 except that it is for structures of 3 or less stories. Duplexes are not included, but townhouses are.

1121 High density, apartment

An apartment development containing an average gross density of 18 or more dwelling units per acre.

1122 Medium density, apartment

An apartment development containing an average gross density of more than 12 dwelling units per acre but less than 18 dwelling units per acre.

1123 Low density, apartment

An apartment development containing an average gross density of 12 or less dwelling units per acre.

1124 High density, townhouse

A townhouse development containing an average gross density of 12 or more dwelling units per acre.

1125 Medium density, townhouse

A townhouse development containing an average gross density of more than 8 dwelling units per acre, but less than 12 dwelling units per acre.

1126 Low density, townhouse

A townhouse development containing an average gross density of 8 or less dwelling units per acre.

113 Single-family/duplex

This category includes areas having detached single and two-family structures used as a permanent dwelling more than two rows wide except for those strip developments connected to larger residential areas. Associated structures may include tool sheds, garages, garden sheds, etc.

1131 High density

A development or grouping containing an average gross density of 6 or more dwelling units per acre.

1132 Medium density

A development or grouping containing an average gross density of more than 3 dwelling units per acre, but less than 6 dwelling units per acre.

1133 Low density

A development or grouping containing an average gross density of more than 3 dwelling units per acre, but less than 6 dwelling units per acre.

[1134] Non-farm residence (see category 291 for farmsteads)*

A dwelling located in a rural or urban-rural fringe area and Occupied by a non-farming family.

1134 Mobile home

A single or several mobile homes not located in a mobile home park.

1135 Seasonal dwelling

A dwelling occupied only during a specific season of the year.

1139 Other

Any single family or duplex structure not covered above.

111 Strip residential

Predominantly residential development located in a linear pattern along a shoreline or road containing a minimum of 5 or more structures and not more than two rows wide. Land use directly behind the strip itself should be unrelated to residential land use.

1141 High density, shoreline

A continuous strip residential grouping wherein are located 8 or more structures per 1000 linear feet.

1142 Medium density, shoreline

A continuous strip residential grouping wherein are located more than 2 structures per 1000 linear feet, but less than 8 structures per 1000 linear feet.

1143 Low density, shoreline

A continuous strip residential grouping wherein are located 2 or less structures per 1000 linear feet.

1144 High density, roadside

A continuous strip residential grouping wherein are located 8 or more structures per 1000 linear feet.

1145 Medium density, roadside

A continuous strip residential grouping wherein are located more than 2 structures per 1000 linear feet, but less than 8 structures per 1000 linear feet.

1146 Low density, roadside

A continuous strip residential grouping wherein are located 2 or less structures per 1000 linear feet.

112 Mobile home parks (SLUC 140)*

An area of land used for a grouping of mobile homes shall be classed into this category. Usually these areas will include mobile homes in numbers over three. Related services and recreational spaces are to be included. Single mobile homes will be classed as part of 113.

1151 High density

A development or grouping containing an average gross density of 12 or more dwelling units per acre.

1152 Medium density

A development or grouping containing an average gross density of more than 6 dwelling units per acre, but less than 12 dwelling units per acre.

1153 Low density

A development or grouping containing an average gross density of 6 or less dwelling units per acre.

113 Group and transient quarters

A structure which is used for housing, whether permanent or temporary, of a number of unrelated individuals. This differs from apartments in that residents tend to interact with each other for meals, care, etc. all of these quarters could also logically go under other uses (i.e., hotels – commercial, dormitory – educational), but they are classed here because all have predominantly residential characteristics in common.

1161 Rooming and boarding houses

Generally operated on a commercial basis, renting rooms to five or more persons not related to the proprietor, with or without board. (SLUC 121)

1162 Membership lodging

Includes organizational private hotels, organizational lodging houses and membership residences dormitories. Does not refer to religious organizational facilities. (SLUC 122)

1163 Residence halls and dormitories

Buildings containing nurses and students residential facilities, including adjacent lawn and parking. (SLUC 123)

* Reference is to the Standard Land Use Classification Manual Code (SLUC) or Standard Industrial Code (SIC) category. Where a cross-reference exists, it is indicated.

- 1164 Retirement homes and orphanages
Includes residential facilities for the aged, orphaned, or indigent. (SLUC 124)
- 1165 Religious quarters
Includes convents, monasteries, abbeys, rectories, parish houses and parsonages. (SLUC 125)
- 1166 Residential hotels
Non-organizational residential or apartment hotels operated as a facility wherein guests reside on a semi-permanent bases. (SLUC 130)
- 1167 Hotels, tourist courts, motels
Transient lodging facilities operated on a commercial basis, by day or week. (SLUC 151)
- 1168 Migrant quarters
Season dwellings used for housing seasonal workers.
- 1169 Other
Group and transient uses not covered above. (SLUC 190)
- 119 Other residential
All other obviously residential land uses not covered above.

12 Commercial, Services, & Institutional

Commercial areas are those used predominantly for the sale of products and services. They are often abutted by residential, agricultural, or other contrasting uses which help differentiate them. The principal components of the commercial-use category are urban central business districts; shopping centers, usually in suburban and outlying areas; commercial strip developments along major highways and access routes to cities; and resorts. The main buildings, secondary structures, and areas supporting the basic use are all included – office buildings, warehouses, driveways, sheds, parking lots, landscaped areas, and waste-disposal areas.

Commercial areas may include some non-commercial uses too small to be separated out. Central business districts often include some institutions, such as churches and schools, and commercial strip developments may include some residential units. These are not separated out unless they exceed one-third the total commercial area, or are large enough to stand alone. Recreational areas are not segregated as such at Level II but may cause some problems in identification. Recreational facilities that form an integral part of an institution should be included in the institutional category. A self-contained sports area, on the other hand, such as a stadium for professional events, is commercial.

Education, religious, health, correctional, and military facilities are also found in this category. All buildings, grounds, and parking lots that compose the facility are included within the institutional unit, but areas not specifically related to the purpose of the institution should be placed in the appropriate category. Auxiliary land use, particularly residential, commercial and services, and other supporting land uses on a military base would be included in the

institutional subcategory, but agricultural areas not specifically associated with correctional, educational, or religious institutions are placed in the appropriate agricultural category. Small institutional units, as, for example, many churches and some secondary and elementary schools, will not meet the minimum area requirements and will be included within another category, usually residential or commercial.

121 Primary/central business district (CBD)

The main commercial service center in a city. Each city has only one CBD, and it can be identified as being the most densely constructed urban portion of a city. It can be further identified as being normally located at the confluence of the major transportation network.

1121 Commercial

Commercial retail establishments. (SLUC 5) 1/p. 57

1212 Services

Includes business, financial, personal, professional and repair service establishment. (SLUC 6) 1/p. 57

1213 Health

Includes hospitals and medically related clinics. (SLUC 651) 2/p.57

1214 Education

Includes all types of public and private institutions where education is the primary use. (SLUC 68) 3/p.57

1215 Religious

Includes all forms of churches, synagogues and retreats. (SLUC 691) 4/p.57

1216 Correctional

Includes all types of detention and correction facilities. (SLUC 674) 5/p.58

1217 Military

Self-explanatory. (SLUC 675) 6/p.58

1218 Government administration and services

Includes city halls, police stations, post offices, and the like. 7/p.58

1219 Other commercial, services, and institutional

Self-explanatory

122 Shopping Center

Usually a single structure, or a group of structures, containing a large amount of floor space and a variety of commercial and service establishments. They are identified by the large common parking lot, usually larger in area than the structures group itself. These are often referred to as neighborhood, community or regional shopping centers.

1220 Thru 1229 Use level IV categories 1221 thru 1229 as listed under 121 (e.g.
1221 Commercial, 1222 services, etc.).

123 Strip development

A linearly patterned commercial service area only one building deep, occurring with a minimum of five establishments. This land use should be backed by a non-related land use.

1231 thru 1239 See 121 above.

124 Secondary/neighborhood business district

These areas consist of relatively compact groups of stores, institutional structures, and/or services outside of the CBD. These uses should be located on major streets and surrounded by non-commercial uses. Parking is either in several scattered small store lots or municipal lots.

1241 thru 1249 See 121 above.

125 Other commercial and services

These would generally be single or joint establishments which do not fit the above definitions, but can be recognized and mapped at level III (e.g., large single stores such as K-Mart).

1251 Grain, feed, and seed
1252 Livestock sales
1258 Other commercial
1259 Other services

126 Other institutional

These are large single institutional land uses, normally in a non-urban setting, such as a prison or military base.

1263 thru 1269 See 121 above.

127 Indoor cultural, public assembly, and recreation

This includes indoor facilities for cultural activity, recreation, and public assembly, such as planetariums, auditoriums, and tennis courts. Outdoor cultural, public assembly, and recreational lands (and their accompanying incidental buildings) are under Category 19, "open and other".

1271 Indoor cultural

Includes facilities such as libraries, museums, art galleries, planetariums, aquariums, and historic buildings. 8/

1272 Indoor public assembly

This category includes such facilities as movie theatres, other theatres, auditoriums, exhibition halls, arenas, and field houses, multiple purpose civic centers. 9/p.58

1273 Indoor recreation

Includes such facilities as meeting, social, performance, class, craft rooms, courts (tennis, etc.), ice skating rinks, bowling alleys, dance halls, gymnasiums, swimming pools, multiple purpose recreation centers. 10/p.59

13 Industrial

Industrial areas include a wide array of uses from light manufacturing and industrial parks to heavy manufacturing plants. Identification of light industries – those focused on design, assembly, finishing, and packaging of products – can often be based on the type of building, parking, and shipping arrangements. Light industrial areas may be, but are not necessarily, directly in contact with urban areas; many are now found at airports or in relatively open country. Heavy industries use raw materials such as iron ore, lumber, or coal. Included are steel mills, pulp or lumber mills, electric power generating stations, oil refineries and tank farms, chemical plants and brick-making plants. Stockpiles of raw materials, large power sources, and waste product disposal areas are usually visible, along with transportation facilities capable of handling heavy materials.

131 Primary metal production (SLUC 33)
(milling, smelting, forging)

This category covers the production of metals from natural mineral ores. The production excludes mining and transportation, but does include storage areas, furnaces, reduces, crushers, etc. Also included are power plants used either exclusively or primarily for metal production. These areas are usually quite large with rail or boat facilities and generally produce large amounts of heat.

- 1311 Blast furnaces and steel mills (SLUC 3311) (SIC 3312)
- 1312 Steel wire products (SLUC 3313) (SIC 3315)
- 1313 Cold rolled sheet, strip and bars (SLUC 3314) (SIC 3316)
- 1314 Steel pipe and tube (SLUC 3315) (SIC 3317)
- 1315 Iron and steel foundries (SLUC 332) (SIC 332)
- 1316 Smelting and refining (SLUC 333, 334) (SIC 333, 334)
- 1317 Rolling, drawing and extruding (SLUC 335) (SIC 335)
- 1318 Nonferrous foundries (SLUC 336) (SIC 336)
- 1319 Other primary metal industries (SLUC 339) (SIC 339)

132 Petrochemicals (SLUC 28, 29, 31)
(storage, refining, etc.)

This category includes refineries, plastic and rubber production, asphalt plants, and similar establishments. They are usually identified by the large number of tanks, pipelines, and associated rail or, more often, boat transportation. Small asphalt plants may be associated with sand and gravel operations.

- 1321 Industrial inorganic and organic chemicals (SLUC 281)
(SIC 281)
- 1322 Plastics and manmade fibers (SLUC 282) (SIC 282)
- 1323 Biological, medicinal and pharmaceutical drugs (SLUC 283) (SIC 283)
- 1324 Soap and detergents (SLUC 2841, 2842, 2843) (SIC 2841, 2842, 2843)
- 1325 Perfumes, cosmetics and toilet preparations (SLUC 2844) (SIC 2844)

- 1326 Paints, varnish, enamels, agricultural chemicals, explosives, and Allied products (SLUC 285, 286, 287, 289) (SIC 285, 286,287,289)
- 1327 Petroleum refining and related industries (SLUC 291, 292, 299) (SIC 291, 292, 299)
- 1328 Tire and rubber manufacturing (SLUC 311, 312, 313, 314, 319) (SIC 311, 312, 313, 314, 319)
- 1329 Other petrochemical industries (SIC 306, 307)

**133 Primary wood processing (SLUC 24, 26)
(lumber, pulp, paper)**

Here, only processing which starts with wood (logs) are considered, not the final product. An establishment which, in one operation, starts with logs and ends with paper is included, but one that starts with pulp will not.

- 1331 Logging camps and logging contractors (SLUC 24) (SIC 24)
- 1332 Sawmills and planing mills (SLUC 242) (SIC 242)
- 1333 Millwork, plywood and related products (SLUC 243) (SIC 43)
- 1334 Wooden container manufacturing (SLUC 244) (SIC 244)
- 1335 Pulp mill (SLUC 261) (SIC 261)
- 1336 Paperboard mill (SLUC 263, 264) (SIC 263, 264)
- 1337 Paperboard containers and boxes (SLUC 265) (SIC 265)
- 1338 Building board and building paper (SLUC 266) (SIC 266)
- 1339 Other primary wood processing

**134 Stone, clay, glass (SLUC 32)
(cement, brick, etc.)**

This category is concerned with the manufacture of cement (dry, not ready mix), bricks, clay tiles, glass, and other types of products. These establishments are usually located near their source of raw materials, such as an open pit extractive area, and near large uses of water and stockpiles of sand or stone. A sand and gravel operation is not included with this land use.

- 1341 Flat glass manufacturing (SLUC 321)
- 1342 Glass and glassware (SLUC 322)
- 1343 Cement (hydraulic) (SLUC 323) (SIC 324)
- 1344 Structural clay products, brick (SLUC 342) (SIC 325)
- 1345 Pottery and related products (SLUC 325) (SIC 326)
- 1346 Concrete, gypsum and plastic products (SLUC 326) (SIC 327)
- 1347 Cut stone and stone products (SLUC 327) (SIC 328)
- 1348 Abrasive, asbestos and miscellaneous nonmetallic mineral products (SLUC 328) (SIC 329)
- 1349 Other stone, clay, glass products

**135 Metal fabrication (SLUC 34)
(secondary manufacturing)**

These firms use primary metals and reshape them for production of a final marketable item. No forging occurs, but rolling, casting, and machining will occur. An excellent example of this industry is automobile manufacturing, where frames, bodies, etc., are made from steel. This use is characterized by single story flat roofed buildings, with no major heat production occurring – except for energy production.

- 1351 Ordnance and accessories (SLUC 341) (SIC 191, 192, 193, 194, 195, 196, 199)

- 1352 Machinery (except electrical) (SLUC 342) (SIC 351, 352, 353, 354, 355, 356, 357, 358, 359)
- 1353 Electrical machinery (SLUC 343) (SIC 361, 362, 363, 364, 365, 366, 367, 369)
- 1354 Motor vehicle equipment (SLUC 3441) (SIC 371)
- 1355 Aircraft and parts (SLUC 3441) (SIC 371)
- 1356 Ship and boat building (SLUC 3443) (SIC 373)
- 1357 Railroad equipment (SLUC 3444) (SIC 374)
- 1358 Other transportation equipment (SLUC 3445, 3449) (SIC 375, 379)
- 1359 Other metal fabrication

136 Non-metal fabrication (SLUC 21, 22, 23, 25, 27, 35)

Plants which created a product using secondary processed materials (non-metal) such as furniture production which uses lumber, not logs, or printing which uses paper, not logs, for pulp.

- 1361 Food and kindred products (SLUC 21) (SIC 21)
- 1362 Textile mill products, leather (SLUC 23) (SIC 23)
- 1363 Apparel, fabrics, leather (SLUC 23) (SIC 23)
- 1364 Furniture and fixtures (SLUC 25) (SIC 25)
- 1365 Newspaper, books, commercial publishing and printing (SLUC 271) (SIC 271)
- 1366 Bookbinding and printing trade services (SLUC 277) (SIC 278)
- 1367 Engineering and scientific instruments (SLUC 351, 352) (SIC 381)
- 1368 Optical, surgical, and dental instruments (SLUC 353, 354, 355, 356, 357) (SIC 383, 384, 385, 386, 387)
- 1369 Other non-metal manufacturing

139 Other

Industrial uses not covered in the above categories.

14 Transportation, Communication & Utilities

Major transportation routes and areas greatly influence other land uses, and many land-use boundaries are outlined by them. The types and extent of transportation facilities in a locality determine the degree of access and affect both the present and potential use of the area.

Highways and railways are characterized by areas of activity connected in linear patterns. The highways include areas used for interchanges, limited access right-of-way, and service and terminal facilities. Rail facilities include station, parking lots, roundhouses, repair and switching yards, and related areas, but overland track is not included unless six or more tracks are joined to give sufficient width for delineation at the scale of 1:250,000. Spur connections from an active line are included in the appropriate industrial or extractive category.

Airports, seaports, and major lakeports are isolated areas of high utilization, usually with no well-defined intervening connections, although some water ports are connected by canals. Airport facilities include the runways, intervening land, terminals, service buildings, navigation aids, fuel storage, parking lots, and a limited buffer zone. Small airports, such as those on rotatable farmland, heliports, and land associated with seaplane bases are not included. Port areas include the docks, shipyards, drydocks, locks, and watercourse-control structures. For recreational facilities see classification number 1935, page 39.

Communications and utilities areas involved in transport of water, gas, oil, electricity, and areas used for airwave communications are also included in this category. Pumping stations, electric substations, and areas used for radio, radar, or television antennas are the major types. Small facilities, or those associated with an industrial, commercial, or extractive land use, are included within the larger category with which they are associated. Long-distance gas, oil, electric, telephone, water, or other transmission facilities rarely constitute the dominant use of land over which they pass. If these uses are dominant and meet the minimum width criteria, they may be identified as transportation uses.

141 Air transportation (SLUC 431, 439)

The airport category includes all facilities directly connected with air transport, whether it be commercial, municipal, or private. These high utilization areas include the runways, intervening land, terminals, service buildings, plane hangars, navigation aids, fuel storage areas, parking lots and a fuel storage area, parking lots and a limited buffer zone. Most of the airports will be surrounded by a high perimeter fence, visible on high altitude imagery, which will clearly define the areas to be included.

- 1411 Commercial aviation
- 1412 General aviation
- 1413 Military
- 1414 Other

142 Rail transportation (SLUC 411, 412)

This category includes all facilities which would be connected with rail transportation; overland track (which has a width which can be delineated at a scale of 1:60, 000), roundhouses, repair and switching yards, and related areas. Also included in this category are the accompanying and necessary rights-of-way.

- 1421 Active yard
- 1422 Station or terminal
- 1423 Abandoned right-of-way
- 1424 Active track
- 1429 Other

143 Water transportation (SLUC 441, 449)

This category includes those areas related to water transportation, excluding the water. The major components of this category are the port areas, docks, shipyards, dry docks, and locks.

- 1431 Port facilities
- 1432 Lock and dam
- 1433 Other

144 Road transportation (SLUC 451, 452)

This category includes those areas related to water transportation, excluding the water. The major components of this category are the port areas, docks, shipyards, dry docks, and locks. For recreational facilities see classification number 1935, page 39.

- 1441 Limited and controlled access expressway
- 1442 5 or more lanes
- 1443 4 lanes
- 1444 3 lanes

- 1445 2 lanes
- 1446 Truck terminal
- 1447 Bus terminal
- 1448 Other

145 Communications

Those areas associated with radio, radar, television, telegraph, telephone, etc., are included into this category. Small facilities or those associated with an industrial, commercial, or extractive land use are included within the category which they are associated with. Long distance transmission facilities rarely constitute the dominant use of land over which they pass. If these uses are dominant, and can be recognized from the imagery alone, they may be identified as a communication land use.

- 1451 Telephone (SLUC 471)
- 1452 Telegraph (SLUC 472)
- 1453 Television (SLUC 474)
- 1454 Radio (SLUC 473)
- 1459 Other (SLUC 479)

146 Utilities

Those areas associated with the transport of gas, oil, water or electricity are included into this category. Pumping stations, electric substations, etc., will constitute the major components of this category. Small facilities and those associated with an industrial, commercial, or extractive land use are included into the appropriate category. Long distance pipelines, etc., rarely constitute the dominant use of land over or under which they pass. If these uses are dominant and can be recognized for the imagery alone, they may be identified as a utility use.

- 1461 Electrical production and transmission (SLUC 481)
- 1462 Gas storage and transmission (SLUC 482)
- 1463 Petroleum storage and transmission (SLUC 4911, 4912)
- 1464 Solid waste disposal and transfer (SLUC 485)
- 1465 Sewage treatment and transmission (SLUC 484)
- 1466 Water treatment and transmission (SLUC 483)
- 1469 Other

[15] Map Industrial Parks under appropriate category in Commercial Services & Institutional (12) or Industrial (13)

16 Mixed

This category is used for a mixture of second-level urban uses in larger cities (generally more than 50,000 inhabitants) where no one use predominates. In any category, as much as one-third intermixture of another use is allowed without changing the basic classification, but where the inter-mixture is greater, where several uses, though each is less than one-third, are included, or where individual second-level units may be too small to be separated, although the aggregate of such uses may be large, the mixed category is used.

This category typically includes developments along transportation routes and the smaller cities, towns, and built-up areas where separate land uses may not be distinguishable. Residential, commercial, industrial, institutional, and occasionally other land uses may be included. Farmsteads intermixed with strip or cluster settlements will be included within the built-up land, but other agricultural land uses should be excluded.

17 Extractive

Extractive land encompasses both surface and subsurface mining operations, such as sand and gravel pits, stone quarries, oil and gas wells, and metallic and nonmetallic mines. In size, these activities range from the unmistakable giant strip or pit mines covering vast areas to the often unidentifiable gas wells less than a foot square. Surface structures and equipment may range from a minimum of a loading device and trucks to extended areas with access roads, processing facilities, stockpiles, equipment sheds, and numerous vehicles. Spoil material and slag heaps are usually found within a short trucking distance of the major mine areas and may be the key indicator of underground mining operations. Uniform identification of all these diverse extractive uses is extremely difficult from remote sensor data alone.

Industrial complexes where the extracted material is refined, packaged, or further processed are included in the industrial category even if the plant is adjacent to the mine. Areas of future reserves are included in the appropriate present-use category, agricultural or forest land, regardless of the expected future use. Unused pits or quarries that have been flooded are placed in the water category if the water body is larger than 40 acres. Areas of tailings, abandoned pits and quarries, and strip-mined areas may remain barren for decades unless steps are taken to hasten the establishment of vegetation. Until vegetative cover is established, such parcels remain in the extractive category.

171 Open pit

Extractive activities which are primarily carried out upon the surface of the earth through the creation of a large pit.

- 1711 Sand and gravel
- 1712 Rock quarry
- 1713 Coal (strip)
- 1714 Iron
- 1719 Other

172 Shaft

Extractive activities primarily carried out underground; portions of this activity covered under the barren land category include disturbed land and development waste rock.

- 1721 Salt
- 1722 Iron
- 1723 Gypsum
- 1724 Copper and associated metals
- 1729 Other

173 Wells

This category includes the areas used for the extraction of oil and natural gas and other minerals from the sub-strata. In the case of one individual well, the area immediately surrounding the well is all that is to be placed into this category. Care must be taken not to confuse these wells with water wells.

- 1731 Oil
- 1732 Gas
- 1733 Salt
- 1739 Other

179 Other extractive

Extractive uses not covered in the above categories.

19 Open & Other

Open land consists of land used for outdoor cultural, public assembly and recreational purposes. Examples would be zoos, botanical gardens, fairgrounds, some parkland, ski areas and cemeteries. Open land may be in intensive or extensive use. It may include structures incidental to the outdoor land uses.

191 Outdoor cultural

Outdoor cultural includes such facilities as botanical gardens, arboretums, and zoos.

- 1911 Botanical gardens and arboretums (SLUC 7123)
- 1912 Zoos (SLUC 7124)
- 1919 Other

192 Outdoor public assembly

This category includes such facilities as movie theatres, auditoriums, exhibition halls, arenas and field houses, and multiple purpose civic centers.

- 1921 Amphitheatres (SLUC 7211)
- 1922 Drive-in movies (SLUC 7213)
- 1923 Stadiums (SLUC 7221)
- 1924 Racetracks (SLUC 7223)
- 1925 Fairgrounds (SLUC 7311)
- 1926 Amusement parks (SLUC 7312)
- 1929 Other

193 Outdoor recreation

All recreation facilities and areas which are basically on open land. They may, however, include incidental buildings such as shelters, toilets, beach change areas, etc. Does not include range-land, forest, water, wetland, and barren lands within parks or recreation areas. These would be classified in categories 3, 4, 5, 6, and 9, respectively, at level I, at the third, fourth, and fifth levels. Ownership and institutional characteristics such as park boundaries would be indicated by a separate mapping legend.

1931 Landscaped and aesthetic areas 11/p. 59

This category includes land maintained as with lawn, plantings, paving, benches, ornamental objects, and walks. They occur in parks or as institutional or estate grounds, malls, etc. They provide open space relief or environmental embellishment. They may also provide casual walking, relaxing, open air and passer-by enjoyment, social encounter or assembly.

1932 Play, games, and athletics 12/p. 59

These lands include the playlots, playgrounds, and athletic fields. They have been developed for active play and recreation, for different age groups. The category as a whole has a wide variety of possible

installation for free or organized play, ranging from swings and sandboxes to softball and baseball diamonds. Bleachers or grandstands may be included, except for those of such scale as to justify inclusion under category 127 as places of public assembly.

1933 Sports areas 13/p. 59

This category includes a variety of uses such as miniature and regular golf courses, golf driving ranges, off-road recreational vehicle trails, tracks and areas, shooting ranges, etc. Athletics is covered under 1932. Conceivably, some hunting and fishing land uses could be in categories 2, 3, 4, 5, 6 and 9, with institutional or functional identification at a lower level.

1934 Other land-based activities 14/p. 59

All recreation facilities and areas which are basically on open land. They may, however, include incidental buildings such as shelters, toilets, beach change buildings, etc. This does not include rangeland, forest, water, wetland or barren land within parks or recreation areas. These would be classified in categories, respectively, at Level I, at the third, fourth, and fifth levels. Ownership and institutional characteristics such as park boundaries would be indicated by a separate mapping legend.

1935 Water-dependent recreation 15/p.60

This category includes such activity areas as swimming beaches and pools, marina and yacht basins and boating sites.

194 Cemeteries

199 Other

DEFINITIONS FOR AGRICULTURAL LAND

2 AGRICULTURAL LAND

Agricultural Land may be broadly defined as land used primarily for production of farm commodities.

21 Cropland, Rotation & Permanent Pasture

Land used to produce crops such as small grains, hay, or row crops including vegetables and land used for pasture.

211 Cultivated cropland

Land which is or will be planted to crops. This land is tilled annually. Cropland planted to legumes and grasses are not included.

2111 Row crops

Land which has crops planted in rows a distinguishable distance apart. Included are corn, dry beans, sugar beets, potatoes, mint, and vegetables.

2112 Small grains

Land which has close grown crops which will be harvested for grain such as wheat, oats, barley, and rye.

2119 Other

Land which is cultivated but not planted with row crops or small grains. Fallow land and land on which the crops have not emerged are included in this category.

212 Hay, rotation and permanent pasture

Land which produces grasses for animal consumption. Woodland pasture is not included in this category.

2120 Hay

Land which produces grasses and which are harvested mechanically.

2121 Rotation pasture

Land which is planted with grasses and legumes which are grazed by animals. The land is grazed only a few years and then used for cultivated crops.

2122 Permanent pasture

Land which produces grasses and certain types of legumes which are grazed by animals. The land is continuously used for pasture with tillage only to re-establish the grasses and legumes.

2129 Other

Land which produces other kinds of hay and pasture for animal consumption.

22 Orchards, Bush-Fruits, Vineyards & Ornamental Horticulture Areas

Orchards, vineyards, and bush-fruit areas produce the various fruit and berry crops. Horticultural areas include nurseries, floricultural areas, and seed-and-sod areas used perennially for that purpose.

221 Tree Fruits

Land used for the production of fruit on trees.

2211 Apples

2212 Cherries

2213 Peaches

2214 Pears

- 2215 Plums and prunes
- 2219 Other

Land used for other kinds of tree fruits.

222 Bush-fruits and vineyards

Land used for the production of fruit on bushes and vines.

- 2221 Strawberries
- 2222 Raspberries
- 2223 Blueberries
- 2224 Grapes
- 2229 Other

Land used for other kinds of bush-fruits.

223 Ornamental horticulture and nurseries

Land used for the production of sod, flowers, ornamental shrubbery, etc., and their seeds.

- 2231 Sod

Land used for the production of sod which will be transplanted.

- 2232 Floriculture

Land used for the production of flowers for bulbs, seeds, and cut flowers.

- 2233 Nurseries

Land used for the production of trees, shrubs, vines, etc., which will be transplanted.

- 2239 Other

Land used for other kinds of ornamental horticulture.

23 Confined Feeding Operations

Feeding operations are large, specialized, livestock-production enterprises, chiefly beef cattle feedlots and large poultry farms, but also including large hog and fur-bearing animal farms. These operations have large animal populations restricted to relatively small areas. The result is a concentration of waste material that is an environmental concern. Feeding operations in conjunction with another farm enterprise are not included. Also excluded are shipping corrals and other temporary holding facilities. Game farms and zoos do not meet the animal-population densities to be placed in this subcategory.

231 Livestock

Large confined feeding operations for feeding four-legged animals, such as swine, cattle, and sheep.

- 2311 Beef
- 2312 Dairy

- 2313 Swine
- 2319 Other

Confined feeding operations for other kinds of livestock.

232 Poultry

Large confined feeding operations for two-legged animals.

- 2321 Chickens
- 2322 Turkeys
- 2329 Other

Other kinds of large, confined feeding operations.

239 Other

Other kinds of large, confined feeding operations.

[28] Inactive Land (These plant communities will be mapped under herbaceous rangelands (31).

Herbaceous rangelands are dominated by native grasses and forbs. Such areas are often subjected to continuous disturbance such as mowing, grazing or burning to maintain the herbaceous character. Typical plant species are quackgrass, Kentucky bluegrass, upland and lowland sedges, reed canary grass, clovers, etc. These plant communities will be mapped under herbaceous rangelands (31).

29 Other Agricultural Land

Other agricultural land not included in the preceding categories or combinations of agricultural land that cannot be clearly defined. Land with farmsteads, greenhouses, and race tracks are included in this category.

291 Farmsteads

Land used for buildings associated with agricultural production, including barns, implement buildings, grain storage buildings, and the dwelling of the farm family.

2911 Farmstead with active residence

Farmsteads which have a farm family living in the dwelling.

2912 Farmstead without active residence

Farmsteads which do not have a farm family living in the dwelling.

292 Greenhouses and mushroom houses

Land with buildings used to produce farm commodities.

- 2921 Vegetables
- 2922 Flowers
- 2923 Mushrooms
- 2929 Other

293 Racetracks

Non-commercial training areas, primarily for race horses.

299 Other

DEFINITIONS FOR RANGELAND

3 RANGELAND*

Rangeland is defined as areas supporting early stages of plant succession consisting of plant communities characterized by grasses or shrubs. In cases where there is obvious evidence of seeding, fertilizing or other cultural practices, these areas should be mapped as rotation or improved pasture (Agricultural land, 2122 and 2123).

30 Herbaceous Rangeland

Herbaceous rangelands are dominated by native grasses and forbs. Such areas are often subjected to continuous disturbance such as mowing, grazing or burning to maintain the herbaceous character. Typical plant species are quackgrass, Kentucky bluegrass, upland and lowland sedges, reed canary grass, clovers, etc.

311 Upland herbaceous rangeland

- 3111 Bluegrasses predominate
- 3112 Quackgrass predominates
- 3113 Bluestems, upland sedges, dewberry mosses, and lichens
- 3114 Beach grass predominates
- 3119 Other upland herbaceous openings

312 Lowland herbaceous rangeland

- 3121 Reed canary grass predominates
- 3122 Clovers predominate
- 3123 Red top predominates
- 3124 Sedges predominates
- 3125 Blue-joint predominates
- 3129 Other lowland herbaceous openings

32 Shrub Rangeland

Shrub rangelands are dominated by native shrubs and low woody plants. If left undisturbed, such areas are soon dominated by young tree growth. Typical shrub species include blackberry and raspberry briars, dogwood, willow, tag alder, etc.

321 Upland shrub rangeland

- 3211 Briars predominate
- 3212 Dogwood predominates
- 3213 Hazel predominates
- 3214 Juneberry predominates
- 3215 Sumac predominates
- 3216 Thornapple predominates
- 3217 Viburnum predominates

- 3218 Sweet fern
- 3219 Other upland shrublands

[322] Lowland shrub rangelands (for Level III use Wetlands 612)

*
*

DEFINITIONS FOR FOREST LAND

4 FOREST LAND 16/p.60

Forest lands are lands that are at least 10 percent stocked by trees producing an influence of the climate or water regime. Forest land can generally be identified rather easily from high-altitude imagery.

Lands from which trees have been removed to less than 10 percent stocking but which have not been developed for other use are also included. For example, lands on which there is forest rotation, involving clear-cutting and block planting, are part of Forest Land. On such lands, when trees reach marketable size, which for pulpwood in the Southeastern United States may occur in two to three decades, there will be large areas that have little or no visible forest growth. The pattern can sometimes be identified by the presence of cutting operations in the midst of a large expanse of forest. Unless there is evidence of other use, such areas of little or no forest growth should be included in the Forest Land category. Lands that meet the requirements for Forest Land and also for a higher use category should be placed in the higher category. Shrub communities will be mapped under rangeland (upland) and wetland (lowland).

41 Broadleaved Forest (generally deciduous)

In Michigan, typical species are oak, maple, beech, birch, ash, hickory, aspen, cottonwood, and yellow poplar.

- 411 Upland hardwoods
 - 4111 Sugar maple predominates
 - 4112 Red maple predominates
 - 4113 Elm predominates
 - 4114 Beech predominates
 - 4115 Yellow birch predominates
 - 4116 Cherry predominates
 - 4117 Red oak predominates
 - 4118 White oak predominates
 - 4119 Other upland hardwoods

- 412 Aspen, white birch, and associated species
 - 4121 Trembling aspen predominates
 - 4122 Bigtooth aspen predominates
 - 4123 Balm-of-gilead predominates
 - 4124 White birch predominates

* Rangelands, forest lands, and wetlands are classified according to plant associations as they are identified with the various stages of ecological succession in Michigan. Definitions for wetlands were extracted from Golet, Francis C. and Larson, Joseph S. (G/L) "Classification of Freshwater Wetlands in the Glaciated Northeast", U.S. Department of Interior, Bureau of Sport Fisheries and Wildlife Resource Publication 116, 1974 and modified for Michigan conditions.

- 413 Lowland hardwoods
 - 4131 Ash predominates
 - 4132 Elm predominates
 - 4133 Red maple predominates
 - 4139 Other lowland hardwoods

42 Coniferous Forest

Coniferous forests include all forested areas in which the trees are Predominantly those with needle foliage. In Michigan these would include Species such as pine, spruce, balsam, larch, hemlock, and cedar.

- 421 Upland conifers
 - 4211 White pine predominates
 - 4212 Red pine predominates
 - 4213 Jack pine predominates
 - 4214 Scotch pine predominates
 - 4215 White spruce predominates
 - 4219 Other
- 422 Lowland conifers
 - 4221 Cedar predominates
 - 4222 Black spruce predominates
 - 4223 Tamarack predominates
 - 4224 Balsam fir-white spruce association predominates
 - 4225 Balsam fir predominates
 - 4229 Other

43 Mixed Conifer-Broadleaved Forest

Mixed forest land includes all forested areas where both broadleaved and coniferous trees are growing.

- 431 Upland hardwoods and pine associations
 - 4311 Sugar maple predominates
 - 4312 Red maple predominates
 - 4313 Elm predominates
 - 4314 Beech predominates
 - 4315 Yellow birch predominates
 - 4316 Cherry predominates
 - 4317 Red oak predominates
 - 4318 White oak predominates
 - 4319 Undifferentiated broadleaved or deciduous forest
- 432 Aspen, birch with conifer associations
 - 4321 Trembling aspen predominates
 - 4322 Bigtooth aspen predominates
 - 4323 Balm-of-gilead predominates
 - 4324 White birch predominates
- 433 Lowland hardwoods with cedar, spruce, tamarack, etc., Associations

- 4331 Ash predominates
- 4332 Elm predominates
- 4333 Red maple predominates
- 4339 Other lowland hardwoods

- 434 Upland conifers with maple, elm, ash, aspen and birch, etc.,
Associations
 - 4341 White pine predominates
 - 4342 Red pine predominates
 - 4343 Jack pine predominates
 - 4349 Other

- 435 Lowland conifers with maple, elm, ash, aspen, birch, etc.,
Associations
 - 4351 Cedar predominates
 - 4352 Black spruce predominates
 - 4353 Tamarack predominates
 - 4354 Spruce – balsam – birch association
 - 4355 Balsam fir predominates
 - 4356 White spruce predominates
 - 4359 Other

DEFINITIONS FOR WATER

5 WATER

The water category includes all areas which are predominantly or persistently water covered. Water bodies that are vegetated are placed in the Wetland category [6] under forested or nonforested wetlands. Sewage treatment or water supply facilities are a basic part of the urban pattern and should be included in the Urban category [1] even where the unit is large enough to be separately identified. No fourth level for this category has been developed. There are many quantitative and qualitative variables that could be used to develop a fourth level depending upon user needs. 17/p.60

51 Streams & Waterways

This category includes rivers, streams, creeks, canals, drains, and other linear bodies of water. Intermittent streams which flow in wet seasons but are dry during dry seasons should be classified as streams if they are water covered the majority of the time. Ephemeral streams which carry surface runoff during and immediately after periods of precipitation or snow melt should not be classified as streams. These areas generally have no permanent or well-defined channels but follow slight depressions in the natural contour of the ground surface. Where the water course is interrupted by a control structure which creates an impoundment, the impounded area should be classified as a reservoir. The boundary between streams and lakes, or reservoirs is the straight line across the mouth of the stream. The St. Mary's, St. Clair, and Detroit Rivers, are classified as Great lakes connecting waterways.

- 511 Small streams and rivers

Small streams and rivers are linear waterways less than 15 feet wide.

512 Medium streams and rivers

Medium streams and rivers are linear waterways between 15 and 50 feet wide. Occasional constrictions of streams and rivers to less than 15 feet may be included to preserve continuity.

513 Large streams and rivers

Large streams and rivers are linear waterways 50 feet or larger in width. Occasional constrictions of waterways to less than 50 feet may be included to preserve continuity.

52 LAKES

Lakes are non-linear water bodies, excluding reservoirs. A water body should be classified as a lake if a structure has been installed primarily to regulate or stabilize lake levels without significantly increasing the water area. The delineation of a lake will be based on the areal extent of water at the time the data is collected. Islands within lakes which are too small to delineate will be included in the water area.

521 Ponds

Ponds are lakes whose areal extent does not exceed 4.9 acres at the time the data is collected.

522 Small lakes

Small lakes in this category are those lakes ranging from 5 to 9.9 acres in areal extent at the time data is collected.

523 Small lakes

Small lakes in this category are those lakes ranging from 10 to 24.9 acres in areal extent at the time data is collected.

524 Medium lakes

Medium lakes in this category are those lakes ranging from 25 to 99.9 acres in areal extent at the time data is collected.

525 Medium lakes

Medium lakes in this category are those lakes ranging from 100 to 249.9 acres in areal extent at the time data is collected.

526 Large lakes

Large lakes in this category are those lakes ranging from 250 to 999.9 acres in areal extent at the time data is collected.

527 Large lakes

Large lakes in this category are those lakes ranging from 1,000 to 2,499.9 acres in areal extent at the time data is collected.

528 Very large lakes

Very large lakes in this category are those lakes ranging from 2,500 to 9,999.9 acres in areal extent at the time data is collected.

529 Very large lakes

Very large lakes in this category are those lakes ranging from 10,000 + acres in areal extent at the time data is collected.

53 Reservoirs

Reservoirs are artificial impoundments of water, whether for irrigation, flood control, municipal water supply, hydroelectric power, or recreation. The reservoir category should not include lakes which have had control structures built to stabilize lake levels without significantly increasing the water area. Reservoirs can usually be identified by the presence of dams, levels, or other water control structures.

531 Ponds

Ponds are reservoirs whose areal extent does not exceed 4.9 acres at the time the data is collected.

532 Small reservoirs

Small reservoirs are those reservoirs from 5 to 9.9 acres in areal extent at the time the data is collected.

533 Small reservoirs

Small reservoirs are those reservoirs ranging from 10 to 24.9 acres in areal extent at the time the data is collected.

534 Medium reservoirs

Medium reservoirs are those reservoirs ranging from 25 to 99.9 acres in areal extent at the time the data is collected.

535 Medium reservoirs

Medium reservoirs are those reservoirs ranging from 100 to 249.9 acres in areal extent at the time the data is collected.

536 Large reservoirs

Large reservoirs are those reservoirs ranging from 250 to 999.9 acres in areal extent at the time the data is collected.

537 Large reservoirs

Large reservoirs are those reservoirs ranging from 1,000 to 2,499.9 acres in areal extent at the time the data is collected.

538 Very large reservoirs

Very large reservoirs are those reservoirs ranging from 2,500 to 9,999.9 acres in areal extent at the time the data is collected.

539 Very large reservoirs

Very large reservoirs are those reservoirs ranging from 10,000 + acres in areal extent at the time the data is collected.

54 Great Lakes

The Great Lakes are the waters of Lake superior, Lake Michigan, Lake Huron, Lake St. Clair and Lake Erie. Connecting waterways are the St. Clair, St. Mary's, and Detroit Rivers. Bays and estuaries of these lakes and waterways should be included under this heading.

DEFINITIONS FOR WETLANDS

6 WETLANDS

Wetlands are those areas where the water table is at, near, or above the land surface for a significant part of most years. The hydrologic regime is such that aquatic or hydrophytic vegetation usually is established, although alluvial and tidal flats can be nonvegetated. Wetlands are frequently associated with topographic lows, even in mountainous regions. Examples of wetlands include marshes, mudflats, wooded swamps, and floating vegetation situated on the shallow margins of bays, lakes, rivers, ponds, streams, and man-made impoundments such as reservoirs. They include wet meadows or perched bogs in high mountain valleys and seasonally wet or flooded basins or potholes with no surface water outflow. Shallow water areas with submerged aquatic vegetation are classed as Water and are not included in the Wetland category.

Wetland areas drained for any purpose belong to other land use categories, whether it be Agricultural Land, Rangeland, Forest land, or Urban and Built-up Land. When the drainage is discontinued and such use ceases, classification reverts to Wetland after characteristic vegetation is reestablished. Wetlands managed for wildlife purposes may show short term changes in vegetative type and wetness condition as different management practices are used, but are properly classified Wetland.

Two separate boundaries are important with respect to wetland discrimination: the upper wetland boundary above which practically any category of land cover may exist, and the boundary between wetland and open water beyond which the appropriate Water category should be employed.

Forested Wetland and Nonforested Wetland are the Level II categories of Wetland.

61 Forested (wooded) Wetlands

Forested wetland includes seasonally flooded bottom-land hardwoods, shrub swamps, and wooded swamps including those around bogs. Because forested wetlands can be detected and mapped using seasonal (winter/summer) imagery, and because delineation of forested wetland is needed for many environmental planning activities, they are separated from other forest land. Wooded swamps and floodplains contain primarily oaks, red maple, elm, ash, alder, and willow. Bogs typically contain larch, black spruce, and heath shrubs. Shrub swamp vegetation includes alder, willow, and buttonbush.

[611] Wooded swamps (mapped under forestry categories 431, 422, 433, and 435)

This class applies to wetlands dominated by trees. The soil surface is seasonally flooded with up to 1 feet of water. Several levels of vegetation are usually present, including trees, shrubs, and herbaceous plants. Broadleaved swamps would be placed in the forestry category 413 and 433; coniferous swamps are placed in forest category 422 and 435. Use only types 4221 and 4351 when inventorying this condition at the fourth level of detail. Wooded bogs are placed in forest category 422 and 435; omit types 4221 and 4351 when inventorying at the fourth level.

612 Shrub swamps

This class applies to wetlands dominated by shrubs where the soil surface is seasonally or permanently flooded with as much as 12 inches of water. Characteristic emergent plants providing cover beneath the shrubs are the sedge and sensitive fern. Meadow or marsh emergents occupy open areas. Willow-buttonbush associations under 6125 are those aquatic shrub swamps with greater than 50 percent shrub cover and average water depth of less than 6 inches.

6121	Alder predominates	(G/L SS-1)
6122	Dogwood, viburnum and willow associations	(G/L SS-2)
6123	Sweetgale-bogbirch associations	(G/L SS-3)
6124	Leatherleaf predominates	(G/L BG-1)
6125	Willow-buttonbush associations (greater than 50% cover – less than 6 inches water)	(G/L SS-4)
6126	Willow-buttonbush associations (less than 50% cover – more than 6 inches water)	(G/L DM-2)
6127	Water willow predominates	(G/L DM-3)
6128	Standing dead trees, shrubs, and stumps	(G/L DM-1)
6129	Other	

62 Non-Forested (non-wooded) Wetlands

Nonforested wetlands are dominated by wetland herbaceous vegetation. These wetlands include inland nontidal fresh marshes, freshwater meadows, wet prairies, and open bogs. The following are examples of vegetation associated with nonforested wetland. Narrow-leaved emergents such as cordgrass and rush are dominant in coastal marshes. Both narrow-leave emergents such as cattail, gulrush, sedges, and other grasses and broad-leaved emergents such as water lily, pickerelweed, arrow arum, and arrowhad, are typical of fresh water locations. Mosses and sedges grow in wet meadows and bogs.

[621] Marshland meadow

This class applies to wetlands dominated by meadow emergents, with up to 6 inches of surface water in the late fall, winter and early spring. During the growing season, the soil is saturated and the surface exposed, except in shallow depressions and drainage ditches. Meadows occur most commonly on agricultural land where periodic grazing or mowing keeps shrubs from growing. Grazed meadows will be mapped under permanent pasture 2123. Ungrazed meadows will be mapped under lowland herbaceous rangeland 312.

622 Mudflats – Land areas supporting little or no vegetation exposed during periods of low water.

623 Shallow marshes

This class applies to wetlands dominated by robust or marsh emergents, with an average water depth less than 6 inches during the growing season. Surface water may be present throughout the year or absent during the late summer and abnormally dry periods. Floating leaved plants and submergents are usually present in open areas. Duckweed is often abundant in quiet water. Submergents are primarily shallow-water species like coontail, bladderwort, and waterweed. Cover plants generally occupy 50 percent of the marsh area.

- | | | |
|------|--|------------|
| 6231 | Cattail predominates | (G/L SM-1) |
| 6232 | Bur reed, bulrushes, sedges, blue-joint | (G/L SM-2) |
| 6233 | Smartweed, mud plantain, pickerel weed,
arrow arum, and arrowhead | (G/L SM-3) |
| 6239 | Other | |
- 624 Deep marshes
- This class applies to wetlands with an average water depth between 6 inches and 3 feet during the growing season. Emergent marsh vegetation is usually dominant, with surface and submergent plants present in open areas. Cover plants generally occupy less than 50 percent of the marsh area.
- | | | |
|------|--|------------|
| 6241 | Cattail predominates | (G/L DM-4) |
| 6242 | Bur reed, rushes and sedges | (G/L DM-5) |
| 6243 | Smartweed, mud plantain, pickerel weed,
Arrow arum, and arrowhead | (G/L DM-6) |
| 6244 | Water lily, watershield, and lotus | (G/L OW-1) |
| 6249 | Other | |
- [625] Open Water (refer to Water 5)
- Water bodies that are over 3 feet deep and are ringed with a border of emergent

*

DEFINITIONS FOR BARREN LANDS

7 BARREN

Barren land (non-vegetated) is land of limited ability to support life and little or no vegetation. Land temporarily barren owing to man's activities is included in one of the other land use categories. Agricultural land temporarily without vegetation because of tillage practices is still classified as agricultural land. Sites for urban development stripped of cover before construction begins should be classified as urban and built-up. Areas of extractive and industrial land have waste and tailings dumps and exhausted sources of material supply are often evident.

71 Salt Flats (not applicable to Michigan)

72 Beaches & Riverbanks

Beaches are the sloping accumulations of sand and gravel along shorelines. The beach category is not used if there is vegetative cover or another land use.

721 Sand beach

Aggregate smaller than 2 mm. In diameter along a shoreline area.

* *Reference is to Golet and Larson, "Classification of Freshwater Wetlands in the Glaciated Northeast" for specific definitions of wetlands types. Where a cross-reference exists, it is indicated

722 Gravel beach

Aggregate larger than 2 mm. In diameter along a shoreline area, varying from fine gravel to cobbles.

723 Riverbanks

Areas of exposed sand created by erosion along streambanks.

729 Other

73 Sand Other than Beaches

Sand other than beaches is composed primarily of dunes and accumulations of sand of aeolian origin.

730 Sand dunes

A hill, mound or ridge of wind-blown sand in a primarily unvegetated condition.

739 Other

74 Bare Exposed Rock

The bare exposed rock category includes areas of bedrock exposure, scarps, talus, slides, volcanic material, and other accumulations of rock without vegetative cover.

741 Rock knobs

Rock formations resembling miniature mountains which are randomly exposed along the earth's surface.

742 Escarpments

A steep to perpendicular rock cliff along the side of a ridge or mountain.

743 Shoreline rock outcrop

Areas of shoreline consisting of exposed bedrock at the surface of the earth.

744 Riverbank

Areas of exposed rock created by erosion along streambanks.

749 Other

75 Transitional Areas

79 Other

This subcategory is used for a mixture of barren land features or when a subcategory cannot be positively identified.

8 TUNDRA (not applicable to Michigan)

9 PERMANENT SNOW & ICE (not applicable to Michigan)

FOOTNOTES TO LEVEL IV DEFINITIONS

1/ The following SLUC categories would be the basis for level V categories of commercial and services.

- Wholesale trade (SLUC 51)
- Hardware-building supplies, farm equipment (SLUC 52)
- General merchandise (SLUC 53)
- Food stores, bake shops (SLUC 54)
- Auto, truck, marine sales, and accessories (SLUC 55)
- Apparel, and accessories (SLUC 56)
- Furniture, home furnishings, and equipment (SLUC 57)
- Eating and drinking (SLUC 58)
- Gasoline stations
- Office buildings
- Finance, insurance, and real estate (SLUC 61)
- Personal services (SLUC 62)
- Business services (SLUC 63)
- Repair services (SLUC 64)
- Professional services (SLUC 65)
- Contract construction services (SLUC 66)
- Other commercial or services (SLUC 69)

2/ The following categories were listed by the committee as included in the health category and would be the basis for level V categories:

Hospitals:

- 1 General, acute
- 2 General, long-term
- 3 Psychiatric
- 4 Specialty
- 5 Osteopathic
- 6 Allopathic
- 7 Veterans
- 8 Rehabilitation
- 9 Other

Clinics:

- 1 Medical
- 2 Dental
- 3 Psychiatry
- 4
- 5
- 6
- 7 Public Health
- 8 Family planning
- 9 Other

3/ Educational institutions include:

- 1 High school
- 2 Middle or junior high
- 3 Elementary
- 4 College, university
- 5 Academy
- 6 Trade school
- 9 Other

4/ Religious institutions include:

- 1 Church
- 2 Retreat house
- 9 Other

5/ Correctional institutions include:

- 1 Maximum security
- 2 Minimum security
- 3 Halfway house
- 4 Detention Center
- 5 Juvenile home
- 9 Other

6/ Military institutions include:

- 1 Army
- 2 Navy
- 3 Marines
- 4 Coast Guard
- 5 Air Force
- 6 National Guard
- 9 Other

7/ Government administration and services (non-utility) includes:

- 1 City Hall (county, town, etc.)
- 2 Post office
- 3 Police office
- 4 Sheriff office
- 5 State police station
- 6 Fire station
- 9 Other

8/ The following SLUC categories would be the basis for level V categories of cultural, public assembly, and indoor recreation

1271 Cultural, indoor

- 12711 Libraries (SLUC 7111)
- 12712 Museums (SLUC 7112)
- 12713 Art galleries (SLUC 7113)
- 12714 Planetariums (SLUC 7121)
- 12715 Aquariums (SLUC 7122)
- 12716 Historic buildings (SLUC 7191)
- 12719 Other (SLUC 7119)

9/ 1272 Public assembly, indoor

- 12721 Movie theatres (SLUC 7212)
- 12722 Legitimate theatres (SLUC 7214)
- 12723 Auditoriums (SLUC 7231)
- 12724 Exhibition halls (SLUC 7232)
- 12725 Arenas and field houses (SLUC 7222)
- 12756 Multiple purpose (two or more of the above)
- 12729 Other

10/ 1273 Indoor recreation

- 12731 Meeting, social, performance, class, craft rooms
- 12732 Courts (tennis, etc.)
- 12733 Ice skating rinks (SLUC 7414)
- 12734 Bowling alleys (SLUC 7417)
- 12735 Dance halls

- 12736 Gymnasiums (SLUC 7425)
- 12737 Swimming pools (SLUC 7432)
- 12738 Multiple purpose recreation centers (2 or more of above) (SLUC 7424)
- 12739 Other

11/ 1931 Landscaped and aesthetic areas, a possible level V for this category could be:

- 19311 Primarily vegetated
- 19312 Primarily hard-surfaced

12/ 1932 Play, games, and athletics, a possible level V would include:

- 19321 Playlots (SLUC 7421)
- 19322 Playgrounds (SLUC 7422)
- 19323 Athletic fields (SLUC 7423)
- 19329 Other

13/ 1933 Sports areas, a possible level V would include:

- 19331 Golf courses (SLUC 7411, 7412)
- 19332 Miniature golf courses (SLUC 7392)
- 19333 Golf driving ranges (SLUC 7393)
- 19334 Off-road recreational vehicle trails, tracks or areas (SLUC 7344)
- 19335 Shooting ranges
- 19339 Other

14/ 1934 Other land-based recreation activities, a possible level V would include:

- 19341 Horseback riding (SLUC 7416)
- 19342 Picnicking
- 19343 Camping
- 19344 Sledding and toboggan hills
- 19345 Skiing (SLUC 7418)
- 19346 Foot trails
- 19347 Landscape, scenic or natural wonder-viewing points
- 19349 Other

15/ 1935 Water-dependent recreation activities at level V would include:

- 19351 Swimming beaches (SLUC 7431)
- 19352 Swimming pools (SLUC 7432)
- 19353 Marinas, yacht basins (SLUC 7441)
- 19354 Boating sites (SLUC 7442)
- 19359 Other

16/ Possible levels below level IV for this entire category would entail individual species, density and size

17/ A variety of quantitative and qualitative variables form the linkage between level III and level V in this category. Existing classification systems already in use by the Department of Natural Resources and which could be used to form the basis of a possible level V deal with: (1) public and industrial water supply; (2) total and partial body contact; and (3) cold water and warm water fish species.