

MICHIGAN LAND COVER / USE CLASSIFICATION SYSTEM

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A revision and update of the *Michigan Land Cover/Use Classification System* originally developed by the Michigan Land Use Classification and Referencing Committee and published by the Michigan Department of Natural Resources.

This revision has been adopted by the IMAGIN (Improving Michigan's Access to Geographic Information Networks) organization as a statewide standard. IMAGIN recommends using this version of the *Michigan Land Cover/Use Classification System* whenever land cover/use maps are updated.

MICHIGAN LAND COVER / USE CLASSIFICATION SYSTEM

This document is a revision and update of the *Michigan Land Cover/Use Classification System* originally developed by the Michigan land use classification and referencing committee and published by the Michigan Department of Natural Resources. This revision has been adopted by the IMAGIN (Improving Michigan's Access to Geographic Information Networks) organization as the statewide standard, and supports its use in updating land cover/use maps.

This system presents a standardized terminology for describing land cover/use. The compound term "land cover/use" has been applied, since neither word alone suffices to express the total system. For two of the major categories, agriculture and urban and built-up lands, the terms express or imply the land use "activity" which is taking place. Cropland, for example, is a land **use** category that includes a variety of land **covers** (grass, small grains, bare soil, etc.); it is classed primarily by its use and secondarily by its cover. For the other five major categories, the terminology does not directly or implicitly describe the activity that may be taking place on the land. Forest land, for instance, may be used for any one or more of several activities -- e.g., timber production, wildlife management, hunting, grazing, wildlife sanctuary, recreation, natural area preservation, or amenity-consumptive purposes in connection with adjacent residential or other land uses; it is classed primarily by its cover and secondarily by its use. "Cover" has long been used to express what is found on the surface on non-urban land.

The *Michigan Land Cover / Use Classification System* is similar to the national system developed by the U.S. Geological Survey (Anderson, et. al., 1981). The Michigan system is multilevel and hierarchical; it classifies Michigan's land cover/use into approximately 500 categories. In developing Level IV and V categories for Urban and Built-Up land, the American Planning Association's **Land-Based Classification Standards** and the **North American Industry Classification System** of the U.S. Office of Management and Budget were utilized so far as possible.

General specifications for using the Michigan Land Cover / Use Classification System

- The Minimum mapping unit should be between one and two and a half acres in size.
- Areas less than 100 feet wide should not be mapped except as parts of larger (and subsequently wider than 100 feet) mapping units.
- Contiguous, or near contiguous (less than 100 feet), areas may be combined into one mapping unit (polygon) to meet the minimum mapping unit size requirement.
- If a mapped unit meets the definitions for two, or more, land cover/use classes, the higher order (lower number) classification shall be assigned.
- Double coding is permissible provided that the dominant class is indicated first.

MSU Remote Sensing and GIS Specifications for Land Cover / Use Updating

- The minimum mapping unit is two and a half acres. Isolated (residual) polygons less than two and a half acres which are the result of surrounding land cover / use changes are permissible.
- Areas less than 100 feet wide should not be mapped except as parts of larger (and subsequently wider than 100 feet) mapping units. An exception is to exclude all roads except limited access highways and associated interchanges.
- Contiguous, or near contiguous (less than 100 feet), areas may be combined into one mapping unit (polygon) to meet the minimum mapping unit size requirement. For example, areas of sparse residential development will be considered as one continuous unit if the properties are within 100 feet of each other, or the distance between structures is less than 200 feet. Mapping boundaries will be drawn to include the separate parcels as one mapping unit (polygon).
- If a mapped unit meets the definitions for two, or more, land cover/use classes, the higher order (lower number) classification should be assigned.

MICHIGAN LAND COVER / USE CLASSIFICATION SYSTEM

Level 1 categories

- 1 URBAN & BUILT UP**
- 2 AGRICULTURAL LAND**
- 3 GRASS and SHRUB LAND**
- 4 FOREST LAND**
- 5 WATER**
- 6 WETLANDS**
- 7 BARREN LAND**

Level 2 categories

- 1 URBAN & BUILT UP**
 - 11 Residential**
 - 12 Commercial, Services, & Institutional**
 - 13 Industrial**
 - 14 Transportation, Communication and Utilities**
 - 16 Mixed Use**
 - 17 Extractive**
 - 19 Open land and Other**

2 AGRICULTURAL LAND

21 Cropland

22 Orchards, Bush-Fruits, Vineyards and Ornamental Horticulture

23 Confined Feeding Operations

24 Permanent Pasture

29 Other Agricultural Land

3 GRASS and SHRUB LAND

31 Grasses and Forbs

32 Shrubs

33 Pine or Oak Opening (prairie)

4 FOREST LAND

41 Broadleaf Forest

42 Coniferous Forest

43 Mixed Conifer-Broadleaf Forest

44 Clearcut Forest

5 WATER

51 Streams and Waterways

52 Lakes

53 Reservoirs

54 Great Lakes

6 WETLANDS

[61] map as **41 (414) or 42 (423)**

62 Non-Forested Wetlands

7 BARREN LAND

72 Beaches and Riverbanks

73 Sand Dunes / Exposed Bluff

74 Bare Exposed Rock

75 Transitional Areas

MICHIGAN LAND COVER / USE CLASSIFICATION SYSTEM

1 URBAN & BUILT UP

11 Residential

111 Multi-Family, Medium- to High-Rise

- 1111 High Density
- 1112 Medium Density
- 1113 Low Density

112 Multi-Family, Low-Rise

- 1121 Apartment

- 11211 High Density
 - 11212 Medium Density
 - 11213 Low Density

- 1122 Townhouse

- 11221 High Density
 - 11222 Medium Density
 - 11223 Low Density

113 Single Family / Duplex

- 1131 Single Family

- 11311 High Density
 - 11312 Medium Density
 - 11313 Low Density

- 1132 Duplex

- 11321 High Density
 - 11322 Medium Density
 - 11323 Low Density

- 1135 Manufactured Home

- 1136 Seasonal Dwelling

- 1139 Other

115 Manufactured 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 (usually mapped as a component of Institutional)
- 1164 Retirement Homes and Orphanages
- 1165 Religious Quarters (usually mapped as a component of Institutional)
- 1167 Hotels, Motels
- 1168 Migrant Quarters (associated with agricultural land uses)
- 1169 Other

117 Rural Estates

119 Other Residential

12 Commercial, Services, & Institutional

121 Primary / Central Business District (CBD)

122 Shopping Center / Malls / Retail Centers

124 Secondary / Neighborhood and Rural Businesses

1241 Commercial

- 12411 Wholesale trade
- 12412 Hardware-building supplies, farm equipment
- 12413 General merchandise
- 12414 Food stores, bake shops
- 12415 Auto, truck, marine sales, and accessories
- 12416 Apparel, and accessories
- 12417 Furniture, home furnishings, and equipment
- 12418 Eating and drinking
- 12419 Gasoline stations

1242 Services

- 12421 Finance, insurance, and real estate
- 12422 Personal services
- 12423 Business services
- 12424 Repair services
- 12425 Professional services
- 12426 Contract construction services
- 12427 Agricultural Services
- 12429 Other services (includes Parking Lots and Garages)

1243 Used Auto Parts Yards (Auto salvage or junk yards)

126 Institutional

1263 Health

12631 Hospitals

- 126311 General, Acute
- 126312 General, Long-Term
- 126313 Psychiatric
- 126314 Specialty
- 126315 Osteopathic
- 126316 Allopathic
- 126317 Veterans
- 126318 Rehabilitation
- 126319 Other

12632 Clinics

- 126321 Medical
- 126322 Dental
- 126323 Psychiatry
- 126327 Public Health
- 126328 Family Planning
- 126329 Other

1264 Education

- 12641 High School
- 12642 Middle or Junior High
- 12643 Elementary
- 12644 College, University
- 12645 Academy
- 12646 Trade School
- 12649 Other

1265 Religious

- 12651 Church
- 12652 Retreat House
- 12659 Other

1266 Correctional

- 12661 Maximum Security
- 12662 Minimum Security
- 12663 Halfway House
- 12664 Detention Center
- 12665 Juvenile Home
- 12669 Other

1267 Military

- 12671 Army
- 12672 Navy
- 12673 Marines
- 12674 Coast Guard
- 12675 Air Force
- 12676 National Guard
- 12679 Other

1268 Government Administration and Services

- 12681 City Hall (County, Town, etc.)
- 12682 Post Office
- 12683 Police Station
- 12684 Sheriff Office
- 12685 State Police Station
- 12686 Fire Station
- 12687 Federal Offices
- 12688 State Offices
- 12689 Other

1269 Other

127 Indoor Cultural, Public Assembly, and Recreation

1271 Indoor Cultural

- 12711 Libraries
- 12712 Museums
- 12713 Art Galleries
- 12714 Planetariums
- 12715 Aquariums
- 12716 Historic Buildings
- 12719 Other

1272 Indoor Public Assembly

- 12721 Movie Theatres
- 12722 Legitimate Theatres
- 12723 Auditoriums
- 12724 Exhibition Halls
- 12725 Arenas and Fieldhouses
- 12726 Multiple Purpose (two or more of the above)
- 12729 Other

1273 Indoor Recreation

- 12731 Meeting, Social, Performance, Class, Craft Rooms
- 12732 Courts (Tennis, etc.)
- 12733 Ice Skating Rinks
- 12734 Bowling Alleys
- 12735 Dance Halls
- 12736 Gymnasiums
- 12737 Swimming Pools
- 12738 Multiple Purpose Recreation Centers (2 or more of above)

128 Office / Research Center or Park

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 Man-Made 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
- 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

137 Recyclable Material Processing

- 1371 Scrap Metal Yards
- 1372 Other Recyclable Material Yards

Note: Used Auto Parts Yards (Auto Salvage) - see category 1243)

138 Industrial Park

139 Other (includes coal and nuclear electric power generation facilities and automotive test tracks)

14 Transportation, Communication, Utilities

141 Air Transportation

- 1411 Commercial Aviation
- 1412 General Aviation
- 1413 Military
- 1419 Other

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
- 1433 Lighthouse
- 1439 Other

144 Road Transportation

- 1441 Limited and Controlled Access Expressway
- 1442 Five or More Lanes
- 1443 Four Lanes
- 1444 Three Lanes
- 1445 Two Lanes
- 1446 Truck Terminal
- 1447 Bus Terminal
- 1448 Highway Maintenance / Road Commission
- 1449 Other

145 Communications

- 1451 Telephone
- 1452 Telegraph
- 1453 Television
- 1454 Radio
- 1455 Cellular Phone
- 1459 Other

146 Utilities

- 1461 Electrical Substation 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

16 Mixed

17 Extractive

171 Open Pit

- 1711 Metallic Mineral Quarry
- 1712 Nonmetallic Mineral Quarry
- 1713 Coal
- 1714 Sand and Gravel
- 1719 Other

172 Underground

- 1721 Metallic
- 1722 Nonmetallic
- 1723 Coal
- 1729 Other

173 Wells

- 1731 Oil
- 1732 Gas
- 1733 Brine Production
- 1734 Waste Disposal
- 1739 Other

179 Other Extractive

19 Open Land and Other

191 Outdoor Cultural

- 1911 Botanical Gardens and Arboretums
- 1912 Zoos
- 1913 Historic Site
- 1919 Other

192 Outdoor Public Assembly

- 1921 Amphitheaters
- 1922 Drive-In Movie Theaters
- 1923 Stadiums
- 1924 Racetracks (automotive, horse, etc.)
- 1925 Fairgrounds (including racetrack if present)
- 1926 Amusement Parks / Water Parks
- 1929 Other

193 Outdoor Recreation

- 1931 Parks
- 1932 Play, Games, and Athletics
 - 19321 Playlots
 - 19322 Playgrounds
 - 19323 Athletic Fields
 - 19329 Other
- 1933 Sports Areas
 - 19331 Golf Courses
 - 19332 Miniature Golf Courses
 - 19333 Golf Driving Ranges
 - 19334 Off-road Recreational Vehicle Trails, Tracks or Areas
 - 19335 Shooting Ranges
 - 19339 Other

- 1934 Other Land-Activities

- 19341 Horseback Riding
- 9342 Picnicking
- 19343 Camps and Campgrounds
- 19344 Sledding or Toboggan Hills
- 19345 Skiing
- 19346 Foot Trails
- 19347 Landscape, Scenic or Natural Wonder-viewing points
- 19349 Other

- 1935 Water-Dependent Recreation
 - 19351 Swimming Beaches
 - 19352 Swimming Pools
 - 19353 Marinas, Yacht Basins
 - 19354 Boating Sites
 - 19354 Other

194 Cemeteries

195 Vacant

196 Under Construction / Construction Sites

2 AGRICULTURAL LAND

21 Cropland

211 Row Crops

- 2111 Corn
- 2112 Soybeans
- 2113 Sugar Beets
- 2114 Potatoes

212 Small Grains

- 2121 Winter Wheat
- 2122 Oats
- 2123 Rye and Barley

213 Hay

214 Truck Crops

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 Vineyards

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

223 Ornamental Horticulture and Nurseries

- 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

24 Permanent Pasture

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 Horse exercise tracks

299 Other

3 GRASS and SHRUB LAND

31 Grasses and Forbs

311 Upland Grasses and Forbs

- 3111 Bluegrasses Predominate
- 3112 Quackgrass Predominates
- 3113 Bluestems, Upland Sedges, Dewberry Mosses, and Lichens
- 3114 Beach Grass Predominates
- 3119 Other Upland Grasses

312 Lowland Grasses and Forbs

- 3121 Reed Canary Grass Predominates
- 3122 Clover Predominates
- 3123 Red Top Predominates
- 3124 Sedges Predominates
- 3125 Blue-Joint Predominates
- 3129 Other Lowland Grasses

32 Shrubs

321 Upland Shrubs

- 3211 Briars Predominate
- 3212 Dogwood Predominates
- 3213 Hazel Predominates
- 3214 Juneberry Predominates
- 3215 Sumac Predominates
- 3216 Thornapple Predominates
- 3217 Viburnum Predominates
- 3218 Sweet Fern Predominates
- 3219 Other Upland Shrubs

Note: Lowland Shrubs are mapped as 612

33 Pine or Oak Opening (prairie)

331 Hardwood Opening

332 Coniferous Opening

4 FOREST LAND

41 Broadleaved Forest

411 Northern Hardwoods

- 4110 Undifferentiated Northern Hardwood
- 4111 Sugar Maple Predominates
- 4112 Red Maple Predominates
- 4113 Elm Predominates
- 4114 Beech Predominates
- 4115 Yellow Birch Predominates
- 4116 Cherry Predominates
- 4117 Basswood Predominates
- 4118 White Ash Predominates

412 Central Hardwoods / Oak

- 4120 Undifferentiated Oak / Hickory
- 4121 Red Oak Predominates
- 4122 White Oak Predominates
- 4123 Black Oak Predominates

413 Aspen-Birch

- 4130 Undifferentiated Aspen-Birch
- 4131 Trembling Aspen Predominates
- 4132 Bigtooth Aspen Predominates
- 4133 White Birch Predominates

414 Lowland Hardwoods

- 4140 Undifferentiated Lowland Hardwood
- 4141 Ash Predominates
- 4142 Elm Predominates
- 4143 Soft Maple Predominates
- 4144 Cottonwood Predominates
- 4145 Balm-of-Gilead Predominates
- 4146 Aspen Predominates

42 Coniferous Forest

421 Pine

- 4210 Undifferentiated Pine
- 4211 White Pine Predominates
- 4212 Red Pine Predominates
- 4213 Jack Pine Predominates
- 4214 Scotch Pine Predominates

422 Other Upland Conifer (Spruce-Fir)

- 4220 Undifferentiated Upland Conifer
- 4221 White Spruce Predominates
- 4222 Balsam Fir Predominates
- 4226 Hemlock Predominates

423 Lowland Conifers

- 4230 Undifferentiated Lowland Conifer
- 4231 Cedar Predominates
- 4232 Black Spruce Predominates
- 4233 Tamarack Predominates
- 4234 Balsam Fir-White Spruce Association Predominates
- 4235 Balsam Fir Predominates
- 4236 Jack Pine Predominates

429 Managed Christmas Tree Plantation

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 Predominates
- 4359 Other

44 Clearcut Forest

5 WATER

51 Streams and Waterways

511 Small Streams and Rivers

512 Medium Streams and Rivers

513 Large Steams and Rivers

52 Lakes

521 Ponds

522 Very Small Lakes

523 Small Lakes

524 Medium Lakes

525 Medium Large Lakes

526 Large Lakes

527 Very Large Lakes

528 Extra Large Lakes

529 Super Large Lakes

53 Reservoirs

531 Very Small Reservoirs

532 Small Reservoirs

533 Medium-Small Reservoirs

534 Medium Reservoirs

535 Medium-Large Reservoirs

536 Large Reservoirs

537 Very Large Reservoirs

538 Extra Large Reservoirs

539 Super Large Reservoirs

54 Great Lakes

6 WETLANDS

61 Forested (Wooded) Wetlands

Note: *Wooded Wetlands are mapped as*

414 Lowland Hardwoods

423 Lowland Conifers

433 Lowland Hardwoods with Cedar, Spruce, Tamarack etc., Associations

435 Lowland Conifers with Maple, Elm, Ash, Aspen, Birch, etc., Associations

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 Aquatic Bed Wetland

6211 Floating Bed Wetland

62111 Great Lakes

6212 Submerged Aquatic Bed

62121 Great Lakes

622 Emergent Wetland

623 Flats

629 Other Non-Forested Wetland

7 BARREN

72 Beaches and Riverbanks

721 Sand Beach

722 Gravel Beach

723 Riverbanks (unconsolidated)

729 Other

73 Sand Dunes / Exposed Bluff

731 Sand Dunes

739 Other

74 Bare Exposed Rock

741 Rock Knobs

742 Escarpments

743 Shoreline Rock Outcrop

744 Riverbank (consolidated)

749 Other

75 Transitional Areas

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 nonconforming 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 the forest land criteria will be placed in the residential category. Sites for urban development stripped of cover before construction begins should be classified as urban and built-up, not barren land. Such sites should remain classified as "under construction" until construction is completed, at which time they would be classified according to their finished land use.

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. Residential development along shorelines may also be linear and sometimes extends back only one residential parcel from the shoreline to the first road.

Areas of sparse residential land use, such as large platted rural residential properties, will be included under another category if they do not meet the 2.5 acre minimum mapping size. Contiguous, or near contiguous (less than 100 feet), residences will be considered as one continuous unit if the properties are within 100 feet of each other, or the distance between structures is less than 200 feet. Mapping boundaries will be drawn to include the separate parcels as one mapping unit (polygon). Acreage determination should include the residence, garage(s), outbuildings, garden, lawn areas, and the area between the residence and the road. [Note - residences below the minimum mapping size can be included in a "point file" layer which is recommended for any land use analysis] 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. If the residential property (or properties) meets the minimum mapping size, use discernible features or distinct changes in cover to define the boundaries of the residential area. In the absence of discernible features or distinct changes use the following guidelines:

- Define the boundary as 50 feet behind and to the side of the residence or other structure most distant from the road.
- Include the area between structures that are less than 200 feet apart. If the distance between structures is more than 200 feet and there is no obvious boundary, then the maximum distance from the side of the structure is 50 feet.
- Include the area between roads and the front of the residence if the frontage is unlikely to revert to rural land use; for example, long driveways (typically less than 1/8 mile), wooded

lanes, and maintained lawns.

The mere construction of a road network is **not sufficient** to classify an area as residential - houses must be present. There are numerous examples of "planned" subdivisions, which may even include an intricate road network, which have yet (20+ years) to have any residences built.

Residential sections may also be included in other use categories where they are integral parts of the other use. Housing areas on military bases or at colleges and universities, living quarters for laborers near a work base, lodging for employees of agricultural field operations or resorts are often difficult to identify and may be placed within the appropriate institutional, industrial, agricultural, or commercial categories of which they are a component.

111 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 includes lawns, parking areas, and small-area recreational facilities built on the site.

1111 High Density

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

1112 Medium Density

A development containing an average gross density of more than 20 dwelling units per acre, but less than 35 dwelling units per acre.

1113 Low Density

A development containing an average gross density of 20 or less dwelling units per acre.

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** in this category, but townhouses, triplexes, double-duplexes, and quadraplexes are. It includes lawns, parking areas, and small recreational facilities built on the site.

1121 Apartment Building

A building with three or more separate rooms, or suites of rooms, designed as residences and occupied by more than one household.

11211 High Density

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

11212 Medium Density

An apartment development containing an average gross density of more than 12

dwelling units per acre but less than 18 dwelling units per acre.

11213 Low Density

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

1122 Townhouse

A type of structure that has three or more separate dwelling units divided vertically, each unit has separate entrances to a front and rear yard.

11221 High Density

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

11222 Medium Density

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

11223 Low Density

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. Includes traditional, single-family residential structures, and manufactured housing not in a manufactured housing park (mobile home park). Lawns, driveways, and associated structures such as garages, tool sheds, garden sheds, home swimming pools, etc. are included.

1131 Single Family

Standard single-family residential structures.

11311 High Density

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

11312 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.

11313 Low Density

A development or grouping containing an average gross density of 3 or less dwelling units per acre.

1132 Duplex

Generally a two-unit building that is divided vertically, each unit having a separate entrance from the outside or through a common vestibule. Two flats (building divided horizontally) are included, but triplexes, double-duplexes, and quadruplexes are included in 112 Multi-Family, Low-Rise.

1135 Manufactured Home

Manufactured housing, also commonly referred to as factory-built housing, includes modular, mobile homes, and manufactured homes.

A manufactured home is a dwelling unit fabricated in an off-site manufacturing facility for installation or assembly at the building site, bearing a label certifying that it is built in compliance with the federal Manufactured Housing Construction and Safety Standard Act of 1974 (42 USC 5401, et. seq.) which became effective June 15, 1976.

A mobile home is a residential dwelling that was fabricated in an off-site facility, designed to be a permanent residence, built prior to enactment of the Federal Manufactured Home Construction and Safety Standards.

A modular home is a structure intended for residential use and is manufactured off-site, but assembled on site. Note that not all modular homes are mobile homes.

1136 Seasonal Dwelling

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

1139 Other

Any single family or duplex structure not covered above.

115 Manufactured Home Park

A property under single ownership or control containing three or more manufactured homes used for permanent or seasonal residential dwellings. Includes the manufactured homes, as well as related service structures and recreational spaces. One to two manufactured homes will be classified as part of 113 Single Family / Duplex. A subdivision consisting of lots for siting manufactured homes should also be classified as 113 Single Family / Duplex. Does not include property used for the display and sale of manufactured units (12 Commercial, Services, and Institutional), nor does it include property used for seasonal recreational purposes only (193 Outdoor Recreation).

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.

116 Group and Transient Quarters

A structure used for permanent or temporary housing of a number of unrelated individuals. This differs from apartments in that residents tend to interact with each other for meals, care, etc.

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.

1162 Membership Lodging

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

1163 Residence Halls and Dormitories

Buildings containing nurses and student residential facilities, including adjacent lawn and parking.

1164 Retirement Homes and Orphanages

Includes residential facilities for the aged, orphaned, or indigent.

1165 Religious Quarters

Includes convents, monasteries, abbeys, rectories, parish houses and parsonages.

1167 Hotels, Motels

Transient lodging facilities operated on a commercial basis, by day or week.

1168 Migrant Quarters

Seasonal dwellings used for housing seasonal workers (usually for agriculture).

1169 Other

Group and transient uses not covered above.

117 Rural Estates

Rural single-family residences on parcels 10 acres or more in size, that are not part of an operating farm, and exhibit no intensive agricultural practices. Includes all maintained areas; may include small pastures for grazing and may have structures, such as garages or barns.

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.

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. Recreational facilities that form an integral part of an institution should be included in the institutional category (e.g. athletic facilities associated with schools). Auxiliary land use, particularly residential, and commercial and services, on a military base or college campus would be included in the institutional subcategory. Areas not specifically associated with the function of the correctional, educational, or religious institutions, such as agricultural, forest land, and certain extensive recreation areas (e.g., golf course) are placed in the appropriate agricultural, forest, recreational, or other category. Small institutional units (e.g., many churches and some secondary and elementary schools) will not meet the minimum area requirements and should be included within the enveloping 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. Central business districts often include some institutions, such as churches and schools. These are not separated out unless they exceed one-third the total commercial area, or are large enough to stand alone.

122 Shopping Center / Malls / Retail Centers

Usually a single structure, or a group of structures, containing a large amount of floor space and a variety of commercial and service establishments surrounded by a common parking lot, usually > 2x the area of the structure(s).

124 Secondary / Neighborhood and Rural Businesses

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

1241 Commercial

- 12411 Wholesale Trade
- 12412 Hardware-Building Supplies, Farm Equipment
- 12413 General Merchandise
- 12414 Food Stores, Bake shops
- 12415 Auto, Truck, Marine Sales, and Accessories
- 12416 Apparel, and Accessories
- 12417 Furniture, Home Furnishings, and Equipment
- 12418 Eating and Drinking
- 12419 Gasoline Stations

1242 Services

- 12421 Finance, Insurance, and Real Estate
- 12422 Personal Services
- 12423 Business Services
- 12424 Repair Services
- 12425 Professional Services
- 12426 Contract Construction Services
- 12427 Agricultural Services
- 12429 Other Services (includes Parking Lots and Garages)

1243 Used Auto Parts Yards (Auto salvage or junk yards)

Establishments that dismantle motor vehicles for the purpose of selling used parts.

126 Institutional

1263 Health

- 12631 Hospitals
 - 126311 General, Acute
 - 126312 General, Long-Term
 - 126313 Psychiatric
 - 126314 Specialty
 - 126315 Osteopathic
 - 126316 Allopathic
 - 126317 Veterans
 - 126318 Rehabilitation
 - 126319 Other

12632 Clinics

- 126321 Medical
- 126322 Dental
- 126323 Psychiatry
- 126327 Public Health
- 126328 Family Planning
- 126329 Other

1264 Education

- 12641 High School
- 12642 Middle or Junior High
- 12643 Elementary
- 12644 College, University
- 12645 Academy
- 12646 Trade School
- 12649 Other

1265 Religious

- 12651 Church
- 12652 Retreat House
- 12659 Other

1266 Correctional

- 12661 Maximum Security
- 12662 Minimum Security
- 12663 Halfway House
- 12664 Detention center
- 12665 Juvenile Home
- 12669 Other

1267 Military

- 12671 Army
- 12672 Navy
- 12673 Marines
- 12674 Coast Guard
- 12675 Air Force
- 12676 National Guard
- 12679 Other

1268 Government Administration and Services

- 12681 City Hall (County, Town, etc.)
- 12682 Post Office
- 12683 Police Station
- 12684 Sheriff Office
- 12685 State Police Station
- 12686 Fire Station
- 12687 Federal Offices (e.g. Federal Office Buildings, USDA County Offices, etc.)
- 12688 State Offices (e.g. State Office Buildings, County FIA Offices, MDNR Field Offices)
- 12689 Other (includes Fish Hatcheries and similar facilities)

1269 Other

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. Note: outdoor cultural, public assembly and recreational lands (and their accompanying incidental buildings) are classified under category 19 "open and other".

1271 Indoor Cultural

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

1272 Indoor Public Assembly

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

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, and multiple purpose recreation centers.

128 Office / Research Center or Park

Areas where the dominant land use consists of a group of offices for professional business activities. NOTE: a single, isolated office for professional services is category 1242. Category 128 includes office com-plexes, office parks, research parks and high-rise office towers outside of a central business district. Commercial buildings within an office park should be assigned to the appropriate commercial category, e.g., motels (1167) and restaurants (1241).

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 residential areas; many are now found at airports or in relatively open country. In contrast, heavy industries use raw materials such as iron ore, lumber or coal and include 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 associated with heavy industries, along with transportation facilities capable of handling heavy materials.

131 Primary Metal Production (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, reducers, 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
- 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.)

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
- 1322 Plastics and Man-made Fibers
- 1323 Biological, Medicinal and Pharmaceutical Drugs
- 1324 Soap and Detergents
- 1325 Perfumes, Cosmetics and Toilet Preparations
- 1326 Paints, Varnish, Enamels, Agricultural Chemicals, Explosives, and Allied Products
- 1327 Petroleum Refining and Related Industries
- 1328 Tire and Rubber Manufacturing
- 1329 Other Petrochemical Industries

133 Primary wood processing (lumber, pulp, paper)

This category includes only processing facilities that start with wood (logs). An establishment that, 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
- 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.)

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 water transportation. Large stockpiles of sand or stone are common. NOTE: sand and gravel operations are **not** included with this land use.

- 1341 Flat Glass Manufacturing
- 1342 Glass and Glassware
- 1343 Cement
- 1344 Structural 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)

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
- 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

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

- 1361 Food and Kindred Products
 - Also includes agricultural packaging and processing facilities, grain elevators, and cold storage facilities.
- 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

137 Recyclable Material Processing

This industrial category includes establishments engaged in processing scrap metal from automotive or industrial sources, as well as other recyclable materials. Included in this category are auto wreckers primarily engaged in dismantling motor vehicles for wholesaling the scrap metal. NOTE: Used Auto Parts Yards (Auto Salvage) are classified as 1243.

- 1371 Scrap Metal Yards
- 1372 Other Recyclable Material Yards

138 Industrial Park

Areas set aside within the community and specifically provided with the necessary community facilities such as roads, water and sewer lines, and power, to support industrial growth and development.

139 Other

Industrial uses not covered in the above categories. Includes electric power generation (coal or nuclear) facilities and automotive test tracks.

14 Transportation, Communication & Utilities

Major transportation routes 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, as well as service and terminal facilities. Rail facilities include stations, parking lots, roundhouses, repair facilities, switching yards and related areas. Spur connections from an active rail line are included within the associated industrial or extractive category.

Airport facilities include the runways, intervening land, terminals, service buildings, navigation aids, fuel storage areas, parking lots and a limited buffer zone. Port areas include the docks, ship yards, dry-docks, locks, and other watercourse-control structures. NOTE: recreational boating facilities are classified in category 1935.

Communications and utilities areas involved in transport or movement of water, gas, oil or electricity, as well as areas used for airwave communications are also included in this category. Pumping stations, electric substations, utility maintenance facilities 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 or under which they pass. If these uses are dominant and meet the minimum width criteria, they may be identified as transportation uses.

141 Air Transportation

The airport category includes all facilities directly connected with air transport, whether it is commercial, municipal, military or private. These areas include the runways, intervening land, terminals, service buildings, plane hangars, navigation aids, fuel storage areas, parking lots and a limited buffer zone.

1411 Commercial Aviation

1412 General Aviation

1413 Military

1414 Other

142 Rail Transportation

This category includes all facilities that are associated with rail transportation: overland tracks, roundhouses, repair facilities, 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

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 Facilities
- 1433 Lighthouse
- 1439 Other

144 Road Transportation

This category includes all roads and road rights-of-way, including the median, bridges, rest areas and weighing stations. This category also includes truck and bus terminals, but does not include parking areas associated with a particular use (*i.e.*, CBD, retail area, factory, etc.).

- 1441 Limited and Controlled Access Expressway
- 1442 Five or More Lanes
- 1443 Four Lanes
- 1444 Three Lanes
- 1445 Two Lanes
- 1446 Truck Terminal
- 1447 Bus Terminal
- 1448 Highway Maintenance / Road Commission
 - Includes state highway maintenance facilities, county road commission facilities and municipal public service garages (associated with street maintenance).
- 1449 Other

145 Communications

Those areas associated with radio, weather radar, television, telephone, cellular phone, etc., are included in this category. Small facilities or those associated with an industrial, commercial, or extractive land use are included within the category that they are associated with. Long distance transmission facilities rarely constitute the dominant use of land over which they pass. If these uses are dominant, they may be identified as a communication land use.

- 1451 Telephone
- 1452 Telegraph
- 1453 Television
- 1454 Radio
- 1455 Cellular Phone
- 1459 Other

146 Utilities

Those areas associated with the storage, distribution or transmission of gas, oil, water or electricity are included into this category. Pumping stations, electric substations, and utility warehouses and storage yards constitute the major components of this category. Small facilities and those associated with an industrial, commercial, or extractive land use are included within the appropriate category. Pipelines, electric transmission lines, etc., rarely constitute the dominant use of land over or under which they pass. If these uses are dominant, they may be identified as a utility use.

- 1461 Electric Substations, utility maintenance facilities, and Transmission
- 1462 Gas Storage and Transmission
- 1463 Petroleum Storage and Transmission
- 1464 Solid Waste Disposal and Transfer
- 1465 Sewage Treatment Facilities and Transmission
- 1466 Water Treatment Plants and Transmission (large water wells are included)
- 1469 Other

16 Mixed

This category is used wherever an intricate mixture of second-level urban uses occurs and where no one land use predominates. In any category, as much as one-third intermixture of another use is allowed without changing the basic classification, but where the intermixture is greater, this mixed category is used. Wherever several uses, each less than one-third the area, are intermixed, or where individual second-level units are too small to be separated, but the aggregate of such uses meets the minimum area size, the mixed category is appropriate.

This category is also used to classify large individual buildings and complexes that are composed of several, distinct land uses. For example, an apartment building that contains a ground floor of commercial uses. This category also includes developments along transportation routes and those of 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 should be included within the this category, but other agricultural land uses should be excluded.

17 Extractive

Extractive land uses encompass both surface and subsurface mining operations, such as sand and gravel pits, stone quarries, oil and gas wells, and metallic and nonmetallic mines. 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.

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 land, grass land, forest land, etc. Unused pits or quarries that have been flooded are placed in the water category, if the water body meets the minimum mapping size. 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 that are primarily carried out on the surface of the earth through the creation of a large pit.

- 1711 Metallic Mineral Quarry
- 1712 Nonmetallic Mineral Quarry
- 1713 Coal
- 1714 Sand and Gravel
- 1719 Other

172 Underground

Extractive activities primarily carried out underground. Note that portions of this activity, such as non-vegetated disturbed land and development waste rock, are classified under the barren land category .

- 1721 Metallic
- 1722 Nonmetallic
- 1723 Coal
- 1729 Other

173 Wells

This category includes the areas used for the extraction of oil, natural gas or brine, as well as the injection of waste into, the substrata. In the case of one individual well, the area immediately surrounding the well is all that is to be placed into this category, assuming it meets the minimum size requirement. Large high-capacity water wells are NOT included in this category – they are classified as a Utility (1466).

- 1731 Oil
- 1732 Gas
- 1733 Brine Production
- 1734 Waste Disposal
- 1739 Other

179 Other extractive

Extractive uses not covered in the above categories.

19 Open & Other

Open urban 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 intensively or extensively used. It may include structures incidental to the outdoor land uses.

191 Outdoor Cultural

Outdoor cultural areas include botanical gardens, arboretums, and zoos.

- 1911 Botanical Gardens and Arboretums
- 1912 Zoos
- 1913 Historic Site
- 1919 Other

192 Outdoor Public Assembly

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

- 1921 Amphitheaters
- 1922 Drive-In movie Theaters
- 1923 Stadiums
- 1924 Racetracks
- 1925 Fairgrounds
- 1926 Amusement Parks / Water Parks
- 1929 Other

193 Outdoor Recreation

All recreation facilities and areas that are on open land. This category also includes any incidental buildings such as shelters, toilets, beach changing areas, etc. This category does **not include** rangeland, forest land, water, wetlands or barren land within parks or recreation areas. These should be classified in level-I categories 3, 4, 5, 6, and 9, respectively, at the third or higher levels.

1931 Parks

This category includes land maintained as lawn, plantings, paving, benches, ornamental objects and walks. These occur in parks or as institutional or estate grounds, malls, etc. They provide open space relief or environmental embellishment.

1932 Play, Games, and Athletics

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 installations 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.

- 19321 Playlots
- 19322 Playgrounds
- 19323 Athletic Fields
- 19329 Other

1933 Sports Areas

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. Note that athletic fields are covered under category 1932.

- 19331 Golf Courses
- 19332 Miniature Golf Courses
- 19333 Golf Driving Ranges
- 19334 Offroad Recreational Vehicle Trails, Tracks or Areas
- 19335 Shooting Ranges
- 19339 Other

1934 Other Land-Based Activities

19341 Horseback Riding

19342 Picnicking

19343 Camps and Campgrounds

Property under single ownership or control in which sites are offered for use by the public or members of an organization, either free of charge or for a fee, for the establishment of temporary living quarters for 5 or more recreational units (tent, travel trailer, camping trailer, motor home, mobile home, or truck camper). Does not include seasonal manufactured housing parks (115).

19344 Sledding or Toboggan Hills

19345 Skiing

19346 Foot Trails

19347 Landscape, Scenic or Natural Wonder-Viewing Points

19349 Other

1935 Water-Dependent Recreation

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

19351 Swimming Pools

19352 Swimming Beaches

19353 Marinas, Yacht Basins

19354 Boating Sites

19359 Other

194 Cemeteries

195 Vacant

Open parcels of land within urban and built-up areas. Includes vacant parcels in platted residential, commercial, and industrial areas, as well as sites that have been cleared of old buildings. Surface cover may be bare soil, paved, or grass; the parcel may also contain evidence of soil disturbance from previous use or site-clearing. In residential areas, adjacent landowners may use portions of vacant lots for gardens and extended lawn areas. Also includes residential properties along shorelines where a house has not been constructed, but the site is maintained and used by the owner for waterfront access purposes. Vacant lots may be mowed on a regular basis.

196 Under Construction / Construction Sites

Includes areas of active construction, temporary construction sites (e.g., temporary highway processing plants and materials storage areas), and areas under development stripped of cover before construction begins. Such sites should be classified as 196 ***until construction is completed***, at which time they would be mapped with their appropriate designation.

DEFINITIONS FOR AGRICULTURAL LAND

2 AGRICULTURAL LAND

Land used primarily for production of farm commodities (food, fiber, fuel, fur or wool).

21 Cropland

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

211 Row Crops

Land that is or will be planted to row crops (crops planted in rows a distinguishable distance apart). This land is tilled annually. Cropland planted to legumes and grasses are not included.

- 2111 Corn
- 2112 Soybeans
- 2113 Sugar Beets
- 2114 Potatoes

212 Small Grains

Land planted to close-grown crops which will be harvested for grain.

- 2121 Winter Wheat
- 2122 Oats
- 2123 Rye and Barley

213 Hay

Land which produces grasses, which when harvested, are used for animal feed.

214 Truck Crops

Land used primarily for the cultivation of vegetables. This class includes, but is not limited to, cucumbers, pumpkins, squash, carrots, onions, carrots, cabbage, broccoli and peppers.

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 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 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 turf grass, 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

Confined feeding operations, also known as animal feeding operations (AFOs), are agricultural enterprises consisting of a lot or facility where animals are stabled or confined and fed or maintained. It includes the raising of animals for food (including milk), fur, or recreation in lots, pens, ponds, sheds, or buildings. Feed is brought to the animals, rather than the animals grazing or otherwise seeking feed in pastures, fields, or on rangeland.

231 Livestock

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

2311 Beef
2312 Dairy
2313 Swine
2319 Other

232 Poultry

Animal feeding operations for two-legged animals.

2321 Chickens
2322 Turkeys
2329 Other

239 Other

Other kinds of animal feeding operations, including equine, fur-bearing animals, wool-bearing animals, apiculture (bees), and aquaculture (e.g., trout farms).

24 Permanent Pasture

This category produces grasses and certain types of legumes that are grazed by animals. The land is continuously used for pasture with tillage only to reestablish the grasses and legumes. Woodland pasture is not included in this category.

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 horse exercise tracks are included in this category.

291 Farmsteads

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

2911 Farmstead With Residence
2912 Farmstead Without Residence

292 Greenhouses and Mushroom Houses

Land with buildings used to produce specialty farm commodities.

2921 Vegetables
2922 Flowers
2923 Mushrooms
2929 Other

293 Horse exercise tracks

Non-commercial training areas, primarily for race horses.

299 Other

DEFINITIONS FOR GRASS AND SHRUB LANDS

3 GRASS AND SHRUB LANDS

Grass and shrub lands are 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 pasture (24 Agricultural land).

31 Grasses and Forbs

Areas 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 Grasses and Forbs

- 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 Grasses and Forbs

- 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 Shrubs

Shrub lands are dominated (> 25% cover) 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 Shrubs

- 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 shrubs** (map as **612**)

33 Pine or Oak Openings (prairie)

This category should be used to classify those openings in oak or pine forestland where grass cover is so thick that seeds cannot germinate.

331 Hardwood Opening

332 Coniferous Opening

DEFINITIONS FOR FOREST LAND

4 FOREST LAND

Forest lands are lands that are at least 16.7 percent stocked (approximately 25% crown cover) by trees of any size, or formerly having such tree cover, and not currently developed for nonforest use.

Lands from which trees have been removed to less than 16.7 percent stocking but which have not been developed for other use are also included. 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 grass and shrub lands (upland) or wetlands (lowland).

41 Broadleaved Forest

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

411 Northern Hardwoods

- 4110 Undifferentiated Northern Hardwood
- 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

412 Central Hardwoods / Oak

- 4120 Undifferentiated Oak / Hickory
- 4121 Red Oak Predominates
- 4122 White Oak Predominates
- 4123 Black Oak Predominates

413 Aspen-Birch

- 4130 Undifferentiated Aspen-Birch
- 4131 Trembling Aspen Predominates
- 4132 Bigtooth Aspen Predominates
- 4133 White Birch Predominates

414 Lowland hardwoods

- 4140 Undifferentiated Lowland Hardwood
- 4141 Ash Predominates
- 4142 Elm Predominates
- 4143 Soft Maple Predominates
- 4144 Cottonwood Predominates
- 4145 Balm-of-Gilead Predominates
- 4146 Aspen Predominates

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 Pine

- 4210 Undifferentiated Pine
- 4211 White Pine Predominates
- 4212 Red Pine Predominates
- 4213 Jack Pine Predominates
- 4214 Scotch Pine Predominates

422 Other Upland Conifer (Spruce-Fir)

- 4220 Undifferentiated Upland Conifer
- 4221 White Spruce
- 4222 Balsam Fir
- 4226 Hemlock

423 Lowland Conifers

- 4230 Undifferentiated Lowland Conifers
- 4231 Cedar Predominates
- 4232 Black Spruce Predominates
- 4233 Tamarack Predominates
- 4234 Balsam Fir-White Spruce Association Predominates
- 4235 Balsam Fir Predominates
- 4236 Jack Pine Predominates

423 Managed Christmas Tree Plantation

43 Mixed Conifer-Broadleaved Forest

Mixed forests are forest lands in which broadleaved and coniferous trees occur together, with neither predominating (make up 75% or more of the stocking).

431 Upland Hardwoods and Pine Associations

- 4311 Sugar Maple Predominates
- 4312 Red Maple Predominates
- 313 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

44 Clearcut Forest

Clearcut forest are those areas which have been clearcut harvested. These areas from which trees have been removed to less than 16.7 percent stocking, but which have not been developed for other uses, are included in the forest land category. This classification roughly corresponds to the zero category (nonstocked) of the fifth level in those counties with a detailed forest inventory component.

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.

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

Lakes whose areal extent does not exceed 4.9 acres at the time the data is collected.

522 Very Small Lakes

Lakes ranging from 5 to 9.9 acres in areal extent at the time data is collected.

523 Small Lakes

Lakes ranging from 10 to 24.9 acres in areal extent at the time data is collected.

524 Medium Lakes

Lakes ranging from 25 to 99.9 acres in areal extent at the time data is collected.

525 Medium Large Lakes

Lakes ranging from 100 to 249.9 acres in areal extent at the time data is collected.

526 Large Lakes

Lakes ranging from 250 to 999.9 acres in areal extent at the time data is collected.

527 Very Large Lakes

Lakes ranging from 1,000 to 2,499.9 acres in areal extent at the time data is collected.

528 Extra Large Lakes

Lakes ranging from 2,500 to 9,999.9 acres in areal extent at the time data is collected.

529 Super Large Lakes

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 Reservoir Ponds

Reservoirs whose areal extent does not exceed 4.9 acres at the time the data is collected.

532 Very Small Reservoirs

Reservoirs from 5 to 9.9 acres in areal extent at the time the data is collected.

533 Small Reservoirs

Reservoirs ranging from 10 to 24.9 acres in areal extent at the time the data is collected.

534 Medium Reservoirs

Reservoirs ranging from 25 to 99.9 acres in areal extent at the time the data is collected.

535 Medium Large Reservoirs

Reservoirs ranging from 100 to 249.9 acres in areal extent at the time the date is collected.

536 Large Reservoirs

Reservoirs ranging from 250 to 999.9 acres in areal extent at the time the data is collected.

537 Very Large Reservoirs

Reservoirs ranging from 1,000 to 2,499.9 acres in areal extent at the time the data is collected.

538 Extra Large Reservoirs

Reservoirs ranging from 2,500 to 9,999.9 acres in areal extent at the time the data is collected.

539 Super Large Reservoirs

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. 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 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, Grass and Shrub Land, 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.

61 Forested (Wooded) Wetlands

Forested wetland includes seasonally flooded bottomland hardwoods, shrub swamps, and wooded swamps including those around bogs. 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 Wetland

[6111] lowland Hardwoods (**423**)

[6112] Lowland Conifers (**423**)

[6113] Mixed Forested Wetlands (**432, 433, or 435**)

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-button-bush associations under 6115 are those aquatic shrub swamps with greater than 50 percent shrub cover and average water depth of less than 6 inches.

- 6121 Alder Predominates
- 6122 Dogwood, Viburnum and Willow Associations
- 6123 Sweetgale-Bogbirch Associations
- 6124 Leatherleaf Predominates
- 6125 Willow-Buttonbush Associations (greater than 50% cover – less than 6 inches water)
- 6126 Willow-Buttonbush Associations (less than 50% cover – more than 6 inches water)
- 6127 Water Willow Predominates
- 6128 Standing Dead Trees, Shrubs, and Stumps
- 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, bulrush, sedges, and other grasses and broad-leaved emergents such as water lily, pickerelweed, arrow arum, and arrowhead, are typical of fresh water locations. Mosses and sedges grow in wet meadows and bogs.

621 Aquatic Bed Wetland

- 6211 Floating Bed Wetland
 - 62111 Great Lakes
- 6212 Submerged Aquatic Bed
 - 62121 Great Lakes

622 Emergent Wetland

623 Flats

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 (196 Under Construction). Areas of extractive and industrial land have waste and tailings dumps and exhausted sources of material supply are often evident.

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.

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 Dunes / Exposed Bluff

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

731 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

Includes barren lands which are in transition from one land use activity to another (areas of construction within the urban environment should be mapped as 196 Under Construction / Construction Sites). These areas typically lack any evidence of future land use and include forest land clearing, areas altered by filling, and other areas stripped of their vegetative cover.