

THEME LAYER AND BASE MAP SURVEY

Database and Resources Development Subcommittee

A User Needs Assessment for Maryland State and Local government Agencies
April 12, 1995

Survey Implementation

To support the stated mission of the MSGIC, the Database and Resource Development Subcommittee conducted a survey on GIS theme layers. The purpose of the survey was to catalog commonly wanted theme layers. Furthermore, the survey would help identify the producers of particular theme layers, and provide information as to scale, whether the data was in paper, digital, or another format. It was believed the results of the survey would bring together individuals and organizations with common interests in particular theme layers, facilitate cooperation in theme layer development, and promote the formation of interest groups leading to economies of scale in theme layer production and development. The results would be useful in cataloging those individuals and agencies involved in the production {and maintenance} of any number of theme layers identified as essential or useful to a particular agency or groups of agencies.

To accomplish this, M. Kavanagh, the Subcommittee chair, and R. Bean developed a theme layer survey and presented the design to the full Subcommittee for approval. When approved, the survey was sent to a contact person in each State department or independent agency, and to county governments and regional councils of government/planning agencies. The survey (Appendix I) asked for information on 190 identified theme layers grouped into 46 categories. Each respondent was asked if their organization was a producer each theme layer, and the scale and format (digital, paper copy, etc.) at which the layer was produced. Additionally, the respondent was asked to rate the utility of each theme layer to their organization (essential or useful) and the scale at which they would like to see the data produced. The results, when returned, were summarized into State agency and county/regional councils of government responses. The results consisted of a total of 63 replies, 36 from State agencies and the remaining 27 from county governments and regional organizations. There were multiple responses from some State agencies; these were treated as individual responses in the analysis.

Survey Results

In order to develop a working list of "high priority" layers, a table was generated of those theme layers that at least one-third of the state respondents rated as "essential" for their GIS efforts (Table I). There were a total of 28 of these layers, primarily in the areas of hydrology, land use/land cover, transportation, governmental boundaries, and land parcel information.

The county and regional responses were treated in a similar manner, using the one-third criteria (9 of 27 responses) as a cut off point. This identified a total of 74 "essential" layers desired by county and regional agencies for use in their GIS efforts. This over two-fold increase in wanted layers helps demonstrate differences in GIS use between local and state government. Many state agencies are currently using GIS for limited functions or for specific objectives, whereas the most county governments and regional organizations are using GIS as a management tool for a wide range of activities.

To better examine the similarities and differences between the state and county/regional responses, a table was developed that lists all theme layers that either one-third of state agencies or one-third of the county/regional respondents rated as essential. This table consists of 79 layers from the original 190 listed in the original questionnaire and is presented as Table I.

Layers that were regarded the highest priority fell into the broad groupings of land resources, water resources, roads, governmental boundaries, land parcels, growth management sensitive areas, community facilities, statistical areas, and regulatory status. For both state and local/regional agencies, the most often identified "essential" layers were governmental boundaries, land parcels, and road information. There was a significant difference between state and county replies, however. Although there tended to be a relatively high degree of relationship between the most desired layers, state agencies invariably selected 1:24000 as the preferred scale, whereas the counties and regional organizations favored 1:7200. Again, this indicates a difference in GIS operations, outlook, and detail that the state and county/regional agencies feel are appropriate for their respective GIS operations.

In summary, this survey reveals that there are both commonalities and differences in desirable coverages and preferred scale between state and county/regional organizations. State agencies identified fewer essential, or core, coverages at a favored scale of 1:24000 for their GIS operations, while county and regional organizations identified many more coverages and the larger scale of 1:7200 as appropriate for their GIS applications. The overlap between the two sets of respondents included governmental boundaries, land parcels, and road information. The counties tended to emphasize community facilities, growth management sensitive areas, statistical areas, and regulatory status areas more than state agencies.

County vs. State Theme Layer Survey Results

The 100 theme layers on this list represent a subset of the complete questionnaire which had 235 potential layers. The individual theme layers that were listed by one-third of the respondents (State-12 or County-10) as essential, or by two-thirds of the respondents (State-24 or County-20) as essential and useful, are on this list. The numbers that are followed by an asterisk represent the category that triggered the above selection criteria. Layers shown with an asterisk in the last column were triggered by all four selection criteria.

THEME LAYER	STATE (36 Responses)				COUNTY (29 Responses)				
	Essential		Essential & Useful		Essential		Essential & Useful		
	#	%	#	%	#	%	#	%	
Topography									
Contours	14*	39	23	64	11*	38	24*	83	
Benchmark	6	17	15	42	10*	35	21*	72	
Soil Resources									
County Surveys	12*	33	24*	67	16*	55	28*	97	*
Natural Soil Groups	10	28	18	50	8	28	21*	72	
Forest Resources									
Deciduous/Coniferous/Mixed	10	28	23	64	12*	41	26*	90	
Land Use/Land Cover									
Land Use	19*	53	26*	72	23*	79	26*	90	*

Land Cover	14*	39	22	61	19*	66	25*	86	
Critical Area Bndry.	10	28	24*	67	17*	59	19	66	
Critical Area Land Use	5	14	21	58	14*	48	19	66	
Wildlife Habitat/Data									
Heritage Species	8	22	14	39	7	24	20*	69	
Agriculture									
Farm Use	6	17	13	36	9	31	21*	72	
Soil and Water Conser. Plan	6	17	18	50	8	28	20*	69	
Wetlands									
Wetland Bndry/Classification	17*	47	25*	70	20*	69	25*	86	*
Hydrology									
Watersheds	15*	42	21	58	16*	55	23*	79	
Subwatersheds	15*	42	18	50	16*	55	23*	79	
Catchment Basins	14*	39	18	50	9	31	20*	69	
Streams	19*	53	24*	67	20*	69	25*	86	*
River Shoreline	11	31	24*	67	14*	48	22*	76	
Lake/Reservoir	11	31	21	58	12*	41	21*	72	
Floodplains									
Tidal 100-Year	11	31	23	64	17*	59	21*	72	
Nontidal 100-Year	9	25	22	61	21*	72	23*	79	
500-Year	5	14	16	44	12*	41	21*	72	
Coastal High Hazard Zone	5	14	14	39	11*	38	16	55	
Floodway	6	17	16	44	18*	62	21*	72	
Groundwater									
Aquifer	5	14	18	50	10*	35	25*	86	
Aquifer Recharge Areas	5	14	16	44	7	24	24*	83	
Water Well Locations	6	17	16	44	8	28	24*	83	
Wellhead Protection Zones	4	11	15	42	9	31	24*	83	

Roads									
Interstate Roads	20*	56	33*	92	21*	72	24*	83	*
State Maintained Primary	20*	56	33*	92	23*	79	27*	93	*
State Maintained Secondary	19*	53	33*	92	23*	79	27*	93	*
Street Address Info.	16*	44	30*	83	21*	72	28*	97	*
Street Directional Info.	11	31	20	56	18*	62	24*	83	
City/County Roads	19*	53	32*	89	24*	83	27*	93	*
Bridges	10	28	20	56	16*	55	24*	83	
Mass/Rail Transportation									
Railroad Lines	7	19	26*	72	12*	41	22*	76	
Airports									
Commercial	8	22	17	47	10*	35	15	52	
Public	6	17	14	39	12*	41	20*	69	
Private	5	14	13	36	10*	35	19	66	
Trails and Bikeways									
Other	2	6	15	42	7	24	20*	69	
Electric Generation									
Substations	2	6	11	31	5	17	20*	69	
Historic Sites									
National Historic Register	7	19	18	50	12*	41	27*	93	
Inventoried Historic Properties	7	19	17	47	9	31	26*	90	
Historic Districts	6	17	16	44	12*	41	25*	86	
Historic Preservation Easement	7	19	14	39	11*	38	23*	79	
Archeological Sites									
Archeological Sites	6	17	18	50	4	14	26*	90	
Archeology Survey Areas	5	14	16	44	4	14	22*	76	

Archeological Potential	5	14	16	44	2	7	22*	76	
Industrial and Hazardous Waste									
Superfund Sites	6	17	17	47	8	28	20*	69	
Underground Storage Tanks	4	11	12	33	6	21	22*	76	
Municipal and Solid Waste									
Active Landfills	9	25	20	56	12*	41	22*	76	
Inactive Landfills	9	25	17	47	11*	38	21*	72	
Rubble Landfills	6	17	14	39	12*	41	21*	72	
Water Treatment									
Surface Water Intakes	6	17	14	39	10*	35	20*	69	
Water Treatment Plants	5	14	13	36	10*	35	21*	72	
Wastewater Treatment									
Treatment Plants	8	22	16	44	14*	48	25*	86	
Sludge Disposal Sites	8	22	14	39	11*	38	23*	79	
Land Surface Application Sites	8	22	16	44	8	28	21*	72	
Sewer Lines & Lift Stations	5	14	15	42	14*	48	25*	86	
Septic Systems	4	11	15	42	7	24	20*	69	
Governmental Boundaries									
State	21*	58	27*	75	12*	41	20*	69	*
County Land/Water	24*	67	31*	86	21*	72	25*	86	*
County Political	23*	64	31*	86	20*	69	25*	86	*
Municipal	20*	56	28*	78	22*	76	25*	86	*
State Legislative Districts	11	31	21	58	10*	35	21*	72	
Congressional Districts	11	31	19	53	9	31	20*	69	
Census Designated Places	10	28	19	53	13*	45	22*	76	
Land Parcels									
Federal Land	18*	50	22	61	14*	48	21*	72	
State Owned Land	21*	58	28*	78	16*	55	25*	86	*

Locally Owned Land	18*	50	24*	70	21*	72	25*	86	*
Prop. Owner & Character.	16*	44	26*	72	21*	72	25*	86	*
Real Property Attributes	13*	36	22	61	17*	59	24*	83	
Buildings/Site Inventories	9	25	16	44	14*	48	22*	76	
MD Envir. Trust Easements	6	17	17	47	11*	38	19	66	
Greenways	7	19	21	58	14*	48	22*	76	
Agricultural District/Easement	8	22	21	58	19*	66	24*	83	
Priv. Conserv. Organizations	9	25	20	56	11*	38	21*	72	
Growth Mgmt/Sensitive Areas									
Steep Slope	8	22	21	58	15*	52	25*	86	
Stream Buffer	14*	39	22	61	15*	52	24*	83	
Heritage Species	10	28	17	47	14*	48	22*	76	
100-Year Floodplain	13*	36	21	58	19*	66	22*	76	
Statistical Areas									
Census Tracts	9	25	16	44	16*	55	24*	83	
Census Block Groups	10	28	15	42	15*	52	25*	86	
Census Blocks	10	28	15	42	16*	55	25*	86	
Minor Civil Divisions	9	25	17	47	11*	38	22*	76	
ZIP Codes	10	28	19	53	13*	45	22*	76	
Community Facilities									
State-Owned Facilities	10	28	26*	72	2	7	21*	72	
Educational Institutions	9	25	19	53	10*	35	25*	86	
State Parks	14*	39	25*	70	11*	38	25*	86	*
State Forests	14*	39	25*	70	9	31	24*	83	
Wildlife Management Areas	11	31	23	64	10*	35	22*	76	
Emergency Management									
Fire Departments	3	8	15	42	14*	48	26*	90	
Hospitals	8	22	17	47	12*	41	24*	83	
Police Stations	4	11	14	39	14*	48	25*	86	

Evacuation Centers	2	6	10	28	10*	35	23*	79	
Regulatory Status									
Zoning	15*	42	23	64	24*	83	26*	90	
Municipal Service Areas	5	14	17	47	15*	52	22*	76	
County Comprehensive Plan	9	25	21	58	20*	69	25*	86	
Water/Sewer Plans	11	31	22	61	22*	76	24*	83	
NUMBER OF LAYERS THAT TRIGGERED THE SELECTION CRITERIA									
	28		22		78		94		
TOTAL THEME LAYERS SELECTED									
	32				99				