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## **CHAPTER 8 APPENDIX**

### **8.0 February 1, 2005 Public Meeting Results by Group**

#### **Group #1**

1. Education of residents regarding fertilizers, alternative landscape uses, and pesticides
2. Update local ordinances/planning tools to allow for preservation of natural areas to reduce stormwater problems
3. Change public attitudes of what is aesthetically pleasing
4. Education of developers
5. Locate old drains to determine where they go and how they may be contributing to the problem
6. Educate residents of effects of “household products” and proper disposal
7. Retro-fit existing developments to be stormwater friendly
8. Use existing natural areas/nature centers as focal points for education
9. Education of commercial fertilizing companies/distributors
10. Encourage organic gardening
11. Include stormwater management practices in master deeds of new developments
12. Develop a marketing scheme to educate consumers
13. Reduce the goose population
14. Monitor existing septic systems

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## Group #2

1. Long range plans for storm drains
2. Reduce waterfowl/seagull problems (hunting?, round ups are costly)
3. Promote use of less damaging fertilizers
4. Improved water management on/along roads
5. Protect river corridors in townships (100ft buffers, include wetlands)
6. Test septic systems
7. Strong ed component – public, developers, govt.
8. Impervious surfaces – creative ways to reduce, creative roadway design to reduce destruction (i.e. 66 ft. from road vs. protect trees; change County right-of-way clearing regulations; less right-of-way width esp. in subdivisions)
9. Not allowing permits that will result in significant erosion/water problems (i.e. house on steep hill with steep roads)
10. Promote alternative landscaping (natives, less grass)
11. Identify storm drain problems/locations & changes
12. Drain commission minimizes neg. impacts
13. Get money for projects (repairs, bmp's)
14. Improved golf course management
15. Ordinances require BMP's (retention/detention)
16. Require better topsoil on new developments

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## Group #3

1. Stormwater runoff (containment)
2. Consistent monitoring & testing of lakes & streams
3. Regional agency for lake boards for coordinated efforts
4. Review design standards in communities in watershed for consistency
5. Phosphorus (reduction on residential properties, public education, buffer zones for natural filters)
6. Monitoring wetlands condition & loss
7. Areas of concern (fuel tanks, old dumps, farm contamination)
8. Public education re: development limiting impervious surface

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## Group #4

1. Educate developers and municipal officials on sustainable stormwater management practices: BMP's
2. Increase lake area/riparian residents' awareness & involvement: geese, fertilizer, landscaping
3. Preserve/keep intact as many high quality wetlands as possible.
4. Educate residents on septic maintenance
5. Provide incentives to residents, developers, and others for good practices (landscaping awards, etc.
6. Promote economic benefits of good stormwater management practices and low impact developments.
7. Provide residents, developers etc. with specific alternatives to bad/current practices
8. Create interactive public demonstration site
9. Enact ordinances that protect water quality and natural resources
10. Create/host public awareness/involvement events (Creek fest, River day)
11. Have State/County show up
12. Develop Master Plan that recognizes and has goal of protecting water quality
13. Educate residents on proper use/disposal of household hazardous waste
14. Continued research on environmental impacts in subwatershed
15. Identify potential corridor linkages in subwatersheds
16. Initiate outreach/involvement programs targeted to young school-age children
17. Assure proper RV disposal practices, car washing practices
18. Identify "time bombs"
19. Clean water for human consumption and recreation
20. Protect enhance wildlife habitat

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21. Protect human health
  22. Educate/train landscapers on sustainable practices
  23. Educate residents on sustainable landscaping practices (buffers, natives)

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## Group #5

1. Updated ordinances (Land Use Planning)
2. Fertilizer – reduced phosphorus (high phosphorus)
3. School projects (public awareness)
4. Engineered Topography (land use planning)
5. Maintain habitat (fishery)
6. Lake Associations (public awareness)
7. Birds, geese ( high phosphorus)

### **Goal: Land Use Planning**

1. Increase buffers
2. BMP's (\$)
3. Cluster developments
4. Indigenous species
5. Mitigation
6. Decrease impervious areas

### **Goal: Fishery**

1. Control pollutants
2. Address invasive species
3. Identify species
4. Identify species location
5. Water temp. control

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**Goal: Public Awareness**

1. Work shops
2. Media coverage
3. Publish Data
4. Organizations

**Goal: Recreational Access**

1. Evaluate lake access
2. Lake reclamation
3. Remove pollutants
4. Geese control
5. Timely septic maintenance

**Goal: High Phosphorus**

1. Septic Maintenance

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## Group #6

1. Increase regulation of phosphorus
2. Promote use of native vegetation
3. Promote natural boundaries and buffers within developments
4. Increase youth education
5. Promote 'natural appearance' turf
6. Increase involvement of lawn care companies
7. Promote monitoring/enforcement of septic fields & self contained sewer systems.
8. Increase developer involvement
9. Encourage cluster developments/deter clear cut development
10. Enforce/strengthen zoning laws
11. Increase the public's understanding of their role in protecting streams & lakes.
12. Promote soil testing to assess needs
13. Pursue periodic/sale of residence testing of septic fields
14. Promote recycling of HazMat and awareness of recycling locations/times

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## 8.1 Upper Clinton Subwatershed Existing and Potential Future Impervious Cover Analysis

### Overview of Impervious Cover

Impervious Cover (IC) derives from human development and has a variety of damaging effects on streams. The Center for Watershed Protection has developed an “IC Model” (ICM) that can serve as a framework for watershed managers to use in evaluating the existing and potential future extent of stream degradation due to IC in the watershed.

#### What is Impervious Cover?

The following definition (Schueler, 1994) succinctly characterizes IC:

*“Impervious Cover represents the imprint of land development on the landscape. It is composed of two primary components: the rooftops under which we live, work and shop, and the transport system (roads, driveways, and parking lots) that we use to get from one roof to another.”*

#### How Does Impervious Cover Impact Stream Ecosystems?

A preponderance of evidence has shown that the amount of IC in a watershed has a direct influence on the integrity of the hydrology, physical structure, water quality, and biology of the streams and rivers in that watershed (Center for Watershed Protection, 2003). IC impacts stream ecosystems by increasing the volume of stormwater runoff discharged from the watershed to the stream. **Hydrologic impacts** including disruption of natural water balance, increased flood peaks, increased stormwater runoff, more frequent flooding, increased bank full flows, and lower dry weather flow. **Structural habitat impacts** include stream widening & erosion, reduced fish passage, degradation of habitat structure, decreased channel stability, loss of pool-riffle structure, fragmentation of riparian tree canopy, and decreased substrate quality. **Water quality impacts** include increased stream temperature, pollutants, and risk of beach closure.

#### The Impervious Cover Model (ICM)

The IC Model (ICM) creates a framework that classifies the quality of streams and rivers based on the percentage of IC in their watersheds (Schueler, 1994). The framework classifies streams as sensitive (0-11% IC), impacted (11-25% IC), and non-supporting (>25%) (Figure 1). Each of these classifications represents a gradient tending toward increasing levels of degradation as more IC is added to the watershed. Specific signs of degradation are offered for each IC category (Table 1).

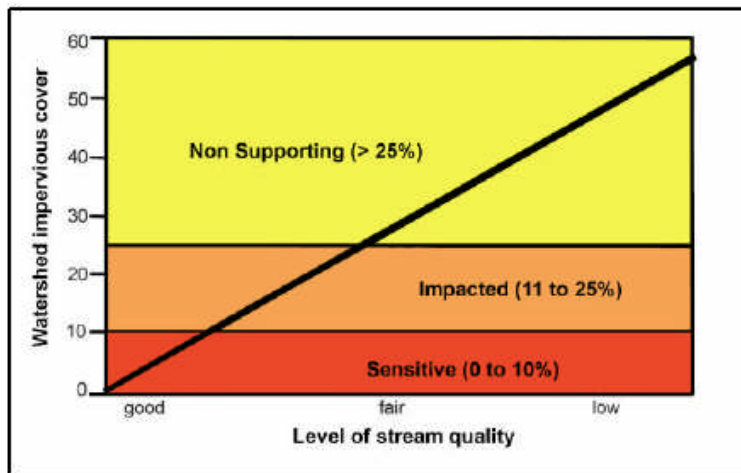


Figure 1. The IC Model (Schueler, 1994)

Table 1. Stream attributes according to the IC Model (Schueler, 1994)

Sensitive Stream 0-10%	Impacted Stream 11-25%	Non-Supporting Stream >25%
<input type="checkbox"/> High quality, stable flow regime	<input type="checkbox"/> Signs of degradation, flow regime destabilizes	<input type="checkbox"/> Low quality; stream is essentially a conduit for conveying stormwater
<input type="checkbox"/> Stable channels are in stable equilibrium	<input type="checkbox"/> Altered stream geometry	<input type="checkbox"/> Severely eroded and incised stream channel
<input type="checkbox"/> Excellent habitat structure	<input type="checkbox"/> Degraded physical habitat in the stream	<input type="checkbox"/> Structure needed to sustain fish is diminished or eliminated
<input type="checkbox"/> Excellent water quality	<input type="checkbox"/> Water quality degraded; contact recreation becomes an issue	<input type="checkbox"/> Water contact recreation is no longer possible
<input type="checkbox"/> Diverse communities of both fish and aquatic insects	<input type="checkbox"/> Many sensitive fish and aquatic insects disappearing from the stream	<input type="checkbox"/> Stream cannot support any but the most tolerant of life forms
<input type="checkbox"/> Do not experience frequent flooding	<input type="checkbox"/> Flooding becomes a more serious problem	<input type="checkbox"/> Flooding becomes a serious problem requiring drastic engineering solutions

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## Tasks of Analysis

This analysis was conducted as a part of the development of a subwatershed management plan for the Upper Clinton, a tributary to the Clinton River in Oakland County. The purpose of the analysis was to evaluate the existing and potential future IC in the subwatershed in order to understand existing conditions and potential future conditions as a basis for goal-setting.

Four tasks were undertaken:

1. Delineate catchments within the Upper Clinton Subwatershed.
2. Estimate IC for the watershed using year 2000 Color-Infrared photography.
3. Estimate potential future IC using community master plans.
4. Estimate the extent of potential reductions in IC that may be afforded by implementation of “Better Site Design” measures (Center for Watershed Protection, 1998).

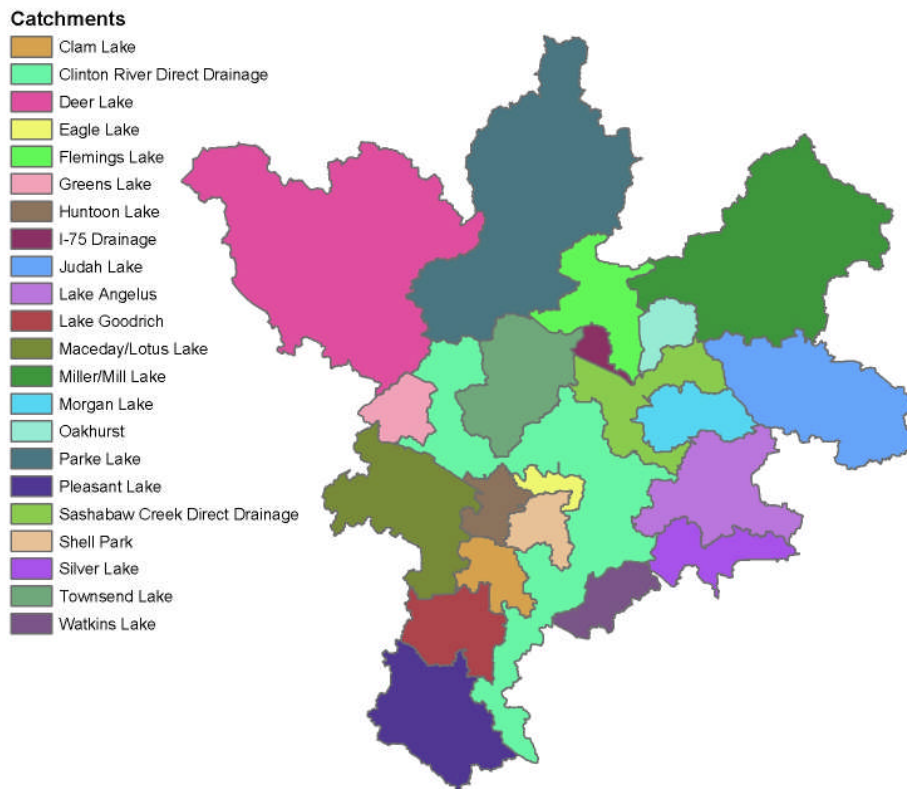
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## Methods

Combinations of automated and manual GIS functions were used to delineate catchments and to develop the estimates of existing and future IC.

### Catchment Delineation

In order to report IC conditions with a level of detail useful for watershed planning, a sub-drainage area delineation was undertaken using ESRI ArcHydro tools (Maidment, 2002) and a 20-foot resolution topography model. This delineation resulted in the identification of 22 sub-drainage areas, or catchments, within the Upper Clinton subwatershed (Figure 2). A detailed technical instruction of the methodology utilized to create the delineation is available on the CD-ROM accompanying the *Arc Hydro: GIS for Water Resources* manual.



**Figure 2. Catchments in the Upper Clinton Subwatershed**

### Existing Impervious Cover

Existing IC was estimated using a semi-automated analysis of 2000 color-infrared photography. An algorithm was developed using ERDAS software to classify the photography into 4 categories: vegetative cover, nonvegetative cover, wetlands, and water. Wetlands and water were derived directly from stereo-compiled Oakland County GIS coverages. In addition, buffered Oakland county road centerlines were used to “burn in” all roads. The nonvegetative class was then manually interpreted to segregate IC from bare soil. Bare soil classes consisted of development sites, cultivated lands, and gravel pits. IC areas

consisted of paved areas and rooftops. Gravel roads were included in the IC class. Pixel class summaries were generated for each catchment, and total acres of IC as well as percent of IC were generated.

### Potential Future Impervious Cover

In order to generate estimates of IC percentages for Oakland County’s parcel-based land use model, pixel summaries for each land use classification over the entire geographic area were calculated. These numbers were then used to calculate potential IC (Table 2).

**Table 2. 2001 Oakland County land use classes and associated % IC values**

Land Use Classification	Estimated % IC
Water	0
Agricultural	1.1
Vacant	2
Recreation and Conservation	2.9
Single Family, 10 acres or greater	3
Single Family, 5 to 9.9 acres	5.4
Single Family, 2.5 to 4.9 acres	7.9
Extractive	9.6
Transportation, Utility, and Communication	10.7
Single Family, 1 to 2.4 acres	12.5
Single Family, 14,000 to 43,559 sq. ft	23.6
Public/Institutional	28
Railroad ROW	30
Single Family Units w/ one parent parcel	31.8
Industrial	32.5
Single Family, 8,000 to 13,999 sq. ft.	35
Single Family, Less than 8,000 sq. ft.	41.6
Multiple Family	42.8
Mobile Home	46.1
Road ROW	47.8
Commercial/Office	52.2

Potential future land use was estimated by combining several datasets into one: Oakland County 2001 Land Use, Oakland County Composite Master Plan, and Oakland County Hydrography. Each polygon in this combined dataset contained the following attributes:

- Existing Land Use (based on 2001 land use)
- Future Land Use (the planned land use based on the most recent Community Master Plan)
- Area (in square feet)
- Buildable (a state denoting whether the land represented by the polygon can be built on)

The “Buildable” field contained the following possible values:

1. **Buildable** – Areas that are not any of the below; developable areas
2. **Water** – Land area classified as water by the OC Hydrography
3. **Wetland** – Land area classified as “swamp/marsh” by the OC Hydrography

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4. **Committed Land Use** – *Land areas in a use other than Single Family or Vacant, Agricultural, or Extractive\**
  5. **Built-out** – *Single family parcels that are developed to their fullest potential\*\**

\* Land areas that were in any use other than single family or vacant were assumed to remain in that use.

\*\* The “Built-out” areas were determined by manually selecting parcels by comparing the planned and existing parcel-size and by visually identifying parcels that almost certainly will not be split.

To estimate total potential future IC, the future additional IC acres and the year 2000 IC acres were totaled for each catchment and the watershed. Potential reductions in IC were estimated by using reduction factors. These factors can be achieved through the use of “Better Site Design” techniques (Better Site Design Handbook (1998). The following reduction factors were used (Huron River Watershed Council, 1999):

- Reduction of 20% for utilizing residential *open-space development* (attributed to reduced road length)
- Reduction of 14% for utilizing *road width reduction* in residential development
- Reduction of 20% for *reduced parking* in commercial and industrial development

## Results

### Year 2000 Land Cover

The total Subwatershed estimated IC for 2000 was 17%, which placed the Upper Clinton Creek Subwatershed within the “Impacted” category of the ICM. Individual catchment land cover estimates were also made (Table 3, Figure 5). Each catchment is denoted with it’s classification in the ICM.

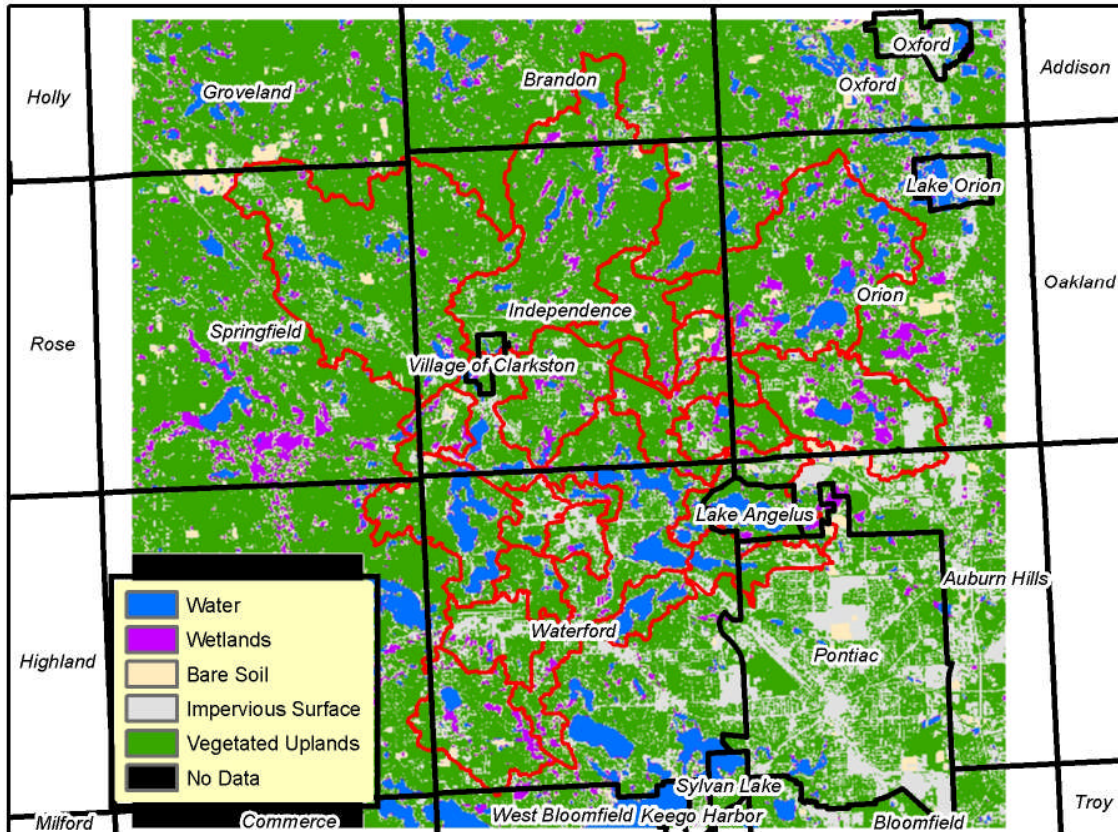
**Table 3. Year 2000 Landcover Estimates for Upper Clinton Subwatershed Catchments**

<b>Catchment</b>	<b>% Impervious</b>	<b>% Vegetated Upland</b>	<b>% Wetland</b>	<b>% Surface Water</b>	<b>% Bare Soil</b>
Oakhurst (Sensitive)	7	60	17	3	7
Miller/Mill Lake (Sensitive)	10	67	10	11	10
Parke Lake (Sensitive)	10	77	6	6	10
Deer Lake (Impacted)	11	77	3	6	11
Flemings Lake (Impacted)	11	81	3	3	11
Greens Lake (Impacted)	14	62	13	5	14
Morgan Lake (Impacted)	14	72	10	4	14
Maceday/Lotus Lake (Impacted)	15	62	2	21	15
Sashabaw Creek Direct Drainage (Impacted)	15	77	6	1	15
Lake Angelus (Impacted)	16	52	5	24	16
Pleasant Lake (Impacted)	17	67	10	5	17
Watkins Lake (Impacted)	18	43	1	38	18
I-75 Drainage (Impacted)	19	77	3	1	19
Townsend Lake (Impacted)	21	69	7	3	21
Clam Lake (Impacted)	24	70	1	5	24
Clinton River Direct Drainage (Impacted)	24	55	4	16	24
Judah Lake (Non-Supporting)	25	57	10	6	25
Silver Lake (Non-Supporting)	28	57	0	12	28
Eagle Lake (Non-Supporting)	29	51	3	17	29
Lake Goodrich (Non-Supporting)	38	55	5	2	38
Huntoon Lake (Non-Supporting)	41	51	0	6	41
Shell Park (Non-Supporting)	43	51	3	2	43

Catchment IC ranged from 7% to 43%. Of the 22 catchments, 3 were classified as “Sensitive”, 13 as “Impacted”, and 6 as “Non-Supporting”. Impervious surfaces are largely concentrated along commercial corridors, including M-59, Dixie Highway, and Baldwin Road. Other areas with significant imperviousness include the I-75 corridor and residential lakefront areas (

Figure 3).

Figure 3. % Land Cover Year 2000 in the Upper Clinton Subwatershed



## Potential Future Development

Based on the existing development status of land and community master plans, the location and type of potential future development was mapped and summarized for each catchment and for the entire subwatershed (Figure 4, Table 4, Table 5). The largest category of planned land use was single family residential, totaling 9,768 planned acres. Approximately 75% of this is large lot residential, between 1 and 5 acres. Significant quantities of land are planned for commercial/office (589 acres) and industrial (397 acres). A total of 485 acres are planned for recreation and conservation.

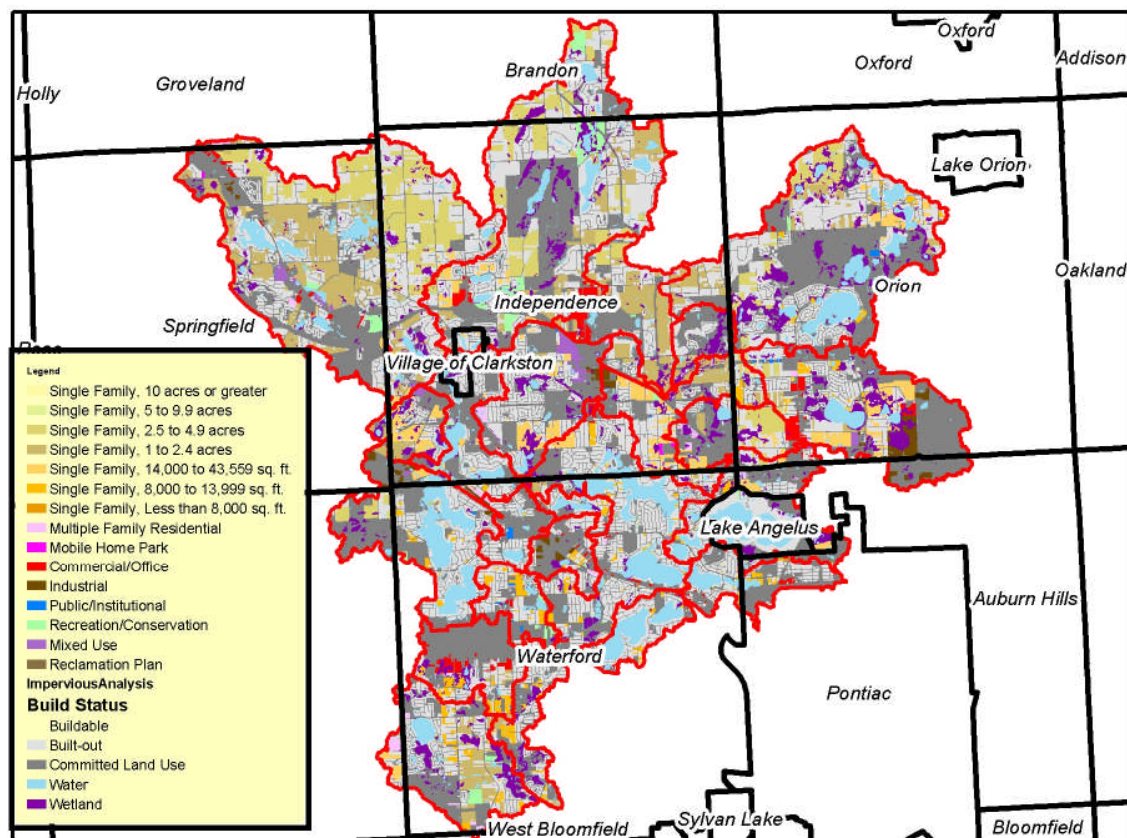


Figure 4. Development Status and Planned Future Land Uses in the Upper Clinton Subwatershed

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**Table 4. Planned Future Land Uses in the Upper Clinton Subwatershed**

<b>Planned Future Land Use</b>	<b>Acres</b>	<b>Category % of Developable Land</b>
Single Family, 1 to 2.4 acres	4128	35.7%
Single Family, 2.5 to 4.9 acres	3239	28.0%
Single Family, 14,000 to 43,559 sq. ft	1480	12.8%
Single Family, 8,000 to 13,999 sq. ft.	911	7.9%
Commercial/Office	589	5.1%
Recreation and Conservation	485	4.2%
Industrial	397	3.4%
Multiple Family	239	2.1%
Public/Institutional	52	0.5%
Mobile Home	16	0.1%
Single Family, Less than 8,000 sq. ft.	14	0.1%
<b>Grand Total</b>	<b>11549</b>	
<b>% Subwatershed Developed</b>	<b>80%</b>	

Overall, the subwatershed is approximately 80% developed, with most of the undeveloped land in the northern portion of the subwatershed, in Springfield, Independence, and Orion Townships. The most highly developed areas are in Waterford Township, the City of Lake Angelus and the City of Pontiac. Catchments with significant amounts of undeveloped land (below 75% developed) include Deer Lake (63%), Flemings Lake (58%), Greens Lake (66%), Morgan Lake (70%), and Sashabaw Creek Direct Drainage (67%). The four most highly developed catchments include Watkins Lake (95%), Huntoon Lake (95%), Eagle Lake (93%) and Clinton River Direct Drainage (93%). Over half of the planned recreation /conservation land areas are in the Parke Lake catchment (253 acres).

**Table 5. Planned Future Land Uses for Catchments of the Upper Clinton Subwatershed**

CATCHMENT	ACRES	PLANNED COMMERCIAL (ACRES)	PLANNED INDUSTRIAL (ACRES)	PLANNED MOBILE HOME (ACRES)	PLANNED MULTIPLE FAMILY (ACRES)	PLANNED PUBLIC INSTITUTIONAL (ACRES)	PLANNED RECREATION (ACRES)	PLANNED SF- 8000 SQFT OR LESS (ACRES)	PLANNED SF- 8000-13999 SQ FT (ACRES)	PLANNED SF- 14000-43560 (ACRES)	PLANNED SF- 1-2.49 ACRES (ACRES)	PLANNED SF- 2.5-4.9 ACRES (ACRES)	% CATCHMENT DEVELOPED (BASED ON MASTER PLAN)
Clam Lake	843	15			2	10	25			83			84%
Clinton River Direct Drainage	6567	64	11		22		26	91		191	68		93%
Deer Lake	9317	72	15	4	48		68	66	1535	12	1593		63%
Eagle Lake	342	2								18	5		93%
Flemings Lake	1730	50					5	1	92		584		58%
Greens Lake	778							176			87		66%
Huntoon Lake	709	6	5		6	15				2			95%
I-75 Drainage	286				5			1			65		75%
Judah Lake	3682	95	189		7	9		256	61	59	47		80%
Lake Angelus	2439	21	9		28		7	84	22	40		8	91%
Lake Goodrich	1482	82			5					119	32		84%
Maceday/Lotus Lake	2974		62			5	17	26	96	55	23		90%
Miller/Mill Lake	6375	9				11	13	111	387	69	357		85%
Morgan Lake	1218	23			22			91	179	10	38		70%
Oakhurst	655								7		70		88%
Parke Lake	7634	106					253	129	824		611		75%
Pleasant Lake	2619	1			54		52	62		116	306		77%
Sashabaw Creek Direct Drainage	1785		39	12	2	1	9	216	36	43	223		67%
Shell Park	729	7	43		9		3			20			89%
Silver Lake	1197	19					1			49		6	94%
Townsend Lake	2325	6	22		28	1	5	170			21		89%
Watkins Lake	862	11	3		2					24			95%

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## Potential Future Impervious Cover & Impact of Better Site Design

The potential future IC was estimated using existing land use plans. Both conventional and “Better Site Design” scenarios were considered (Figure 6, Figure 7). The future IC of the Upper Clinton Subwatershed is projected to increase five percentage points from year 2000 estimates, from 17% to 23%, based on existing land use plans. Deer Lake catchment in Springfield and Independence Townships has the greatest potential to add IC acres within the watershed, potentially adding 2, 227 additional acres of IC under conventional development schemes and bringing the catchment area from 11% IC (at the “Sensitive” to “Impacted” threshold) to 24% IC (at the “Impacted” to “Non-supporting” threshold). Other large potential percent increases include Flemings Lake (increase of 8%), Townsend Lake (increase of 12%), and Greens Lake (increase of 13%).

Estimated potential reductions in IC using “Better Site Design” methods were substantial in Deer Lake (8%), Greens Lake (6%) and Townsend Lake (9%). Five catchments were classified “Non-supporting” in the year 2000. Future development is projected to increase this number to ten. “Better Site Design” measures may be able to prevent 2 catchments (Townsend Lake and Greens Lake) from progressing to the non-supporting category.

Eleven catchments are classified as “Impacted” in 2000. Future development is projected to increase this number to 21. “Better Site Design” measures will not prevent any of these catchments from moving into the “Impacted” category”. Oakhurst catchment is the only catchment which will remain in the “Sensitive” category under current development policy.

**Table 6. Year 2000 and Potential Future IC Estimates of Communities in the Stony Creek Watershed**

<b>Catchment</b>	<b>Acres</b>	<b>Year 2000 Acres Imperviousness</b>	<b>Potential Additional Impervious Acres (Conventional Site Design)</b>	<b>Potential Additional Impervious Acres (Better Site Design)</b>	<b>% Impervious (2000)</b>	<b>% Future Impervious (Conventional)</b>	<b>% Future Impervious (Better Site Design)</b>	<b>BSD Savings</b>
Clam Lake	843	202	251	242	24	30	29	1
Clinton River Direct Drainage	6567	1576	1749	1716	24	27	26	1
Deer Lake	9317	1025	2227	1453	11	24	16	8
Eagle Lake	342	99	109	107	29	32	31	1
Flemings Lake	1730	190	327	302	11	19	17	2
Greens Lake	778	109	209	166	14	27	21	6
Huntoon Lake	709	291	303	300	41	43	42	1
I-75 Drainage	286	54	68	65	19	24	23	1
Judah Lake	3682	921	1197	1111	25	33	30	3
Lake Angelus	2439	390	477	452	16	20	19	1
Lake Goodrich	1482	563	667	647	38	45	44	1
Maceday/Lotus Lake	2974	446	525	502	15	18	17	1
Miller/Mill Lake	6375	638	813	781	10	13	12	1
Morgan Lake	1218	171	250	235	14	20	19	1
Oakhurst	655	46	59	56	7	9	9	0
Parke Lake	7634	763	1056	1001	10	14	13	1
Pleasant Lake	2619	445	594	566	17	23	22	1
Sashabaw Creek Direct Drainage	1785	268	415	387	15	23	22	1
Shell Park	729	313	343	338	43	47	46	1
Silver Lake	1197	335	370	364	28	31	30	1
Townsend Lake	2325	488	759	552	21	33	24	9
Watkins Lake	862	155	173	170	18	20	20	0

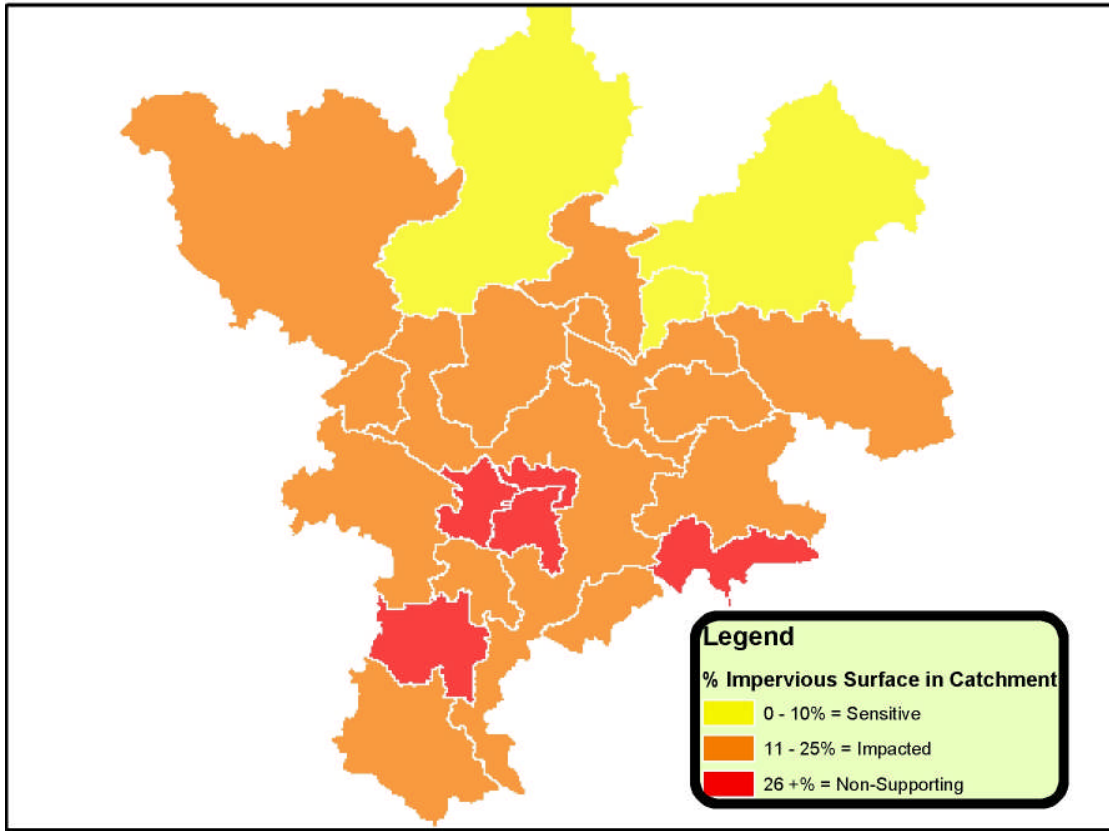
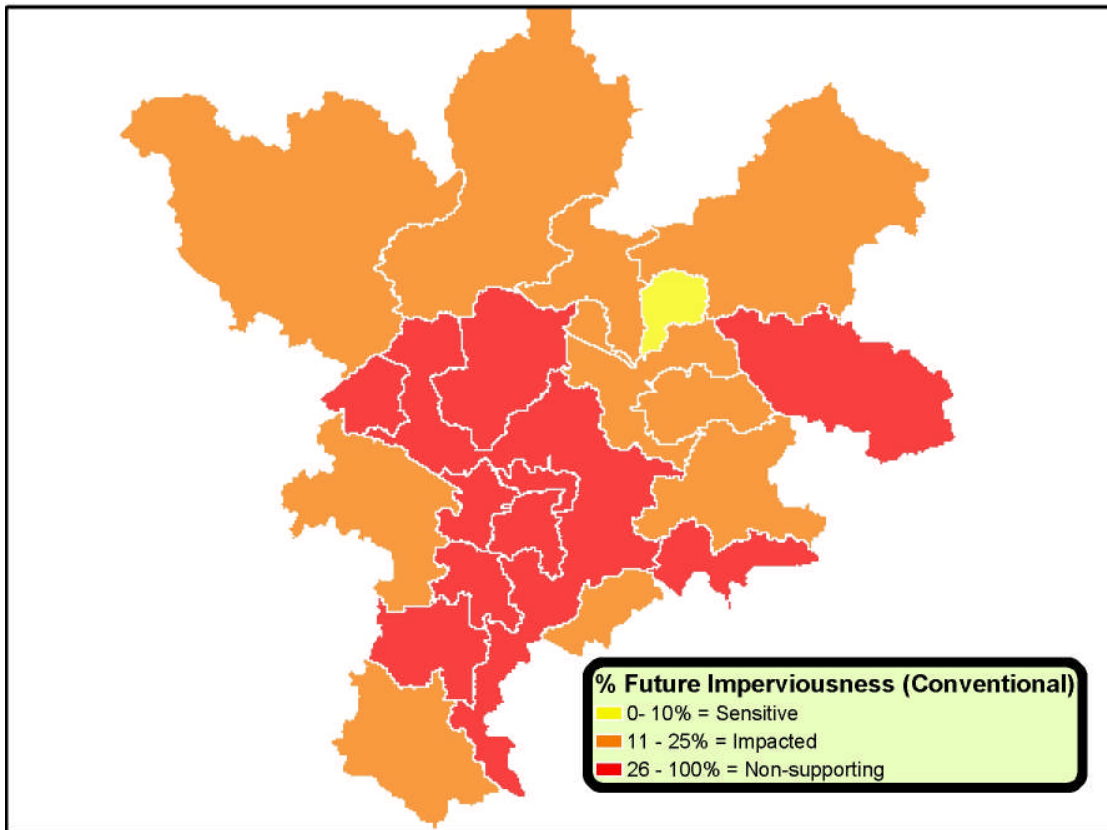
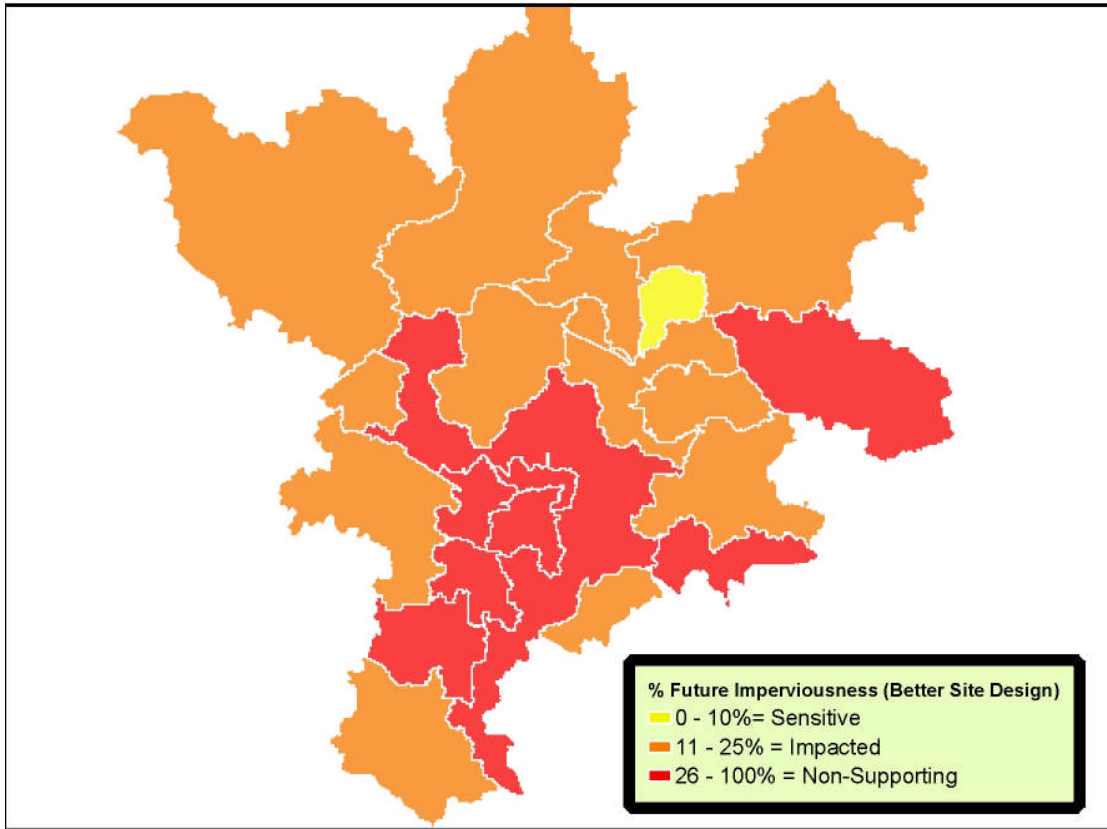


Figure 5. Year 2000 Impervious Surfaces in the Upper Clinton Subwatershed



**Figure 6. Future Impervious Surfaces in the Upper Clinton Subwatershed Utilizing Conventional Development**



**Figure 7. Future Impervious Surfaces in the Upper Clinton Subwatershed Utilizing Better Site Design**

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## Potential Errors in the Analysis

The accuracy of the future IC estimates depends upon two factors; the accuracy of the IC estimates for each land class (discussed in the next section) and the accuracy of the methodology in estimating potential development areas.

### Potential Development Methodology

Community master plan data was combined with wetlands and water features to remove “unbuildable” land areas. The remaining land was then evaluated to determine if the land was in a “committed use” using GIS data sources. Committed uses were generally parks and schools. Finally, the remaining land was evaluated to determine whether it was “built-out” to its fullest potential, thereby not likely to be developed. Any error in the databases or manual or automated processing could affect the outcome of the analysis. Redevelopment was not considered in the analysis.

### Error in Estimating IC for Land Use Classes

Because the master plan data was parcel specific, IC estimates were generated for each land use classification by generating average pixel summaries of imperviousness for each parcel in Oakland County’s parcel-specific 2001 land use data. The actual percentage of IC on any particular parcel within a land use classification may vary widely from the average value. This variation likely introduced error into the potential IC analysis; therefore the future imperviousness values represent average imperviousness conditions and should only be used as a general guide for projecting future conditions. **This analysis does not purport to make a highly accurate forecast of future conditions, but rather provides an indication of future trends.**

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## Conclusions

Based on the results of the analysis, the following conclusions can be made:

1. Overall, the Upper Clinton Subwatershed is currently an “Impacted” stream system based on the ICM (17% IC).
2. Because of the uneven development pattern across the Subwatershed, some areas are “Sensitive” while others are “Impacted” or “Non-supporting”.
3. Potential Future IC (around 20-23%) will result in increased IC but overall the subwatershed will remain in the “Impacted” category.
4. Five catchments are classified as “Non-supporting” in 2000. Future development is projected to increase this number to 10, based on existing land use plans. “Better Site Design” measures may be able to prevent 2 catchments (Townsend Lake and Greens Lake) from progressing to the non-supporting category.
5. Eleven catchments are classified as “Impacted” in 2000. Future development is projected to increase this number to twenty-one, based on existing land use plans. “Better Site Design” measures will not prevent any of these catchments from moving into the “Impacted Category”. Oakhurst catchment is the only catchment which will remain in the “Sensitive” category.

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## Literature Cited

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### **8.3 Completed Community Planning Checklists**