



**City of Ann Arbor**  
**Planning & Development Services**  
 Phone: 734.794.6267 Fax: 734.994.8460

**Impervious Area Worksheet**  
**For Single Or Two-Family Residential**  
**Development**

**Applicants for all projects creating new impervious area must fill out this worksheet and submit it to the Planning and Development Services Unit with their building permit application. As with building and grading permit applications, you will need to include a plan that shows: all existing impervious area, the impervious area to be constructed, and the impervious area to be removed.**

Property Address \_\_\_\_\_ Parcel Number \_\_\_\_\_

Applicant Name \_\_\_\_\_ Date \_\_\_\_\_

Project Type (Circle one):    New Structure    Addition    Reconstruction    Other \_\_\_\_\_

**IMPERVIOUS AREA CALCULATION**

**Impervious Area to be Constructed**

|   |                |              |
|---|----------------|--------------|
| Structures (measure from edge of eaves)     | + _____        | sq ft        |
| Parking/storage areas (including driveways) | + _____        | sq ft        |
| Walkways                                    | + _____        | sq ft        |
| Patios and Courtyards                       | + _____        | sq ft        |
| Other (specify _____)                       | + _____        | sq ft        |
| <b>Impervious Area Constructed Subtotal</b> | <b>+ _____</b> | <b>sq ft</b> |

**Impervious Area to be Removed**

|   |                |              |
|---|----------------|--------------|
| Structures (measure from edge of eaves)     | - _____        | sq ft        |
| Parking/storage areas (including driveways) | - _____        | sq ft        |
| Walkways                                    | - _____        | sq ft        |
| Patios and Courtyards                       | - _____        | sq ft        |
| Other (specify _____)                       | - _____        | sq ft        |
| <b>Total impervious area</b>                | <b>- _____</b> | <b>sq ft</b> |
| <b>Impervious Area Removed Subtotal</b>     | <b>- _____</b> | <b>sq ft</b> |

|                             |       |                         |   |                     |
|-----------------------------|-------|-------------------------|---|---------------------|
| _____ sq ft                 | minus | _____ sq ft             | = | _____ sq ft         |
| Constructed Impervious Area |       | Removed Impervious Area |   | New Impervious Area |

Storage of the First Flush (the first 0.5 inches of runoff during a storm event) is required for the net new impervious area. The Rules of the Washtenaw County Water Resources Commissioner have been used to derive the following formula for the required First Flush storage:

$$0.04 \times \text{Square Footage of added impervious area} = \text{Cubic Feet of storage volume required}$$

If the new impervious area is greater than 200 sq ft you must provide for stormwater management. Multiply your "new impervious area" by 0.04 to determine the volume of storage required for your site.

|                     |   |             |   |                  |
|---------------------|---|-------------|---|------------------|
| _____ sq ft         | x | <b>0.04</b> | = | _____ cubic feet |
| New Impervious Area |   |             |   | Required Volume  |

## STORMWATER TREATMENT MEASURE INFORMATION

The following stormwater treatment measures can be utilized to manage the runoff resulting from the net increase of Impervious Area created. Links to information about these treatment measures are available at [www.a2gov.org/storm](http://www.a2gov.org/storm). For specific numeric sizing criteria used for their design, please reference The Rules of the Washtenaw County Water Resources Commissioner, [www.ewashtenaw.org/government/drain\\_commissioner/dc\\_webPermits\\_DesignStandards/dc\\_Rules](http://www.ewashtenaw.org/government/drain_commissioner/dc_webPermits_DesignStandards/dc_Rules) or the Low Impact Development Manual for Michigan, [www.semco.org/LowImpactDevelopment.aspx](http://www.semco.org/LowImpactDevelopment.aspx). A plan showing the proposed stormwater treatment measure(s) must be provided with your building permit application.

| <u>Treatment Measures</u>                           | <u>Conversion Formula</u>  | <u>Storage Volume</u>   |
|---|--|-------------------------|
| Rain Barrel   | _____ gallons x 0.13369 =  | _____ cubic feet        |
| Rain Garden/Bioretentation                          | _____ ft (length) x _____ ft (width) x _____ ft (average depth) =                              | _____ cubic feet        |
| Drywell   | _____ ft (radius) x _____ ft (radius) x 3.14 x _____ ft (depth)=                               | _____ cubic feet        |
| Cistern   | _____ gallons x 0.13369 OR<br>_____ ft (radius) x _____ ft (radius) x 3.14 x _____ ft (depth)= | _____ cubic feet        |
| Swale   | _____ ft (length) x _____ ft (width) x _____ ft (average depth) =                              | _____ cubic feet        |
| Storage Basin                                       | _____ ft (length) x _____ ft (width) x _____ ft (average depth) =                              | _____ cubic feet        |
| Porous Pavement (30% of subgrade infiltration area) | _____ ft (length) x _____ ft (width) x _____ ft (average depth) x 0.3 =                        | _____ cubic feet        |
| Other: _____  |  | _____ cubic feet        |
| <b>Total Capacity***</b>                            |  | <b>_____ cubic feet</b> |

Optional - **Watershed** (Circle one)      Direct Drainage to Huron      Traver      Millers      Allen      Malletts      Honey      Swift Run      Fleming      Other

### Purpose of Worksheet

In compliance with the City's Federal Stormwater Permit requirements, new and redeveloped projects within the City of Ann Arbor must incorporate stormwater treatment measures or Best Management Practices (BMPs) to minimize the discharge of pollutants to storm drain systems and local waterways. Stormwater BMPs include source controls, design measures and post-construction stormwater treatment controls.

Prior to issuance of a building permit, all development projects adding new impervious area will be required to complete this form and provide information regarding impervious surface area and stormwater treatment measure(s) that will be implemented at your development site.

"Impervious surface" means that part of a developed parcel that has been modified to reduce the land's natural ability to absorb and hold rain fall. It includes hard surfaces which cause water to run off the surface in greater quantities or at an increased rate of flow from the flow that existed under natural conditions prior to development. For example, common impervious surfaces include, but are not limited to, rooftops, walkways, patios, courtyards, driveways, parking lots, storage areas, concrete or asphalt paving, gravel roads, or any cleared, graded, graveled, paved or compacted surfaces, or other surfaces which similarly impede the natural infiltration of surface water into the soil.

\*\*\* Notice: The required stormwater management volume for residential development projects may or may not meet the minimum requirements for the city's residential stormwater credits. Please visit <http://www.a2gov.org/storm> to verify your treatment measure will meet those minimum requirements if you are interested in receiving a credit on your quarterly stormwater bill.

### STAFF ONLY

|                         |                        |                |
|-------------------------|------------------------|----------------|
| Building Permit # _____ | Application Date _____ | Reviewer _____ |
|-------------------------|------------------------|----------------|

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