



sanborn
geospatial



Impervious Surface Mapping

Impervious surfaces generate runoff that creates increased flooding, erosion, and water pollution issues for urban communities and their surrounding environments. Further, combined sanitary and storm water sewer systems currently used in many older cities result in greater pollution and environmental degradation.

Knowing the extent of a community's impervious surfaces can help to locate areas that may benefit from Best Management Practices. As communities grow, they are confronted with the challenges of building and maintaining infrastructure to store and treat excess volumes of storm water. In metropolitan areas across the United States, construction costs for storm water management facilities developed during the last 20 years have been estimated at over \$1.4 billion.

Applications for Impervious Surface Mapping

- Hydraulic and hydrologic modeling
- Storm water modeling/remediation planning
- Predicting non-point source water pollution loads
- Assessing storm water utility fees
- Urban development/build-out analysis
- Watershed modeling/watershed health assessment
- Urban planning and land use planning
- Strategies for stormwater reduction (apart from centralized structural solutions)

Governments and utilities interested in preventing and / or mitigating negative impacts of urbanization on water resources need to know the location and extent of impervious surfaces. This allows for a more accurate assessment of a community's relationship to the water cycle, impact on waterways, and the ways that this relationship can be understood to better manage storm water plans and costs.

Many municipalities have developed storm water utility billing systems that assess a fee based on the amount of impervious surface per parcel or customer to help optimize revenue and offset the increasing costs of storm water management. Such fees and other best management practices (BMPs) are also designed to offer incentives to reduce at the source the volume of storm water entering the ecosystem.

Sanborn offers two primary methodologies designed to provide the baseline data needed to meet any impervious surface mapping challenge. Our products have been proven in planning and land management applications in communities across the United States.

Planimetric Impervious

This manual approach is the traditional way of creating impervious surface maps and typically involves compilation of planimetric features such as roads, building, parking lots, driveways, sidewalks etc., using 2D or stereo heads-up digitizing techniques. This approach is suitable for smaller geographies such as a City or a County. However, it tends to be cost prohibitive at the regional scale. It can also be expensive if frequent updates are required.

Semi-automated Impervious

This semi-automated approach leverages software techniques to recognize impervious surfaces based on color, texture, size, shape and pattern. Analysts “train” the software to recognize different types of impervious surfaces and then to find areas in the data that have similar characteristics or properties. After impervious areas have been identified automatically, an analyst manually reviews / edits areas that appear to be impervious surfaces but are not (i.e. baseball diamonds, agricultural fields with high reflectance, etc.). This approach is more cost effective than the planimetric approach, more time-efficient, and lends itself better to general change detection (i.e., identification of new impervious areas). The product derived using this approach is primarily a raster product and results in a somewhat different appearance than if using traditional planimetric methods. The remote sensing process produces an impervious layer for a community’s GIS that quantifies impervious surfaces for the entire community’s area of interest. This data layer can then be summarized by any set of GIS polygons.

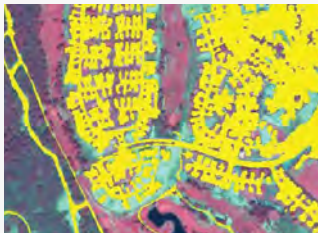
Source Imagery

The manual approach can be implemented using analog or digital imagery, while the automated approach can be implemented with 3-band digital imagery (either color infrared or true color).

For best implementation results for semi-automated products (which require less manual editing), 4-band imagery, which includes the color infrared band, is preferred. In addition, imagery must be orthorectified and should be acquired during “leaf-off” conditions.

Sanborn Impervious Surface Mapping Products

Sanborn offers four Impervious Surface Mapping Products, with two primary data generation approaches, all designed to provide the baseline data needed to meet any impervious surface mapping challenge. Our products have been proven effective for planning and land management applications in communities across the United States.



STANDARD IMPERVIOUS

The Standard Impervious Surface Mapping Product is generated from 2.5m orthoimagery and classifies surfaces into impervious or pervious categories with accuracies of 90%. The Standard product does not identify specific types of impervious surfaces. This product is a raster product and should not be converted to a vector environment as the datasets will show pixelated edges.



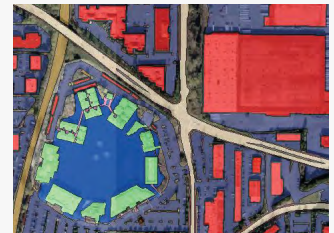
ENHANCED IMPERVIOUS

The Enhanced Impervious Surface Mapping Product is generated from 1.0m orthoimagery. The Enhanced Product uses higher pixel resolution imagery than the Standard product, and classifies areas into impervious or pervious categories than the Standard product, with accuracies of 90%. The Enhanced product does not identify specific types of impervious surfaces. This is a more economically-priced product than the Planimetric and Premium products.



PREMIUM IMPERVIOUS

The Premium Impervious Surface Mapping Product is generated from 1-foot to 6-inch orthoimagery and is more accurate for identifying smaller impervious features than the Standard and Enhanced products. The Enhanced Impervious Product classifies features into impervious or pervious categories with accuracies of 95%, but does not identify specific types of impervious surfaces. The data will exhibit pixelated edges, but they'll be much less noticeable when compared to the Standard / Enhanced products.



PLANIMETRIC IMPERVIOUS

The Planimetric Impervious Surface Mapping Product is generated from 1-foot to 6-inch ortho imagery, and employs a vector dataset to identify varying impervious surface types with accuracies of 99%. Vector-based boundaries generated by this product are generally straight lines.

About Sanborn

Sanborn is a 21st century industry leader in geospatial solutions and technology, offering superior services, program management, and customer support.

For our clients we provide a national presence, extensive resources, quick responses, and exceptional value. For over a century, we have been a leader in the rapidly growing geospatial industry, with successful projects delivered worldwide.

For more information, visit us online at www.sanborn.com, or call **1.866.726.2676** to speak with a representative.