

From the user’s perspective, *service frequency* determines how many times an hour a user has access to the transit mode, assuming that transit service is provided within acceptable walking distance (measured by *service coverage*) and at the times the user wishes to travel (measured by *hours of service*). Service frequency also measures the convenience of transit service to choice riders and is one component of overall transit trip time (helping to determine the wait time at a stop). Regarding service frequency, a majority of the MLTA routes currently operate at LOS E. Table 2 summarizes the transit level-of-service analysis results for service frequency.

Table 2 Service Frequency Level-of-Service Analysis

Routes	Service Frequency (Min)	Composite LOS
Campus PM Route 1	10	B
Downtown Mall PM Route 2	60	E
Green Line Route 3	60	E
Orange Line Route 4	60	E
Gold Line Route 6 – Mountain Valley	60	E
Gold Line Route 6 – Hospital Bus	60	E
Red Line Route 7	80	F
Tyrone Bus Route 8	90	F
Purple Line Bus Route 9	80	F
Brown Line Bus Route 10	120	F
Cassville Bus Route 11	30	D
Blue Line Bus Route 12	60	E
Pink Line Bus Route 16	80	F
West Run Express Bus Route 30	20	C
Blue & Gold Bus Route 38	20	C
Valley View Bus Route 44	15	C

Hours of service, also known as “service span,” is simply the number of hours during the day when transit service is provided along a route, a segment of a route, or between two locations. The hours of service analysis a majority of the MLTA routes currently operate at LOS E. Table 3 summarizes the transit level-of-service analysis results for hours of service.



Table 3 Hours of Service Level-of-Service Analysis

Routes	Hours of Service	Composite LOS
Campus PM Route 1	9	E
Downtown Mall PM Route 2	6	E
Green Line Route 3	10	E
Orange Line Route 4	16	C
Gold Line Route 6 – Mountain Valley	15	C
Gold Line Route 6 – Hospital Bus	12	D
Red Line Route 7	11	E
Tyrone Bus Route 8	12	D
Purple Line Bus Route 9	11	E
Brown Line Bus Route 10	9	E
Cassville Bus Route 11	12	D
Blue Line Bus Route 12	11	E
Pink Line Bus Route 16	9	E
West Run Express Bus Route 30	10	E
Blue & Gold Bus Route 38	14	C
Valley View Bus Route 44	7	E

Service coverage is a measure of the area within walking distance of transit service. Based on the TCQSM, areas must be within 1/4-mile of a bus stop (or route in the case of MLTA) or 1/2 mile of a transit station to be considered an area served by transit. Service coverage is an all-or-nothing issue for transit riders—either service is available for a particular trip or it is not. As a result, there is no direct correlation between service coverage LOS and what a passenger would experience for a given trip. Based on the analysis, the MLTA service coverage is a LOS A according to Transit level of service (TLOS) methodology. However, this should be understood as a metric that does not always consider real world conditions such as topography, directness of routes to transit stops, and other factors that affect the user experience. Although TLOS methodology suggests a high level of service for Morgantown’s transit supportive areas, anecdotal understanding of the actual user experience may differ. Map 14 shows the overlap between transit supportive areas and MLTA’s service.

Deficiencies within the MLTA’s transit system are discussed in three areas: service frequency, service hours, and service coverage.

- Service Frequency: MLTA’s fixed-route service currently operates at LOS E throughout the day with respect to frequency. If headways are decreased, service will become more appealing to a broader range of users, and ridership should increase.



- **Service Hours:** MLTA's fixed-route service currently operates at LOS E throughout the day with respect to hours of service. Service at this level is generally used only by those who have no other transportation alternative, such as WVU students. Increasing the hours of service will make bus service usable for a broader range of trip purposes. In contrast, an insufficient service span can cause unwanted time constraints on daily activities or trips because of the limited time available in which to make trips.
- **Service Coverage:** The current population and employment service coverage is LOS A. The area located north of WV 705, which is not currently served by transit, may require additional transit routes or additional transportation facilities in order to be served. This area, however, is currently undeveloped.

### **Pedestrian System**

Morgantown's pedestrian system consists primarily of sidewalks and off-street multi-use trails. It is given added complexity by Morgantown's topography, the separation of West Virginia University's three principal campuses, and the high degree of non-motorized travel demand typical of university cities. As with its bicycle infrastructure network, Morgantown has taken recent steps to enhancing its pedestrian system through development of a formal plan and a quasi-governmental advisory board.

Morgantown's efforts to improve pedestrian infrastructure in the City are based largely on a significant demand for this infrastructure as evident by current travel patterns. Based on a 2000 survey by the West Virginia Department of Transportation, Division of Highways, Morgantown had the highest percentage of persons walking to work in the State (16.8%), compared to a state average of 2.5%. Many residents also walk for exercise and enjoy the use of multi-use paths and trails, such as those along the Monongahela River and Deckers Creek.

As reported in the Morgantown Pedestrian Safety Plan, Prevention Magazine listed Morgantown as having the highest proportion of its population walk for exercise in the State. This may be in part to the variety of multi-use trails providing both recreational and commuting opportunities. The Caperton Trail and the Decker's Creek Trail provide nearly ten miles of paved pathways throughout the City, mainly running along the Monongahela River and through southeast Morgantown. Several of the City's parks include natural surface trails, with approximately five miles of trails at White Park, two miles at University Farm, ten miles at Cooper Rock, five miles at Snake Hill Wildfire Management Area, and additional trails on unregulated private land.

The West Virginia University Injury Control Research Center analyzed crash data from 1998 through 2008, identifying 226 reported pedestrian injuries occurring between January 1998 and June 2008. The following intersections have the highest number of reported pedestrian injuries (noted in parentheses):

- Spruce & Walnut (9)
- High & Willey (8)
- S. University & Pleasant (8)
- University & College (8)
- N. Willey & Prospect (7)
- Spruce & Pleasant (5)
- University/Beechurst/Fayette (5)
- Beechurst & Campus (5)
- Chestnut Ridge/Van Voorhis (5)
- High & Walnut (4)
- High & Fayette (4)
- University & Prospect (4)

In addition, police report data from 2005 through 2011 identify a total of 144 crashes within the city limits involving pedestrians. Of these crashes, 35 occurred on City streets, 15 on private roads or parking lots, and 94 on County, State, or US routes.



What is noteworthy about these two sets of statistics is the relatively consistent number of average yearly accidents involving pedestrians, between 20 and 25 per year. This suggests that particularly problematic locations or corridors likely experience consistent patterns of accident activity.

**Bicycle System**

Morgantown has taken significant steps in the past few years to support progress towards improving bicycling in the city, including the creation of a Bicycle Board in 2006, the development of the Greater Morgantown Bicycle Plan, and the adoption of a “Complete Streets” policy by the City and the MPO.

Morgantown currently has limited bicycle infrastructure, in part because of the challenges noted in the *Greater Morgantown Bicycle Plan* (2012) with the city’s hilly geography and limited rights-of-way on roadways. However, the city does have some trails for cycling and other bike facilities, which are detailed below. None of the City streets have paved shoulders, and few of the state routes do. There are no on-street bicycle lanes in Morgantown.

Morgantown has numerous bicycle parking racks throughout the City. West Virginia University also provides bicycle racks at many of its buildings. In 2010, City Council approved funding to implement a plan for bicycle parking rings on downtown parking meters. The City has not adopted design standards for bicycle rack facilities or development standards requiring new bicycle rack facilities as part of new retail, commercial, or residential developments.

**Bicycle Safety**

The Morgantown Bike Board has collected data for bicycle related crashes. There have been nine reported bicycle crashes in the last five years in Morgantown, which are listed in Table 4. Based on accounts from the Bicycle Board, the current process for reporting bicycle crashes is very tedious and lacks support. Therefore, this number could under represent the true number of bicycle collisions and may not reveal all bicycle-related safety concerns.

Table 4 Reported Bicycle Crashes within the City of Morgantown (2007-2011)

Location	Date	Type Involved	Sidewalk Cycling?	Report Number
Dalton St. IMO	5/2/2007	Bicycle	Unknown	2007-15369
Sabraton Ave	8/11/2008	Bicycle	Unknown	2008-26434
US-119	9/18/2008	Bicycle	Y	2008-25297
Jones Ave & Sharon Ave	8/31/2009	Bicycle	N	2009-75462
209 Chestnut St	11/13/2009	Bicycle	Y	2009-98715
1632 Sabraton Ave	11/18/2009	Bicycle	N	2009-100369
Unlisted	4/25/2011	Bicycle	N	2011-42129
High St & Fayette St	8/16/2011	Bicycle	Y	2011-84039
Beechurst Ave & 6th St	8/23/2011	Bicycle	Y	2011-87348



As noted in Table 4, at least four of the reported crashes involved cyclists riding on the sidewalk. This suggests a lack of roadway bicycle facilities or comfort among bicyclists for riding on the road. The *Greater Morgantown Bicycle Plan* notes that, besides being illegal, riding on sidewalk in high-traffic locations can actually place bicyclists at greater risks, particularly at intersections. It suggests that bicycle routes with low traffic volume, bike lanes on arterial streets, and completely separated trails can benefit cyclists that would otherwise ride on the sidewalk.

### **Public Input**

During the initial study process, the public was provided multiple opportunities to engage in Crossroads. Regarding existing conditions, the public brought forth several concerns with the transportation system. Included below is a summary of the Stakeholder Interview comments and comments from the general public that were received at meetings held in January and March of 2012. It should be noted that the ideas expressed in this summary reflect the opinions and perceptions of individuals interviewed and may not be representative of all individuals, or factually accurate.

***Business growth and housing development have outpaced the transportation system.*** This situation has created an environment where the system is incomplete, inadequate, disjointed, and overwhelmed. There are congestion problems due to limited capacity and lack of efficiency.

Projections of future growth will be reviewed in further detail in forthcoming chapters.

***Topography.*** The areas topography severely limits the amount of buildable space.

***Transportation system lacks adequate way-finding.*** This was mentioned for vehicular, pedestrian, and bicycle traffic. Users unfamiliar with the area find it difficult to locate their destination.

Way-finding will be reviewed in further detail in forthcoming chapters.

### ***Major transportation issues were consistently defined as:***

- Pedestrian traffic at Grumbein's Island impeding vehicular traffic
- Peak hour congestion
- Topography
- Inadequate pedestrian facilities
- Only two N-S corridors and two E-W corridors
- Funding
- Transit schedule and frequency. Lack of specified bus stops
- County/Cities cooperation/ coordination and politics in the area as well as at the State level
- Lack of county zoning
- Parking downtown, parking during events, and on street parking that restricts municipal services
- Truck traffic through the CBD
- WVDOH should consider/improve signal synchronization and potential reversible lane locations
- No enforcement at dangerous intersections, toward pedestrians who cross illegally, or illegal parking
- Negative media representation
- Vehicular mentality
- Lack of adequate biking facilities

***Major Congestion Areas.*** In each interview the Monongahela Blvd/Beechurst Avenue/University Avenue/Don Knotts Drive corridor, the 705 corridor and Mileground were repeatedly mentioned.



2040 Long Range Transportation Plan  
Existing Conditions Executive Summary  
Morgantown Monongalia Metropolitan Planning Organization  
May 2012

The capacity deficiency analysis performed using existing conditions verifies that several sections of these corridors are operating at unacceptable Levels of Service.

**Major Safety Concerns.** These revolved around the specific dangerous intersections listed below as well as pedestrians intermingling with motor vehicles. Grumbein's Island was most frequently mentioned.

- Grumbein's Island
- US 119 at Stewartstown Road
- WV 705 at Stewartstown Road
- Van Voorhis Rd. at West Run Road
- US 119 at West Run Road
- Cheat Road at Tyrone Avery Road
- Tyrone Road at Tyrone Avery Road
- Don Knotts Blvd at US 119
- Sabraton Road at Greenbag Road
- Mileground at Trinity
- Anywhere along WV 705 corridor

While these intersections do not show up as safety concerns in the crash analysis, it should be noted that several of the intersections listed above are part of the high corridor crash locations and, as such, will be reviewed in further detail during the transportation planning process.

**Transit is key.** In each interview, the stakeholders felt that transit is an integral part of the overall system and worked well to incorporate pedestrians and bicyclists. Most participants thought transit worked very well in the area except for a few details. They would like to see improved frequency in service, specific bus stop locations, and a schedule that benefits every day workers; not just students.

**Transportation Demand Management (TDM)** TDM may be defined as seeking to maximize the operating capacity of the area's existing system by minimizing the number of vehicles on the network. This is done by encouraging the use of alternative modes of transportation, ridesharing and congestion reduction by shifting travel times. The MPO is working to implement TDM in the area. One way the MPO is addressing this issue is seek better coordination among all the major employers and additional park-n-ride locations for the area. Transportation Demand Management will be reviewed further in forthcoming chapters.





Pennsylvania

Wetzel

Monongalia

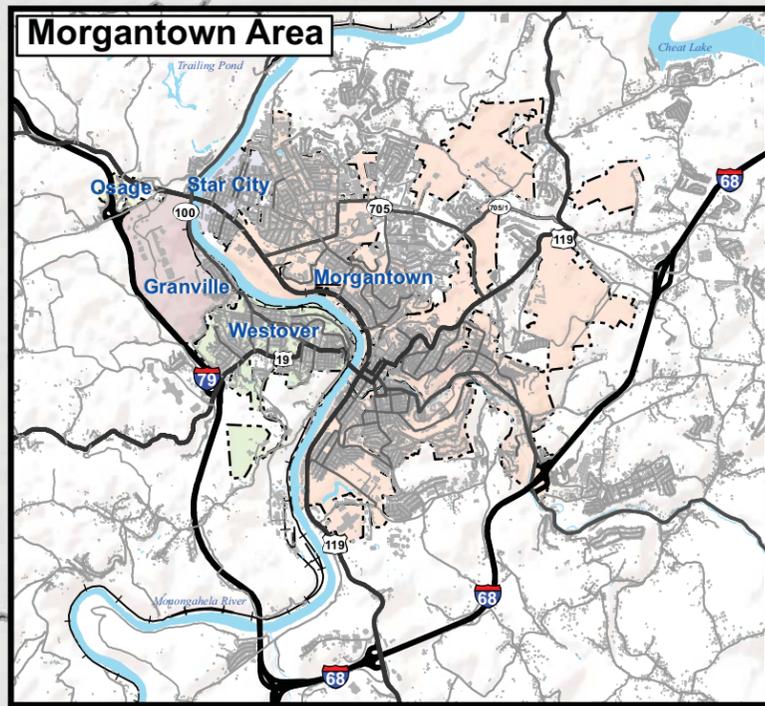
West Virginia

Preston

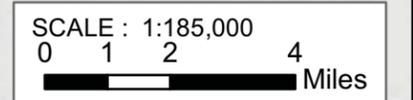
Marion

Taylor

Harrison



1:130,000  
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**Legend**

- Buildings
- Monongalia Co Boundary
- Corporate Boundaries

**Study Area Map**

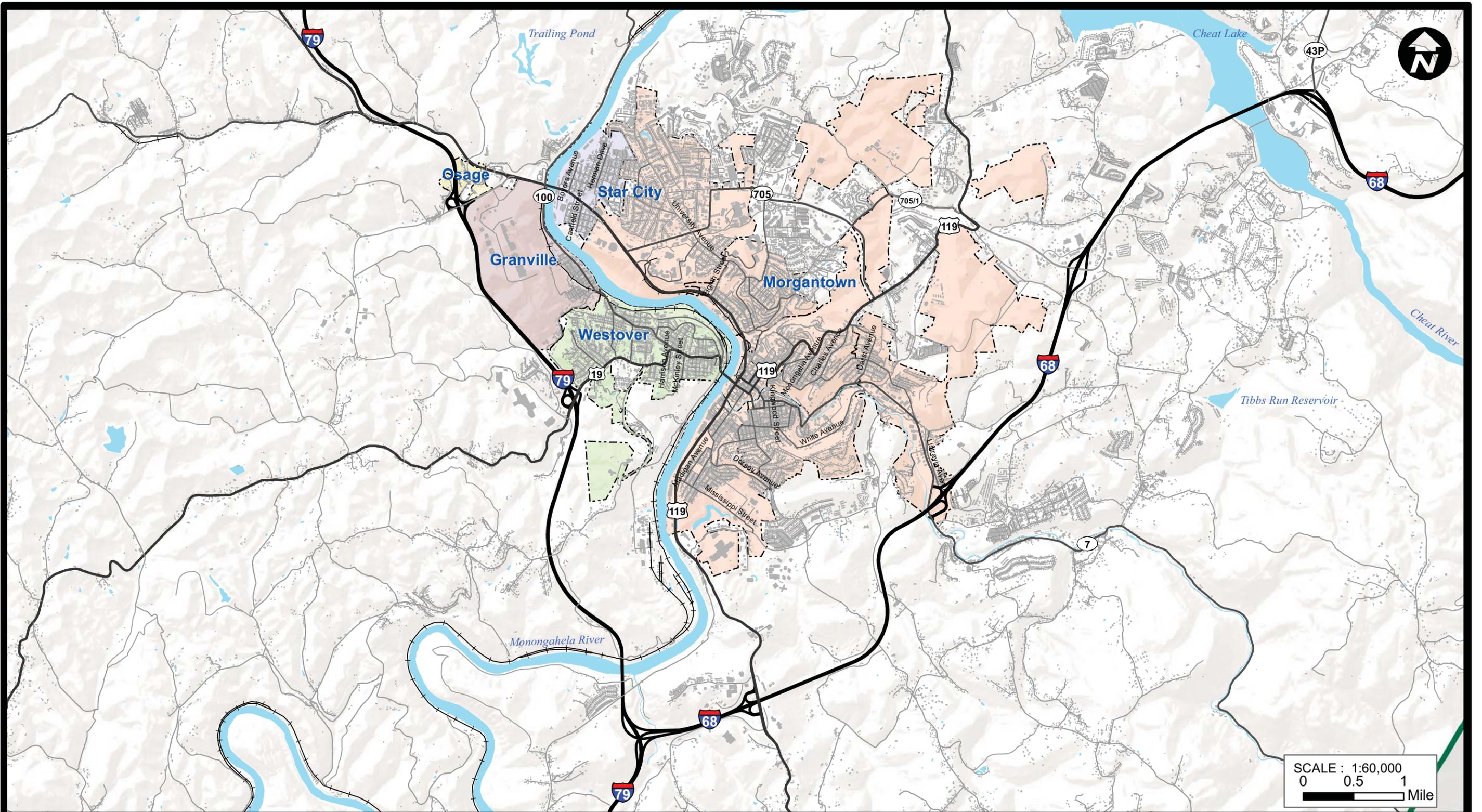
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**Figure**

**1 of 21**

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SCALE : 1:60,000  
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 Mile

**Legend**

-  Buildings
-  Monongalia Co Boundary
-  Corporate Boundaries

**Study Area Map -  
 Urbanized Area**

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**Figure**

**2 of 21**



# Pennsylvania

Wetzel

Monongalia

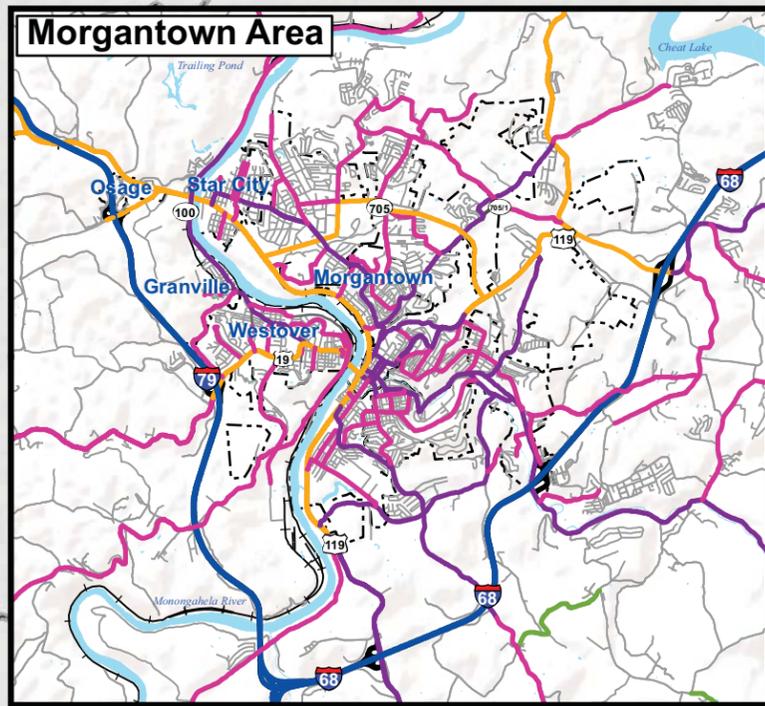
West Virginia

Preston

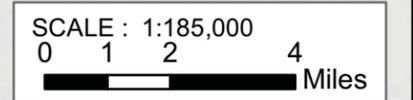
Marion

Taylor

Harrison



1:130,000  
0 0.5 1 2 Miles



## Legend

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- MonongaliaCoBoundary
- Corporate Boundaries

## Functional Classification Map

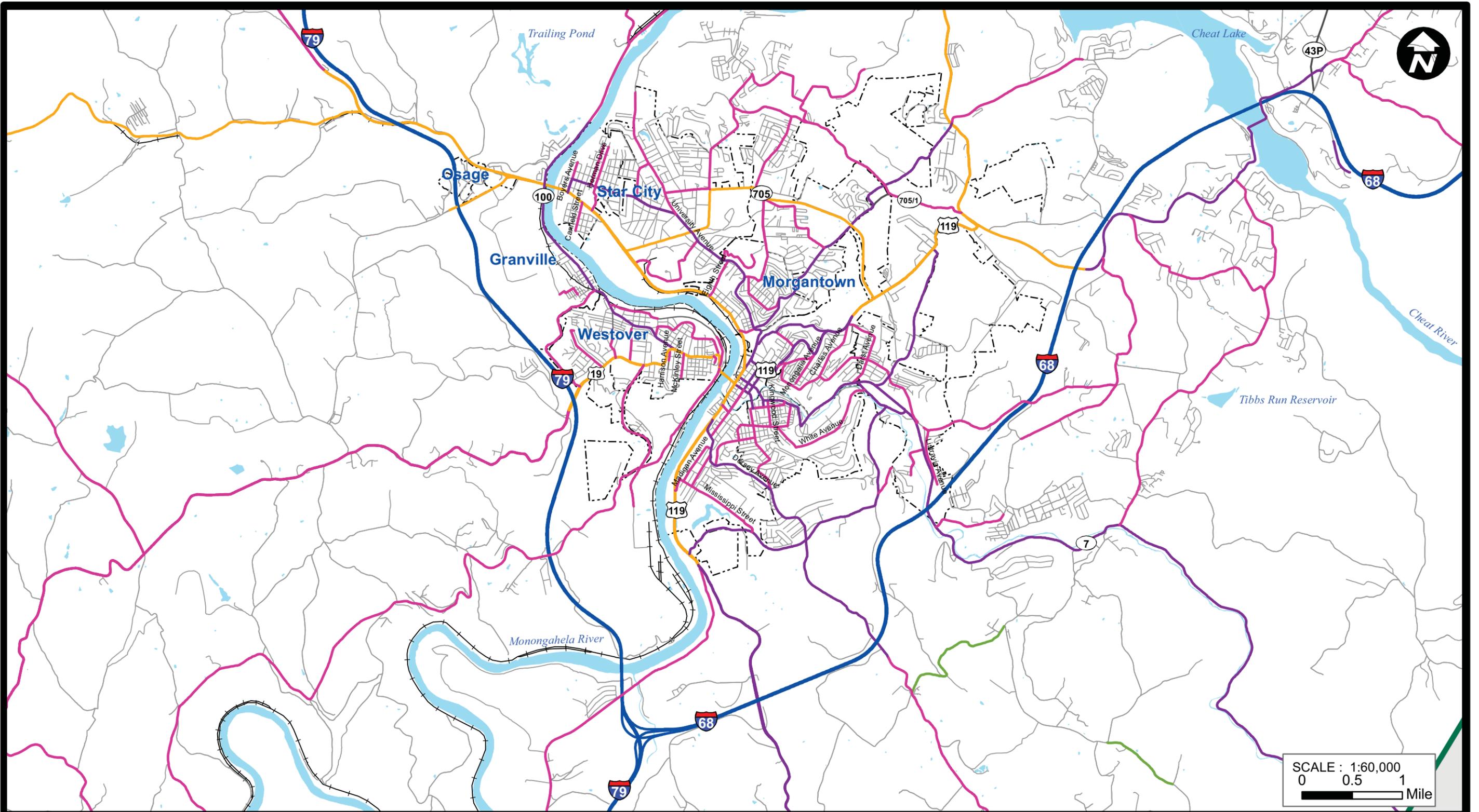
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Figure

3 of 21

P:\PR50755\Mapping\GIS\Workspaces\Jamie\Maps\Existing Conditions Report 4-30-2012\Map4\_FunctionalClass\_Morgantown\_11x17.mxd



**Legend**

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- Monongalia Co Boundary
- Corporate Boundaries

**Functional Classification Map -  
Urbanized Area**

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet  
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 Units: Foot US  
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**Figure**

**4 of 21**



Pennsylvania

Wetzel

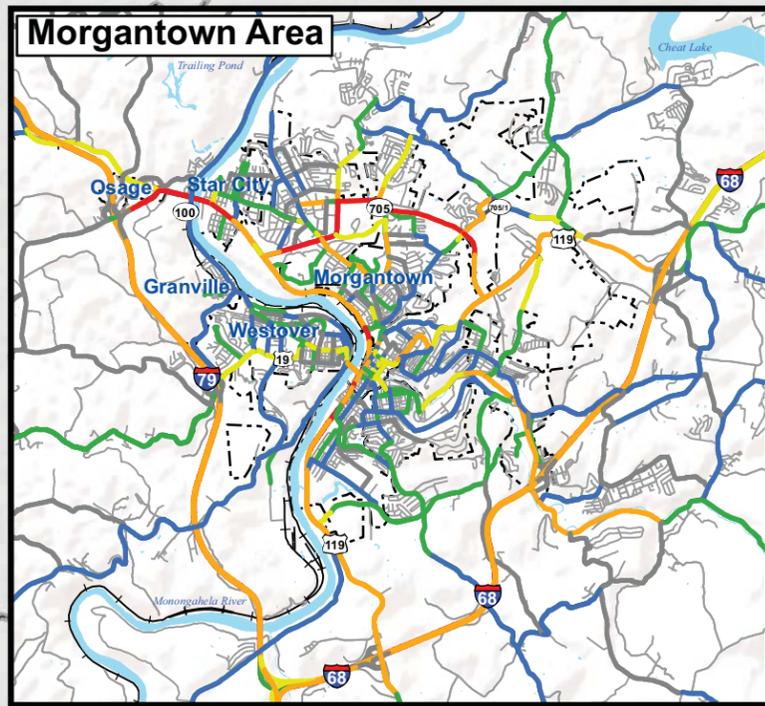
Monongalia

West Virginia

Preston

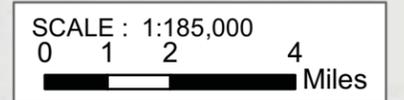
Marion

Taylor



1:130,000  
0 0.5 1 2 Miles

Harrison



**Legend**

- |                         |                        |
|-------------------------|------------------------|
| <b>Vehicles Per Day</b> | — Local Roads          |
| — No Count Available    | ▭ MonongaliaCoBoundary |
| — 1 - 5000              | ▭ Corporate Boundaries |
| — 5001 - 10000          |                        |
| — 10001 - 15000         |                        |
| — 15001 - 25000         |                        |
| — 25001 - 45000         |                        |

**Average Daily Traffic Volumes Map**

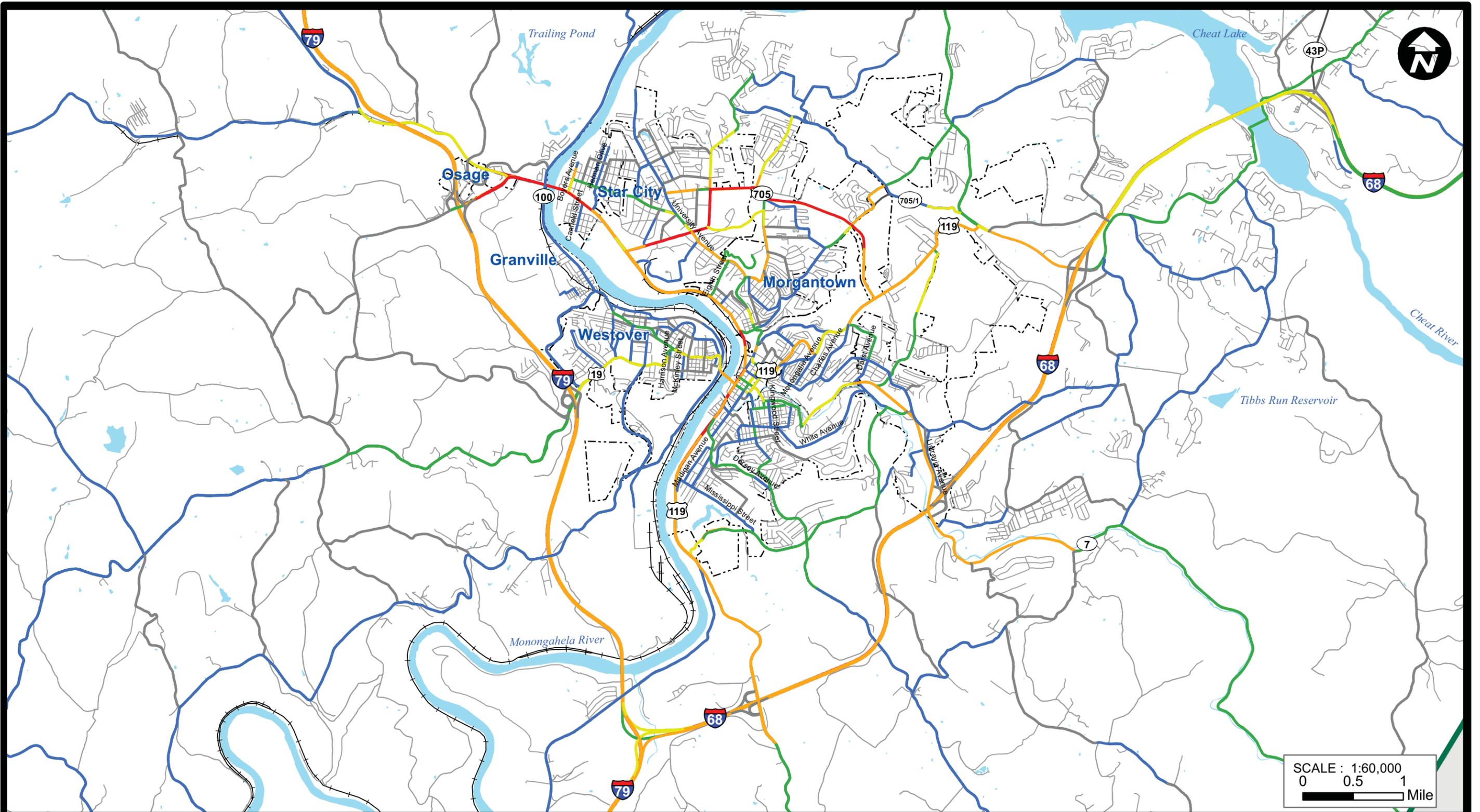
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**Figure**

**5 of 21**

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SCALE : 1:60,000  
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 Mile

**Legend**

- |                         |                        |
|-------------------------|------------------------|
| <b>Vehicles Per Day</b> | Local Roads            |
| — No Count Available    | Monongalia Co Boundary |
| — 1 - 5000              | Corporate Boundaries   |
| — 5001 - 10000          |                        |
| — 10001 - 15000         |                        |
| — 15001 - 25000         |                        |
| — 25001 - 45000         |                        |

**Average Daily Traffic Map -  
Urbanized Area**

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 Units: Foot US  
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**Figure**

**6 of 21**





Pennsylvania

Wetzel

Monongalia

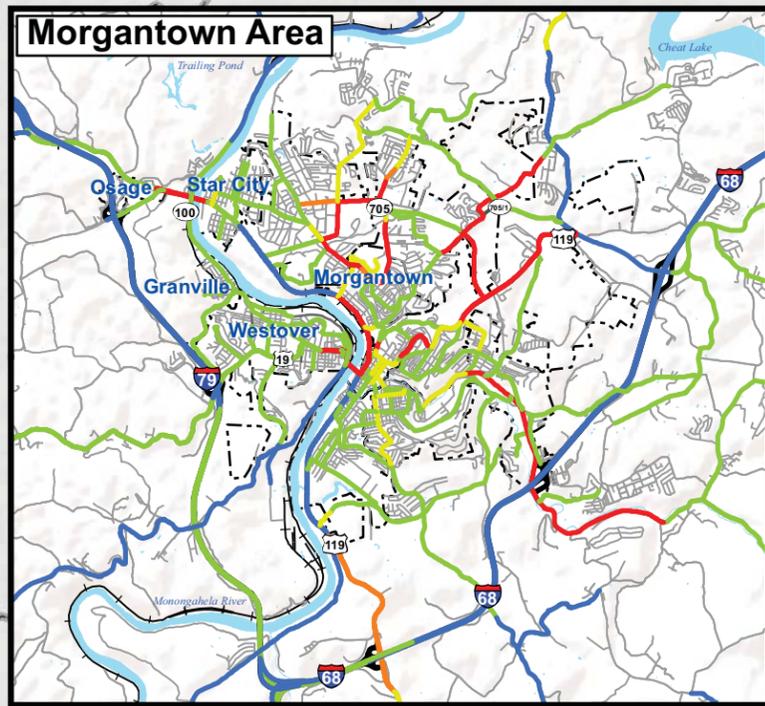
West Virginia

Preston

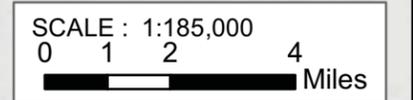
Marion

Taylor

Harrison



1:130,000  
0 0.5 1 2 Miles



**Legend**

**Level of Service**

- A-B
- C
- D
- E
- F

- Monongalia Co Boundary
- Corporate Boundaries

**Existing Capacity Deficiencies Map**

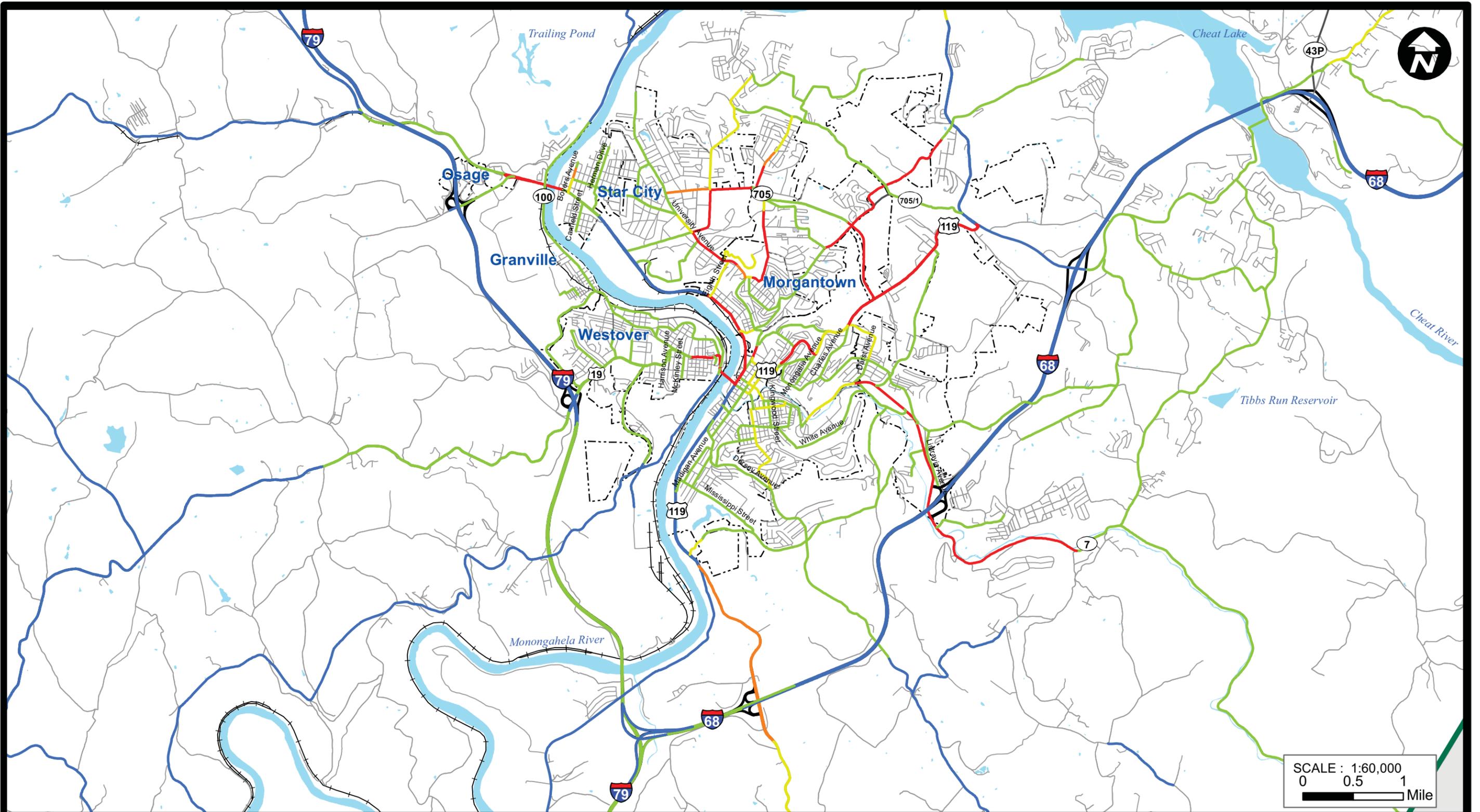
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**Figure**

**8 of 21**

P:\PR50755\Mapping\GIS\Workspaces\Jamie\Maps\Existing Conditions Report 4-30-2012\Map9\_DEF\_Morgantown\_11x17.mxd



SCALE : 1:60,000  
 0 0.5 1  
 Mile

**Legend**

- Level of Service**
- A-B
  - C
  - D
  - E
  - F
- Monongalia Co Boundary
- Corporate Boundaries

**Existing Capacity Deficiencies Map -  
 Urbanized Area**

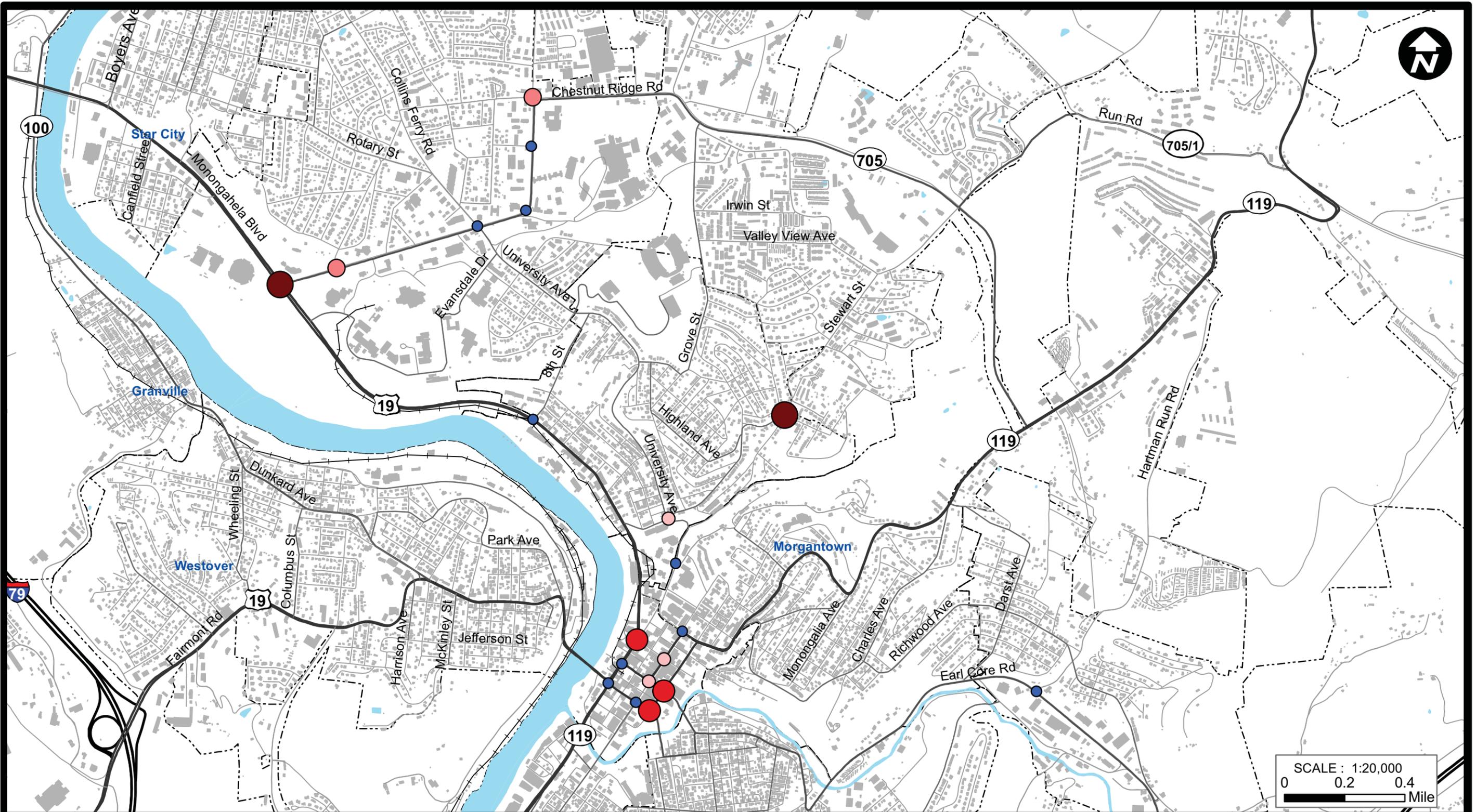
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**Figure**

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P:\PR50755\Mapping\GIS\Workspaces\Jamie\Maps\Existing Conditions Report 4-30-2012\Map10\_Crashes\_Morgantown\_11x17.mxd



**Legend # Of Crashes Per Million Vehicles Entering The Intersection**

- |   |  |                      |
|---|--|----------------------|
| <b>Crash Rate</b>                                     | <span style="color: red;">●</span> 1.76 - 3.00     | Buildings            |
| <span style="color: blue;">●</span> 0.75 - 1.28       | <span style="color: darkred;">●</span> 3.01 - 6.00 | Corporate Boundaries |
| <span style="color: pink;">●</span> 1.29 - 1.50       |  |                      |
| <span style="color: lightcoral;">●</span> 1.51 - 1.75 |  |                      |

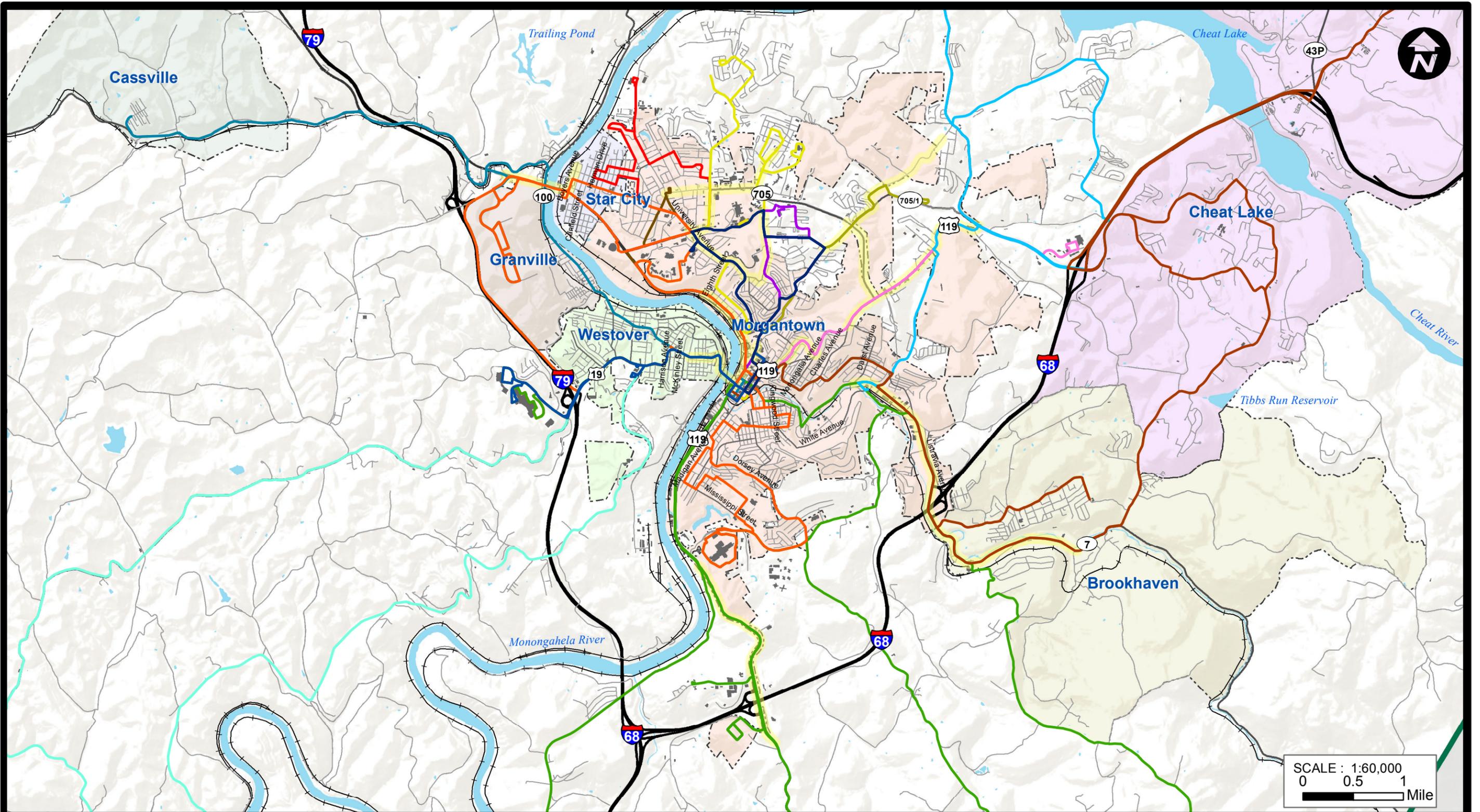
**Intersection Crash Locations Map**

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**Figure**

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**Legend**

- Route 1    Route 8    Route 14    Congested Corridors (LOS E-F)
- Route 2    Route 9    Route 15
- Route 3    Route 10    Route 16
- Route 4    Route 11    Route 30
- Route 6    Route 12    Route 38
- Route 7    Route 13    Route 44

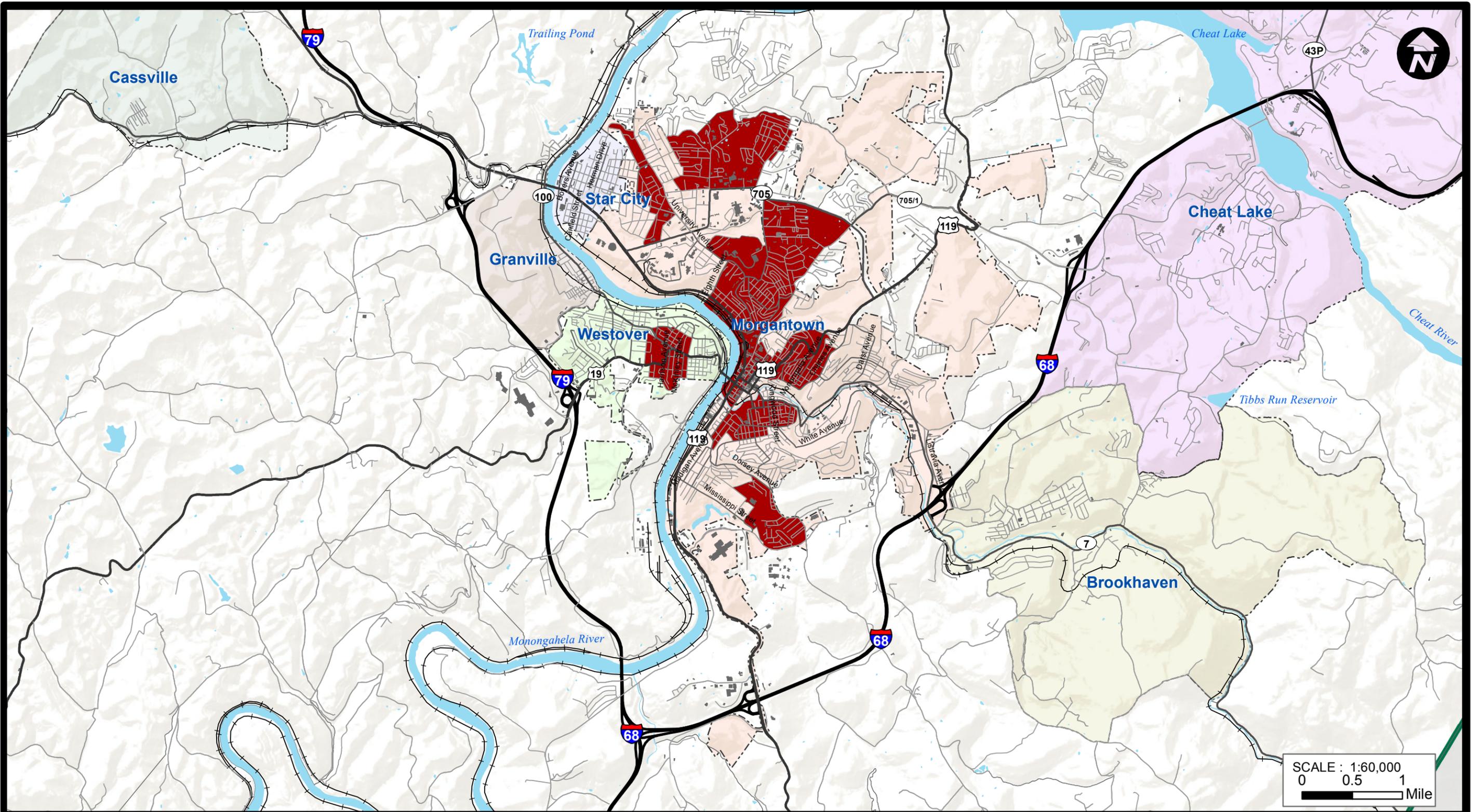
**Mountain Line Transit Authority  
Fixed Route Service**

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**Figure**

**11 of 21**



H:\profile\11737 - Morgantown L RTP\gis\TM111737\_12\_Population Density.mxd

**Legend**

- <3 Households Per Acre
- 3+ Households Per Acre

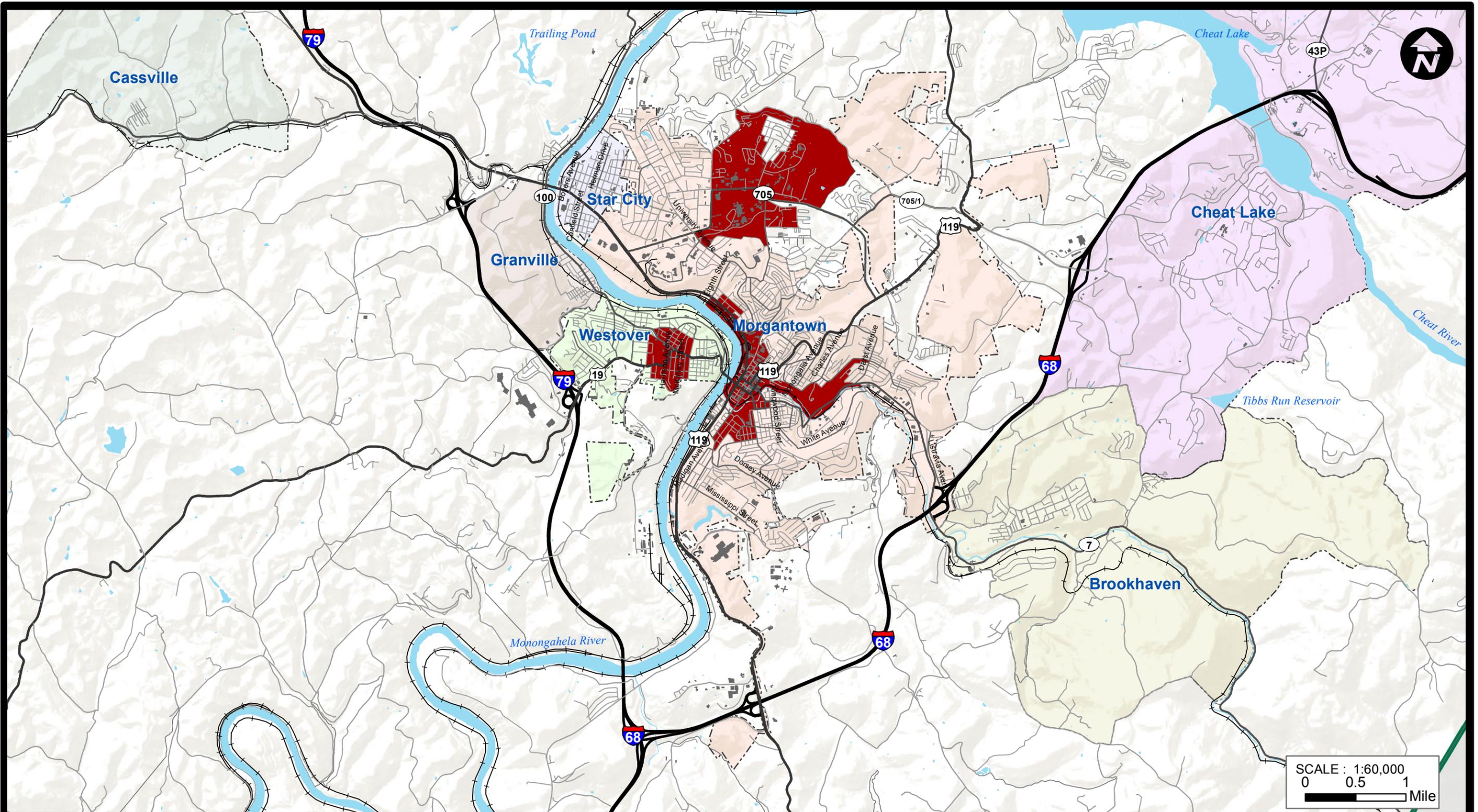
**Population Density**  
Source: 2010 Census Data

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 Units: Foot US  
 Author: Popovich, Kris  
 Time : 11:40:14 AM      Date : 1/4/2012      Revised : 5/3/2012



**Figure**

12 of 21



**Legend**

- <4 Employees Per Acre
- 4+ Employees Per Acre

**Employment Density**  
Source: 2010 Census Data

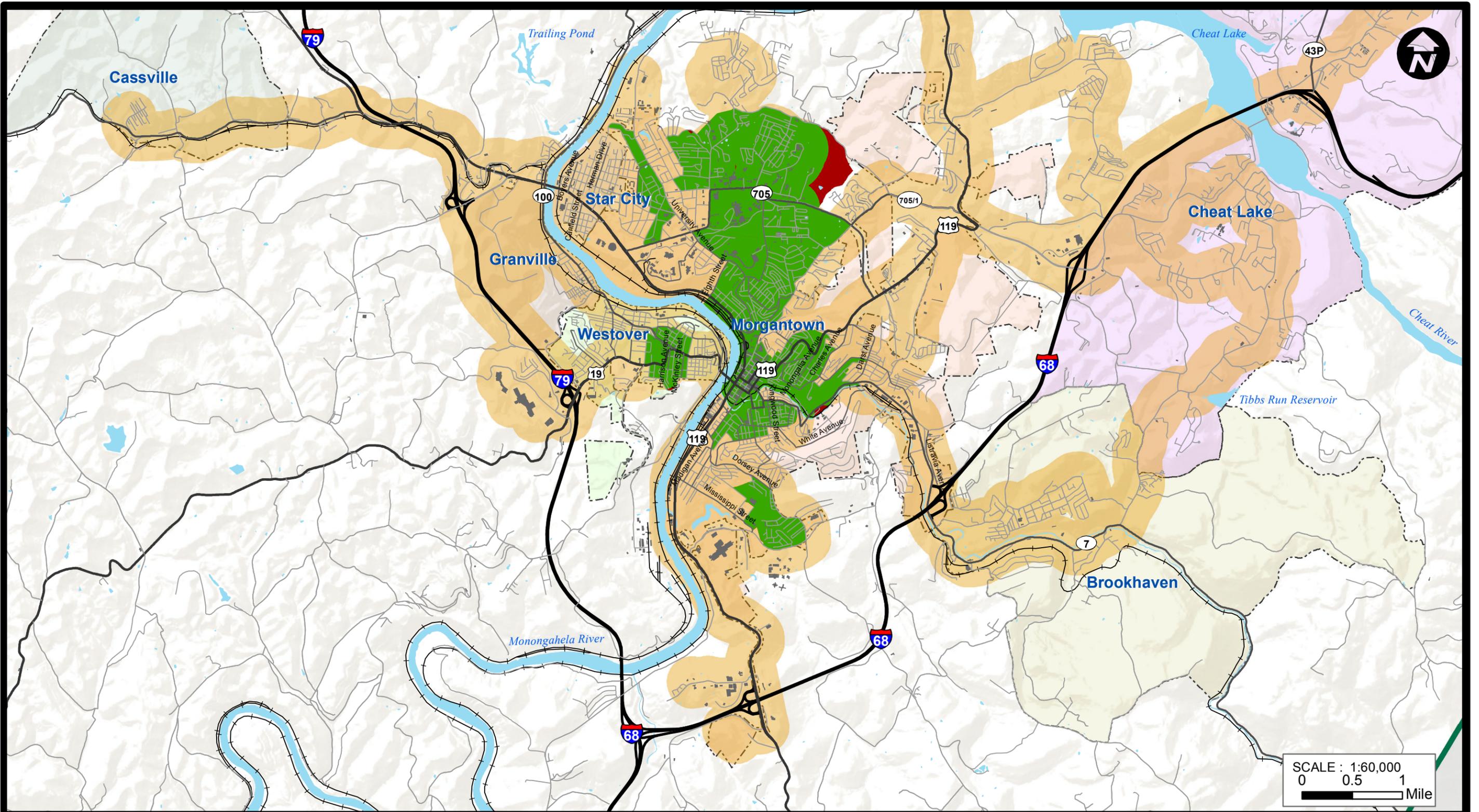
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**Figure**

**13 of 21**

H:\profile\11737 - Morgantown LRTP\gis\TM111737\_13\_Employment Density.mxd



**Legend**

- TSA\_Served
- MLTA\_transit\_routes\_buff
- TSA

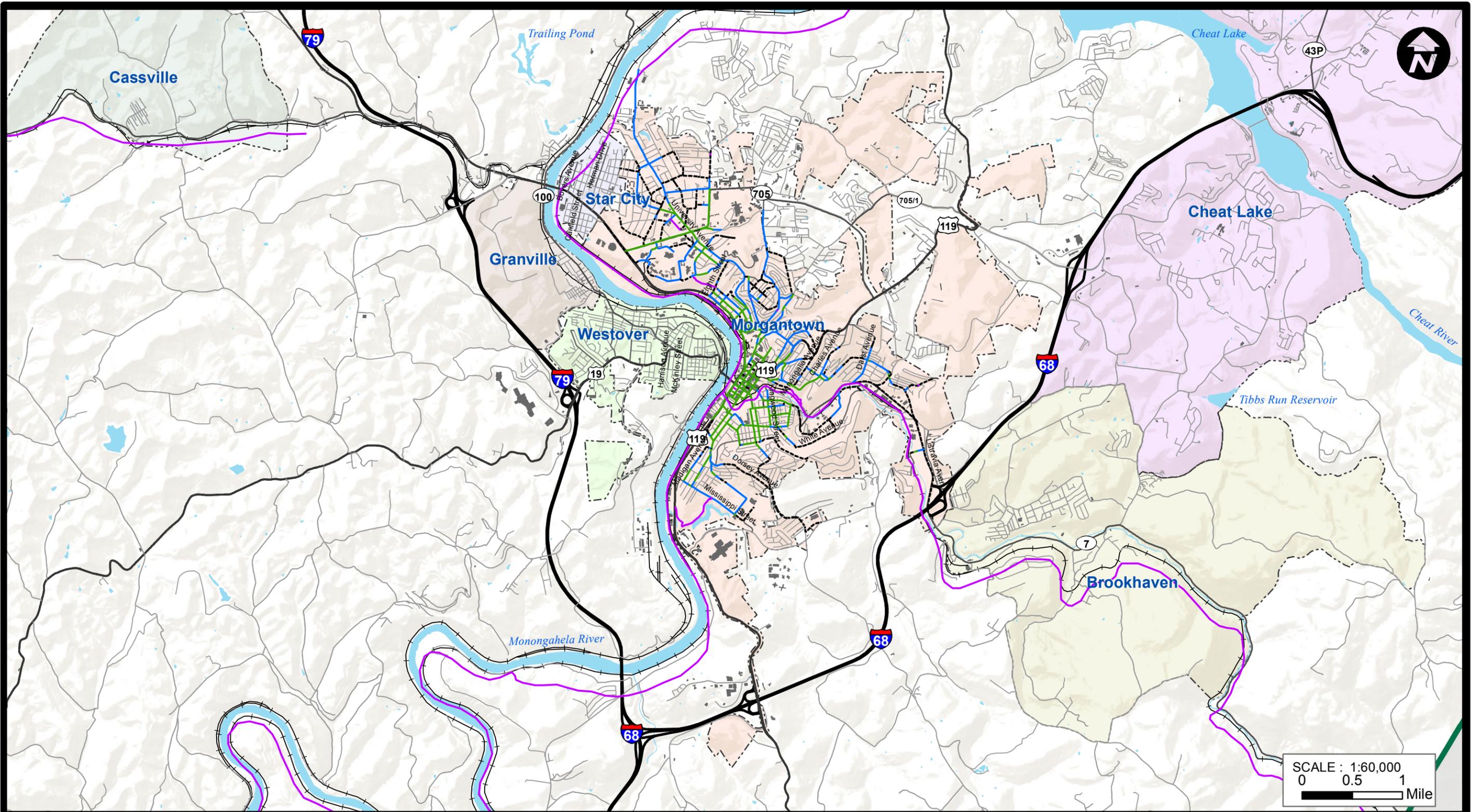
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**Figure**

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H:\profile\11737 - Morgantown LRTP\gis\TM111737\_15\_CNS.mxd

**Legend**

- No Sidewalks
- Sidewalks on One Side Only
- Sidewalks on Both Sides
- Multi-Use Path or Trail

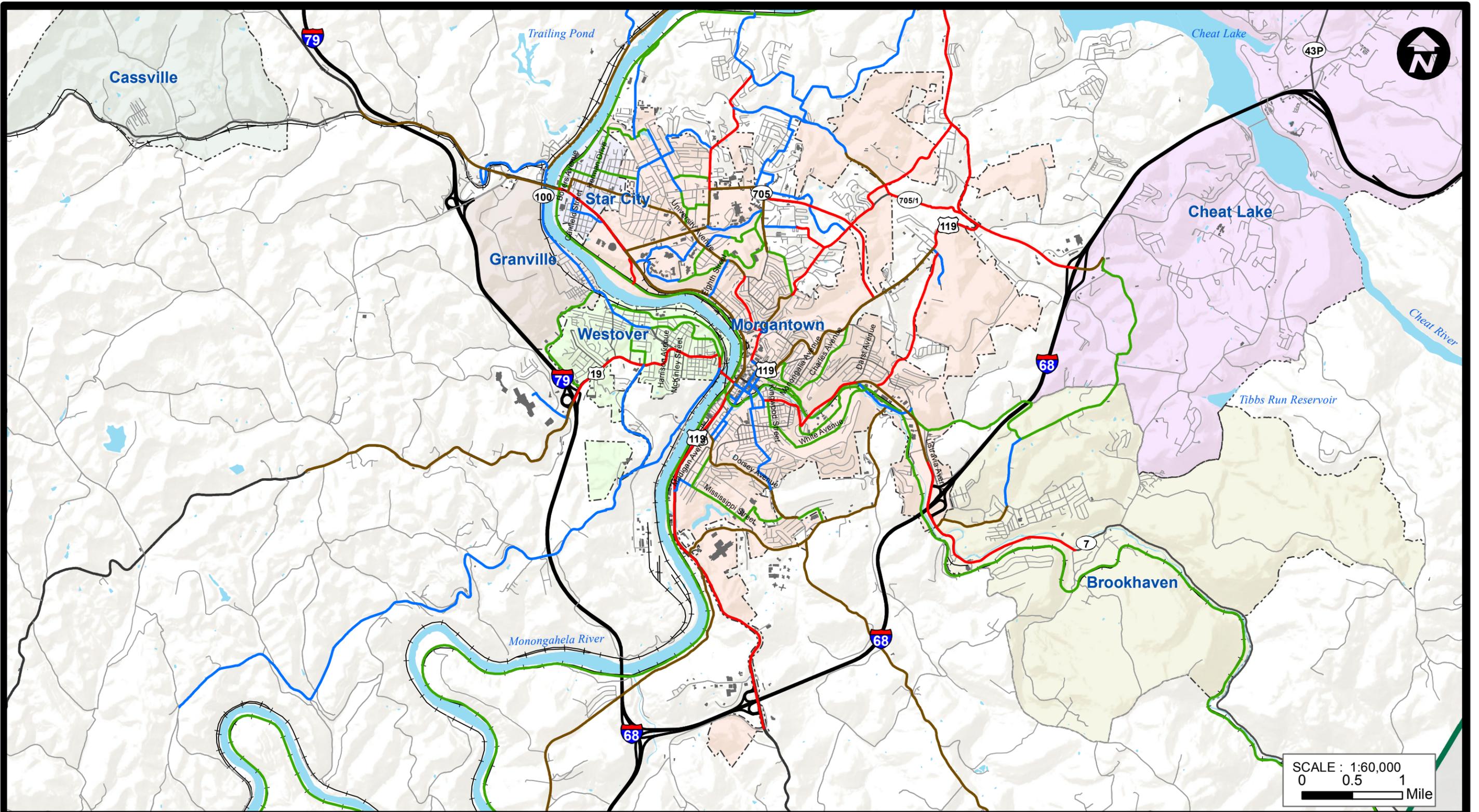
**Connecting Network Streets (CNS), Rail Trails, and Pedestrian Greenways**

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 Units: Foot US  
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 Time : 12:40:38 PM      Date : 1/4/2012      Revised : 5/3/2012



**Figure**

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H:\profile\11737 - Morgantown LRTP\gis\TM111737\_16\_Bicycle Commuter.mxd

**Legend**

- Pleasant
- Ok
- Scary
- Dangerous

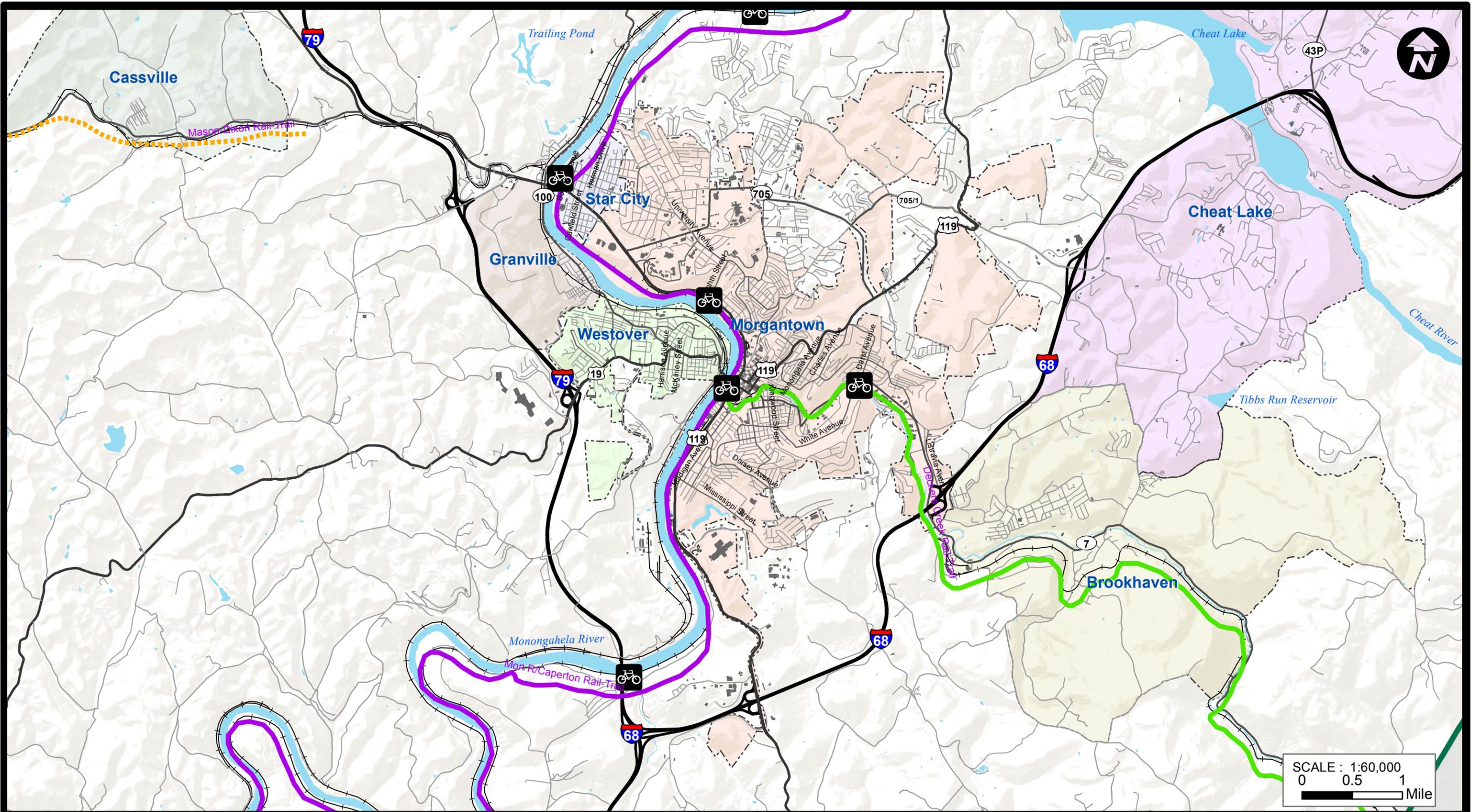
**Bicycle Commuter Map**  
 Source: [www.bikemorgantown.com](http://www.bikemorgantown.com)

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Units: Foot US  
 Author: Popovich, Kris  
 Time : 12:51:11 PM      Date : 1/4/2012      Revised : 5/3/2012



**Figure**

**16 of 21**



H:\profile\11737 - Morgantown LRTP\gis\TM111737\_17\_Morgantown Trails.mxd

**Legend**

-  Trailheads
-  Deckers Creek Rail-Trail
-  Mon R/Caperton Rail-Trail
-  Mason-Dixon Rail-Trail (Proposed Trail Alignment)

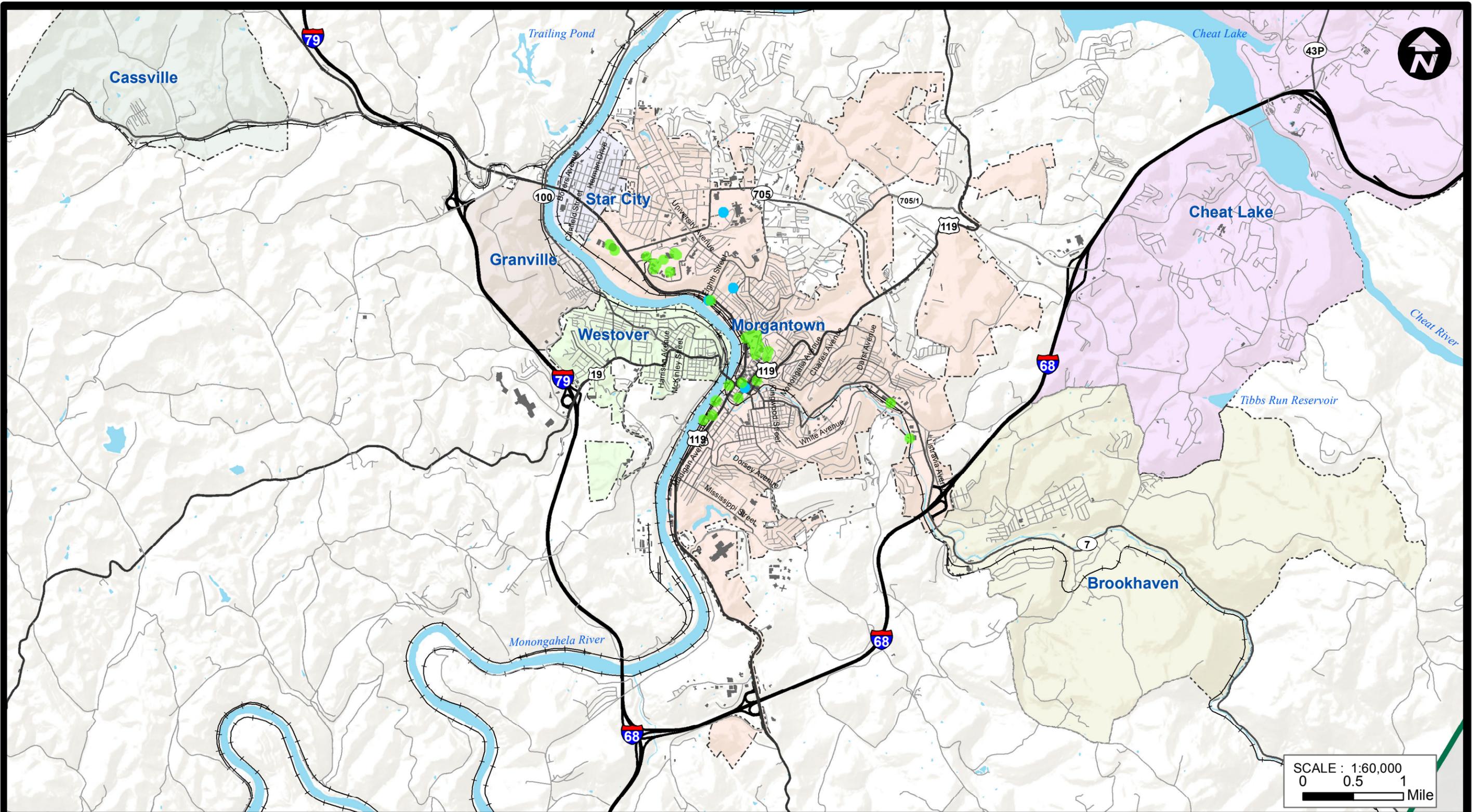
**Morgantown Trails**  
Source: [www.bikemorgantown.com](http://www.bikemorgantown.com)

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Units: Foot US  
 Author: Popovich, Kris  
 Time : 12:42:11 PM      Date : 1/4/2012      Revised : 5/3/2012



**Figure**

17 of 21



SCALE : 1:60,000  
 0 0.5 1  
 Mile

**Legend**

- Existing Bicycle Parking
- Bike Service Centers

**Bicycle Parking & Service Centers**

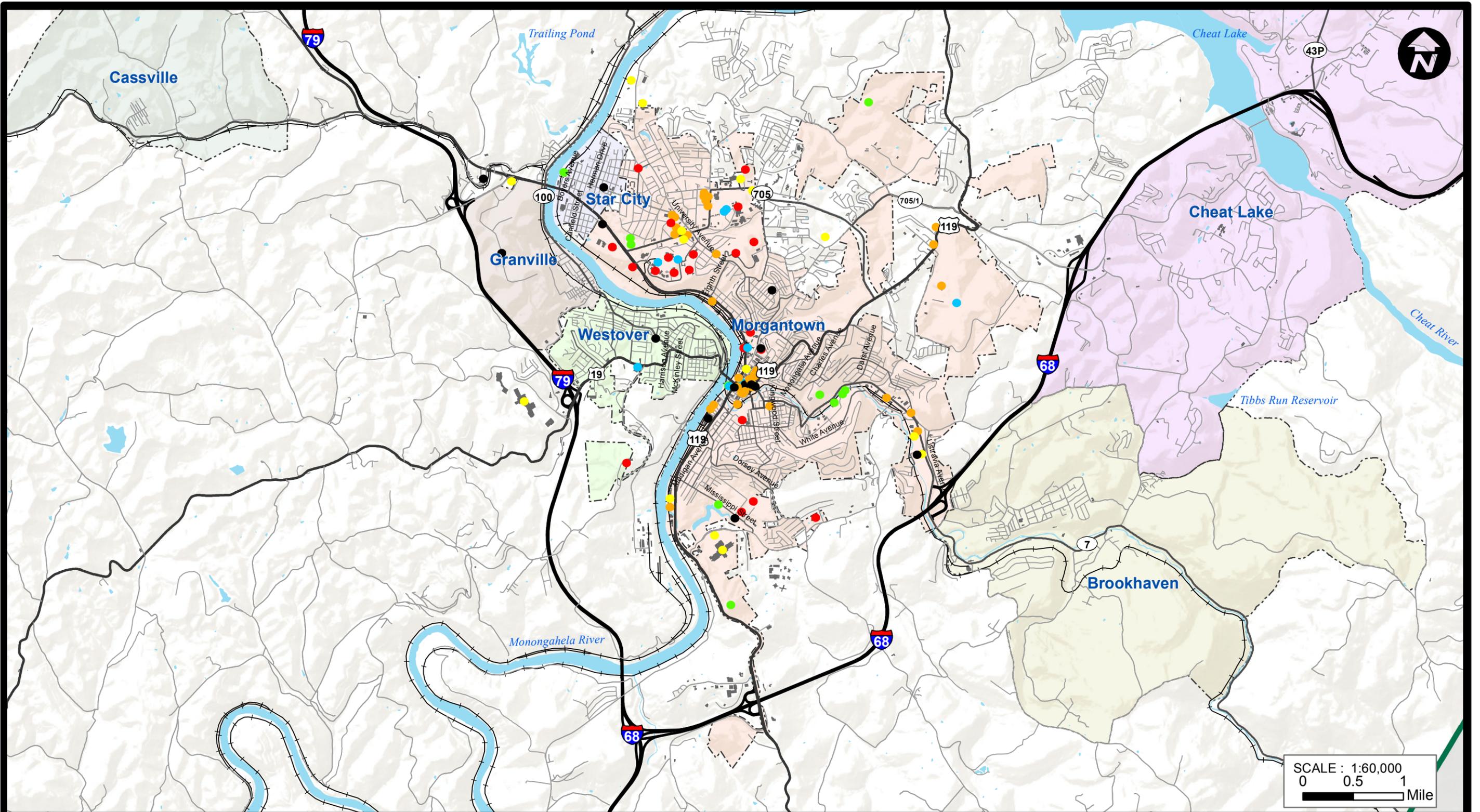
Source: [www.bikemorgantown.com](http://www.bikemorgantown.com)

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Units: Foot US  
 Author: Popovich, Kris  
 Time : 12:44:30 PM      Date : 1/4/2012      Revised : 5/3/2012



**Figure**

**18 of 21**



H:\profile\11737 - Morgantown LRTP\gis\TM111737\_19\_Bicycle Generators.mxd

**Legend**

- Schools
- Recreation
- Commercial/Retail
- Restaurant
- Transportation
- City/Community Centers

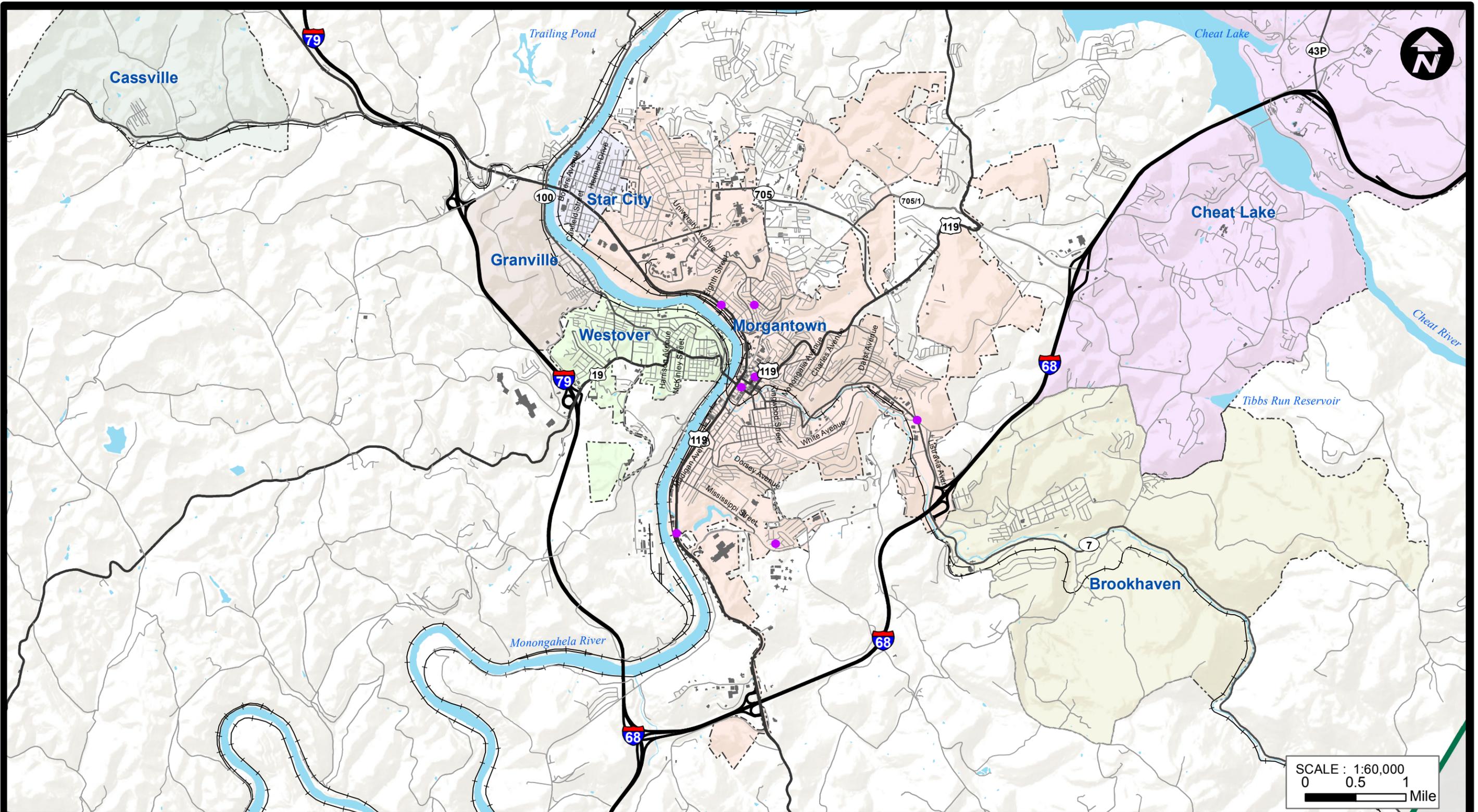
**Bicycle Trip Generators**  
Source: [www.bikemorgantown.com](http://www.bikemorgantown.com)

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Units: Foot US  
 Author: Popovich, Kris  
 Time : 12:45:18 PM      Date : 1/4/2012      Revised : 5/3/2012



**Figure**

**19 of 21**



**Legend**

- Bicycle Crashes

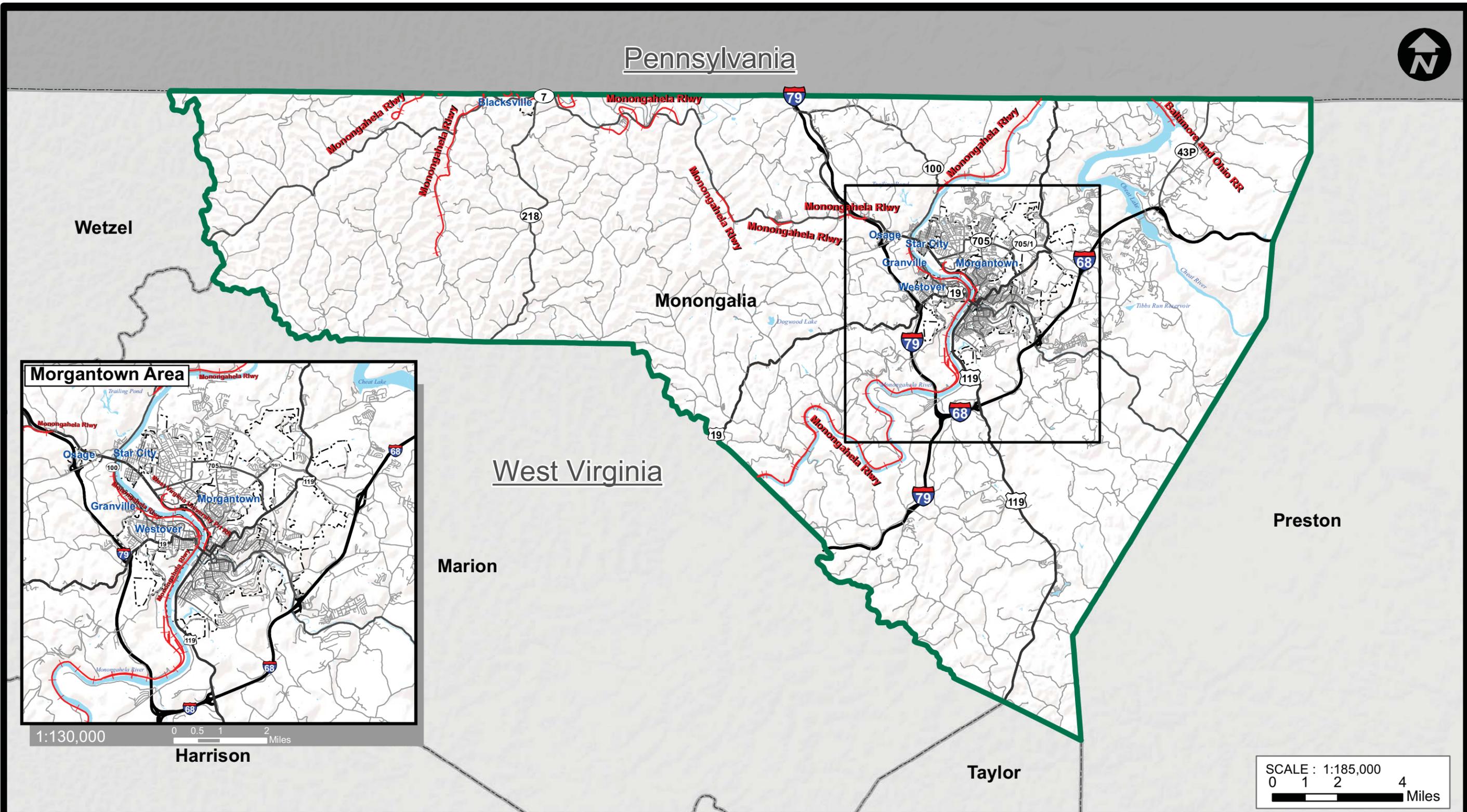
**Reported Bicycle Crashes  
Within Morgantown (2007-2011)**  
Source: [www.bikemorgantown.com](http://www.bikemorgantown.com)

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Units: Foot US  
 Author: Popovich, Kris  
 Time : 12:08:05 PM      Date : 1/4/2012      Revised : 5/3/2012

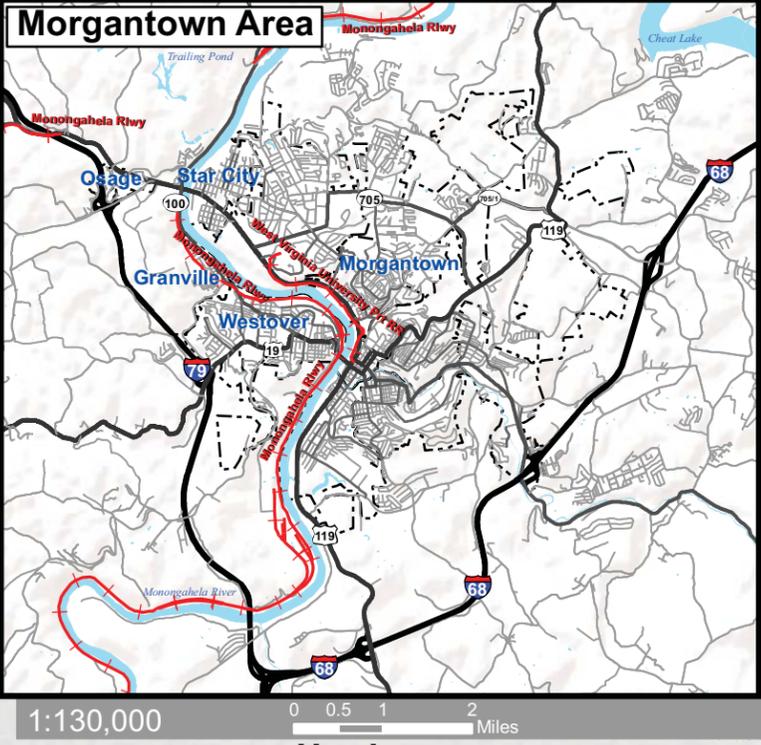


**Figure**

**20 of 21**



P:\PR50755\Mapping\GIS\Workspaces\Jamie\Maps\Existing Conditions Report 4-30-2012\Map21\_Railroads\_WV\_11x17.mxd



**Legend**

-  Railroad
-  Monongalia Co Boundary
-  Corporate Boundaries

**Rail Lines Map**

Coordinate System: NAD 1983 StatePlane West Virginia North FIPS 4701 Feet  
 Projection: Lambert Conformal Conic  
 Datum: North American 1983  
 Units: Foot US  
 Author: Popovich, Kris  
 Time : 9:43:50 AM      Date : 2/29/2012      Revised : 5/1/2012



**Figure**

**21 of 21**