

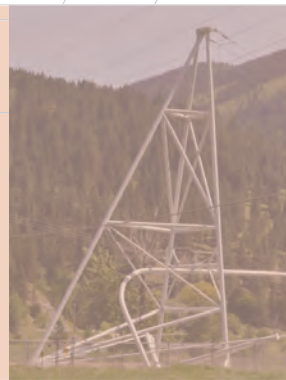
Western

EAST MISSOULA

HIGHWAY 200 CORRIDOR PLAN



East Missoula



Eastern

Technical
Analysis



WGMGROUP
Community Values. Inspired Futures.

April 21, 2020

Technical Analysis

Introduction

The Introductory Framework provides a high-level review of previously completed studies to provide the foundation for the East Missoula Highway 200 Corridor Plan. While many of the previously completed studies include relevant information, the focus of those studies does not typically align with the Highway 200 Corridor

Plan Area. Utilizing the Introductory Framework as a foundation, additional detailed analysis was completed that is specific to the corridor Plan Area. This analysis is intended to provide a better understanding of the corridor and to fill data gaps from the Introductory Framework while providing the necessary information

for funding applications and identifying opportunities and issues to be addressed during design alternative development. The analysis is focused on four key topic areas: transportation, right-of-way and utilities, environmental/Pre-NEPA, and land use.



Transportation Analysis

The existing transportation network was evaluated to identify issues related to access management, intersection design, safety, transit, bicycle and pedestrian facilities, and parking. In addition to evaluating the components individually, it is also important to evaluate how

each of these individual elements function together. The following information reports the findings from our inventory conducted in the fall of 2019.



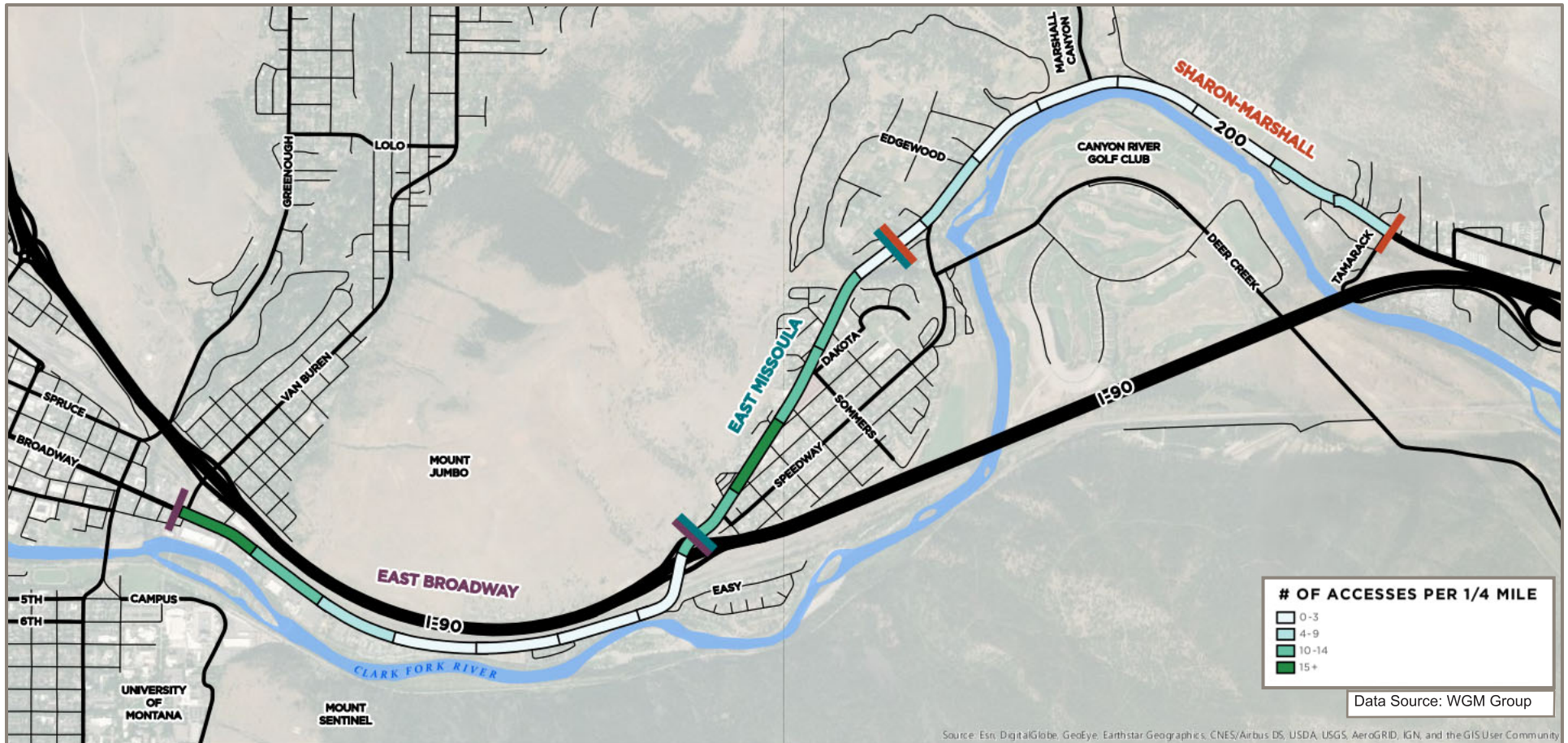


Figure 1: Access Points per 1/4 mile

Access Management

Access along the Highway 200 corridor includes public streets, private residential driveways, commercial driveways and parking. Managing access points and spacing along the corridor can improve the safety, function and overall operation of the roadway. Figure 1 shows the number of access points per 1/4 mile generally indicating where access points are concentrated within the corridor. Within the

corridor, the areas with a high concentration of access points are adjacent to commercial uses which generate more traffic than residential uses. Reducing the number of access points through the use of curb or other means of access management can improve circulation and safety in these areas. For the areas with a low concentration of access points, access management is likely unnecessary.

East Broadway Segment

Starting with the first corridor segment,

traveling east, there is established curb, gutter, and sidewalk on the south side of the road clearly identifying and defining access points on the south side of the road. On the north side, lay down curb and gutter in front of 1010, 1020, 1032 E. Broadway provides a segment of unrestricted, open access, representing poor access management. Beginning at the location across from the new Missoula College, Highway 200 lacks curb and gutter on the north side of the road through the end of the segment. This results in a large number of vehicles parking

along the railroad.

The primary deficiency in this segment is located on the north side; the long distance of unrestricted access, combined with the parking demand for the apartments and Missoula College, suggests the need to formalize parking lots and consolidate access points.

East Missoula Segment

The middle segment of the project has the highest concentration of access points with the least delineation along the corridor. The lack of curb, gutter, and sidewalk, combined with numerous approaches and large areas of continuously paved property abutting the road result in nearly continual access with few restrictions in places. Some areas have lost all definition of where the road ends and the parking lots begin. For example, Michigan Avenue has little to no delineation of its right-of-way as it approaches Highway 200 through the Ole's gas station parking lot. Additionally, multiple businesses sharing

unrestricted, open access use pull-in parking, creating dangerous maneuvers when backing/ exiting on the segment corridor. There is a need for delineation of lanes, access points, and parking in this area. This may include the consolidation of access points and parking access.

ShaRon-Marshall Segment

As the corridor continues east, the land use becomes less dense and accesses are better defined. Many individual homes have larger lots that access side streets, which then access Highway 200 at well-defined intersections. The topography limits access, with the river to the south and the mountain on the north side. Summer recreational river usage along Tamarack Road and at the ShaRon fishing access results in a large amount of vehicles parked along the road shoulder. Improved sight distance, formalized parking, and bus service may be needed in this area.

Non-Motorized Mobility

The non-motorized mobility analysis performed an inventory analysis of bicycle and pedestrian facilities, trails, and pedestrian crossings to identify connectivity deficiencies, including ADA and PROWAG compliance. Figure 2 shows the existing bicycle and pedestrian facilities in the corridor.

East Broadway Segment

Starting at the beginning of the Plan Area, complete curb, gutter, and a 7-foot attached sidewalk exists from Van Buren Street east to Easy Street, forming a pedestrian route on the south side of the road. Existing sidewalk on the north side extends from Van Buren through the 900 block of Broadway but does not exist through the remainder of this segment. Bicycle lanes run in both directions from Van Buren until just west of Easy Street. A trail also exists on the south side of the road, extending east of Missoula College to



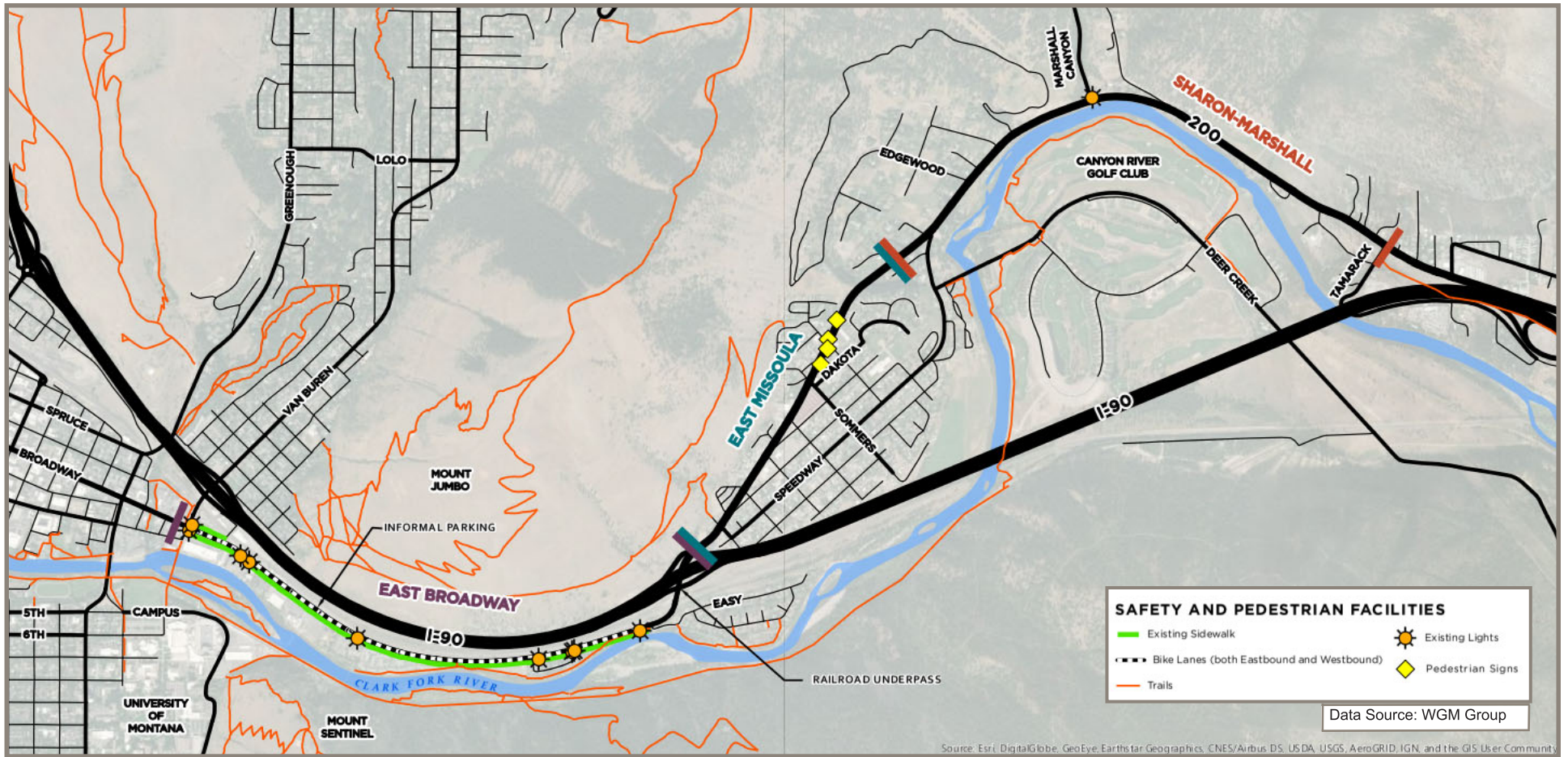


Figure 2: Existing Bicycle and Pedestrian Facilities

Easy Street. On the north, the existing railroad underpass is too narrow to facilitate pedestrian or bicycle facilities. With no safe pedestrian or bicycle connection through the interchanges, there is a significant gap in connectivity. This connection is important for connecting the East Missoula and Missoula communities. No formal crossings exist from the informal parking on the north side and land uses on the

south side of the road.

East Missoula Segment

In this segment, Highway 200 acts as a barrier to the East Missoula community, as there are no striped crossings or pedestrian facilities along the roadway. This section of the corridor also lacks any formal bicycle infrastructure. There is no street lighting and limited

pedestrian signage along this segment.

ShaRon-Marshall Segment

No bicycle or pedestrian infrastructure exists along this corridor segment.

Transit

Mountain Line provides free bus service to all three segments of the subject corridor with bus Route 4. Route 4 provides service Monday through Saturday with one hour headways from approximately 6:15am to 7:30pm. Mountain Line has stated that there is interest in shifting the bus route through East Missoula from Speedway to Highway 200.

The 2015 Bus Stop Master Plan utilizes density of population and employment as criteria for spacing between stops with the goal of maximizing speed, reliability and customer access to the bus stops. These guidelines suggest that either high density (1/4 mile) or medium density (1/2 mile) spacing is appropriate for this corridor.

All of the stop locations are provided with the same service hours and headways throughout all segments of the project, however the amenities provided are dependent upon the ridership at each location. This is identified by the tier system for each stop that in general include the following amenities:

- Tier 1 – Bus Shelter with 6-8 ft. bench and Bus Stop Signage
- Tier 2 – 6-8 ft. Bench and Bus Stop Signage
- Tier 3 – Bus Stop Signage

Stop locations were mapped and classified based on their amenities. Spacing criteria was then utilized to show the 1/4 and 1/2 mile influence areas for each of the current and

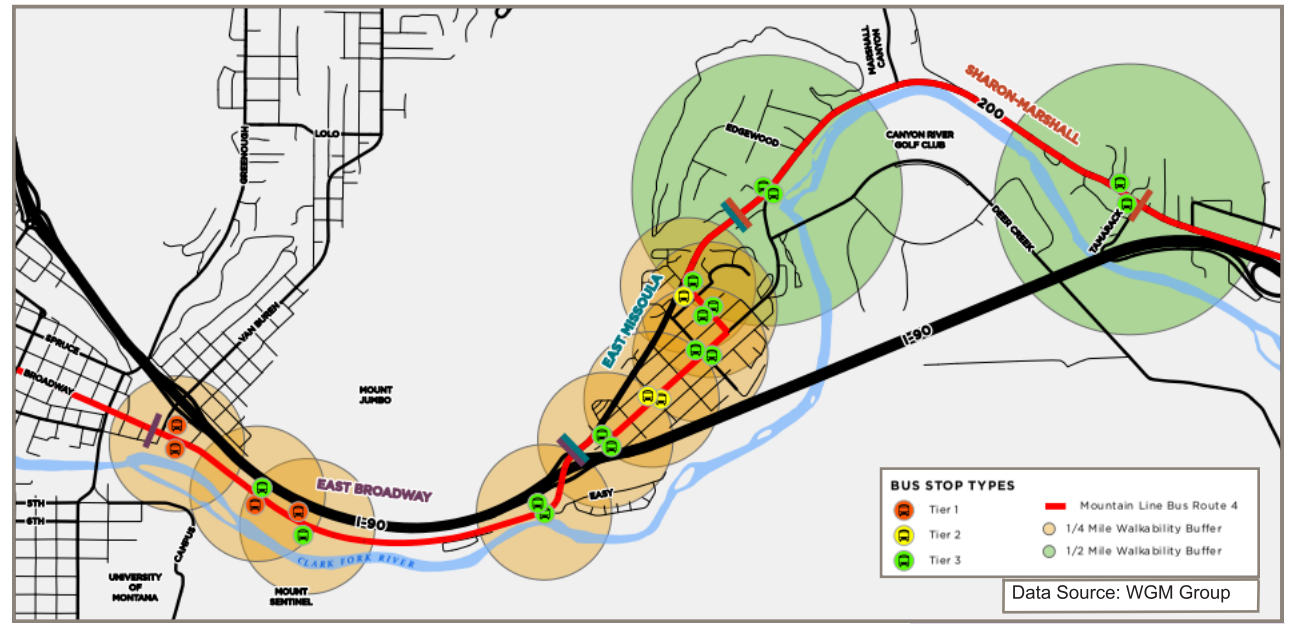


Figure 3: Transit

bus stop locations as shown in Figure 3. This clearly shows that the East Missoula segment is well served with the existing bus stops, however gaps exist in both the East Broadway and ShaRon-Marshall Segments. These gaps may however be due to the lack of demand for service in these areas given the current development levels. As development occurs in these areas and reductions in barriers (sidewalks, ADA facilities, crosswalks, etc.) to access the bus stops occur, additional ridership may spur the need for new stops in areas of deficient service. Reduction in service headways (i.e., more frequent bus service) may

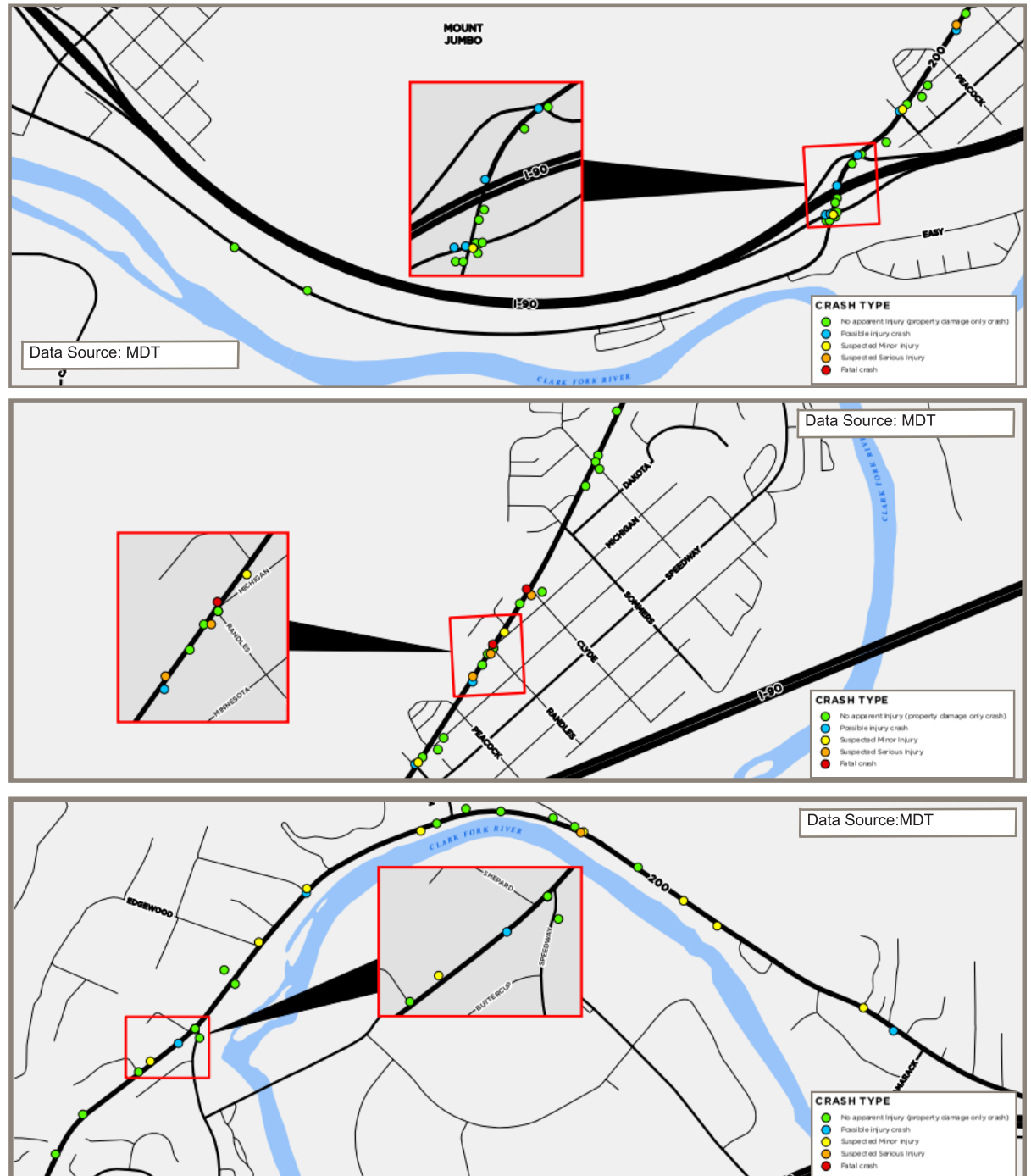
become necessary as travel demand increases between Missoula and East Missoula. The convenience provided by reduced headways might also result in increased ridership for current residents.

Safety

MDT provided WGM with updated traffic crash data for reported crashes within the study area for the ten-year period from January 2009 through December 2018. WGM filtered these crashes to eliminate those related to icy road conditions, impaired drivers, and animals in the roadway as these crashes are difficult to mitigate through design, leaving the 74 crashes shown in Figures 4 through 6. As with the former MDT road safety audit, the two areas with the highest concentration of reported crashes are the I-90 eastbound ramps intersection, and the area between Highton and Clyde Streets in East Missoula.

The concerns and recommendations presented in the Road Safety Audit and discussed in the Introductory Framework continue to be appropriate. In addition, the study corridor would benefit from well delineated and appropriately signed pedestrian crosswalks at key locations in East Missoula, as well as potentially at locations between Van Buren Street and Easy Street where parking is located on the north side of the street (primarily at Missoula College and at the apartment complexes east of Missoula College). These crossings could be made safer still with the addition of rectangular rapid flashing beacons (RRFBs) to notify drivers that pedestrians are actively crossing the highway.

Figures 4-6, top to bottom: Vehicle Crashes 2009-2018, East Broadway Segment; Vehicle Crashes 2009-2018, East Missoula Segment; Vehicle Crashes 2009-2018, ShaRon-Marshall Segment.



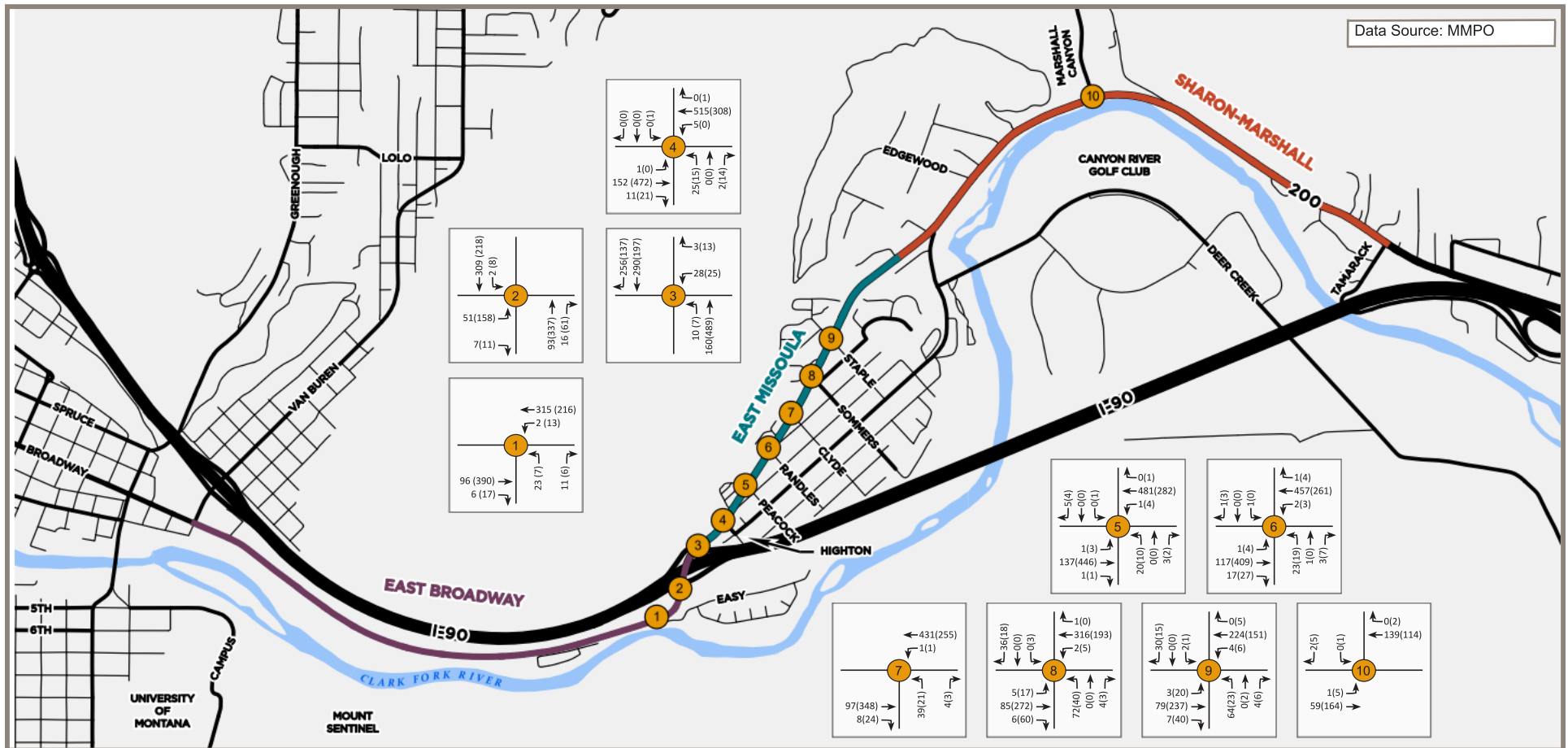


Figure 7: Existing Traffic Volumes
AM Peak Volumes
(PM Peak Volumes)

Intersections

Existing traffic volumes were counted at ten key intersections in the study area. These counts were conducted on Tuesday, Wednesday, and Thursday, November 5, 6, and 7, 2019. The morning counts were conducted from 7 to 9 AM and the afternoon counts were conducted from 4 to 6 PM. This data was then analyzed to identify the AM and PM existing “peak hour” traffic volumes for each

key intersection illustrated in Figure 7. (The Van Buren Street intersection was also counted, but not included in the following analysis because it is an outlier within the study area – a signalized intersection in a highly urbanized area of Missoula on the very fringe of the study area far from any other study intersection, rather than an unsignalized intersection in the East Missoula area bunched with the other

study intersections.)

Each of the key intersections operate as a two-way stop, with stop-sign control on the side streets, and no control on Highway 200. With two exceptions, all approaches at each of the key intersections are comprised of a single lane. The two exceptions are at Easy Street, where eastbound Highway 200 provides

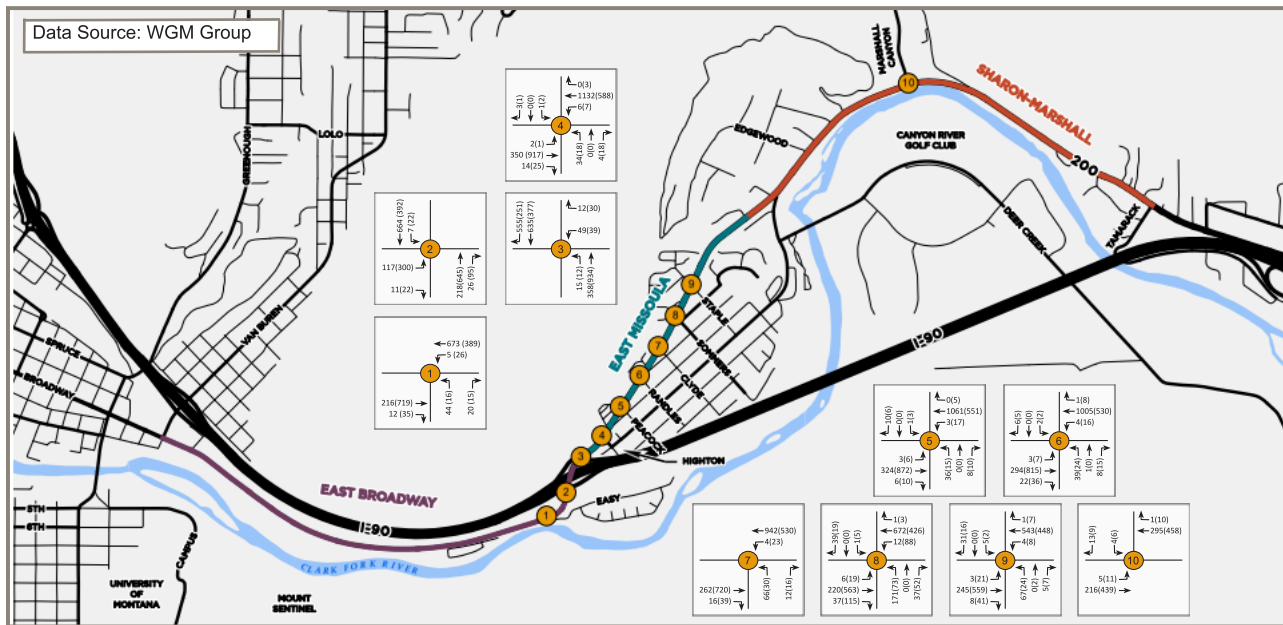


Figure 9: Future Traffic Volumes
AM Peak Hour
(PM Peak Hour)

which in turn is influenced primarily by traffic volume. LOS values range from A to F.

As shown in Figure 8, the computer model analysis suggests that each of the key intersections currently operate at LOS C or better during both the AM and PM peak hours. This is considered an acceptable service level.

As part of a concurrent exercise conducted as part of this study, forecasts were made for growth changes anticipated within the study area over the next 20 years (see Figure 20). These changes will each result in increased traffic volumes accessing Highway 200 from the side streets and traveling through the study area. Peak hour traffic generation estimates were prepared for each of these land uses, and distributed throughout the roadway network. In addition, a background growth rate of two percent per year is anticipated for through traffic on Highway 200 and all traffic on the I-90 ramps. This two percent annual growth reflects the impact of general increases in development and population throughout the region, and is typical of a facility such as Highway 200. Together, these volume increases result in the 20-year planning horizon traffic volumes shown in Figure 9.

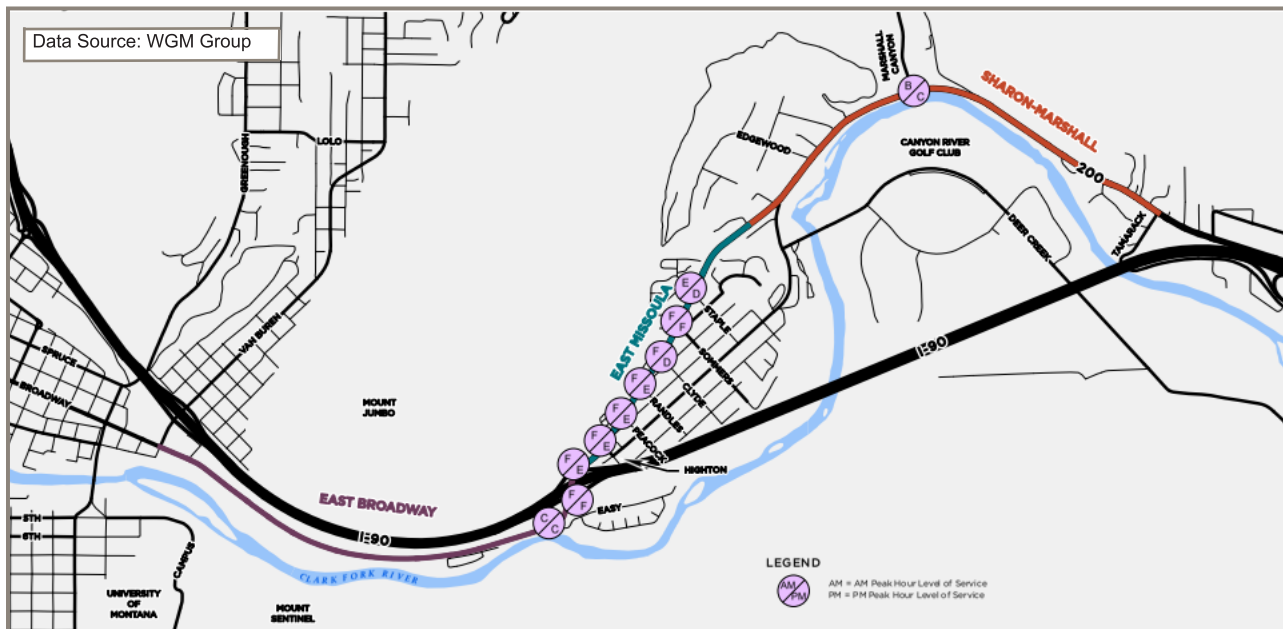


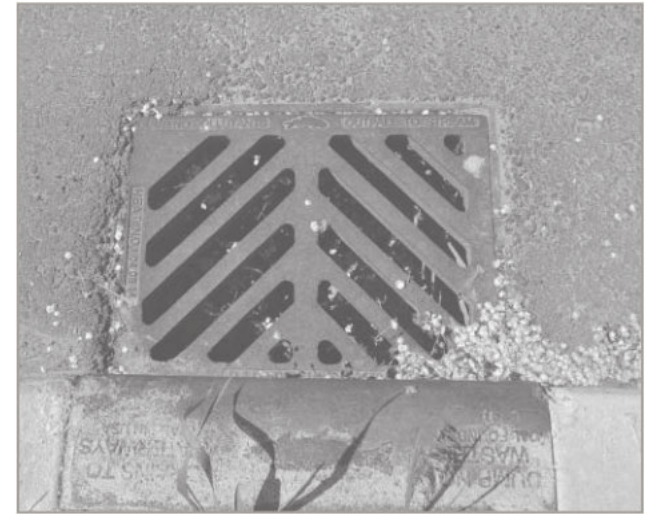
Figure 10: Future Intersection Level of Service

The intersection capacity analysis calculations were repeated using the future traffic volume estimates. The results of this future planning analysis, as illustrated in Figure 10, predict poor LOS E or F during one or both peak hours for each of the key intersections with the exceptions of Easy Street and Marshall Canyon Road. This drop in LOS indicates that intersection capacity improvements should be considered at these locations.

Right-of-Way & Utilities Analysis

The existing right-of-way and utility infrastructure were analyzed to identify any deficiencies and assess capacity relative to future growth

and anticipated transportation needs. The utility analysis includes the review of sewer, water, stormwater, and electrical power.



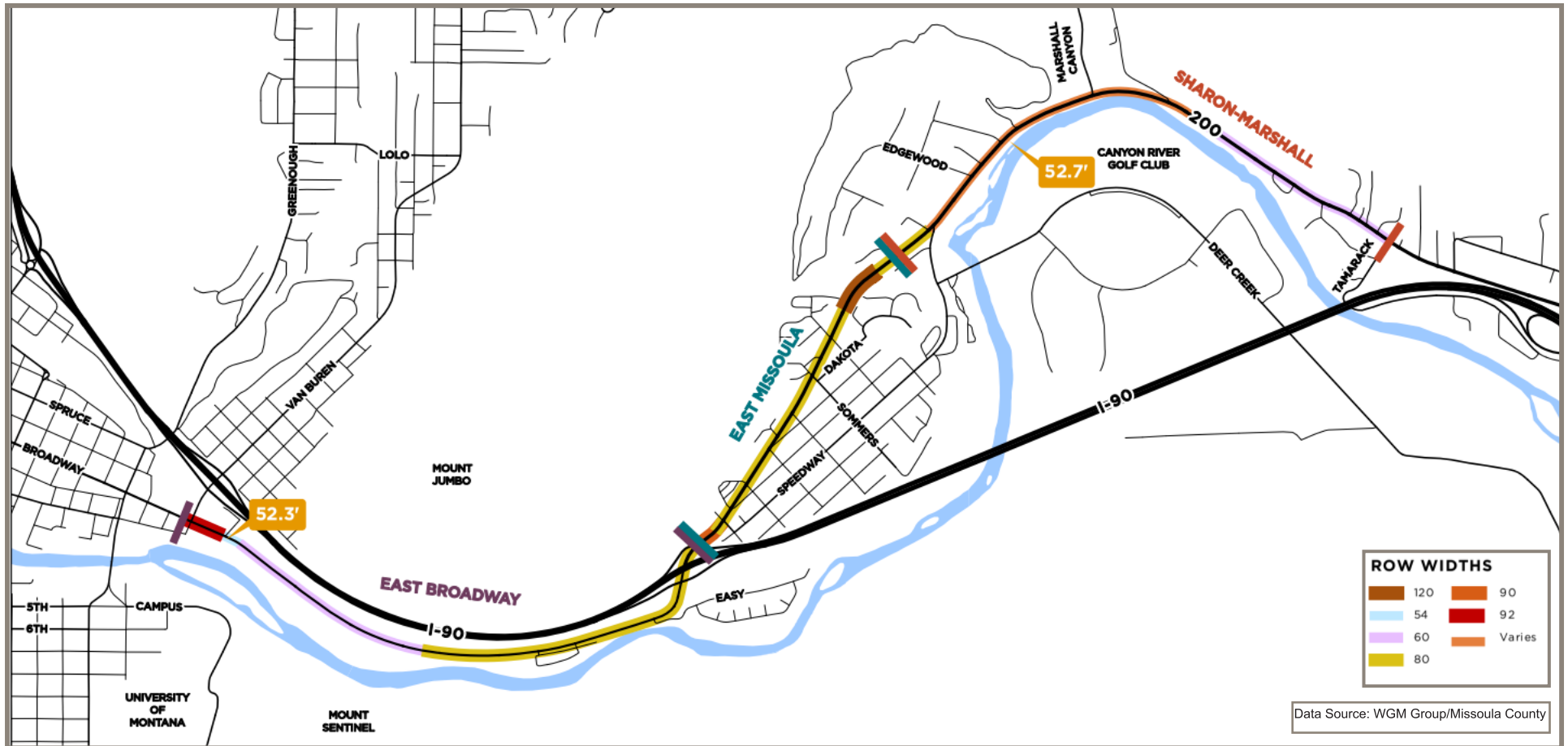


Figure 11: Existing Right-of-Way Widths

Right-of-Way

The existing width of right-of-way was researched to determine the area available for improvements. Right-of-way research included GIS analysis and review of existing surveys along the corridor. A complete survey of the right-of-way was not completed as part of this project.

The right-of-way for Highway 200 through the

Plan Area varies in width as shown in Figure 11. In the East Broadway Segment, the right-of-way is mostly 60 feet or 80 feet wide. East of Van Buren Street, there is a short section where the right-of-way is 92 wide and a short section where it is less than 53 feet wide. Through the East Missoula Segment, the right-of-way is mostly 80 feet wide with a 120 foot wide section near the eastern end of the Segment. Through the ShaRon-Marshall Segment, a large portion of the right-of-way is approximately 60 feet wide with some variation and the

narrowest point being 52.7 feet wide. Along the eastern portion of the segment the right-of-way becomes 60 feet wide.

A typical right-of-way width for a minor arterial street similar to Highway 200 through the Plan Area might be 80 to 100 feet, depending on the road section. Without acquiring additional right-of-way, the limited existing right-of-way through the Plan Area will restrict the type of road improvements that can be constructed for a complete street.

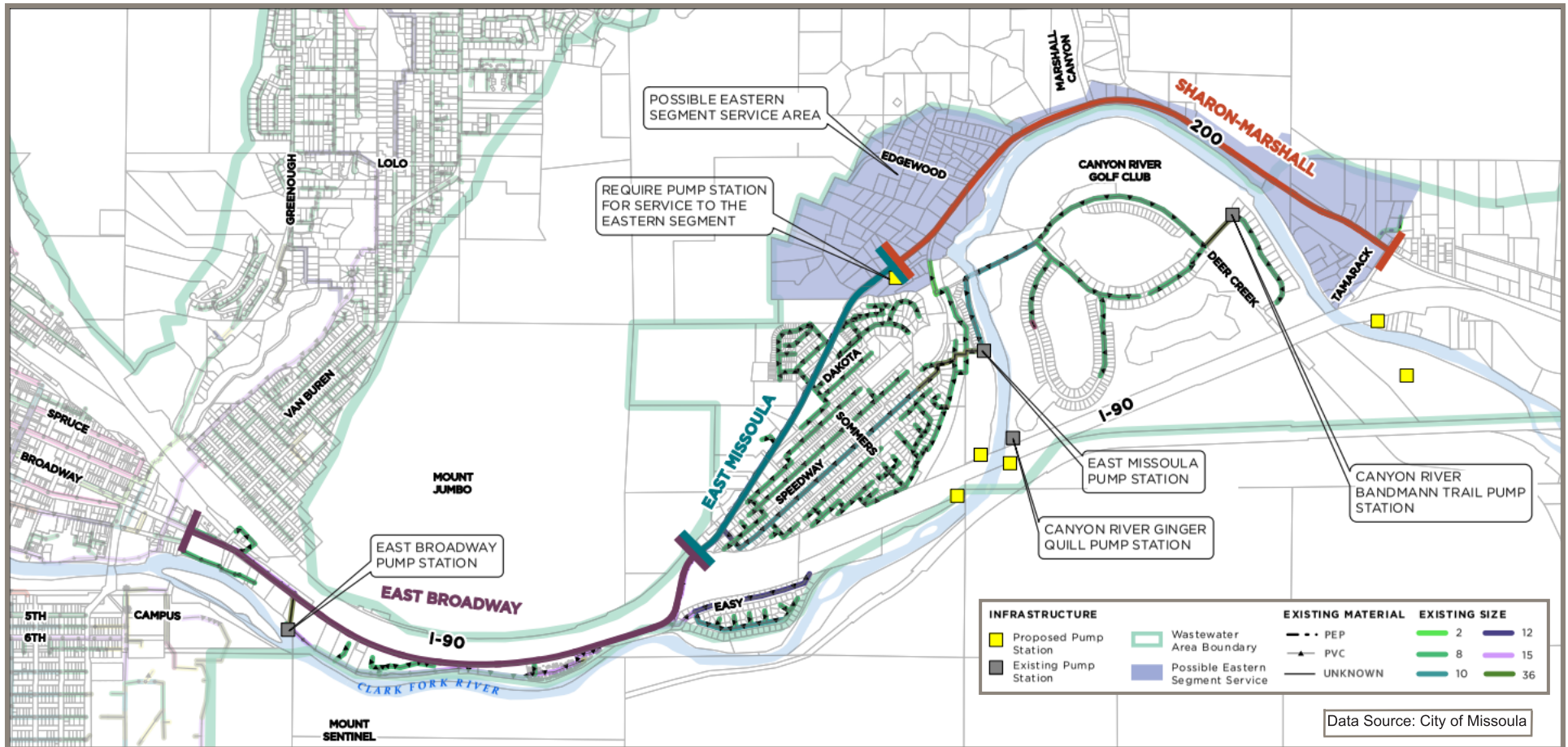


Figure 12: Sewer Infrastructure

Sewer

Sewer infrastructure for the plan is shown in Figure 12. The Plan Area is within the City of Missoula Wastewater Service Boundary. In general, sewer service within the East Broadway Segment and East Missoula Segment is provided by the City of Missoula

and the ShaRon-Marshall Segment is served by individual on-site sewer systems. The City of Missoula Sewer System includes four pump stations within the Plan Area: East Broadway; East Missoula; Canyon River Bandmann Trail; and Canyon River Ginger Quill. An existing

15" sewer main within the Highway 200 right-of-way conveys wastewater from the East Missoula area to the City of Missoula. Depending on the type and level of future development within the Plan Area, this main may reach capacity in the future. If the

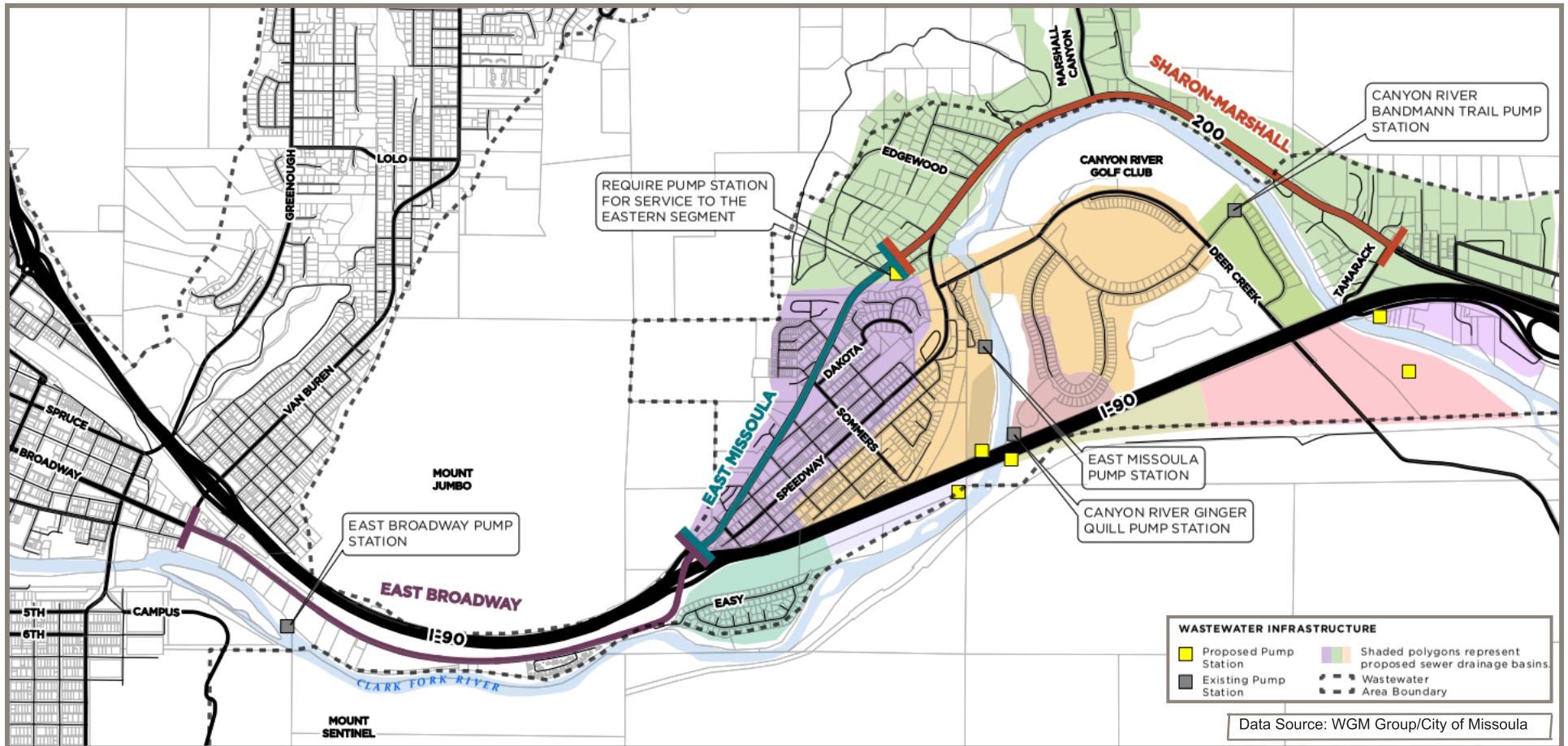


Figure 13: Sewer Drainage Basins

ShaRon-Marshall Segment is to be served by City sewer, a new pump station and force main would be required for this area. The force main would likely be located within the Highway 200 right-of-way. As designs are completed for Highway 200 surface improvements,

consideration should be given to allow a corridor for a future force main that is located outside of the road section. Figure 13 shows the drainage basins for sewer collection and associated pump stations that may be required for service. The City of Missoula Public Works

Department should be formally notified that future surface improvements are planned within the Highway 200 right-of-way so they can further evaluate the capacity of their sewer system and plan for any necessary improvements.

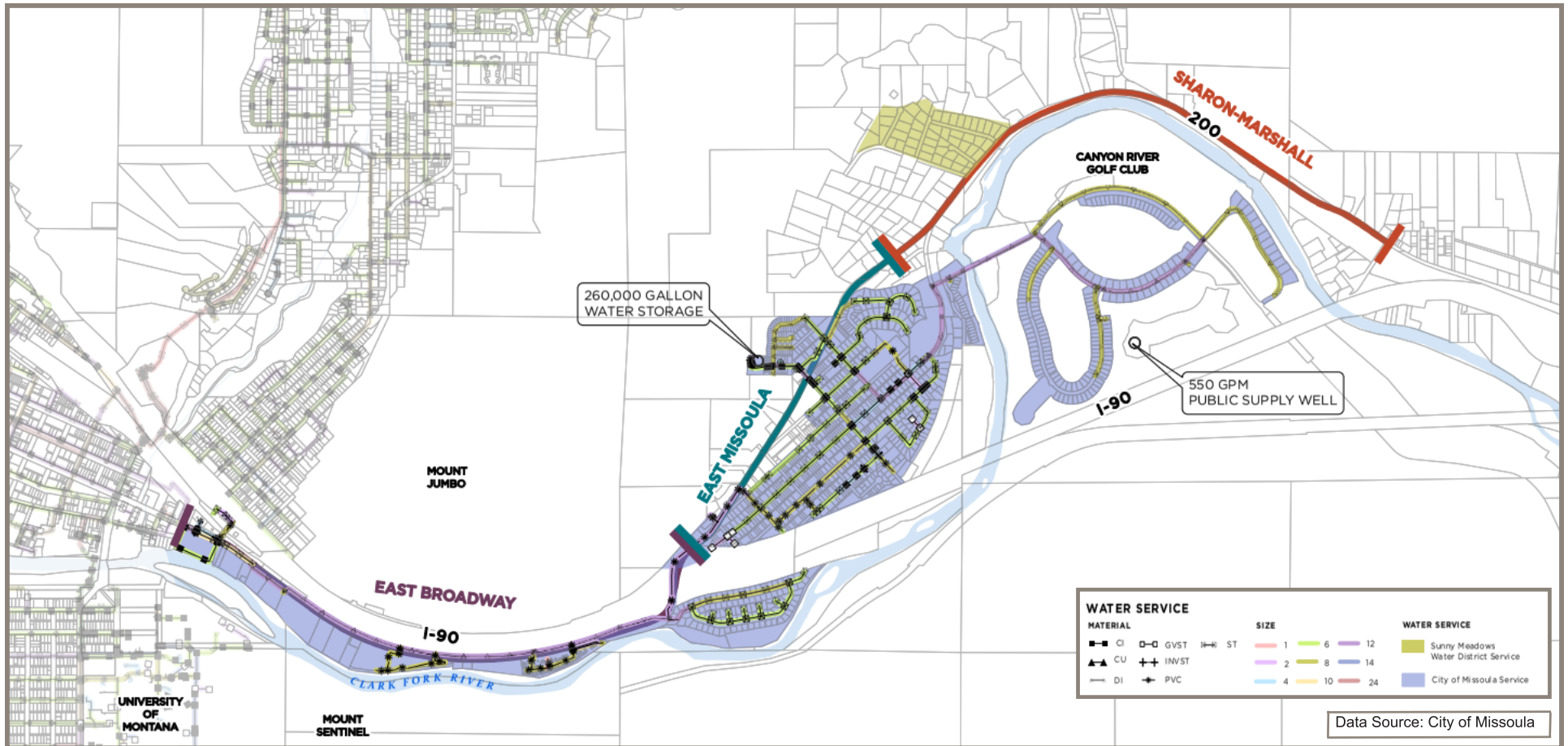


Figure 14: Existing Water Infrastructure

Water

Water infrastructure for the plan area is shown in Figure 14. Public water supply within the Plan Area is provided by either the City of Missoula, private individual wells or a County Water District. In general, the East Broadway Segment and East Missoula Segment are served by the City of Missoula and the ShaRon-Marshall Segment is served by either the Sunny

Meadows Water District or private individual wells.

The City of Missoula water system is supplied by multiple groundwater wells, including a 550 gpm well in the Canyon River development and 260,000 gallons of elevated storage in East Missoula. An existing 12" water main

located within the Highway 200 right-of-way extends from the western part of East Missoula to the City of Missoula, however there is no water main within the Highway 200 right-of-way through East Missoula. City static water pressure in the East Missoula area ranges from 50 psi to 90 psi. Several fire hydrants are located off the existing water mains. Flow

tests on these hydrants range from 1,500 gpm to 3,000 gpm. The City of Missoula water system likely has capacity to serve additional development within the Plan Area. Anticipated infrastructure within the Highway 200 right-of-way includes extension of the existing 12" main to the east to improve supply and distribution. The City of Missoula Public Works Department should be formally notified that future surface improvements are planned within the Highway 200 right-of-way so they can further evaluate the capacity of their water system and plan for

any necessary improvements.

The Sunny Meadows Water District serves approximately 54 residential lots between East Missoula and Marshall Canyon Road. This water system is supplied by two public supply wells, each producing about 100 gpm and an elevated 136,000-gallon storage reservoir. This system is designed to serve the residential lots within the water district and likely does not have additional capacity for large scale expansion.

Electrical

Electric and gas service for the Plan Area is provided by NorthWestern Energy. Electrical service in East Missoula is generally provided with overhead lines while the newer residential areas are served with underground lines. Existing gas mains are located throughout the Plan Area with the gas main along Highway 200 being a four-inch line. In addition to the existing NorthWestern Energy gas and electric lines, an existing petroleum line, owned by the Yellowstone Pipeline Company crosses the Plan Area from east to west. This pipeline is within an existing easement and is likely not feasible to relocate.

There are several communication providers in the Plan Area that have overhead and/or buried lines including CenturyLink, Charter Communications Inc., Blackfoot Communication and AT&T. There are fiber broadband lines along Highway 200 that will need to be considered if the road grade is changed with future improvements.



Existing utilities within the Highway 200 right-of-way will likely need to be relocated with future surface improvements. NorthWestern Energy and other service providers should be formally notified that future surface improvements are planned within the Highway 200 right-of-way so they can further evaluate the capacity of their system and plan for any necessary improvements.

Storm Water

Future road improvements within the Highway 200 right-of-way will need to evaluate storm water collection, disposal, and treatment alternatives. There are no regional storm drain collection or treatment systems serving the Plan Area that could be utilized. Current storm water management is primarily achieved using individual infiltration sumps dispersed throughout the Plan Area as shown in Figure 15. Soil maps published by the Natural Resources Conservation Service (NRCS) indicate that the majority of the Plan Area contains gravelly loam soils with a few isolated pockets of silty clay. The widespread use of sumps and dominant gravelly soils indicate that conditions are likely conducive to the use of infiltration practices for storm water management

The Plan Area lies within the boundary of the City of Missoula and Missoula County small Municipal Separate Storm Sewer System (MS4). The MS4 program is derived from the Clean Water Act and it is enforced through DEQ's General Permit for Storm Water Discharges Associated with Small MS4s. New projects that create greater than 1-acre of disturbance are required to provide permanent post-construction best management practices (BMPs) to treat storm water runoff. Further, to help avoid causing or exacerbating storm drainage issues,

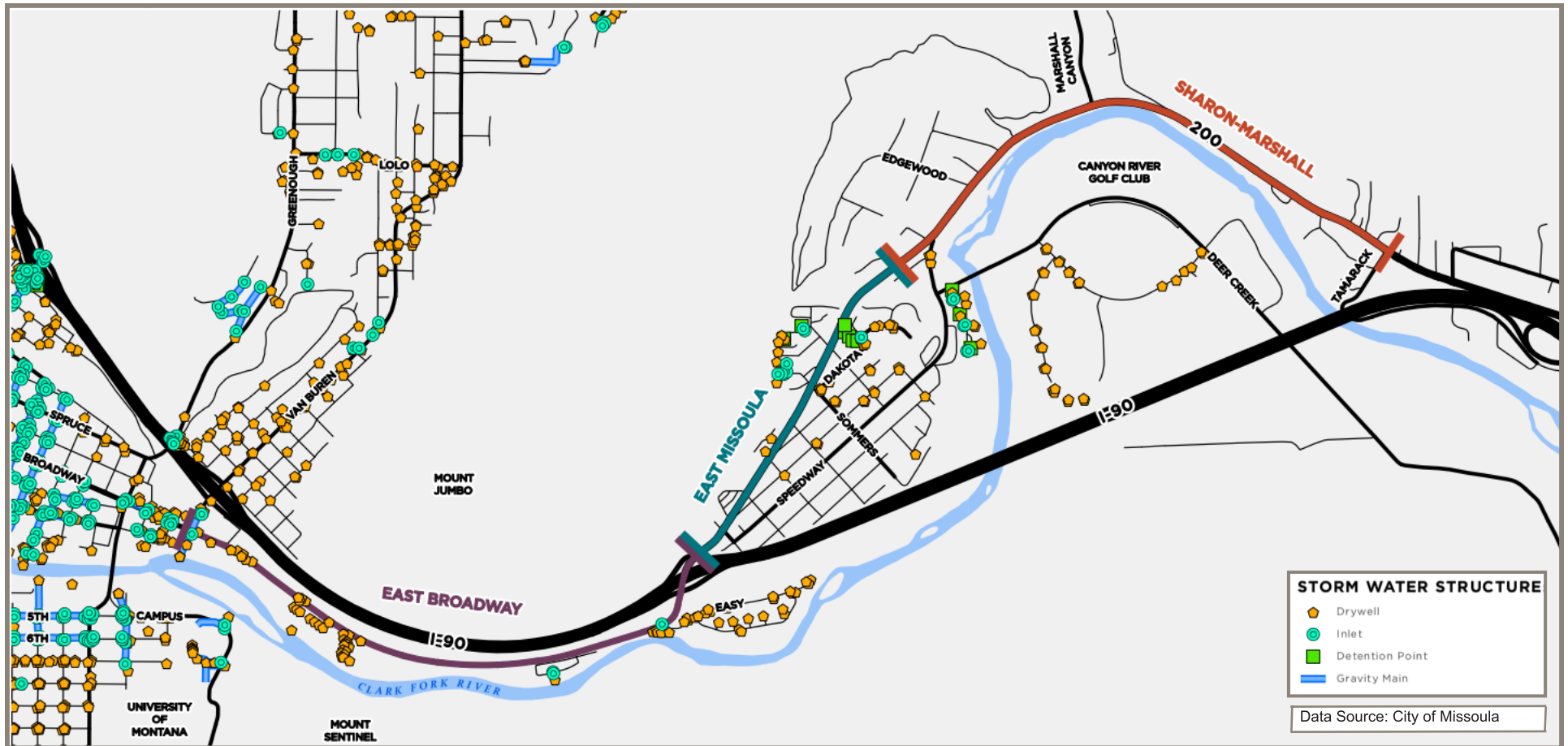


Figure 15: Storm Water Structures

both City and County regulations typically require projects to control runoff peak flows by providing storage systems. The City has recently created a city-wide storm water utility to help address storm water management, satisfy requirements of the MS4 program, and assist maintaining public storm water systems. The portions of the Plan Area that are within

the City limits are assessed a fee for the City Storm Water Utility.

The standard City/County infiltration sump design is generally the preferred method for storm water management in the Missoula area because it is cost effective, space efficient, and can meet all current regulatory

requirements. If treatment for larger drainage areas is necessary, storm drain systems and centralized dry infiltration ponds may also be a potential solution for the Plan Area. A detailed investigation of soils to validate soil infiltration capabilities and refine storm water management alternatives is recommended for any future improvement plans.

Land Use Analysis

The land use analysis evaluated the land capability and suitability to determine the potential for future development. The physical capability analysis included evaluating slopes and floodplain. Further analysis of the land

determined to be physically capable took into consideration ownership, the growth policy recommendations, expectations for infill development, and sewer and water service.



Slopes

Slopes were evaluated to determine the buildable areas in the Plan Area. Areas with slopes over 25% are considered not buildable. Special considerations are needed for building on slopes over 15%. Areas with slopes under 15% are desirable for building. Figure 16 shows the slopes in the Plan Area and flow arrows generally depicting the direction water will drain.

East Missoula is located in the valley between Mount Jumbo and Mount Sentinel. Much of the land containing slopes over 25% is in public ownership. Larger parcels of land held in private ownership exist North of Zaugg Drive and west of Tremper Drive, however, approximately half of the acreage in this area contains steep slopes and is not buildable. The land at the base of Mount Sentinel is constrained by Interstate 90 and the Clark Fork River, leaving minimal acreage available for development. Larger parcels of vacant land exist off of Deer Creek Road that are within the 0-15% slope range. These parcels could be developed in the future, though development may be limited due to other contributing factors such as the Deer Creek Shooting Center. There is private land on the northern boundary of the Plan Area, accessed off of Old Marshall Grade with slopes in excess of 15%. Generally, these parcels of land are developed with one single-family home per

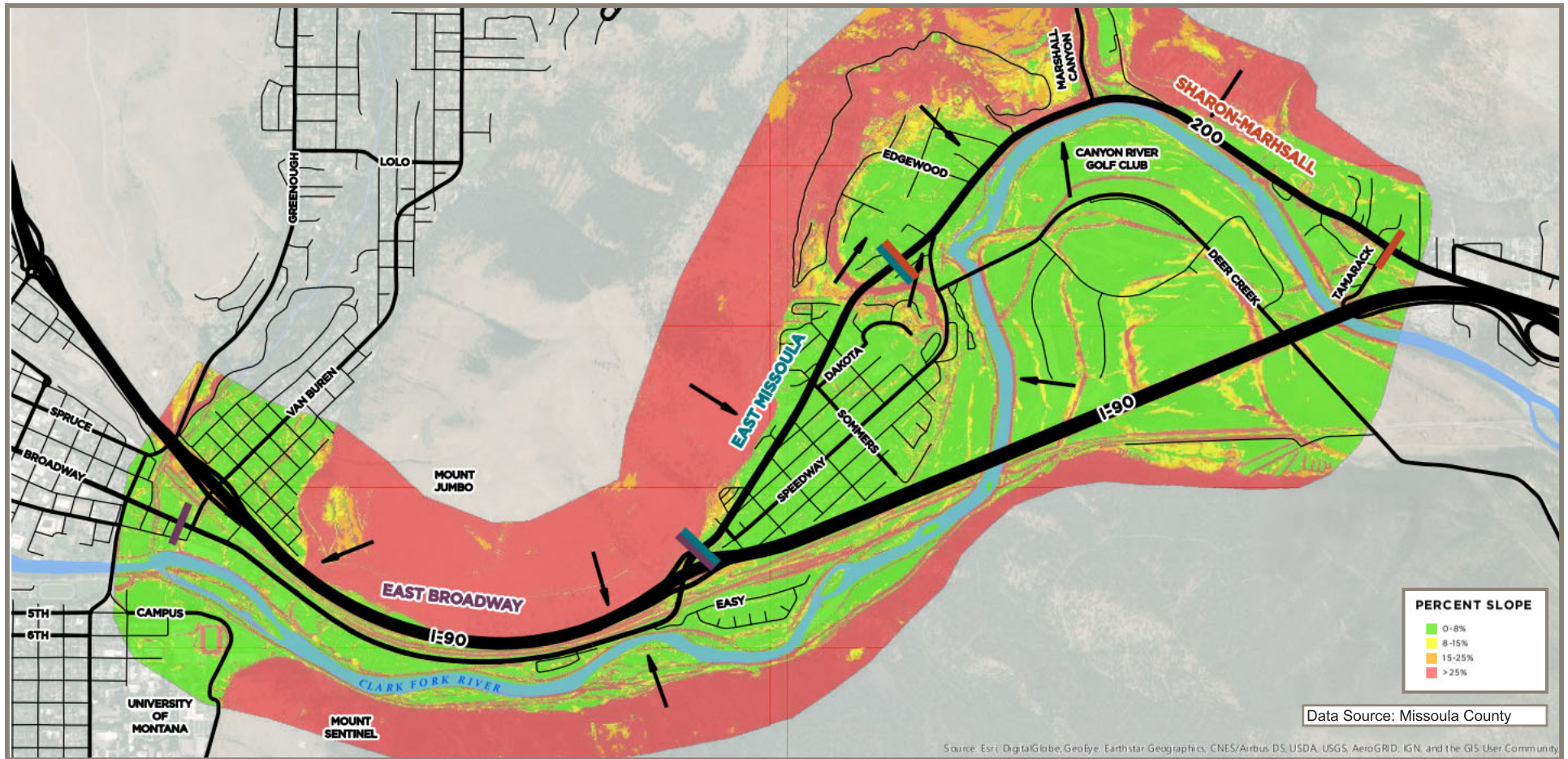


Figure 16: Slopes

parcel. Further development of these parcels are not anticipated based on the slopes.

The Highway 200 corridor is relatively flat with the exception of Brickyard Hill located east of Staple Street and west of Brickyard Road. At Brickyard Hill, there are steep slopes on both sides of Highway 200 that may affect design

options in this area because of limitations in the width of the street section.

Much of the ShaRon-Marshall Segment is located directly adjacent to the Clark Fork River with the shoulder sloping towards the river. Between Old Marshall Grade Road and Marshall Canyon Road there is a large cut

on the north side of the road. This area is constrained by the slope on the north side of the road and the river bank on the south side of the road which limit the width of the road section and potentially additional amenities beyond the highway.

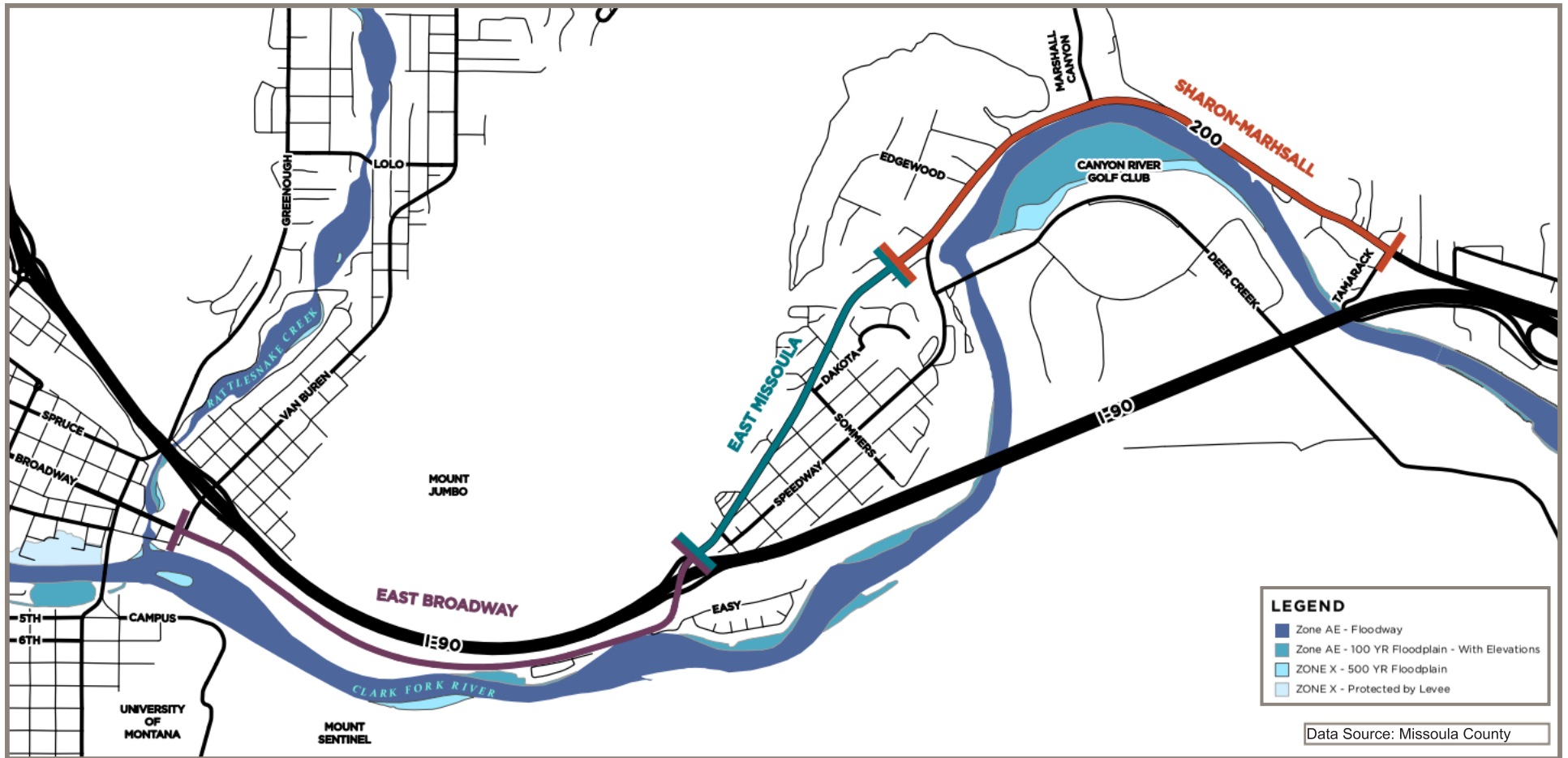


Figure 17: Floodplain

Floodplain

The FEMA mapped floodplain in this area includes the 100-year Floodway, Zone AE (100- year floodplain with elevations), and Shaded Zone X (100-500 Year floodplain), as shown in Figure 17. The mapped floodplain is

generally contained within the banks of the river, however, a large area of land south of the main river bend is within Zone AE and Shaded Zone X. This property has already been developed with the Canyon River Golf Course and redevelopment of this property is unlikely. A private parcel of land south of I-90 and north of the River at the western side of the Plan Area has potential for development, however,

the southeastern corner of the property includes a small river channel.

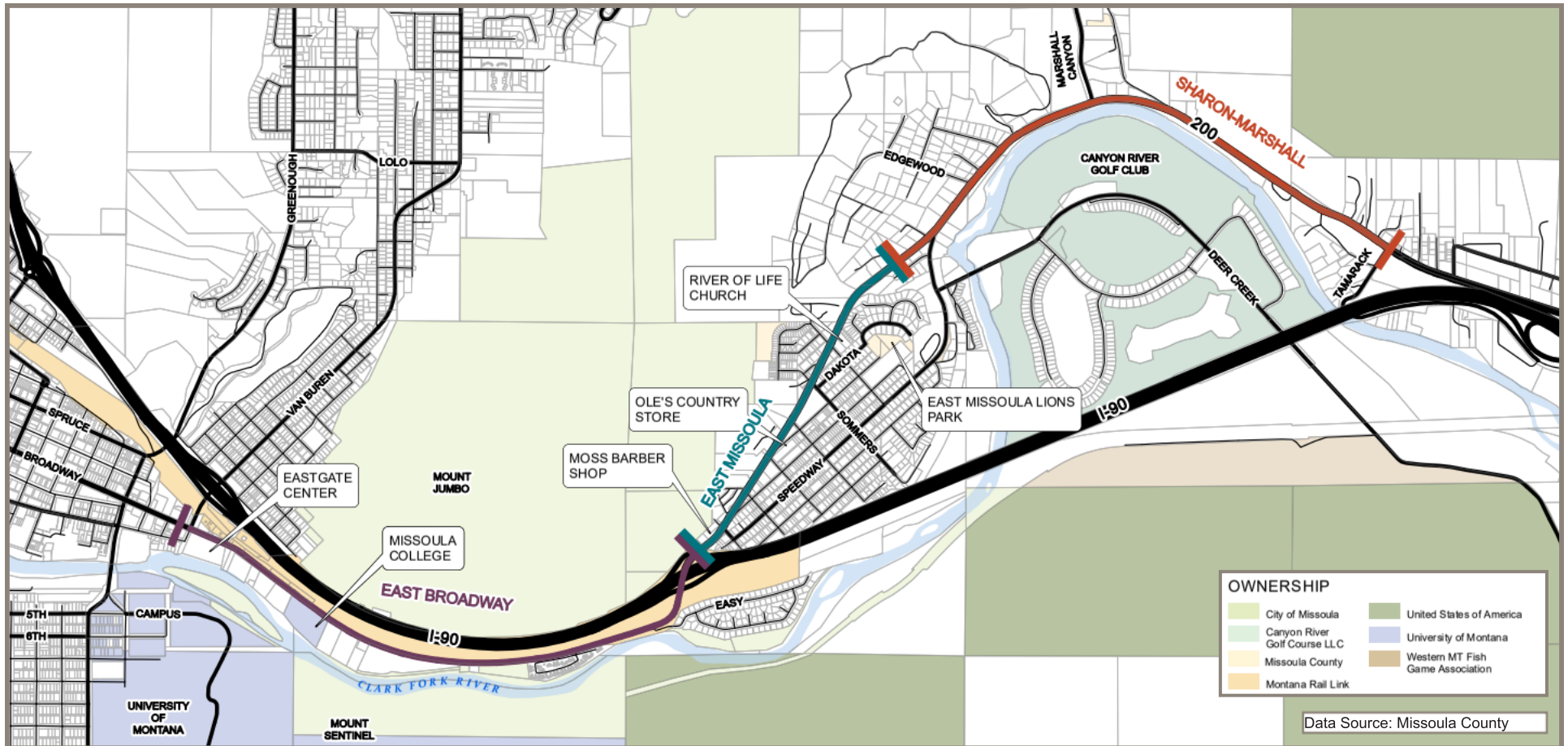


Figure 18: Ownership

Ownership

Ownership was evaluated to identify the lands on public ownership and other large parcel property owners. These are shown in Figure 18. The existing developed areas in East Missoula are bordered by public lands either owned by the City of Missoula or the Forest Service. The City owns much of Mount Jumbo, and the Forest Service owns most of Mount Sentinel. The City owns a stretch of property at the base of Mount Sentinel where the Kim Williams Trail

has been built. Montana Rail Link operates a rail line running from Bonner to Missoula. The rail is located south of I-90 and north of the Kim Williams Trail. Other major landowners in East Missoula include Canyon River Golf Course LLC, Missoula County, Robert and Rebecca Deschamps, and Albert and Beverly Bellusci. The Canyon River Golf Course is located south of the river and north of I-90 and consists of 275 acres which is developed as a public golf course. Missoula County owns several park properties in the area. The Lion's Club

helped develop and maintain the 3.5-acre park northeast of the school, known as the East Missoula Lions Park. Albert and Beverly Bellusci own 97 acres on the Mount Jumbo hillside. This property is not currently developed. Robert and Rebecca Deschamps own approximately 89 acres west of Marshall Canyon Road; all but 15.5 acres are held in a conservation easement with Five Valleys Land Trust. Five Valleys Land Trust also holds a conservation easement on land owned by the City of Missoula located on the west side of the Plan Area.

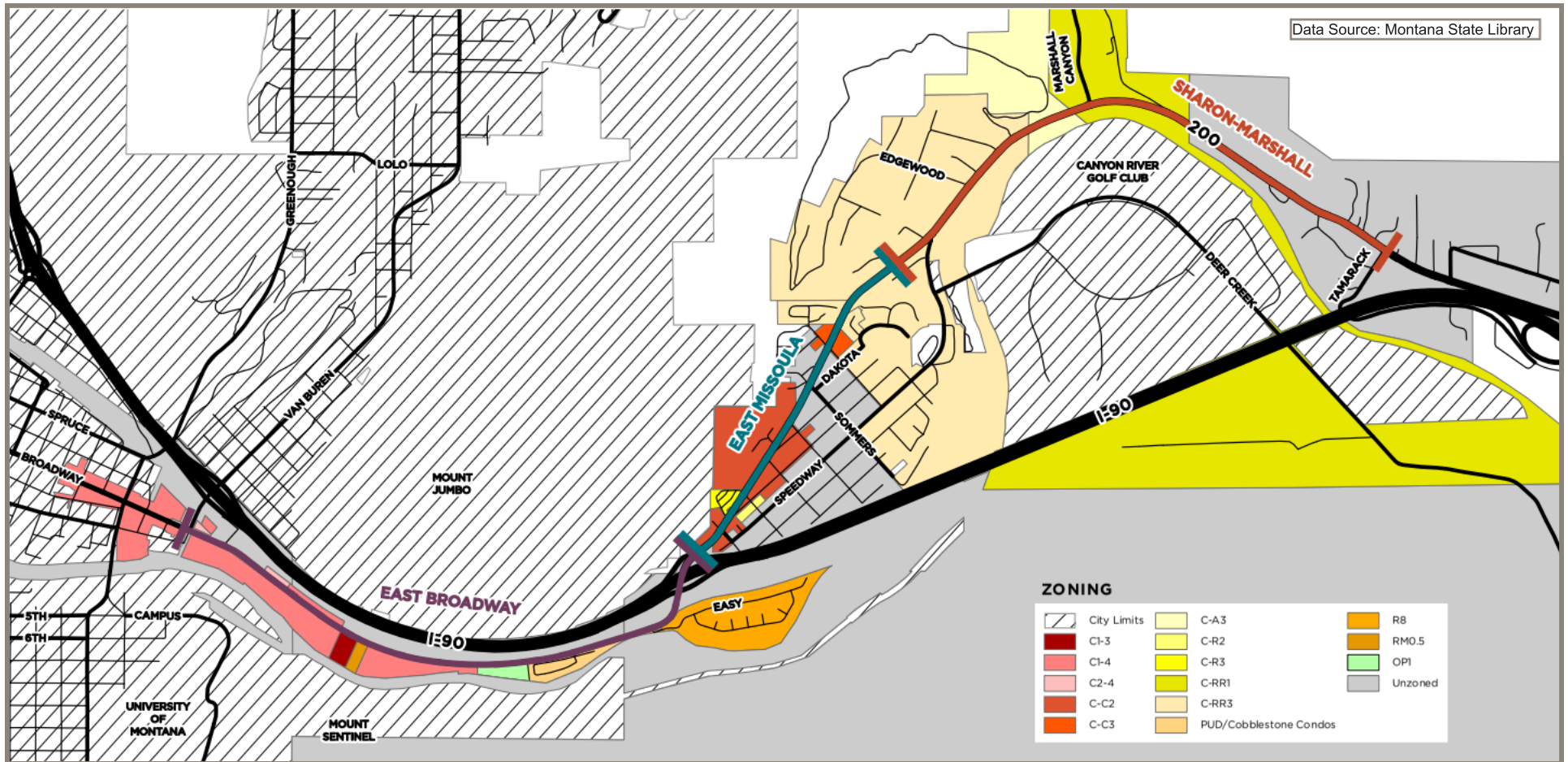


Figure 19: Zoning

Zoning

Zoning in the Plan Area includes City and County zoning districts as shown in Figure 20, which only shows the zoning obstructs adjacent to the corridor. The City of Missoula, Title 20, Zoning Ordinance, and the Missoula County Zoning Regulations are in place to implement the policies contained within the

respective Growth Policies. The city zoning currently applies to two parcels at the eastern end of the Plan Area and the Canyon Creek Subdivision and Golf Course. These parcels are all zoned residential with the Canyon Creek Subdivision zoned RT10 and designed as a cluster development, utilizing the Golf Course as open space. The two parcels at the eastern edge of the Plan Area are zoned R20 and R40. The maximum residential density within these

zones is four dwelling units per acre and one dwelling unit per acre respectively.

The remaining area within the plan boundary is outside of the city limits and either unzoned or zoned commercial or residential. The northwestern area of the plan is designated C-C2, General Commercial. This zone allows for residential development at a density of 43 units per acre, retail sales, eating and

drinking establishments, contractor businesses, commercial uses of low intensity which may require a large area of land. The core of East Missoula is currently unzoned, though the county is undergoing a substantial zoning code update with the plan to develop a zone and then apply it to this area to implement the Live/Make Neighborhood designation within the Growth Policy. This would allow 3-11 dwelling units per acre, however, upon further investigation based on block size and lot size eight dwelling units per acre is more probable. The current build-out in this area is approximately six dwelling units per acre.

Moving further east and down Brickyard Hill a large amount of land is zoned C-RR3, Residential, with a density of four dwelling units per acre. The C-RR3 zone allows for single-family and two-family housing at a moderate density if served by public sewer and water. Other privately owned land in the Plan Area is zoned C-A1, C-A3, and C-RR1 with densities of one dwelling unit per 40 acres, one dwelling unit per five acres and one dwelling unit per acre, respectively. The C-A1 and C-A3 zones encourage the protection of open space land and the protection of natural resources. Low-density residential development is suitable within the C-A3 zone. The C-RR1 zone provides for transitional low-density residential development while recognizing environmental concerns. Areas currently unzoned would need to be zoned in compliance with the Growth Policy for increased development.

Reasonable expectations for entitlements

Entitlements cover the range of compliance and approvals needed to move a development project forward. Entitlements primarily include growth policies and zoning. However, the availability of public sewer and public water affect the intensity of development. The Corridor Plan covers land in Missoula County, both inside and outside of the city. For portions of the East Broadway Segment, that are within the city limits, the Our Missoula 2035, Growth Policy, adopted in 2016, guides land use and municipal zoning regulates land development. For the lands outside of the city, the Missoula County Growth Policy adopted in 2016 and The Missoula County Land Use Element Plan adopted in 2019, guide land use and county zoning regulates land development. Refer to the Introductory Framework for exhibits showing the Land Use Designations for the City and County Growth Policies. The primary public water system in place is Missoula Water and the primary public sewer is Missoula Sewer.

Beginning with the East Broadway Segment, Interstate 90, Montana Rail Link and Highway 200 dominate the corridor. Along Highway 200, the primary land uses consist of commercial uses, offices, multi-family housing, and Missoula College. Less noticeable but important to the East Broadway Segment are the existing trails and parks along the Clark Fork River. In summer months, the East Broadway Segment is heavily used for access to the Clark Fork River. River floaters

who take out of the river along this corridor are likely to have put in the river at ShaRon or other upstream locations in the study area. It also serves recreationists whose destination is the Kim William's Trail, Mount Sentinel or Mount Jumbo. In addition, this segment of the corridor handles traffic and parking associated with major events at Washington Grizzly Stadium. Portions of the East Broadway Segment are also in the Hellgate URD that runs from Madison Street to Riverside Health Care. The URD provides financial incentives to development. The land use designations for the East Broadway Segment include Gateway to Missoula and East Missoula, Urban Center, and Neighborhood Mixed Use from Our Missoula 2035 Growth Policy. The land use intensities range from high-intensity commercial at the west to neighborhood-scale commercial uses and multi-family residential uses in the Neighborhood Mixed-Use area. Within Urban Center- horizontal and vertical mixed uses of retail, service, office, and high-density residential in the range of 24 units per acre to 43 units per acre are expected. Within the Neighborhood Mixed-Use retail, offices, entertainment, professional services, eating and drinking, shopfront retail that serves a small scale neighborhood need and residential uses at a density of 12 units per acre to 23 units per acre are expected. We expect the land uses in the East Broadway Segment to develop within the vision of the planning documents.

In the East Missoula Segment, Highway 200 bisects the area from the Montana Rail Link underpass through to Brickyard Hill. Along Highway 200, the uses include

highway oriented commercial, gasoline sales, automotive repair, eating and drinking, self-storage, and neighborhood commercial and residential uses including recent multi-family development. As you move away from the highway, the uses are dominated by single-family residential uses, both new and existing, interspersed with commercial uses. School District No. 1 still maintains but does not use the Mount Jumbo School. Public sewer and public water that allows for higher intensity residential land uses serve the East Missoula Segment. The land use designations for the East Missoula Segment include Neighborhood Center, Live/Make Neighborhood, and Residential from the Missoula County Land Use Element Plan. The land use intensities range from large scale commercial to mixed-use with a residential density of eight units or greater along the Highway 200 corridor in the Neighborhood Center area to residential densities of three units per acre to eleven units per acre in the Residential area and the Live/Make Neighborhood. Small-scale manufacturing and commercial uses as a secondary use exist and are expected to continue within the Live/Make Neighborhood.

The ShaRon-Marshall Segment begins as you head down Brickyard Hill northeast out of East Missoula. Highway 200 dominates this area. Land uses on both sides of the highway are low to medium density residential uses until the river pinches down the developable terraces against the foothills as you approach Marshall Canyon Road. Access to the Clark Fork River on the Eastern side of Deer Creek Bridge and at ShaRon create parking and traffic congestion. There is congestion in terms of traffic, both pedestrian and vehicular

and parking along both sides of all public roads. Mountain is once again becoming a recreational destination for mountain biking and other activities. Just beyond Marshall Canyon, there are agricultural uses on the flats that lead up to open hillsides that transition into residential uses in clusters of medium density until Tamarack Drive. There are scattered commercial uses in this area as well. There is also the outlying land south of Interstate 90, which contains longtime uses like the Deer Creek Shooting Range, and open land that is transitioning with development such as the self-storage units along Deer Creek Road.

The land use designations for the ShaRon-Marshall Segment include Working Lands, Rural Residential and Agriculture, Rural Residential and Small Agriculture, Residential, Open Resource and Recreation from the Missoula County Land Use Element Plan and Residential Low Density from Our Missoula 2035 Growth Policy. The privately-owned lands on the northern hillsides are generally designated Working Lands and Rural Residential and Agriculture. Residential densities range between one unit per 10 acres and one unit per two acres in the Rural Residential and Agriculture area with most of the undeveloped area in timberland or in a relatively natural state. Working lands includes those areas that are expected to develop in the low density ranges between one unit per 160 acres to one unit per 40 acres. Limited development is expected in these areas. The area west of Brickyard Hill designated Residential is largely developed with single-family homes. If served by public sewer and water in the future intensity of

three dwelling units per acre to 11 dwelling units per acre could be expected. Properties north of Highway 200, near Marshall Canyon Road, are designated Rural Residential and Small Agriculture. Densities in this area range from one unit per acre to two units per acre. Continued low-density development and small agricultural operations are expected to continue in this area. Once past the Marshall Canyon pinch point, continued residential development in the area designated Residential can be expected at a density of three dwelling units per acre to 11 dwelling units per if served by public sewer and water.

Moving south of the Clark Fork River and north of the Interstate, the Canyon River Golf Course and the associated subdivision dominate the land which is designated Residential Low Density with a density range of one unit per acre to two units per acre. Entitled lots within this subdivision are expected to develop over the next few years.

Areas south of the Interstate are designated Residential, Rural Residential and Small Agriculture, Open, Resource and Recreation. The areas designated Open, Resource and Recreation are public lands where development is not likely. Immediately south of the Interstate, the land is designated Residential at a density of three units per acre to 11 units per acre. These lands are partially developed with the storage units mentioned above. This area is not currently served by public sewer or water, which in combination with the location south of the Interstate and adjacent shooting range limit future growth and development. The vacant land south of the Interstate and east of Deer Creek Road,

designated Residential Low Density, gained entitlements through the preliminary plat approval for a subdivision, however, this subdivision has since expired. Residential Low Density has an intensity of one dwelling unit per acre to two dwelling units per acre. This area is expected to develop within this density range. The shooting range is designated Rural Residential and Small Agriculture with a density range of one unit per acre to two units per acre. This is an active range and redevelopment of this site is unlikely.

In Figure 20, the areas most likely to experience growth are shown to help plan

for growth within the corridor over the next 20 years. These areas were determined by looking at the physical capability of the land followed by the cultural suitability to determine where development is feasible in the future. This eliminated areas where development is unlikely to happen such as areas with slopes over 25%, areas within the floodplain, and properties owned by public agencies. Next, properties were evaluated to determine their capacity for growth based on whether or not the properties have previously been developed, existing development patterns, and the likelihood for infill development while taking into consideration the density

allowed by the growth policy. Additionally, WGM Group utilized their familiarity with past projects and development in the areas to inform the analysis. Projections for residential, commercial, and industrial growth were quantified to analyze the impact on intersection level of service (Figure 10). This includes 1,200 dwelling units, 5,000 sf of retail space, 15,000 sf of office space, and 30 industrial units. These are projections only based on current regulations and building trends.

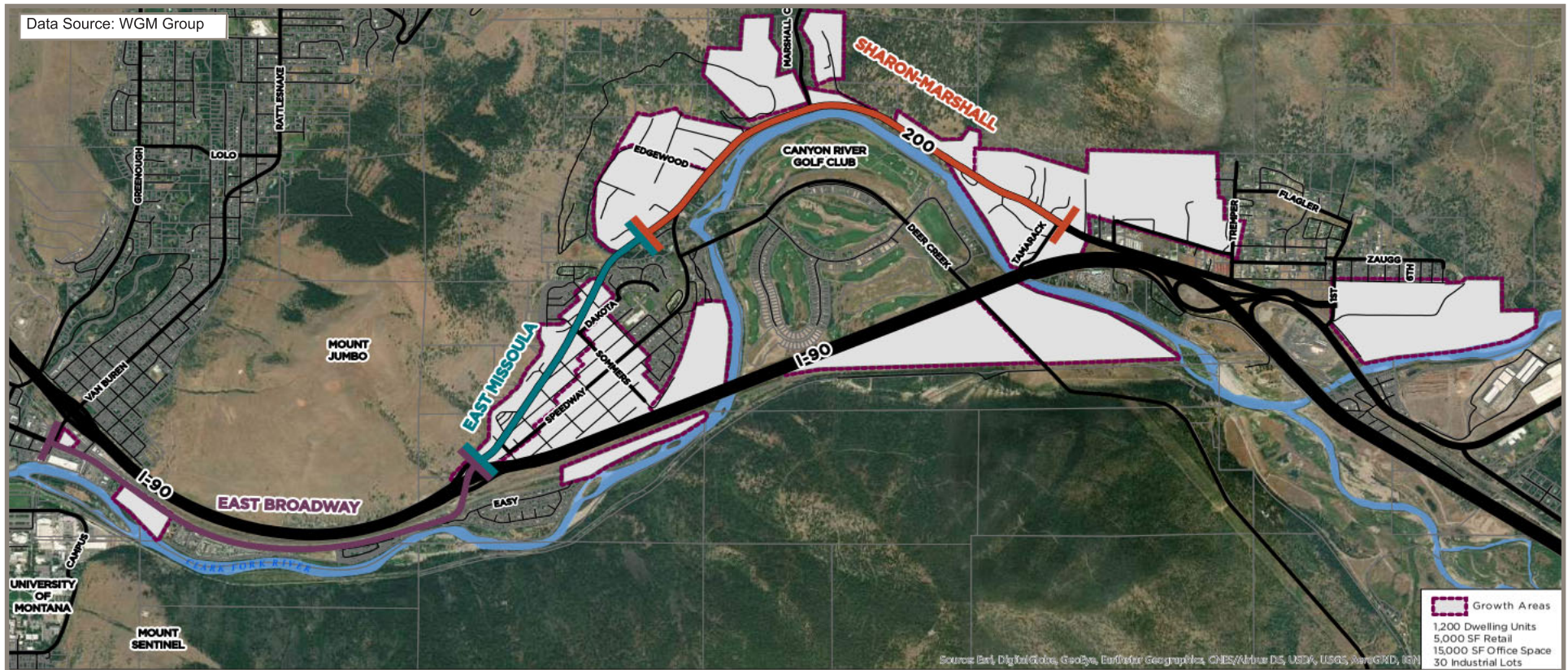


Figure 20: Projected Growth Areas

Environmental/Pre-NEPA Planning

An environmental review was conducted for the Highway 200 corridor between Van Buren Street in Missoula and Tamarack Road between East Missoula and Bonner. The purpose of the review is to evaluate environmental resources and potential impacts, constraints, and opportunities throughout the Corridor to support development of recommended improvements and accompanying future NEPA/MEPA document preparation. Baseline

environmental data was collected and compiled for the Corridor for physical and cultural characteristics including farmland, groundwater and surface water, wetlands, visual analysis, socioeconomic conditions, biological resources, and cultural and historic sites; further, potential impacts to these resources were assessed and mitigation measures recommended. In addition, past and present activities that may result in

contaminated soil, soil vapor, surface water, or groundwater were reviewed; properties that may need future investigation were identified as having a “potential environmental impact.” Refer to Tables 1-3 on the following pages for a summary of potential short-term and long-term impacts on resources and recommendations on avoiding and minimizing impacts.

RESOURCE	POTENTIAL IMPACT	AVOIDANCE/MINIMIZATION
Surface Water	Erosion, sedimentation, or disturbance of Marshall and Mittower Creeks or the Clark Fork River, especially in locations where there may be additions of or modification to existing culverts, or widening toward the Clark Fork River.	Use best management practices as part of erosion control planning to limit introduction of sediment into waterways. Comply with the DEQ Stormwater Construction General Permit requirements if proposed disturbance areas total more than one acre, and federal Section 404 permit and DEQ Section 401 certification requirements if future proposed project design excavates or fills any wetlands or waters of the state.
Groundwater Resources	Existing wellheads and storm drainage sumps providing a pathway for groundwater contamination from spills, contaminants in stormwater runoff from adjacent land uses, and de-icing operations.	Use erosion and sediment control best management practices, especially with respect to existing sumps and wells, to limit pathways to groundwater.
Visual Resources	Construction impacts include dust and debris, traffic congestion, construction equipment and materials in staging and construction areas, and disturbed areas pending revegetation.	Require the use of dust suppression, choose re-vegetation plant material compatible with existing vegetation.
Socioeconomic	Positive impacts include improved safety and non-motorized connectivity, decreased congestion, increases in property values, and better delivery of community services. Adverse impacts include potential for loss of affordable housing as East Missoula Segment redevelops	Outside of design measures, community decision for future developers to include units for low-income populations in residential redevelopment.
Threatened & Endangered Species	Disrupted local travel patterns between areas of preferred habitat during construction activity. The potential impact to Bull Trout from Corridor improvements is habitat loss in the Clark Fork River due to construction practices increasing sediment loading, which in turn degrades habitat.	Minimize total project footprint. For terrestrial species, avoid creating human-generated attractants by promptly cleaning up any project-related spills, litter, garbage and debris; appropriately storing and handling food, drinks, petroleum products, and other attractants; and notifying project managers of any animal carcasses found in the area. For aquatic species, maintain a minimum five-foot buffer along streambanks to prevent destabilization and sedimentation; site staging areas outside of riparian areas; limit unnecessary removal of toe material; plant revegetation in contact with the low water table to encourage survival, rapid growth, and effective bank reinforcement; and use best management practices as part of erosion control planning to limit introduction of sediment into waterways.

RESOURCE	POTENTIAL IMPACT	AVOIDANCE/MINIMIZATION
Animal SOC	Short-term displacements of animal SOC who may be occupying habitat in the proposed construction area. Due to the proximity of a Bald Eagle nest to the project corridor, there is the potential for disturbance via short-term construction activity and noise	<p>Carefully select construction staging areas and/or opt for a fall construction schedule that avoids bird species nesting seasons.</p> <p>For road infrastructure projects, Montana guidelines recommend a combination of seasonal restrictions and visual buffers to provide the best protection for Bald Eagles. Seasonal restrictions recommend that no road construction or maintenance, including use of loud construction machinery, be performed in the direct line of sight of an active nest between February 1 and August 15. Visual buffers within a quarter-mile of nest sites are recommended to be enhanced if possible and not removed; specifically, new construction (i.e. proposed safety improvements) should only be placed in locations that maintain the quarter-mile buffer. Further, tree removals should be avoided and no pesticides used as part of the project. USFWS guidelines recommend the following buffers for linear infrastructure construction, assuming there is no similar activity within one mile of the nests. If activity is not visible from the nest, 330 feet to construction activity. If activity is not visible from the nest, clearing, external construction and landscaping between 330 feet and 660 feet should be done outside the breeding season. If activity will be visible from the nest, 660 feet to construction activity, with landscape buffers recommended.</p>
General Wildlife	Short-term displacements of wildlife with limited mobility who may be occupying habitat in the proposed construction area. Short-term sediment runoff to waterbodies hosting aquatic species.	Assess potential habitat areas, and minimize disturbance to the extent possible to reduce impacted area occupied by mammals, reptiles, and amphibians. Follow migratory-bird conservation measures, including seasonal clearing/grubbing outside the nesting season. Design to minimize or avoid work in waterways, including best management practices in erosion control planning to limit introduction of sediment into waterways.
Plant SOC	Disturbance of plant SOC by construction activity and staging outside of existing right-of-way.	Perform plant surveys as part of design; should plant SOC be identified, carefully site construction staging areas and improvements to avoid or minimize impacts.
Noxious Weeds	Land disturbance during construction creating new suitable habitat for noxious weeds to establish	Minimize disturbance to the extent possible to reduce area that may be infested by noxious weeds. Use best management practices to limit noxious weed introduction by construction equipment and to re-seed disturbed areas with an appropriate seed mix post-construction.

RESOURCE	POTENTIAL IMPACT	AVOIDANCE/MINIMIZATION
Farmland	Loss of prime farmland or farmlands of local importance from agricultural production.	If right-of-way acquisition is proposed, use the NRCS Farmland Conversion Impact Rating Form should be used as a tool to evaluate impact, with mitigation measures proposed if appropriate.
Surface Water	Erosion, sedimentation, or disturbance of Marshall and Mittower Creeks or the Clark Fork River, especially in locations where there may be additions of or modification to existing culverts, or widening toward the Clark Fork River.	Design improvements intentionally to minimize or avoid work in waterways.
Groundwater Resources	New storm drainage sumps providing a pathway for groundwater contamination from spills, contaminants in stormwater runoff from adjacent land uses, and de-icing operations	Design storm drainage systems using best management practices.
Irrigation	Impacts to historic irrigation structures or buried lines as a part of road widening or new trail construction.	Coordinate with irrigation facility owners to limit impact to operations.
Wetlands	Filling of wetlands, especially in locations where there may be additions of or modification to existing culverts, or widening toward the Clark Fork River	<p>The February 2013 Montana Stream Mitigation Procedure issued by the US Army Corps of Engineers requires the following sequence of preferred mitigation as follows:</p> <ol style="list-style-type: none"> 1. Avoid the impact altogether by design decision. 2. Minimize impacts by limiting degree or magnitude of the action. 3. Rectify the impact by repair, rehabilitation, or restoration of the affected environment. 4. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action. 5. Compensate for the impact via mitigation, which could include credit banking, in-lieu fee, permittee-responsible mitigation, or a combination of these.
Visual Resources	New roadway signage, changes in road section adding multi-modal travel, changes in road section resulting in new cut/fill sections, and clearer definition of vehicular lanes vs non-motorized corridors.	Design intentional placement and aesthetic of features, minimization of cut and fill, provisions for landscaping, and light shielding.
Socioeconomic	Beneficial impacts – improved safety and non-motorized connectivity. Adverse impacts - defined pathways and driveways may limit access to some East Missoula Segment businesses, and improved safety may result in further redevelopment, which could displace low-income populations	Outside of design measures, community decision for future developers to include units for low-income populations in residential redevelopment.
Section 4(f)	Use of ShaRon property for Corridor improvements.	Mitigation and Section 4(f) evaluation level dependent on extent of use.

Summary

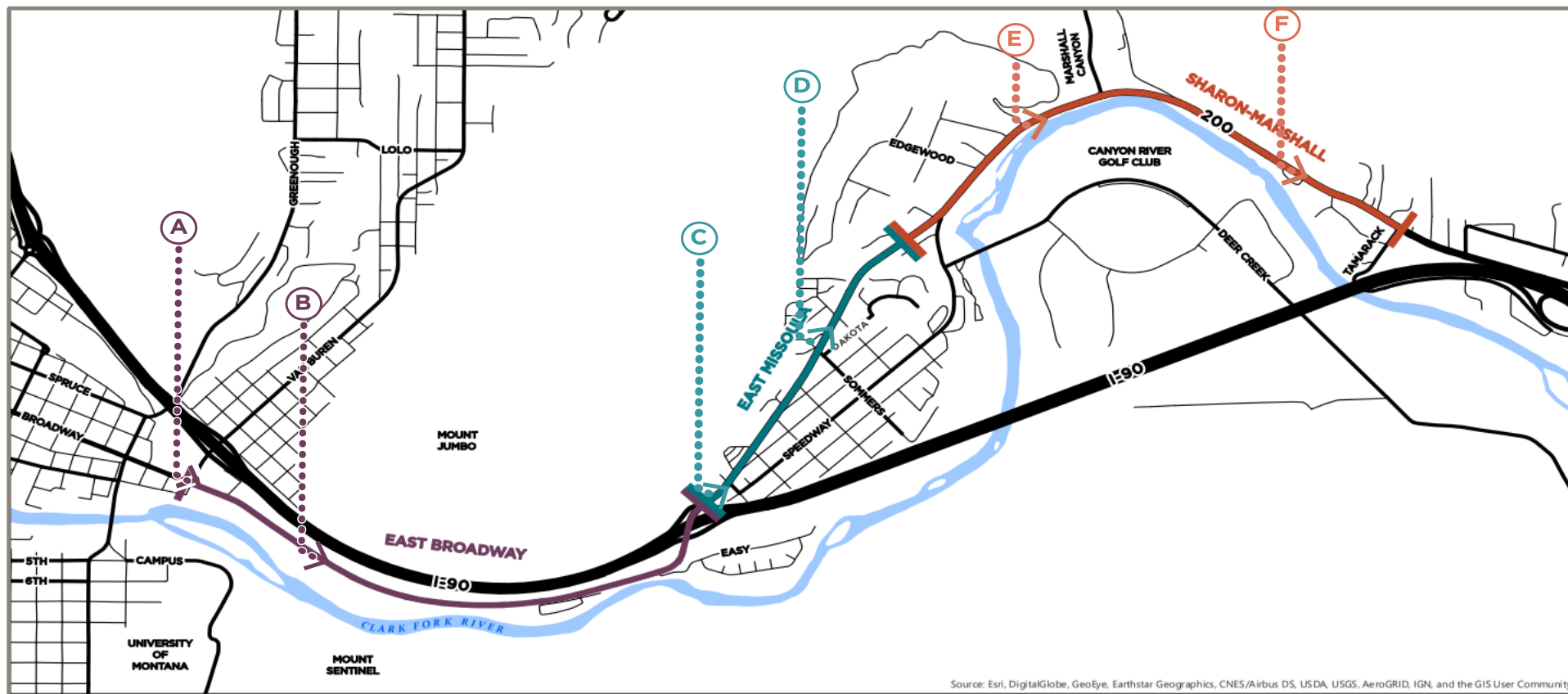


Figure 21: Plan Area

The three segments in the Corridor Plan, East Broadway Segment, East Missoula Segment, and ShaRon-Marshall Segment, each have unique characteristics that were identified during the analysis of the corridor. A summary of the key findings and distinctive characteristics are summarized on the

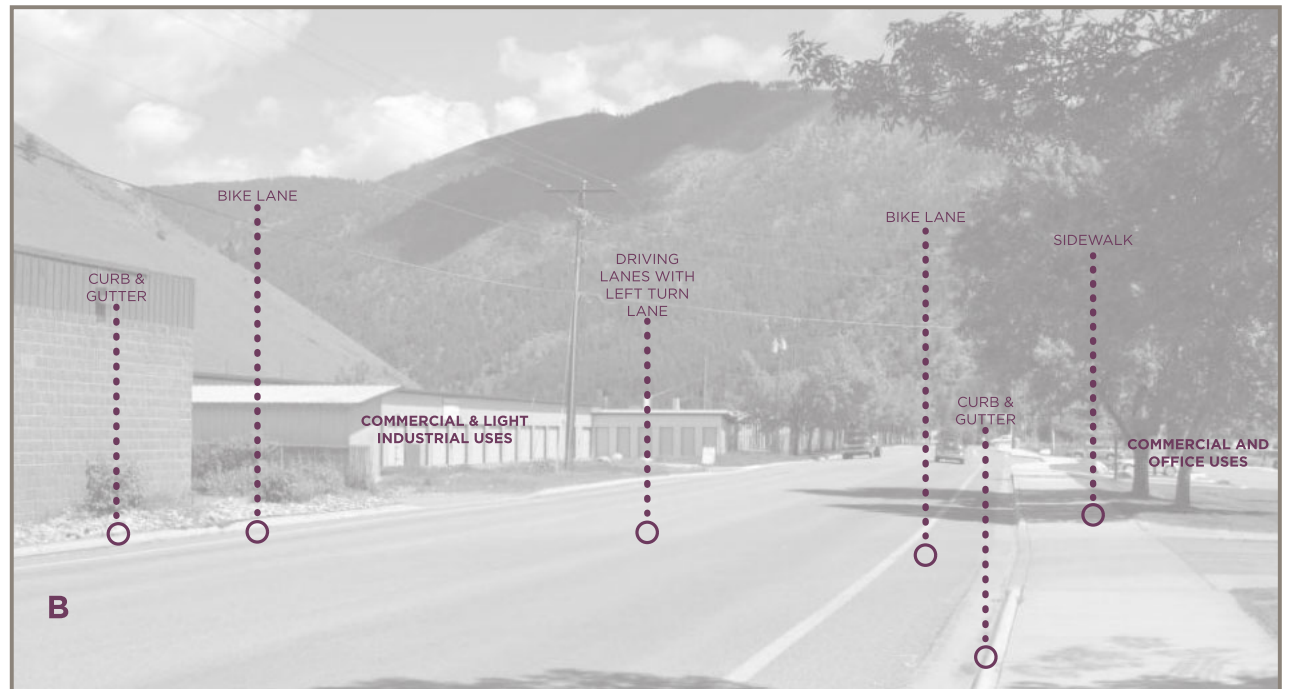
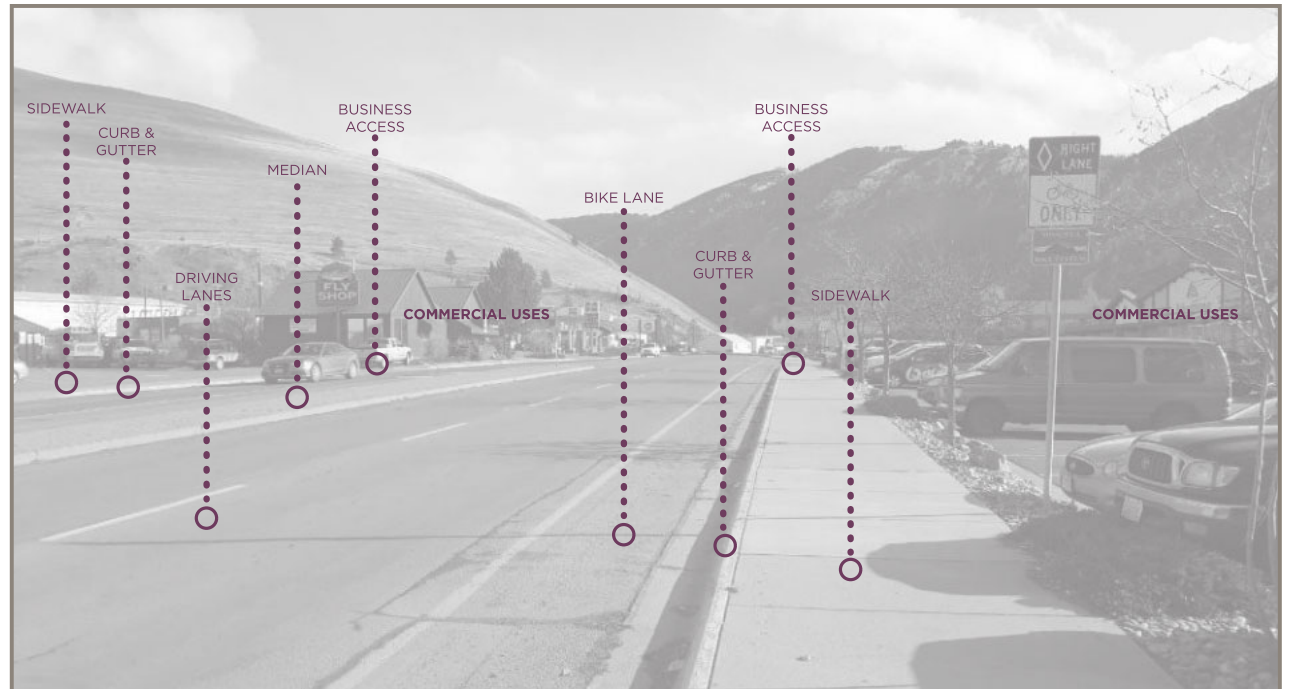
following pages for each segment of the corridor. Figure 21 shows the Plan Area and the location of the photos included in the summary of key findings.

East Broadway Segment

The East Broadway Segment is the corridor's most urban, with commercial and office uses, mixed-use housing, and institutional uses such as Missoula College. The corridor is constrained by Mount Jumbo, I-90, the Montana Rail Link Main Line to the north, and the Clark Fork River to the south. This area faces increasing bicycle and pedestrian traffic that conflicts with numerous driveways.

Key Issues Identified:

- Areas of unrestricted access, limited curb, gutter, and sidewalk, and the need for consolidated access points
- Informal parking lots
- Incomplete trail connection
- Narrow railroad underpass limiting bicycle and pedestrian facilities
- Lack of pedestrian crossings
- Safety concerns at I-90 eastbound ramp
- Intersection capacity improvements should be considered to accommodate future growth
- Traffic and parking issues associated with recent growth and events
- Limited right-of-way width including a short area less than 53 feet wide
- Utilities may need to be relocated with future improvements
- Potential impacts to Bull Trout habitat, making the minimization of the construction footprint an important consideration
- Impacts from construction activity on animal and plant species of concern and noxious weed establishment

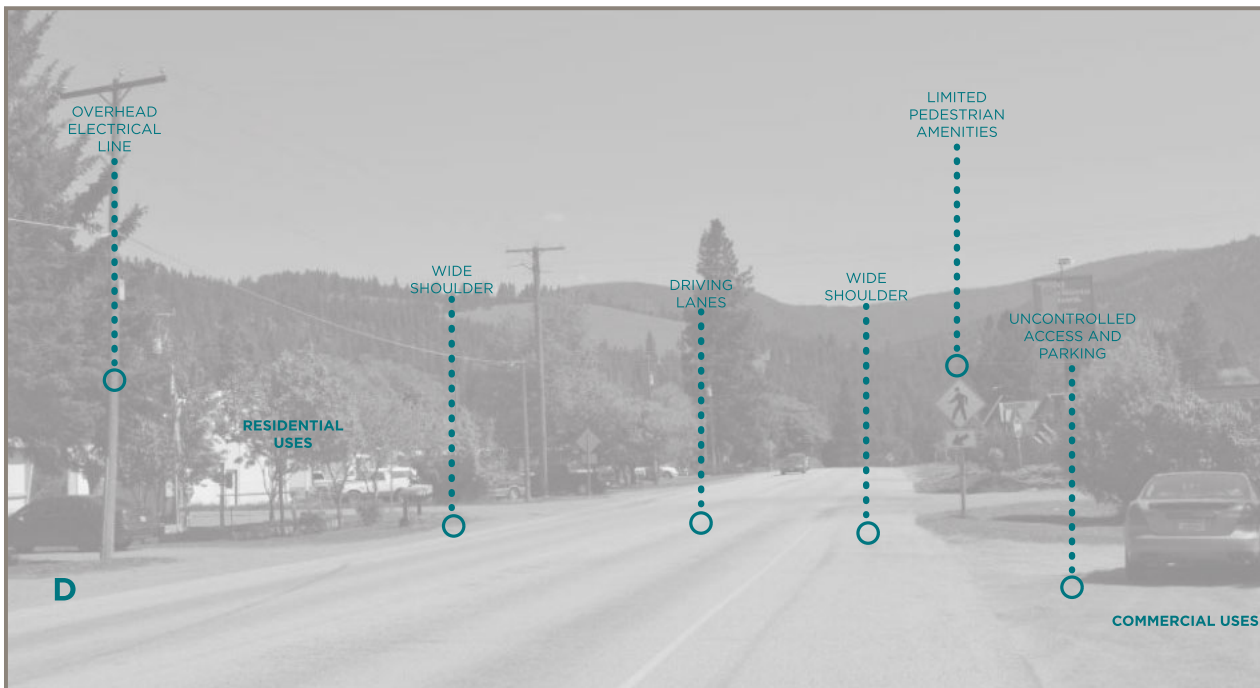


East Missoula Segment

The East Missoula Segment is the heart of the Corridor and the “main street” of the East Missoula community. East Missoula is increasingly providing workforce and student housing to the greater Missoula area and University of Montana with the segment including a mix of single and multi-family housing, commercial and light industrial uses. This area lacks a clear identity due in part to the lack of a streetscape including access control, non-motorized facilities, lighting, and safety features.

Key Issues Identified:

- Limited to no access management and unrestricted parking causing safety concerns
- No bicycle and pedestrian facilities
- Limited street lighting
- Signed and striped pedestrian crossings are needed
- Safety concerns at the area between Highton and Clyde Streets
- Intersection capacity improvements should be considered to accommodate future growth
- Slopes at Brickyard Hill limit options for future improvements along Highway 200
- Utilities may need to be relocated with future improvements
- Impacts from construction activity on animal and plant species of concern and noxious weed establishment



ShaRon-Marshall Segment

The ShaRon-Marshall Segment is the rural portion of the Corridor and includes access to recreational opportunities including Canyon River Golf Course, Milltown State Park, ShaRon access to the Clark Fork River, and Marshall Mountain. With the increased recreational use and incomplete multi-modal connections, there are more conflicts between vehicles, pedestrians, and cyclists along with parking issues. There are also physical constraints in this segment with the existing topography and adjacency of the river.

Key Issues Identified:

- Lack of appropriate parking for recreational access
- No non-motorized infrastructure
- Parking issues and congestion
- Lack of complete trail infrastructure
- Intersection capacity improvements should be considered to accommodate future growth
- Constrained width for improvements between Old Marshall Grade Road and Marshall Canyon Road
- Limited right-of-way width including a short area less than 53 feet wide
- Growth is limited by sewer and water service
- Utilities may need to be relocated with future improvements
- Potential erosion, sedimentation, or disturbance impacting surface water with construction along Mittower Creek, Marshall Creek, and the Clark Fork River
- Potential impacts to Bull trout habitat, making the minimization of the construction footprint an important consideration
- Impacts from construction activity on animal and plant species of concern and noxious weed establishment

