Chapter Five:

Transportation Deficiencies, Issues, and Projects

Bay County Road Commission
City of Bay City
City of Essexville
Michigan Department of Transportation
Bay Metro Transit Authority
Transit Project List
Adopted Project List
Environmental Mitigation

Transportation Deficiencies, Issues, and Projects

The center or focus of the Metropolitan Transportation Plan is a list of specific projects, which have been developed by BCATS. Each project must meet an identified transportation need, primarily addressing capacity and maintenance deficiencies and improving safety. Under Fast Act guidelines, each project must be fundable within anticipated financial resources.

The following is a list of types of projects that may be programmed into the Transportation Improvement Program (TIP):

A. Identified capacity deficiencies from the 2013 transportation network loaded with 2013 traffic volumes (existing problem areas).

B. Identified capacity deficiencies from the 2045 transportation network loaded with 2045 traffic volumes (expected future problem areas).

C. Maintenance type deficiencies (reconstruction or resurfacing needs) identified from ongoing pavement management practices, such as PASER data collection, of the implementing agencies and BCATS.

D. Intersections identified as having existing or potential capacity or safety related issues from review of accident data or lane capacity analysis.

E. Area wide or system wide issues or potential projects needing transportation systems management solutions or further study, which may include transportation enhancement and/or other intermodal solution.

The major priority is roadway repair and preservation. There are approximately 303.4 miles of federal-aid routes within the BCATS urbanized area. About 194.3 miles are under local jurisdiction and about 109.1 miles are under state jurisdiction. BCATS, through funding from the Transportation Asset Management Council (TAMC), has rated the condition of these roadways since 2003. Working closely with the road agencies, pavement management practices are reviewed. As of February 2017, approximate 14% of BCATS federal aid eligible roads are in Good to Excellent condition, 37% in Fair condition and 49% are in Poor condition.

If the goal is to upgrade the pavement condition of these roadways so that 75% are rated good or excellent by 2022, then funding levels for all agencies would need to be at least double what is currently being spent annually on capital improvement to reach that goal.

BCATS Area Volume to Capacity Ratios from the GLBR Travel Demand Model: 2045

Road Name	Extent	2013 V/C with TIP Projects	2045 V/C without MTP Projects	2045 V/C with MTP Projects
AM Peak (7a-9a)				
Lafayette	Wenona To Broadway	0.92-1.04	0.96-1.06	0.96-1.06
Trummbull	Center to Nebobish	0.85-0.92	0.76-0.83	0.76-0.83
N. Water	McEwan to Woodside	0.85-0.87	0.79-0.82	0.79-0.82
PM Peak (3p-6p)				
Lafayette	Wenona To Broadway	0.90-1.03	0.94-1.05	0.94-1.05
Trummbull	Center to Nebobish	0.83-0.90	0.75-0.81	0.75-0.81
N. Water	McEwan to Woodside	0.84-0.86	0.78-0.80	0.78-0.80
Daily				
Lafayette	Wenona To Broadway	0.87-1.01	0.91-1.03	0.91-1.03
Trummbull	Center to Nebobish	0.81-0.88	Not Deficient	Not Deficient
N. Water	McEwan to Woodside	0.82-0.84	Not Deficient	Not Deficient

Table 3: Volume to Capacity Ratios (GLBR Travel Demand Model)

Because many of the capacity improvements affect connectivity and accessibility rather than direct expansion of deficient corridors the following results summary is included below.

GLBR model results Summary for BCATS Area 2045 Metropolitan Transportation Plan (MTP) Capacity Projects

- Kiesel Road - add a center turn lane in front of Christa McAuliffe and John Glenn schools to relieve traffic congestion during school morning start and afternoon end times. This project

adds capacity to the road segment which reduces the volume over capacity (V/C) ratio which is a positive result for the immediate area. The travel demand model is not sensitive to turning movements so any more specific results are not possible.

- Midland Road - add a center turn lane between 3 Mile and Mackinaw Road. This project adds capacity to the road segment which reduces the volume over capacity (V/C) ratio which is a positive result for the immediate area. The road segment is not currently deficient because there was no specific development identified at this time in the estimated future SE-Data for the surrounding TAZs, However, there are large tracts of farmland and access to US-10 that make this a prime spot for development.
- Pine Road - add a center turn lane between Young's Ditch Road and Ridge Road. This project adds capacity to the road segment which reduces the volume over capacity (V/C) ratio which is a positive result for the immediate area. The travel demand model is not sensitive to turning movements so any more specific results are not possible.
- Due to the overall forecasted decline in population and employment of the BCATS area the overall model volumes are decreasing with the exception of certain areas where housing or business developments are underway or expected. This has caused a reduction of V/C on Trumbull and N. Water deficient corridors. While the Lafayette deficient corridor V/C stayed constant or increased slightly. This is due to the proximity of the Uptown development.

Transportation Deficiencies by Agency in the BCATS Area

Bay County Road Commission

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Road Segments

Bangor Rd – Wheeler Rd to Donahue Beach Drive
Beaver Rd – Old Beaver Rd to Fraser Rd (I-75)
Euclid Avenue - M-84 to Hotchkiss Rd
German Rd – M-15 to S. Trumbull Rd
Killarney Beach Rd - North of Euclid Avenue
Linwood Rd – M-13 to Seven Mile Rd
Mackinaw Rd – Delta Rd to Freeland Rd
Midland Rd - Mackinaw Rd to Three Mile Rd
Monitor Rd – Wheeler Rd to Grove Street (Kawkawlin)

North Union Rd- Monitor Rd to Euclid Avenue
Old Kawkawlin Rd - M-13 to State Park Drive
Patterson Rd – Wilder Rd to Wheeler Rd
Pine Rd – Cass Avenue to Youngs Ditch
Ridge Rd - Bay City Limits to Scheurmann Rd
Salzburg Rd – Three Mile Rd to Mackinaw Rd
Scheurmann Rd - Youngs Ditch Rd to M-25
Seven Mile Rd – Salzburg Rd to Midland Rd; Beaver Rd to River Rd;
Shady Shores Drive - Patterson Rd to Saginaw River
Three Mile Rd - M-84 to Amelith Rd; Wilder Rd to Midland Rd
Trumbull Street - 22nd Street to North of Cass Avenue
Wilder Rd - Patterson Rd to Tiernan Rd
Youngs Ditch – Pine Rd to Knight Rd
Zimmer Rd – Bangor Rd to Patterson Rd

Intersections
Pine Road / Youngs Ditch (safety, capacity)
Ridge Road / Scheurmann Road (realignment)
Truman Parkway / Wilder Road (safety*, channelization)
Two Mile Road / Wilder Road (safety*)

*Safety issues were determined by crash history, alignment, local knowledge and/or design deficiencies.

Issues
Access Management
All-season roadway network (truck related)
Changing land-use impacts on transportation facilities
Closing of Monitor Road south of Wilder Rd and diverting traffic to Bay-Arenac Dr
Interconnection of traffic signals along all corridors
Railroad crossings (at grade)
Providing Paved Shoulder
County drains adjacent to County Roads

City of Bay City

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Segments

3rd St: Madison to Boutell
Bangor St: Marquette to Wilder
Cass Ave: Polk St to Michigan
E Midland St: N Walnut St to N Walnut St
E Midland/Vermont St: Midland to Vermont
E Smith St: State St to Sophia St
Fremont St: S Grant St to Madison Ct
Marquette Ave: Hart to Wilder
McGraw St: Harrison St to Michigan
Michigan Ave: Fremont to 25th St
N Wenona Ave: W Vermont St to W Vermont St
S Lincoln St: 28th to Bala Dr
S Wenona Ave: Ionia to E Midland St
State St: Ausable to Huron
W Fisher St: Euclid to Wenona
W Ionia St: Euclid to Wenona
W Midland St: Euclid to Wenona
Woodside Ave: Liberty Bridge EB/WB to Mclellan

Intersections

Vermont / Walnut (capacity)
Henry / Vermont (capacity and timing)
State / Wilder (capacity)
Woodside/Trumbull (safety)

Issues

Railtrail crossings
Operation and maintenance of moveable bridges
Mast-arm signal replacements
Interconnection of traffic signals along various corridors
All season roadway network (truck related)
Access Management
Land-use impacts on transportation facilities

Traffic signal removal at unwarranted locations
Center Avenue Historic Heritage Route
Trumbull St/M-15/Wilder Rd Corridor Study
Establishment of Bicycle Routes on the existing roads

City of Essexville

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Segments
Pine Street: RR Tracks to Hampton Township Line

Intersections
Woodside Ave & Scheurmann St
Woodside Ave & Main St

Issues
Streetscaping along all federal-aid routes
Intermodal connection to port facilities
Access Management
Transportation facilities needed as a result of changing land-uses
Transportation Enhancement and local Safety projects
All-season roadway network (truck related)
Railroad crossing at Woodside and 'Y' junction
Establishment of Bicycle Routes on the existing roads

Michigan Department of Transportation

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Segments
M-25 (Veteran's Memorial Bridge): Over Saginaw River
M-25 (Center Ave): Madison Ave to N Vanburen St; N Lincoln St to N Birney St
M-25 (Thomas St & Jenny St): M-25 to S Henry St
M-13/M-84 (Lafayette Bridge): Over Saginaw River (Reconstruction planned for 2020)
M-84: Garfield Ave to McKinley St
M-25: Veteran's Memorial Bridge to Saginaw St
M-25 (N Madison Ave): Mckinley Ave to 6th St

Intersections
US-10 and Mackinaw Rd Interchange
M-84 and Lafayette / Garfield
M-13/M-84 and Lafayette / Broadway
M-13 (Euclid Ave) / M-84 Salzburg (safety, capacity)
M-13/I-75 Connector at Wilder Rd and Monitor Rd (capacity, safety)
Signal progression at intersections along M-25 and M-13 corridors

Issues
US-10 & Mackinaw Rd road interchange (operational/capacity)
US-10 & Garfield Rd road interchange (relocation of Fisher Rd and safety-line of sight)
- Outside of the BCATS area but has significant impact to the transportation network as the route to the regional Airport

See State Long Range Transportation Plan Strategies, Appendix A. regarding highway, bridge, truck, carpool, access management, ridesharing, non-motorized, public transportation, regional rail, intercity bus, air, marine and intercity rail issues.

Transportation Projects

The following transportation projects are specifically identified as part of this BCATS 2045 Plan. These projects have an identified source of funding, thus ensuring a financially constrained plan. Additional funding that is available after these projects are constructed is currently appropriated for operations and maintenance of the transportation network.

Project Number	Project	Location	Project Type	Length (mi.)	Year	Cost (x1000)
1	Midland St/Vermont St	Wenona Ave to Dean St	Mill and Resurface	0.16	2017	$417
2	Patterson Ave	Smith St to Marquette Ave	Reconstuction	0.19	2017	$710
3	3 Mile Rd	M-84 to Amelith	Crush & Shape	1.00	2017	$866
4	German Rd	Bullock to M-15	Resurface	1.86	2017	$800
5	I-75	Cottage Grove Road to Linwood Road	Major Rehabilitation	1.80	2017	$11,935

6	M-25 WB	M-25 WB	Traffic Operations or Safety (PE)	0.24	2017	$103
7	US-10 – WB	US-10 from Flajole Road to I-75	Traffic Operations or Safety (PE)	9.94	2017	$284
8	M-247	M-13 to Bay City State Park	Resurface (PE)	3.036	2017	$34
9	Trumbull St	M-25 to Woodside Ave	Full Reconstruction	0.63	2018	$1,672
10	I-75	Beaver Rd to Cottage Grove Rd	Restore & rehabilitate (PE)	3.60	2018	$759
11	M-13	Beaver Road	Traffic Operations or Safety (PE)		2018	$135
12	M-247	M-13 to BCSRA	Resurface (CON)	3.036	2018	$724
13	Old Kawkawlin Rd	M-13 to 2 Mile Rd	Mill, resurface, drainage, signage	0.73	2019	$1,324
14	I-75	8 bridges in Bay County	Deep Overlay	2.40	2019	$8,764
15	I-75	3 bridges in Bay County	Deck Replacement	1.69	2019	$7,799
16	I-75 NB	M-13 Connector to Beaver Road	Restore & rehabilitate (CON)	5.33	2019	$21,569
17	M-25 WB	M-25 WB	Traffic Operations or Safety (CON)	0.24	2019	$305
18	Old Kawkawlin Rd	2 Mile Rd to M-247	Restore & rehabilitate	1.15	2020	$1,845
19	US-10	US-10 from Flajole Road to I-75	Traffic Operations or Safety (CON)	9.94	2020	$3,125
20	M-13	& M-84 over East Channel Saginaw River	Bridge Replacement		2020	$56,902
	2017-2020 Totals					**$120,072**
	Road segment is within BCATS, but outside the urbanized area. ***PE- Preliminary Engineering phase and CON-Construction phase***					

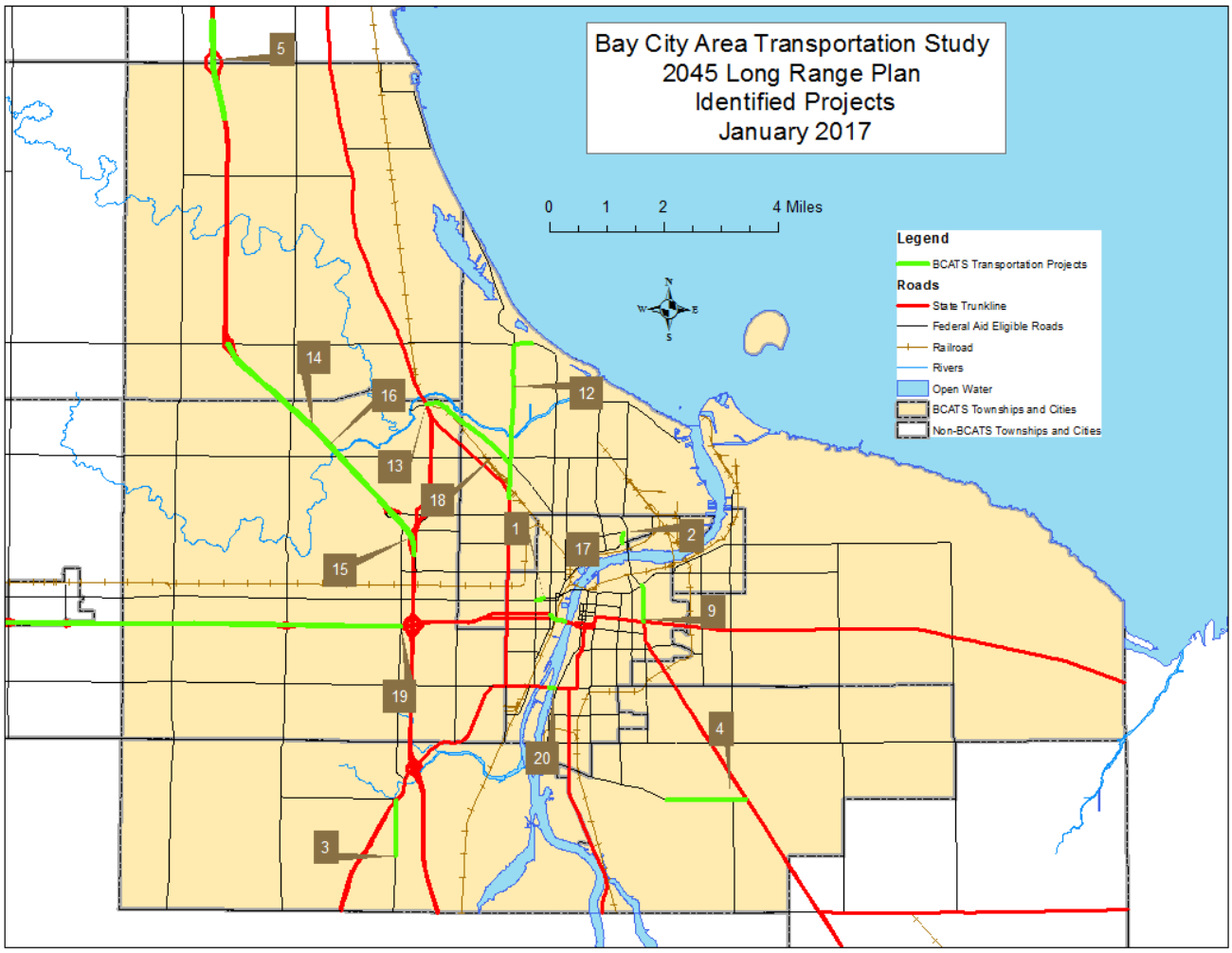
Table 4: BCATS Transportation Projects

The following transportation projects are specifically identified as part of this BCATS 2045 Plan. However, these projects have yet to have a specific funding source identified or year of construction. Revenue estimates for this Plan indicates funding for these would be available in future years. Any additional funding that is available after these projects are constructed would be appropriated for operations and maintenance of the transportation network.

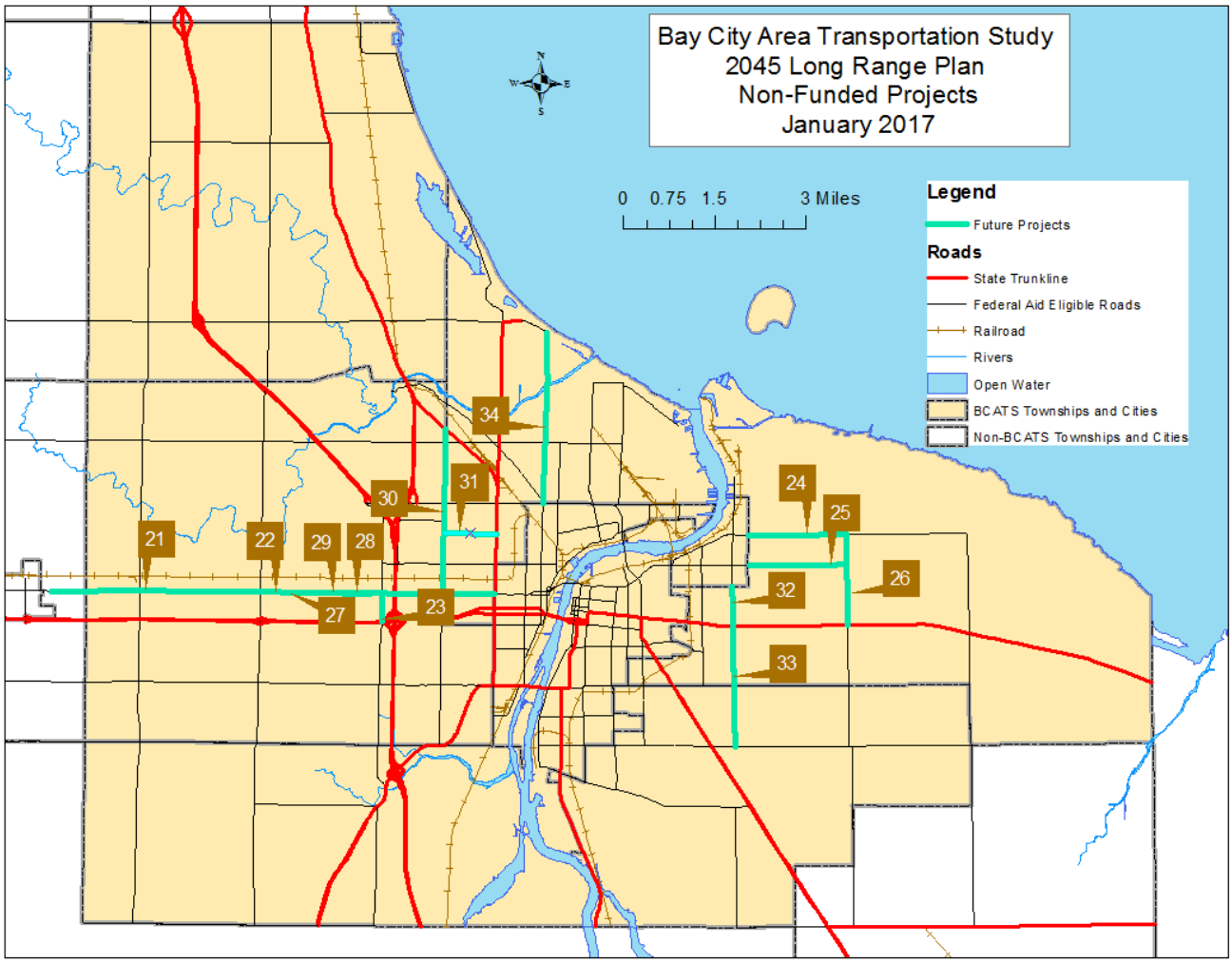
Project Number	Project	Location	Project Type	Length (mi.)	Year of Cost Estimate	Cost (x1000)
21	Midland Road	Four Mile Road to Mackinaw Road	Restore & rehabilitate	1.00	2021	$1,500
22	Midland Road	Mackinaw to Auburn City Limits	Reconstruction	3.50	2025	$5,250
23	Three Mile Road	M-84 to Midland Road	Restore & rehabilitate	3.25	2026	$4,875
24	West Hampton Road	Essexville City Limits to Knight Road	Restore & rehabilitate	2.0	2031	$8,000
25	West Borton Road	Essexville City Limits to Knight Road	Restore & rehabilitate	2.0	2032	$8,000
26	Knight Road	M-25 to Borton Road	Restore & rehabilitate	1.5	2035	$6,000
27	Midland Road	Euclid Avenue to Four Mile Road	Restore & rehabilitate	3.0	2036	$6,000
28	Midland Road	3 Mile Road to Mackinaw Road	Capacity Project (Add center turn lane)	2.0	3037	$2,000
29	Midland Road	Four Mile Road to Mackinaw Road	Restore & Widen	1.0	2040	$2,500
30	Two Mile Road	Midland Road to M-13	Rehabilitate	2.75	2041	$19,250
31	Kiesel Road	2 Mile Road to Euclid Road	Capacity Project (Add center turn lane)	1.0	2042	$1,500
32	Pine Road	Cass Avenue to Nebobish	Rehabilitate & Partial Widening	2.50	2043	$16,250
33	Pine Road	Young's Ditch Road to Ridge Road	Capacity Project (Add center turn lane)	0.5	2044	$1,000
34	State Park Drive	Wilder Road to the State Park Entrance	Rehabilitate & Partial Widening	3.50	2045	$31,500
					2020-2045 Totals	**$113,625**

Table 5: BCATS Future Road Projects

In summary, more than $250 million ($141 million and $113 million from project tables above) are planned to be spent on road projects from 2017 to 2045. Any unallocated estimated revenue will go towards general rehabilitation/resurface projects not yet identified at this time to assist in the maintenance, preservation and efficiency of the existing BCATS transportation system.
The implementing agencies used an inflation factor of 3.3% per year in determining future cost projections.



Map 3: BCATS Obligated Projects 2045 LRP



Map 4: BCATS Projects 2045 LRP (no funding source)

Bay Metro Transit Authority Projects

Facilities – Current facility which houses maintenance, operations and administrative functions of the transit system is 56,000 square feet and was completed in 1981 at a cost of $3.5 million. The building is presently 36 years old but is in good condition and should continue to be functional for many more years. However, it will be reasonable to consider either a major renovation or building replacement during the term of the long range plan terminating in the year 2045. The facility will reach 40 years of age in the year 2021 and planning for its replacement/ upgrade should have begun by that time.

Assuming a building of similar size and function the cost estimate [for a new building] would be about $15,000,000 in 2021.

The intermodal central bus station, located in downtown Bay City, serves both the local transit system and intercity carriers. It was completed in 1991. Constant bus traffic, especially by the much heavier intercity coaches, takes a significant toll on the pavement. Concrete drives on the site have already been replaced one time at a cost of about $250,000. It is expected that these replacements will need to be done every 15 years, so there should be two more large concrete replacement jobs during the long range plan, the first in 2017 [$300,000] and the second in 2032 [$350,000]. The terminal, itself, is relatively small, about 2,500 square feet, most of which is a glass enclosed lobby. A major renovation occurred in the year 2014 at a cost of $100,000. The next renovation will likely need to be done in 2034 at an estimated cost of $200,000.

Vehicle Replacement – Bay Metro currently operates 45 buses and 17 vans. The estimated useful life for medium-duty buses is 10 years, heavy-duty buses 12 years, and for vans it is 4 years or 100,000 miles (according to ALTOONA testing). It is important to note that Bay Metro vehicles exceed the age and mile standards because of the lack of grant money available to replace these vehicles based on the useful life criteria. Bay Metro places significant effort on maintaining the fleet in order to extend the useful life of each class of vehicle. For example, the extended life of medium and heavy-duty buses is 18-20 years, while the vans are 5-6 years.

Many of Bay Metro's current fleet of buses are beyond their useful life and are eligible for replacement when funding becomes available. Below is a chronological list of the order in which the fleet needs replacement

Transit Projects (Currently Eligible for Replacement)

Year	Vehicle to be Replaced	Number of Vehicles	Cost Per Vehicle (5% increase/yr)	Total
2016	1998 Orion II	8	$400,000	$3,200,000
2016	1999 Orion II	4	$400,000	$1,600,000
2016	2000 Gillig	3	$400,000	$1,200,000

2016	2002 Gillig	10	$400,000	$4,000,000
2016	2008 Ford Van	1	$50,000	$50,000
2016	2009 Ford Van	2	$50,000	$100,000
2016	2007 Thomas	3	$400,000	$1,200,000
2016	2008 Thomas	4	$400,000	$1,600,000
2016	2011 Chevy Vans	2	$50,000	$100,000
Total		37		13,050,000

Table 6: Transit Projects (Currently Eligible for Replacement)

Transit Projects (Eligible for Replacement Beyond 2016)

2017	2013 Ford Van	1	$425,000	$52,500
2019	2015 Ford Van	8	$447,000	$464,000
2020	2016 Ford Vans	3	$70,000	$165,000
2021	2011 Gillig	4	$470,000	$2,040,000
2025	2015 Gillig	9	$15,000,000	$5,580,000
Total		25		$8,301,500

2021	Lift Vans	6	$63,000	$378,000
2023	Lift Vans	8	$69,000	$552,000
2024	Lift Vans	3	$72,000	$216,000
2025	Lift Vans	6	$76,000	$456,000
2027	Buses	32	$684,000	$21,888,000
2027	Lift Vans	8	$84,000	$672,000
2028	Lift Vans	3	$88,000	$264,000

2029	Lift Vans	6	$92,000	$552,000
2031	Buses	4	$831,000	$3,324,000
2031	Lift Vans	8	$101,000	$808,000
2032	Lift Vans	3	$106,000	$318,000
2033	Lift Vans	6	$111,000	$666,000
2035	Buses	9	$1,010,000	$9,090,000
2035	Lift Vans	8	$122,000	$976,000
2036	Lift Vans	3	$128,000	$384,000
2037	Lift Vans	6	$134,000	$804,000
2039	Buses	32	$1,113,000	$35,616,000
2039	Lift Vans	8	$141,000	$1,128,000
2040	Lift Vans	3	$148,000	$444,000
2041	Buses	4	$1,353,000	$35,616,000
2041	Lift Vans	6	$155,000	$930,000
2043	Lift Vans	8	$171,000	$1,368,000
2044	Lift Vans	3	$180,000	$540,000
2045	Buses	9	$1,645,000	$14,805,000
2045	Lift Vans	6	$189,000	$1,134,000
2020-2045	Maintenance & Administration Building Replacement	1	$122,000	$15,000,000
	Replacement Totals	**188**		**$112,313,000**

Table 7: Transit Projects (Eligible for Replacement Beyond 2016)

Environmental Mitigation

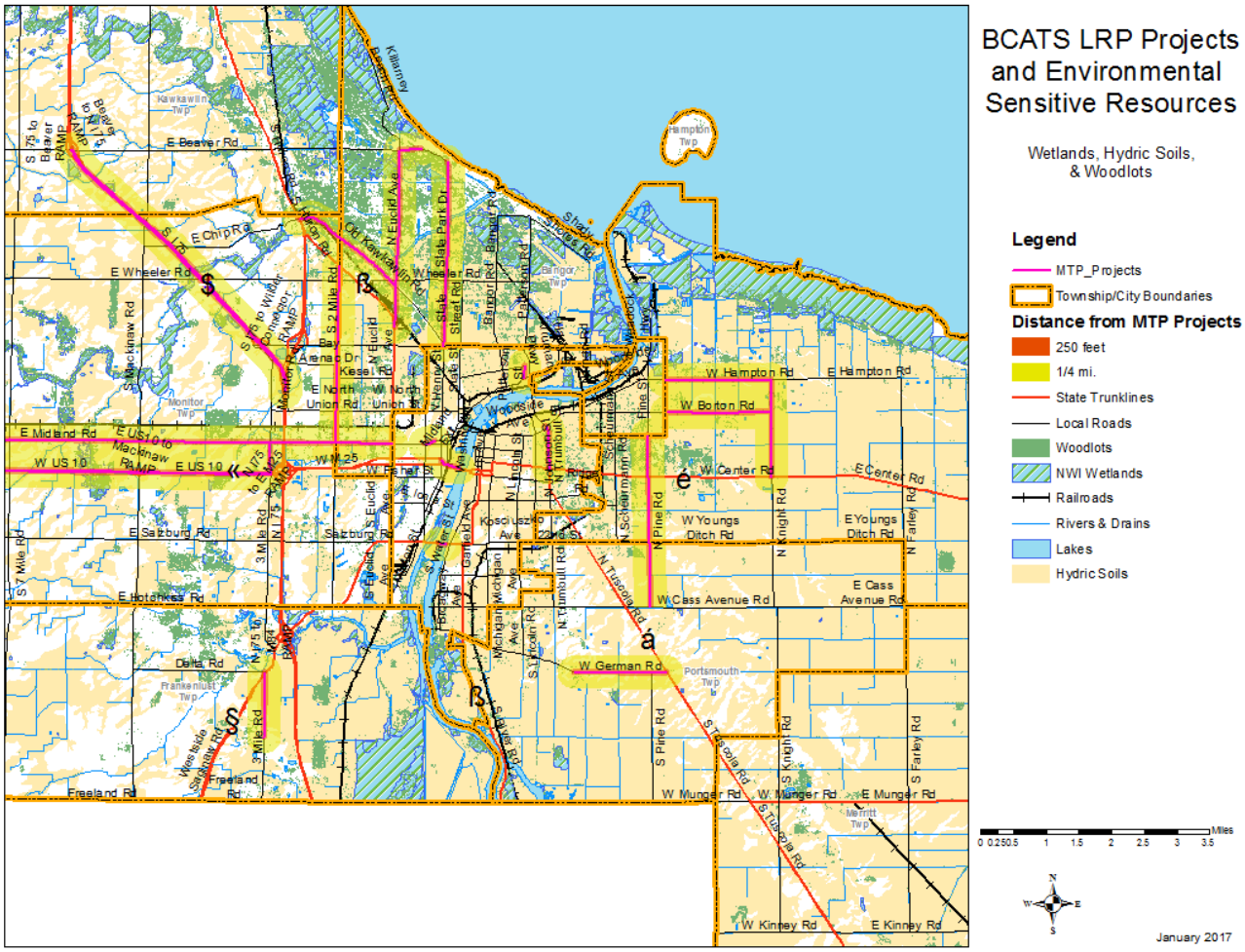
BCATS has inventoried the following Environmental Sensitive Resources in the BCATS area using Geographic Information System (GIS) technology along with local knowledge. Maps of these resources and the related Metropolitan Transportation Plan Projects.

GIS Data Layers	Source
Flood prone areas	FEMA
Historic Sites	Bay County GIS, Nat. Register of Historic Places & Michigan Department of History, Arts and Libraries
Heritage routes	Bay County GIS & MDOT
Wetlands	Michigan Center for Shared Solutions
Cemeteries	Bay County GIS
Parks and Recreation Areas	Bay County GIS & Recreation Dept.
Lakes and Streams	Michigan Center for Shared Solutions
Woodland	Michigan Center for Shared Solutions - IFMAP/GAP
Non-motorized Trails	Bay County GIS & Saginaw Bay Greenways
Hydric Soils	Michigan Center for Shared Solutions & Bay County Soil Survey Manual

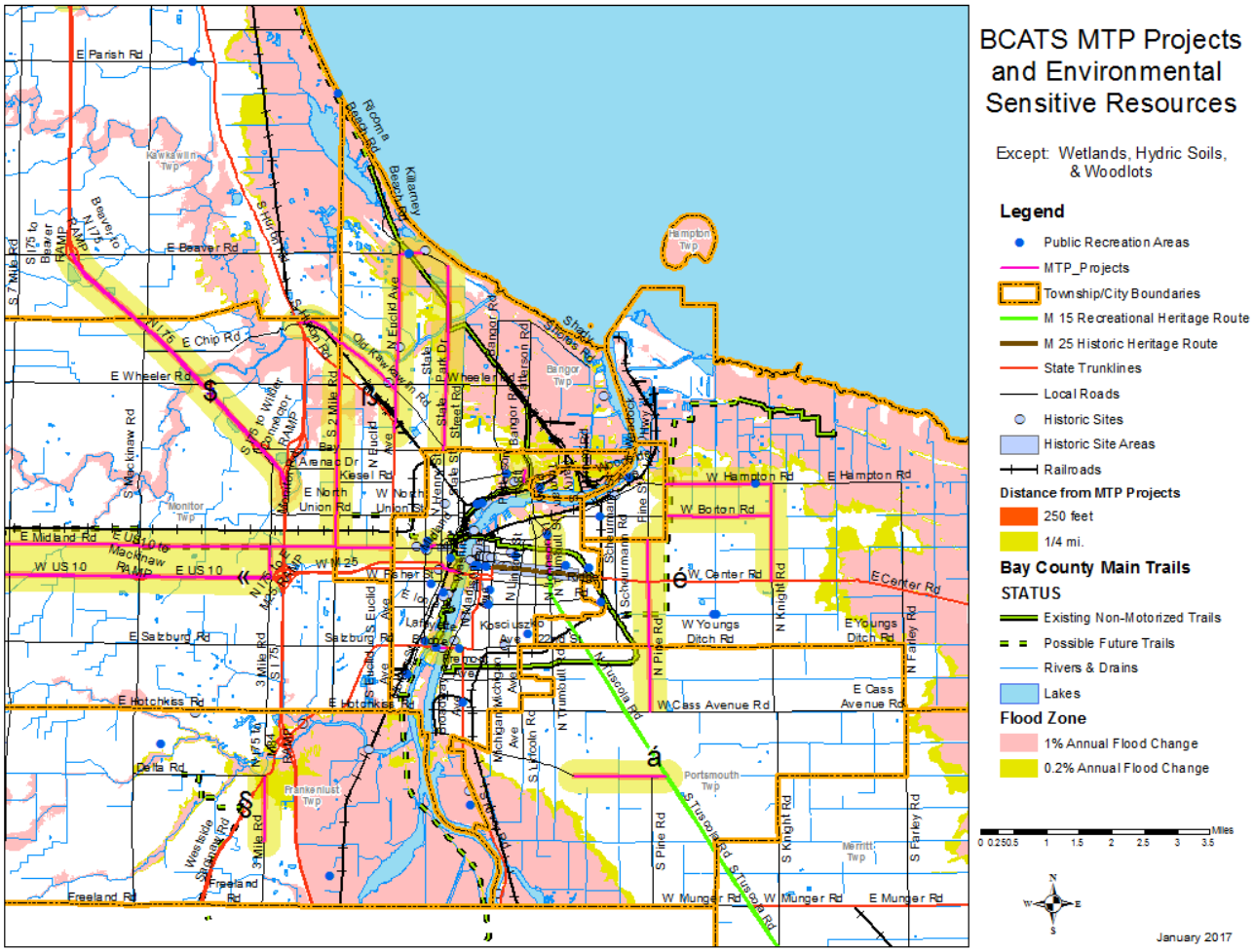
The 32 transportation improvement projects are pavement reconstruction or resurfacing projects that would not expand the current roadway. Following is a list of the number of possible projects that may impact environmental sensitive resources within BCATS

The analysis of possible impacts from planned transportation projects on environmental sensitive resources should not be used to infer that simply because an impact is possible, the transportation project is not justified. It is simply designed to draw attention to the range of possible impacts and to elevate the consideration of environmental resources in all phases of project planning, design, construction, and maintenance.

BCATS and the implementing agencies in the area shall take appropriate measures to minimize the impact on these environmental sensitive resources for these and future project by using the guidelines set forth by the American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence located on the Internet at http://www.environment.transportation.org/.



Map 5: LRP Projects and Environmental Sensitive Resources



Map 6- LRP Projects and Environmental Sensitive Resources