



Spring Street Intersection Study

Waterville, Maine

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Prepared for:
City of Waterville, Maine

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INTRODUCTION

Gorrill Palmer was retained by the City of Waterville to complete a planning level feasibility study for intersection improvements to the Spring Street intersection with Main Street, Front Street, Water Street and Bridge Street.

The purpose of this study is to provide intersection improvements that will allow increased economic development and downtown growth, utilizing a “Complete Streets” approach whereby pedestrian and bicycle improvements are enhanced while not negatively impacting the vehicular levels of service and operations. Pedestrian connectivity across Spring Street is of particular importance in this study. Also, improving the intersection in a manner that provides a “Gateway” to the City or a sense of arrival is highly valued by the City and its stakeholders.



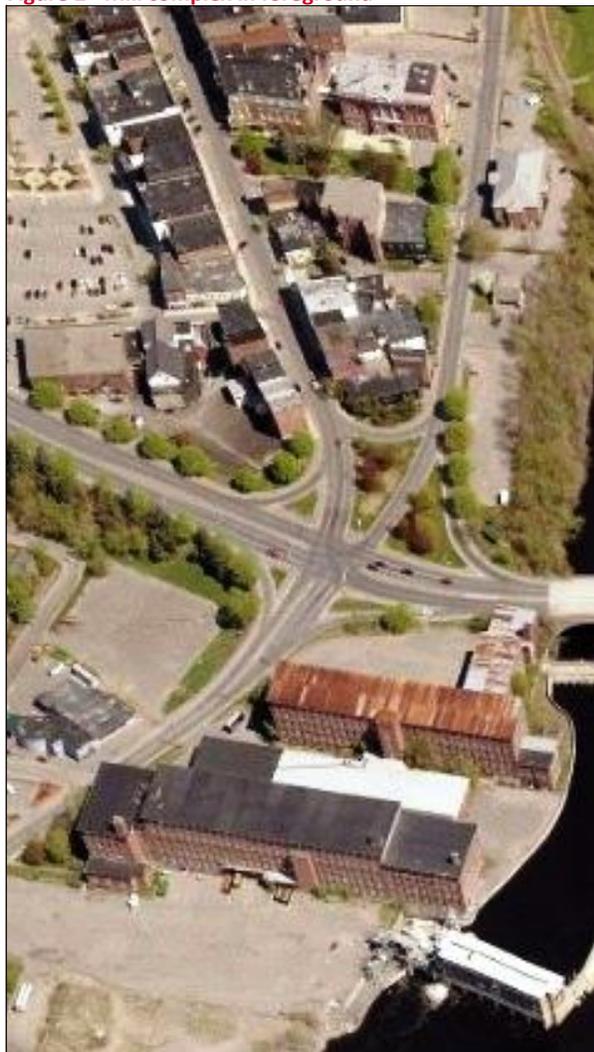
Figure 1 - Waterville downtown & Kennebec River

The location of this intersection is very significant to the City. It is located next to the Waterville/Winslow bridge over the Kennebec River and provides one of the few connections to Winslow and communities beyond including Vassalboro, China and Albion. It also represents the southern terminal of Main Street in Waterville, in the heart of the downtown. As a result, its significance as a gateway to the City cannot be undervalued. If done properly, improvements to the intersection will contribute directly to positive downtown economic growth, civic pride and community engagement. Downtowns serve as the heart and soul of a community, embodying community economic health, local quality of life and community history.

It is those attributes and characteristics that are considered when contemplating these intersection improvements.

Intersection improvements serving modes other than vehicular is a critical need for the project. Pedestrian improvements at this intersection, including sidewalks, crosswalks and ADA compliant ramps will greatly enhance pedestrian safety and improve connectivity across Spring Street.

Figure 2 - Mill complex in foreground



One of the catalysts for this project was the City's sale of the historic C.F. Hathaway Co. building. The new owner of the Mill complex has completed the renovation of the southernmost mill on Water Street, known as the Hathaway Creative Center, into a mixed use building with apartments and businesses. The success of this renovation has placed a further emphasis on the need for multimodal improvements at the intersection. Spring Street and this intersection can be an imposing barrier between the Mill complex area and the downtown Main Street area. Multimodal improvements to the intersection will eliminate the imposing feel of Spring Street as a barrier and this will further encourage redevelopment in the Mill complex area.

The City has partnered with the MaineDOT on this assignment through their Planning Partnership Initiative (PPI) program. Work on this assignment included collecting traffic data, completing traffic analysis for existing condition, no build and build options, developing conceptual plans, determining construction cost estimates, reviewing economic benefits, developing a selection matrix and providing recommendations on the preferred option for the intersection improvements.

DATA COLLECTION

Crash Data:

To better understand the crash patterns of the existing intersection, Gorrill Palmer obtained 2011-2013 collision data from MaineDOT (latest available data at the beginning of this study). Based on the information provided, the intersection is not classified as a High Crash Location (HCL). At the time of this report, we confirmed the intersection status using more recent



2012-2014 data that the intersection is still not classified as a High Crash Location. Even though the intersection is not a HCL, it did have 16 and 14 crashes in the 2011-2013 and 2012-2014 time periods respectively.

At the beginning of this study, the 2011-2013 data was reviewed to identify if there were any crash patterns, typically defined as three or more similar type crashes. There were two distinct crash patterns. The first involved five rear-end crashes for Spring Street eastbound traffic. The second pattern was also a rear-end pattern (total of four crashes) for Main Street southbound traffic. It is possible that reconstructing the intersection could address the crash patterns and should be a factor in the final design of the intersection.

In addition to identifying crash patterns, we also reviewed both the 2011-2013 and 2012-2014 crash summaries to see if there were any reportable crashes that involved pedestrians. Based on the information provided, there were two crashes that involved pedestrians, one in 2012 and one in 2013. The 2012 crash involved a pedestrian walking “with traffic in the roadway” (according to the police report) being struck by a Spring Street eastbound vehicle traveling in the same direction and the situation was exacerbated by sun in the driver’s eyes. The second crash occurred in 2013 when a Spring Street eastbound vehicle was taking a left (reportedly on a green arrow) and struck a pedestrian in the crosswalk that was crossing against the light when they should not have. According to the information provided in the police reports, the pedestrians appear to have been at fault in each of the crashes.

Traffic Volumes:

Gorrill Palmer obtained available turning movement and automatic traffic recorder (ATR) data from recent counts collected by MaineDOT and then supplemented that data by collecting additional turning movement counts. The MaineDOT data included the Spring Street intersection with Main / Front / Water / Bridge Street and also for the adjacent intersections of Spring/Silver Street and Bridge/Bay Street. The following summarizes the traffic information obtained from MaineDOT:

- Spring/Main/Bridge/Water Intersection (Waterville) – 12 hour turning movement counts (2009 & 2013). The 2013 volumes were counted at the end of September. Multi-day ATR counts on each leg of this intersection were also completed (2009, 2013 & 2014).
- Bridge/Benton/Clinton Intersection (Winslow) - 12 hour turning movement counts (2009).

The following summarizes the data collected by Gorrill Palmer:

- Spring/Silver Street Intersection (Waterville) - Weekday AM & PM peak hour and Saturday peak hour counts (October 21, 2014 and November 1, 2014).
- Spring/Main/Bridge/Water Intersection (Waterville) – Saturday peak hour counts (October 25, 2014).
- Bridge/Benton/Clinton Intersection (Winslow) - Weekday AM & PM peak hour and Saturday peak hour counts (October 21, 2014 and November 1, 2014)



- The above traffic data was compiled in its raw format, then volumes were balanced, seasonally adjusted to represent the peak summer months (as necessary), and finally 2014 design hour volumes were determined as summarized in Figure 3.

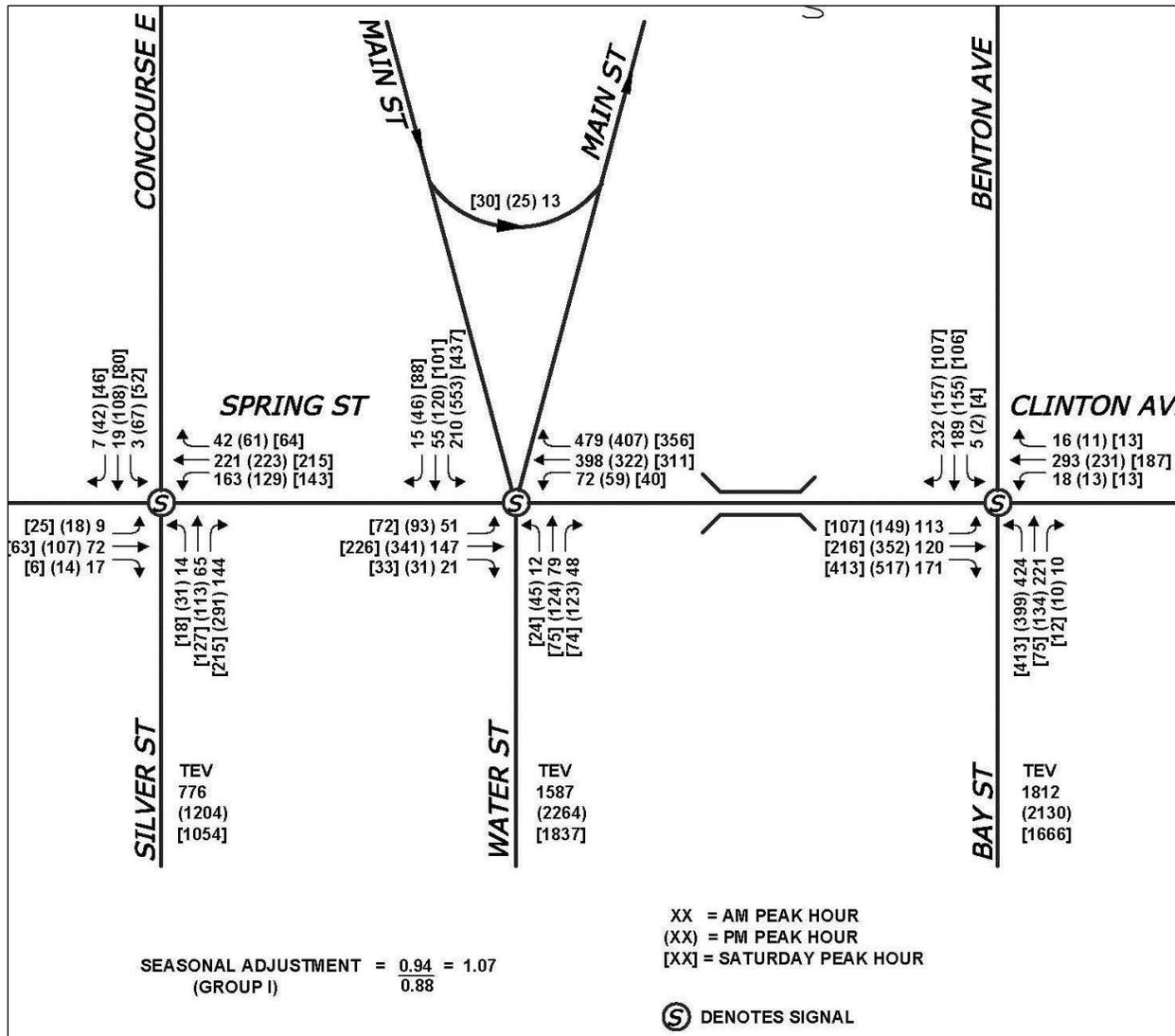


Figure 3 - 2014 traffic design hour volumes

TRAFFIC & CAPACITY ANALYSIS

With the above traffic data and design hour volumes, Gorrill Palmer performed capacity analysis and modeling using SimTraffic computer software for the existing condition. The results of the existing condition modeling were reviewed by the City, MaineDOT and the public and then calibrated to provide a reasonable representation of the existing conditions.

Figure 4 - SimTraffic model of the existing conditions



Next, Gorrill Palmer developed a future no build traffic model based on a 20 year projection (year 2035). In order to determine a reasonable growth rate factor, an assessment of planned development was completed including projects approved but not yet built, projects in the approval pipeline, projects that have obtained a MaineDOT traffic movement permit and projects that in the City's judgement should be considered in the 20 year planning horizon. An assessment of the continued redevelopment of the

Hathaway Mill complex was also factored into the growth projections. Finally, historic traffic growth was reviewed and considered in the assessment. After considering the above factors, Gorrill Palmer selected an annual growth factor of 1.5% for 20 years, for an overall growth factor of 1.35. This factor seemed reasonable when considering that the MaineDOT historical traffic growth at this location showed growth in the past few years close to flat if not negative.

Upon review by the City, the growth factor, for movements to and from Water Street, were increased to 3% per year to ensure the proper growth was captured from the Hathaway Mill complex. The resulting 2035 traffic design hour volumes

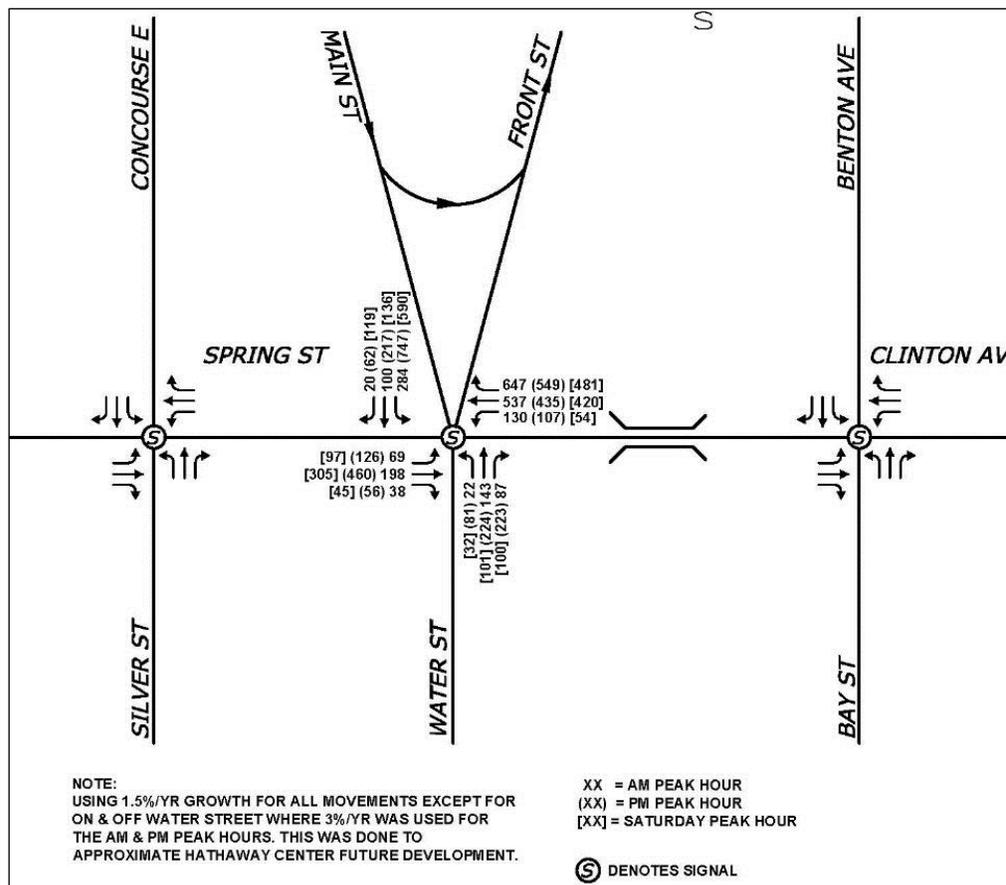


Figure 5 - 2035 traffic design hour volumes



are shown in figure 5.

Traffic analysis and modeling of the future 2035 no build condition were completed next and thereafter traffic analysis and modeling were completed for the four (4) proposed intersection options. Those alternatives included a roundabout (Option 1), signalized intersection with turning lanes (Option 2), signalized intersection with reduced turning lanes (Option 3) and a circular intersection (Option 4). The analysis focused on the weekday PM peak hour since that was the time period identified as generating the highest volumes and creating the lowest level of service. A detailed description of each of the options is discussed in the next Section. A summary of the traffic analysis results is provided below in Table I.

Table I - Level of Service Summary - 2035 PM Peak Hour					
No Build	Option 1 (Roundabout)		Option 2 (Signal w/ turning lanes)	Option 3 (Signalized w/ reduced turning lanes)	Option 4 (two lane Circular Intersection)
	Single Lane	Two Lane			
D (36)	F (>100)	D (27)	D (51)	D (47)	D (27)*

XX (XX) = Level of Service (Delay in Seconds) *Not analyzed, but assumed the same as Two Lane Roundabout

The findings of the traffic analysis suggest that a single lane roundabout will not function, the two lane roundabout and circular intersection have the best level of service and least vehicular delays (27 sec), while the signalized intersection with slip lanes had the greatest vehicular delays (51 sec). All alternatives considered, with the exception of the single lane roundabout which failed, resulted in a “D” level of service in the 2035 PM peak hour. This is consistent with the 2035 no build condition results (LOS D). A level of service “D” is generally considered an acceptable level of service. It is worth noting that the No Build condition is not “complete streets” friendly.

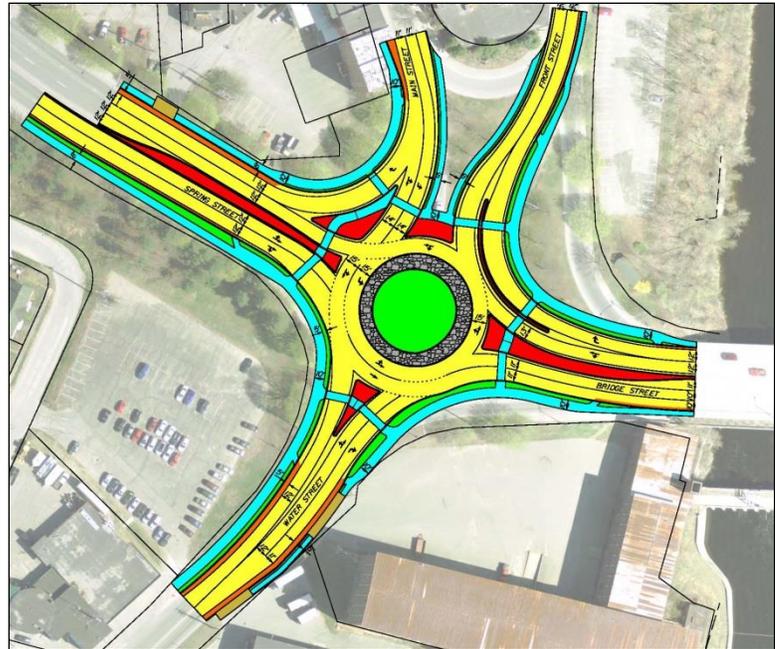
SUMMARY OF OPTIONS

As part of this study, four (4) intersection options were considered; roundabout, signalized intersection with turning lanes, signalized intersection with reduced turning lanes and a circular intersection. A detailed description of each option is provided below:

Roundabout (Option 1)

This option consists of a partial multi-lane roundabout with an inscribed circle diameter of approximately 160 feet. The roundabout provides connections with Spring, Main, Front, Bridge and Water Streets. All of the streets have multiple travel lanes, raised medians in certain locations and/or splitter islands and roadside curbing with esplanades and variable width sidewalks. Bicyclists using the existing travel lanes/shoulders can exit the roadway before entering the roundabout and travel along the 10 foot wide multi-use paths and then reenter the travel lanes/shoulders beyond the roundabout. Bicyclists may also choose to stay in the travel lanes when traveling through the roundabout. Cross walks are proposed at the splitter islands on each roadway approach.

Specific to lane arrangements, the roundabout accommodates two travel lanes (thru-left, thru-right) on the Spring Street approach, three travel lanes (left, thru-left, separated right) on the Main Street approach, two travel lanes on the Front Street departure, two travel lanes (thru-left, separated right) on the Bridge Street approach and two travel lanes (thru-left, right) on the Water Street approach. The roundabout includes dual turn lanes from the Main Street approach to the Bridge Street departure. The roundabout is designed to accommodate large trucks (WB-67) with truck aprons provided where necessary.

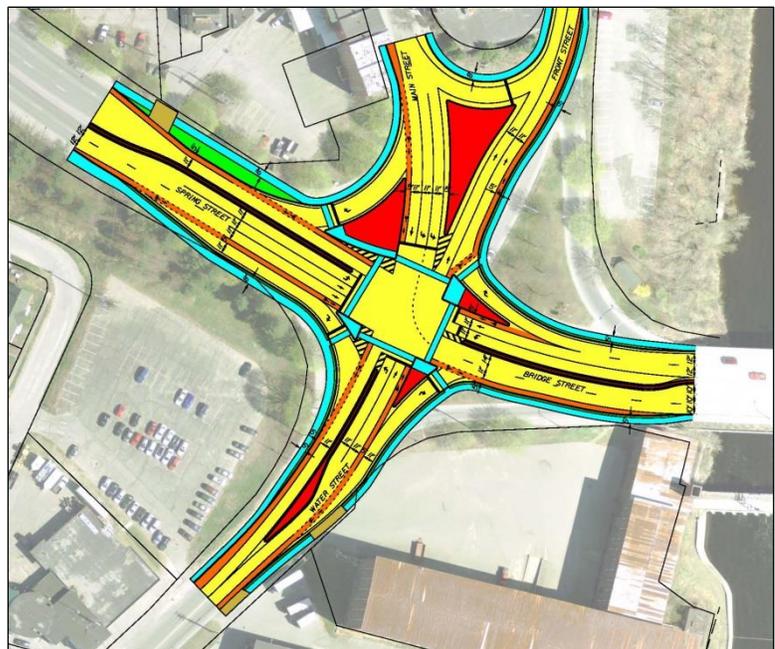


Some of the benefits of this option include; it provides a gateway to the community, vehicular operations/delays are good and pedestrian mobility is strong.

Some of the negative aspects of this option include; pedestrian connectivity to Main Street is less direct, bicycle accommodations can be challenging and capital costs are slightly higher than the other options.

Signalized Intersection with Turning Lanes (Option 2)

This option consists of a signalized intersection with connections to Spring, Main, Front, Bridge and Water Streets. All of the streets have multiple travel lanes, raised medians in certain locations, roadside curbing with esplanades and variable width sidewalks. Bicyclists are accommodated with bike lanes on all intersection approaches. Cross walks are proposed on all approaches of the intersection and are located in front of the stop bars.



This intersection is designed so that there are little to no pedestrian-vehicular conflicts. The right turn movements are separated from the intersection with raised medians and all but one right turn movement is signal controlled so that the pedestrian crossings can occur without vehicle conflicts. Regarding lane arrangements, this intersection accommodates four travel lanes (left, thru, thru, separated right) on the Spring Street approach, four travel lanes (left, left, thru, separated right) on the Main Street approach, two travel lanes on the Front Street departure, three travel lanes (left, thru, separated right) on the Bridge Street approach and three travel lanes (left, thru, separated right) on the Water Street approach. This intersection provides dual turn lanes from the Main Street approach to the Bridge Street departure. The right turn movement from Bridge Street to Front Street is uncontrolled and free flowing but must yield to pedestrians and bicyclists. This intersection is designed to accommodate large trucks (WB-67).

Some of the benefits of this option include; pedestrian safety and bicycle accommodations.

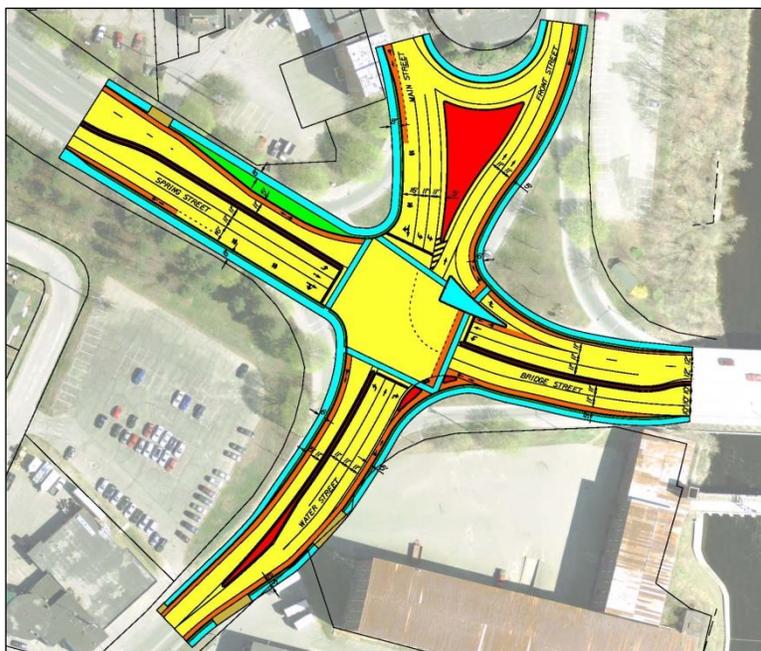
Some of the negative aspects of this option include; doesn't provide community gateway, vehicular operations/delays are poor and pedestrian mobility is poor.

Signalized Intersection with Reduced Turning Lanes (Option 3)

Similar to Option 2, this option consists of a signalized intersection with connections to Spring, Main, Front, Bridge and Water Streets. All of the streets have multiple travel lanes, raised medians in certain locations, roadside curbing with esplanades and variable width sidewalks.

Bicyclists are accommodated with bike lanes on some of the intersection approaches and shared lanes on the remaining intersection approaches. Cross walks are proposed on all approaches of the intersection.

This intersection is designed to create the smallest footprint. As a result, all but one of the separated right turn lanes have been removed and consolidated with the other approach lanes. The one exception is the right turn movement from Bridge Street to Front Street. This



intersection has pedestrian movements that may conflict with vehicular right turn movements. Regarding lane arrangements, this intersection accommodates three travel lanes (left, thru,



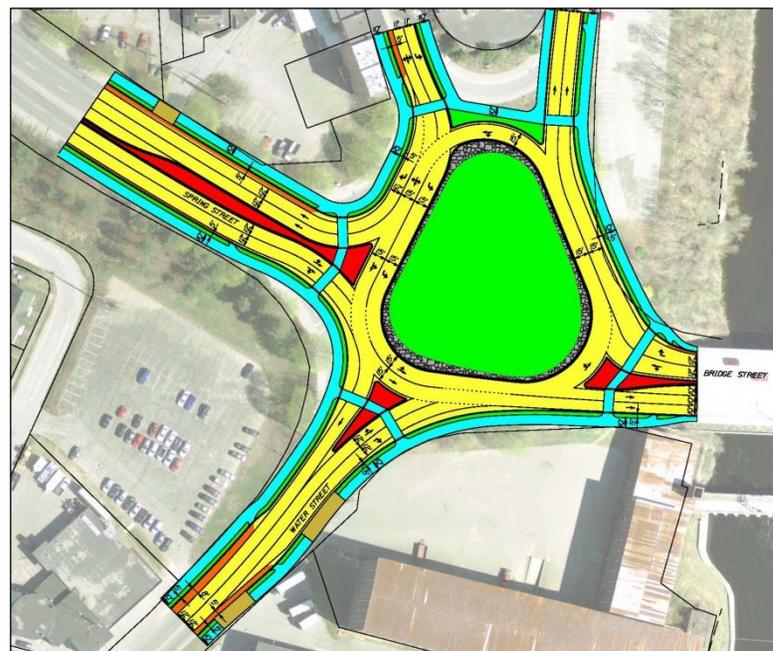
thru-right) on the Spring Street approach, three travel lanes (left, left, thru-right) on the Main Street approach, 2 travel lanes on the Front Street departure, three travel lanes (left, thru, separated right) on the Bridge Street approach and three travel lanes (left, thru, right) on the Water Street approach. Similar to Option 2, this intersection provides for dual turn lanes from the Main Street approach to the Bridge Street departure. The right turn movement from Bridge Street to Front Street is uncontrolled and free flowing but must yield to pedestrians and bicyclists. This intersection is designed to accommodate large trucks (WB-67).

Some of the benefits of this option include; pedestrian connections to Main Street are direct and it has the least capital costs of the options.

Some of the negative aspects of this option include; doesn't provide community gateway, vehicular operations/delays are poor and bicycle accommodations are less desirable.

Circular Intersection (Option 4)

The layout of this option was developed to mimic the original intersection layout dating back to the 1950's. This option consisted of a large green space within a triangular network on roadways that operate in an unsignalized manner. This intersection provides connections with Spring, Main, Front, Bridge and Water Streets. Similar to the roundabout, this intersection requires vehicles to yield on entry into the intersection and provides for one-way traffic movements in a counter clockwise direction. Most of the streets have multiple travel lanes, raised medians in certain locations and/or splitter islands and roadside curbing with esplanades and variable width sidewalks. Bicyclists using the existing travel lanes/shoulders can exit the roadway before entering this intersection and travel along the 10 foot wide multi-use paths and then reenter the travel lanes/shoulders beyond the intersection. Bicyclists may also choose to stay in the travel lanes when traveling through the intersection. Cross walks are proposed on the approaches where vehicles typically yield before entering the intersection.



Regarding lane arrangements, the circular intersection accommodates two travel lanes (thru-left, thru-right) on the Spring Street approach, two travel lanes (left, left-thru-right) on the Main Street approach, two travel lanes on the Front Street departure, two travel lanes (thru-



left, right) on the Bridge Street approach and two travel lanes (thru-left, right) on the Water Street approach. The circular intersection includes multiple lanes from the Main Street approach to the Bridge Street departure and also from the Bridge Street approach to the Front Street departure. This intersection is designed to accommodate large trucks (WB-67) vehicles with truck aprons provided where necessary.

Some of the benefits of this option include; it provides a unique and historic gateway to the community, pedestrian and bicycle mobility are strong, pedestrian connectivity to Main Street is good.

Some of the negative aspects of this option include; it has the largest footprint and provides the least opportunity for adjacent land development, vehicular operations and safety is concerning.

One of the major concerns of this option by Gorrill Palmer, MaineDOT and the City is the vehicular operations and safety of the intersection. There is a concern with speed differential of approaching, circulating and exiting traffic. This differential is due to the small radii on the corners that would slow vehicles down and straight tangent sections within the intersection where vehicles would speed up. A key to the success of a roundabout design is the uniform and controlled speed of traffic entering, circulating and exiting the roundabout. The lack of uniform speed on this option may result in poorer operations including uncharacteristic and sudden changes in vehicle speeds, which will likely result more crashes and reduced safety when compared to a roundabout option. The City and Colby College understand that further study and refinement of this option to address the operational and safety concerns will be required before receiving approval by MaineDOT. Colby College indicated that they may advance an additional study of Option 4.

CONCEPTUAL PLANS

Gorrill Palmer developed conceptual plans for each of the options presented in the previous section. Using base plans developed from aerial images and right of way and property line information provided by the City, intersection layouts were prepared for all of the options showing travel lanes, shoulders, curbing, esplanades, raised medians, bikeways, sidewalks and cross walks. A copy of the conceptual plans can be found in Appendix A of this report.

MAIN STREET TWO-WAY ASSESSMENT

Currently, Main Street is a one-way, two-lane roadway with traffic traveling in the southbound direction towards this intersection. Front Street also operates as a one-way, two-lane roadway with traffic traveling in the northbound direction away from this intersection. The City is having ongoing discussions about the conversion of Main Street, Front Street or both from one-way traffic to two-way traffic. Below is a summary of the relative adaptability that each of the options have for this potential change. It is worth noting that this assessment is based on a

preliminary review of the layouts only and does not include any traffic or capacity analysis. A separate study would be required to review traffic flows and related capacity analysis before making a final recommendation regarding two-way traffic.

Roundabout (Option 1)

The roundabout option appears easy to convert to accommodate two-way Main Street and Front Street traffic. Conversion of both Main Street and Front Street to two-way traffic will likely require the elimination of the Front Street connection to the intersection, due to its close proximity to Main Street. It is recommended that Front Street be realigned and connected to Main Street just north of the intersection. Traffic movements to and from Front Street would be limited to right turn only movements, with an unsignalized intersection at Main Street.



Under this scenario, it would be expected that the major traffic flow patterns of Main Street to Bridge Street and Bridge Street to Front Street would be shifted to Spring Street to Bridge Street and Bridge Street to Spring Street. As a result, changes to the roundabout layout would likely include, two travel lanes (thru-left, separated right) on the Main Street approach, two travel lanes (thru-left, thru-right) on the Bridge Street approach and two travel lanes departing on Spring Street. Two lanes within the roundabout would be provided for the Bridge Street to Spring Street movement. Splitter islands at the Main Street approach would require reconfiguring.

Signalized Intersection with Turning Lanes (Option 2)



This option appears easy to convert to accommodate two-way Main Street and Front Street traffic. Similar to Option 1, conversion of both Main Street and Front Street to two-way traffic will likely require the elimination of the Front Street connection to the intersection, due to its close proximity to Main Street. It is recommended that Front Street be realigned and connected to Main Street just north of the intersection. Traffic movements to and from Front Street would be limited to right turn only movements, with an unsignalized intersection at

Main Street. Similar to Option 1, it would be expected that the major traffic flow patterns of Main Street to Bridge Street and Bridge Street to Front Street would be shifted to Spring Street and Bridge Street. As a result, changes to the intersection layout would likely include, three travel lanes (left, thru, separated right) on the Main Street approach, three travel lanes (left, thru, thru-right) on the Bridge Street approach and two travel lanes departing on Spring Street. Raised islands at the Main Street approach would require reconfiguring.

Signalized Intersection with Reduced Turning Lanes (Option 3)

Similar to the previous options, this option appears easy to convert to accommodate two-way Main Street and Front Street traffic. Similar to previous options, conversion of both Main Street and Front Street to two-way traffic will likely require the elimination of the Front Street connection to the intersection, due to its close proximity to Main Street. It is recommended that Front Street be realigned and connected to Main Street just north of the intersection. Traffic movements to and from Front Street would be limited to right turn only movements, with an unsignalized intersection at Main Street.



It would be expected that the major traffic flow patterns of Main Street to Bridge Street and Bridge Street to Front Street would be shifted to Spring and Bridge Streets. As a result, changes to the intersection layout would likely include, two travel lanes (left, thru-right) on the Main Street approach, three travel lanes (left, thru, thru-right) on the Bridge Street approach and two travel lanes departing on Spring Street.

Circular Intersection (Option 4)



The circular intersection option appears easy to convert to accommodate two-way Main Street and Front Street traffic. Unique to all of the options considered, the conversion of both Main Street and Front Street to two-way traffic can likely be completed while maintaining the Front Street connection to the intersection. This is due to the intersection layout and the separation that exists between Main Street and Front Street at the intersection.



Again, under this scenario, it would be expected that the major traffic flow patterns of Main Street to Bridge Street and Bridge Street to Front Street would be shifted to Spring and Bridge Streets. As a result, changes to the circular intersection layout would likely include one travel lane (thru) on the Main Street and Front Street approaches and two travel lanes (thru-left, thru-right) on the Bridge Street approach. Two lanes within the circular intersection would be provided for the Bridge Street to Spring Street movement. Splitter islands at the Main Street and Front Street approaches would require reconfiguring.

CONSTRUCTION COSTS

Gorrill Palmer developed an opinion of probable construction costs for each of the options presented in this report. Using the conceptual layouts developed for each of the options, preliminary project quantities were determined. Construction costs were developed using MaineDOT average unit pricing, descriptions and pay items. Work assumed full depth reconstruction in roadway widening areas with a 1.5” pavement overlay in remaining areas. A 15% contingency was added to each of the construction cost estimates.

The conceptual construction cost estimate for each option is summarized below:

Description	Conceptual Construction Costs
Roundabout (Option 1) -	\$1,655,200
Signalized Intersection with Turning Lanes (Option 2) -	\$1,409,000
Signalized Intersection with Reduced Turning Lanes (Option 3) -	\$1,217,200
Circular Intersection (Option 4) -	\$1,437,900

A detailed breakdown of the construction cost estimates can be found in Appendix B of this report. The construction cost estimates provided in this report are considered preliminary and further refinements to the estimates can be expected during final design.

The costs provided in this report are construction costs only, and do not include engineering, right of way, utility, geotechnical, environmental permitting or construction inspection costs.

ECONOMIC ANALYSIS

Gorrill Palmer retained the services of Planning Decisions Inc., to investigate the development potential of land that may become available in the vicinity of the intersection as a result of the four intersection options. Assessment of fiscal impacts of that potential development was also determined. Work included review of the land use regulations, review of site constraints, identification of potential developable areas, market assessment, parking scenarios and development of fiscal impacts for each intersection option.



In general, the results of this assessment concluded that Options 1, 2 and 3 had similar financial/revenue benefits to the City while Option 4 provided less financial/revenue benefits to the City when compared to the other options.

A copy of Planning Decisions report entitled “Downtown Development Study” can be found in Appendix D of this report.

SELECTION MATRIX

To assist in evaluating and comparing the options presented, a selection matrix was developed. Working with the Advisory Committee, the team established the following ten (10) criteria for scoring the options; pedestrian connectivity to Main Street, establishing a gateway, level of service, pedestrian mobility, pedestrian safety, bicycle accommodations, land use opportunity, two-way Main Street flexibility, capital costs and operational costs. The comparison of the options to the No Build option is also provided for each of the criteria. Below is a summary of the criteria and evaluation of the options.

Pedestrian Connectivity to Main Street

As noted in the introduction, one of the primary project objectives is to improve pedestrian connectivity between the Hathaway Mill complex and Main Street. Spring Street, with its current large width, serves as a physical barrier for pedestrian movements north and south. Improvements to these pedestrian movements are critically important for this project. This criterion has a value of 15 points (15% of the overall matrix). The overall matrix has a total value of 100 points. Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10

In summary, none of the options score highly on this criterion as none provide a great solution to north – south pedestrian connection. Of the options presented, the signalized intersection with reduced turning lanes (Option 3) provided the most direct cross connections. The Circular Intersection (Option 4) provided relative direct connections while the roundabout (Option 1) and signalized intersection with turning lanes (Option 2) provided less direct connections.

The No Build option provides very poor pedestrian connectivity and therefore received a score of 2, which is the lowest score, when comparing to the other options.

Meets City Vision “Gateway”

Also noted in the introduction, a second project objective is to provide a sense of arrival and gateway for this intersection due to its strategic location relating to Main Street, downtown and the link to adjacent communities. This criterion has a value of 15 points (15% of the overall matrix). Below is the evaluation of options for this criterion:



Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15

In summary, the roundabout (Option 1) and the circular intersection (Option 4) provide the best opportunity to create a sense of arrival and gateway treatment for this location. The signalized intersections (Options 2, 3) provide little to no gateway value.

The No Build option provides no gateway to the City and therefore received a score of 0, lower than all other options.

Vehicle Level of Service

It is important when completing this study to understand that vehicular level of service (LOS) cannot be impacted negatively by the project (Based on MaineDOT direction and the fact that the Spring Street corridor serves as a minor arterial). As a result, it was important to complete the traffic analysis for the 2035 no-build condition and for each of the proposed options. This future no-build assessment served as the baseline for comparison to the proposed options. The traffic analysis concluded that all of the proposed options maintain the same LOS as the no-build condition and therefore comparison of Vehicle Delays between the build options was assessed in this criterion. This criterion has a value of 10 points (10% of the overall matrix). Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5

In summary, the roundabout (Option 1) provided the shortest delays and the circular intersection (Option 4) had slightly longer delays due to the longer time required to maneuver through the intersection. The signalized intersection with reduced turning lanes (Option 3) has longer delays than Options 1 and 4 but less delays than Option 2. The signalized intersection with turning lanes (Option 2) had the longest delays.

The No Build option provides delays slightly better than Option 3 and therefore it received a score of 7.

Although not specifically discussed, the vehicular operations of Option 4 have not been fully vetted at this point. While the general layout and movements are similar to a roundabout, there is a concern that the intersection geometry of Option 4 will result in varying speeds of vehicles within the intersection and thereby may reduce intersection safety and operations. A review of this option by MaineDOT resulted in a favoring of the roundabout option over the circular intersection option for those reasons. As a result, Option 4 has not been approved by MaineDOT as a viable option at this time. Colby College indicated that they may advance an



additional study to address the operational and safety concerns outlined by MaineDOT, to allow this option to be reconsidered by the MaineDOT.

Pedestrian Mobility

Pedestrian mobility attempts to identify the time it takes to cross the intersection. Cross walk locations and lengths were considered in this assessment. This criterion has a value of 10 points (10% of the overall matrix). Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8

In summary, the roundabout (Option 1) and circular intersection (Option 4) had the best pedestrian crossing times. The signalized intersection with reduced turning lanes (Option 3) had longer crossing times when compared to Options 1 and 4 but shorter crossing times than Option 2. The signalized intersection with turning lanes (Option 2) had the longest crossing times. The No Build option provides pedestrian mobility slightly better than Option 2 and slightly worse than Option 3 and therefore received a score of 5.

The results above assume that vehicles yield to pedestrians in the crosswalks, particularly as it relates to the roundabout and circular intersection options. Those options scored higher than the other options primarily because of the shorter crossing distances and not having to wait for a pedestrian signal to cross. However, it is worth noting that drivers in roundabouts with two lane exits are less likely to yield to pedestrians in cross walks. During the peak hour of traffic, pedestrians may need to wait longer than usual to cross and it can be more difficult for pedestrians to judge gaps in the vehicular traffic.

Pedestrian Safety

Pedestrian safety attempts to identify potential conflicts between vehicular and pedestrian movements. This criterion has a value of 10 points (10% of the overall matrix). Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8
Pedestrian Safety	4	10	8	2



In summary, the signalized intersection with turning lanes (Option 2) received the best score since it is designed to have little to no pedestrian conflicts. The signalized intersection with reduced turning lanes (Option 3) scored second best since it provided for pedestrian signals at the cross walks. The roundabout (Option 1) scored third best in the assessment. The circular intersection (Option 4) scored slightly worse than the roundabout due to the increased multi-lane crossings and the likely higher vehicular speeds.

The No Build option provides pedestrian safety similar to Option 3 and therefore received a similar score of 8.

Bicycle Accommodations

Bicycle improvements to the intersection were also identified as a need for this study. Bicycle improvements can include bike lanes, shared lanes or separated multi-use paths. This criterion has a value of 10 points (10% of the overall matrix). Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8
Pedestrian Safety	4	10	8	2
Bicycle Accommodations	4	10	4	7

In summary, the signalized intersection with turning lanes (Option 2) received the best score since it provides dedicated bike lanes within the intersection. The circular intersection (Option 4) scored second best since the multi-use paths adjacent to the circular roadway provide for little confusion. The roundabout (Option 1) and the signalized intersection with reduced turning lanes (Option 3) scored the lowest in the assessment. The roundabout can be more challenging for bicyclists to navigate when compared to the other options. The signalized intersection with reduced turning lanes includes shared lanes on some of the approaches requiring bikes to share the lanes with vehicles.

The No Build option provides no bicycle accommodations and therefore received a score of 0.

Land Use Opportunity

This section considers the findings and results of the Planning Decisions report entitled “Downtown Development Study.” This criterion has a value of 10 points (10% of the overall matrix). Below is the evaluation of options for this criterion:



Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8
Pedestrian Safety	4	10	8	2
Bicycle Accommodations	4	10	4	7
Land Use Opportunity	6	6	6	2

In summary, none of the options provide a great opportunity for redevelopment of land adjacent to the intersection. However, the roundabout and signalized intersections (Options 1, 2 and 3) all provided similar land use benefits while the circular intersection (Option 4) provided the least land use benefit since it had the largest footprint. See Appendix D for further discussion. The No Build option provides no land use opportunity and therefore received a score of 0.

Two-Way Main Street Flexibility

This section considers the relative adaptability that each of the options have for accommodating two-way traffic on Main Street and Front Street. It is worth noting that two-way traffic on Main Street and Front Street is subject to state approval and would be subject to a separate comprehensive traffic analysis and study involving public input. This criterion has a value of 5 points (5% of the overall matrix). Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8
Pedestrian Safety	4	10	8	2
Bicycle Accommodations	4	10	4	7
Land Use Opportunity	6	6	6	2
Two-Way Main Street	4	4	4	5

In summary, all of the options are easy to convert to accommodate two-way traffic on Main Street and Front Street but the circular intersection (Option 4) scored the highest since it maintains the ability to connect Front Street to the intersection whereas the other options eliminate that connection. These findings are based on review of the intersection layouts only and do not give consideration to the viability of traffic flows and related capacity analysis.



The No Build option ease to accommodate two-way traffic on Main Street and Front Street is similar to Option 3 and therefore received a similar score of 4.

Capital Costs

This section considers the construction costs of each of the options. This criterion has a value of 10 points (10% of the overall matrix). Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8
Pedestrian Safety	4	10	8	2
Bicycle Accommodations	4	10	4	7
Land Use Opportunity	6	6	6	2
Two-Way Main Street	4	4	4	5
Capital Costs	6	8	10	8

In summary, the signalized intersection with reduced turning lanes (Option 3) scored the best with the lowest construction costs. The signalized intersection with turning lanes (Option 2) and the circular intersection (Option 4) scored second best with slightly higher costs. The roundabout (Option 1) scored the lowest with the highest construction costs.

The No Build option capital cost is the lowest and therefore received a score of 10.

Operational Costs

This section considers the operational costs for the intersection after construction. While all of the options will require intersection lighting, the cost to operate and maintain an active signal system will vary based on the option. This criterion has a value of 5 points (5% of the overall matrix). Below is the evaluation of options for this criterion:

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8
Pedestrian Safety	4	10	8	2
Bicycle Accommodations	4	10	4	7
Land Use Opportunity	6	6	6	2



Two-Way Main Street	4	4	4	5
Capital Costs	6	8	10	8
Operational Costs	5	1	2	5

In summary, the roundabout and circular intersections (Options 1 and 4) scored the best as no signals need to be maintained. The signalized intersection with reduced turning lanes (Option 3) scored better than the signalized intersection with turning lanes (Options 2) since Option 3 will require less signal heads, mast arms and foundations.

The No Build option assessment of operational costs relating to signals is the lowest and therefore received a score of 0.

A copy of the Selection Matrix can be found in Appendix C of this report.



RECOMMENDATIONS

From review of the selection matrix scoring as summarized below, it can be seen that the roundabout (Option 1) had the highest combined score while the circular intersection (Option 4) had the second highest combined score. The No Build option received a total score of 36, which is far lower than any of the proposed build options.

Criteria	Option 1	Option 2	Option3	Option 4
Pedestrian Connectivity	8	8	12	10
Gateway	15	3	3	15
Vehicular LOS	10	4	6	5
Pedestrian Mobility	8	4	6	8
Pedestrian Safety	4	10	8	2
Bicycle Accommodations	4	10	4	7
Land Use Opportunity	6	6	6	2
Two-Way Main Street	4	4	4	5
Capital Costs	6	8	10	8
Operational Costs	5	1	2	5
TOTALS	70	58	61	67

The roundabout (Option 1) provides for a strong gateway to the community, provides the best vehicle operations (LOS/delays), provides for good pedestrian mobility, provides decent land development opportunities, is relatively easy to convert the layout to accommodate two-way traffic on Main Street and provides for the least post-construction operational costs.

The circular intersection (Option 4) provide for good pedestrian connectivity and mobility, provides for a strong gateway to the community, provides for good bicycle accommodations, provides the best results for converting two-way traffic on Main Street and Front Street and provides for the least post-construction operational costs.

For these factors, it is our recommendation that both the roundabout (Option 1) and circular intersection (Option 4) be selected as the preferred options for further study and consideration. Regarding Option 4, please note that further refinement of that option is needed before it can be considered a viable option by MaineDOT as there are operational and safety concerns with its current design, as noted in this report.



FUNDING SOURCES

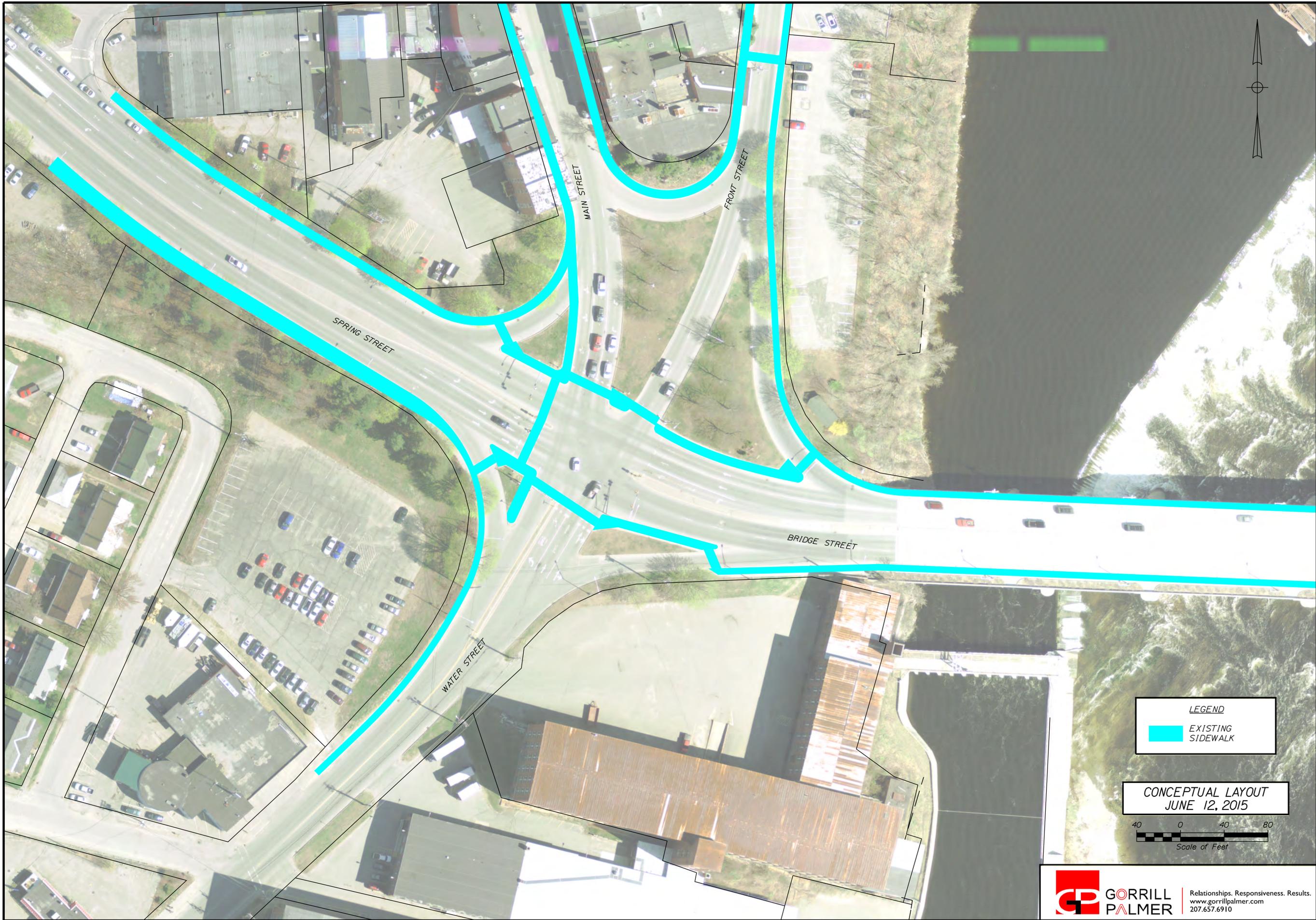
At this time, there is no construction funding identified for these intersection improvements. This section provides a brief listing of possible funding sources (in random order), which could be considered and investigated by the City as the project moves forward. Please note that MaineDOT approval is required for any changes to the state highway system regardless of the funding source.

- **Municipal Partnership Initiative (MPI)** – This MaineDOT program provides funding for projects on state and state-aid highways where municipalities are requesting changes for local transportation needs, developing economic opportunities and/or safety concerns. MaineDOT MPI funding contribution for a project is usually capped at \$500,000 and its share will be capped at 50% or less of the total costs.
- **Business Partnership Initiative (BPI)** – This MaineDOT program provides funding for projects on state and state-aid highways where municipalities, private businesses or other entities are requesting changes for local transportation needs, developing economic opportunities and/or safety concerns. MaineDOT BPI funding contribution for a project is usually capped at \$1,000,000 and its share will be capped at 33% or less of the total costs.
- **CDBG Programs** – The Maine Department of Economic and Community Development has several block grants that provide funds:
 - **Downtown Revitalization Grant Program (DTR)** – This program provides funds for communities to implement comprehensive, integrated and innovative solutions to identified problems facing their downtown districts. These downtown revitalization projects must be part of a strategy that targets downtown service and business districts and will lead to future public and private investment. The DTR maximum grant award is \$400,000.
 - **Public Infrastructure Grant Program (PI)** – This program provides funds for communities to address local issues, which are part of a community development strategy leading to future public and private investments, but road and street reconstruction are not eligible for this grant. The PI maximum grant award is \$1,000,000.
 - **Maine Downtown Center Assistance (MDCA)** – This program provides funding to support activities undertaken by the Maine Downtown Center on behalf of communities addressing critical needs in established downtown areas with the objectives in building vibrant, sustainable Maine downtowns. The MDCA maximum grant award is \$100,000.
- **Quality Community Programs** – This MaineDOT program provides funding for projects relating to transportation enhancements, safe routes to school and various other community programs. This program is intended to improve community transportation related facilities through bicycle and pedestrian improvements, safety improvements, environmental improvements, scenic, historic and other quality community improvements.



APPENDIX A

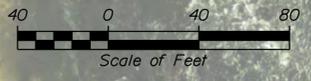
Conceptual Plans



LEGEND

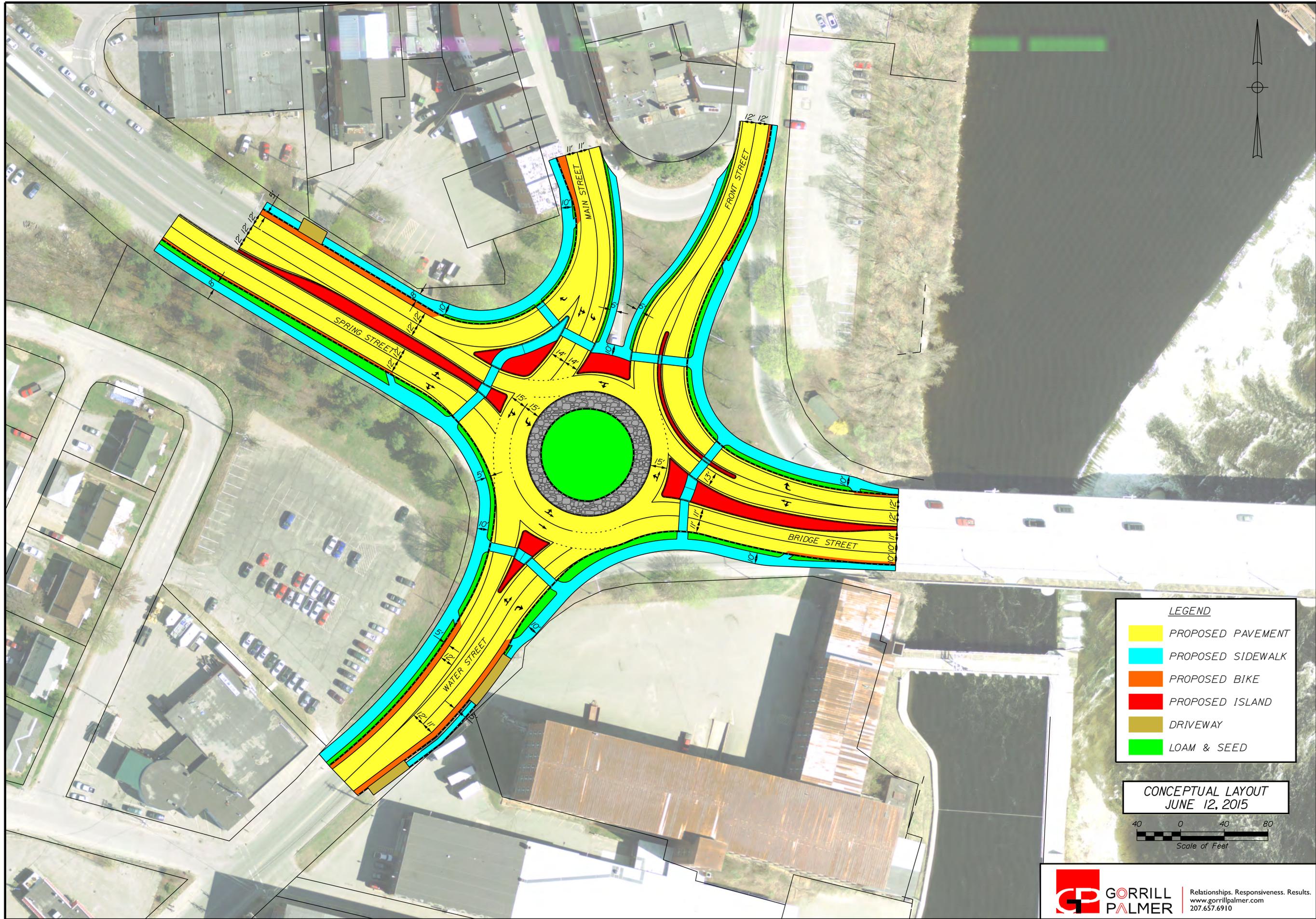
EXISTING SIDEWALK

CONCEPTUAL LAYOUT
JUNE 12, 2015



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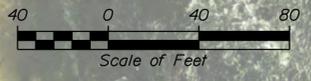
CITY OF WATERVILLE MAINE		DATE	
SIGNATURE		DATE	
P.E. NUMBER		DATE	
WIN 18556.02		HIGHWAY PLANS	
WATERVILLE SPRING STREET INTERSECTION		BY	
EXISTING CONDITIONS PLAN		L. NEWHOUSE 06/12/15	
SHEET NUMBER		L. NEWHOUSE 06/12/15	
1		D. LETINGER 06/12/15	
OF 5		DESIGN DET ALEDO	
		REVISIONS 1	
		REVISIONS 2	
		REVISIONS 3	
		REVISIONS 4	
		FIELD CHANGES	



LEGEND

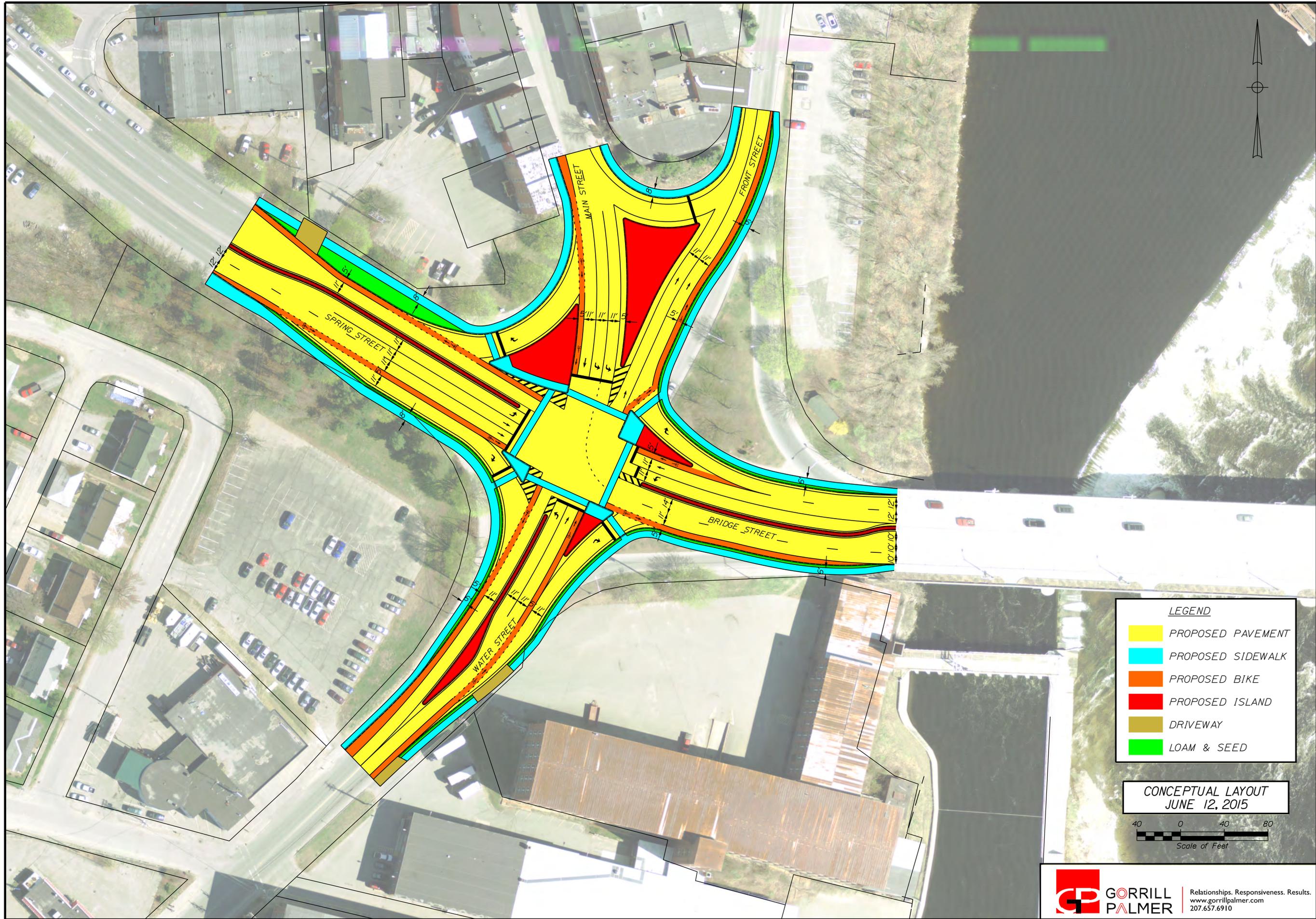
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- PROPOSED BIKE
- PROPOSED ISLAND
- DRIVEWAY
- LOAM & SEED

CONCEPTUAL LAYOUT
JUNE 12, 2015



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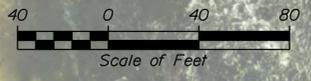
CITY OF WATERVILLE MAINE				
WATERVILLE SPRING STREET INTERSECTION PLAN OPTION 1	BY L. NEWHOUSE 06/12/15	DATE 06/12/15	SIGNATURE	P.E. NUMBER
SHEET NUMBER 2 OF 5	PROJ. MANAGER B. FROMMANNERS	CHECKED-REVIEWED L. NEWHOUSE D. LEITINGER	DESIGN-DETAILED L. NEWHOUSE	DATE
HIGHWAY PLANS	REVISIONS 1	REVISIONS 2	REVISIONS 3	DATE
WIN 18556.02	FIELD CHANGES	REVISIONS 4	DATE	DATE



LEGEND

- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- PROPOSED BIKE
- PROPOSED ISLAND
- DRIVEWAY
- LOAM & SEED

CONCEPTUAL LAYOUT
JUNE 12, 2015



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CITY OF WATERVILLE MAINE				
WATERVILLE SPRING STREET INTERSECTION	PLAN OPTION 2	SHEET NUMBER	3	OF 5
WIN 18556.02	HIGHWAY PLANS	DATE	SIGNATURE	P.E. NUMBER
FIELD CHANGES	REVISIONS 4	REVISIONS 3	REVISIONS 2	REVISIONS 1
DESIGN DETAILED	DESIGN DETAILED	DESIGN DETAILED	DESIGN DETAILED	DESIGN DETAILED
CHECKED-REVIEWED	CHECKED-REVIEWED	CHECKED-REVIEWED	CHECKED-REVIEWED	CHECKED-REVIEWED
L. NEWHOUSE	L. NEWHOUSE	L. NEWHOUSE	L. NEWHOUSE	L. NEWHOUSE
BY	BY	BY	BY	BY
DATE	DATE	DATE	DATE	DATE



APPENDIX B

Construction Costs

Gorrill-Palmer Consulting Engineers Inc.
Conceptual Opinion of Probable Construction Cost

6/9/2015

Job Number: **2939, WIN 18556.02**
 Project Location: **Waterville, Maine**
 Comments: **Spring Street Intersection Study**
 Date: 12/15/2014
 Revised Date: 6/12/2015
 References: Unit pricing based on average MaineDOT Unit pricing or recent bid price information.
Conceptual Construction Cost Estimates
 Calculated By: Laurie Newhouse, Jared Winchenbach
 Checked By: Brandon Havu, Don Ettinger

Notes: 1. Construction costs do not include costs for engineering, construction inspection, right of way, utilities, geotechnical and environmental permitting costs.
 2. Work assumes Widen & 1 1/2" Overlay where possible

Item	Item Description	Unit	Unit Price	OPTION 1 ROUNDBOUT		OPTION 2 SIGNAL, W/TURNING LANES		OPTION 3 SIGNAL W/REDUCED TURNING LANES		OPTION 4 CIRCULAR INTERSECTION	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
203.20	COMMON EXCAVATION	CY	\$ 13.00	9000	\$ 117,000.00	5800	\$ 75,400.00	4200	\$ 54,600.00	6200	\$ 80,600.00
304.10	AGGREGATE SUBBASE COURSE - GRAVEL	CY	\$ 25.00	7000	\$ 175,000.00	3750	\$ 93,750.00	3200	\$ 80,000.00	4400	\$ 110,000.00
403.207	HOT MIX ASPHALT 19.0 MM	T	\$ 100.00	1800	\$ 180,000.00	530	\$ 53,000.00	450	\$ 45,000.00	940	\$ 94,000.00
403.208	HOT MIX ASPHALT 12.5 MM	T	\$ 100.00	1230	\$ 123,000.00	1000	\$ 100,000.00	940	\$ 94,000.00	950	\$ 95,000.00
403.209	HOT MIX ASPHALT 9.5 MM (INCID.)	T	\$ 125.00	370	\$ 46,250.00	400	\$ 50,000.00	350	\$ 43,750.00	410	\$ 51,250.00
403.213	HOT MIX ASPHALT 12.5 MM (BASE COURSE)	T	\$ 100.00	900	\$ 90,000.00	265	\$ 26,500.00	225	\$ 22,500.00	470	\$ 47,000.00
409.15	BITUMINOUS TACK COAT - APPLIED	G	\$ 14.00	515	\$ 7,210.00	325	\$ 4,550.00	300	\$ 4,200.00	320	\$ 4,480.00
502.342	STRUCTURAL CONC. ROADWAY TRUCK APRON	CY	\$ 500.00	115	\$ 57,500.00	0	\$ -	0	\$ -	200	\$ 100,000.00
604.072	CATCH BASIN TYPE A1-C	EA	\$ 3,000.00	14	\$ 42,000.00	13	\$ 39,000.00	11	\$ 33,000.00	15	\$ 45,000.00
605.11	12" UNDERDRAIN TYPE C	LF	\$ 45.00	2500	\$ 112,500.00	2300	\$ 103,500.00	2200	\$ 99,000.00	2700	\$ 121,500.00
608.26	CURB RAMP DETECTABLE WARNING FIELD	SF	\$ 65.00	360	\$ 23,400.00	230	\$ 14,950.00	150	\$ 9,750.00	320	\$ 20,800.00
609.11	VERTICAL CURB TYPE 1	LF	\$ 30.00	2500	\$ 75,000.00	2300	\$ 69,000.00	2200	\$ 66,000.00	2700	\$ 81,000.00
609.34	CURB TYPE 5	LF	\$ 25.00	1850	\$ 46,250.00	2600	\$ 65,000.00	2200	\$ 55,000.00	1900	\$ 47,500.00
615.07	LOAM	CY	\$ 30.00	380	\$ 11,400.00	300	\$ 9,000.00	300	\$ 9,000.00	600	\$ 18,000.00
618.13	SEEDING METHOD NUMBER 1	UN	\$ 40.00	27	\$ 1,080.00	24	\$ 960.00	24	\$ 960.00	49	\$ 1,960.00
619.1201	MULCH	UN	\$ 25.00	27	\$ 675.00	24	\$ 600.00	24	\$ 600.00	49	\$ 1,225.00
621.0000	LANDSCAPING	LS	\$ 25,000.00	1	\$ 25,000.00	1	\$ 25,000.00	1	\$ 25,000.00	1	\$ 25,000.00
626.31	18 INCH DIAMETER FOUNDATION	EA	\$ 750.00	0	\$ -	18	\$ 13,500.00	12	\$ 9,000.00	0	\$ -
* 629.05	HAND LABOR, STRAIGHT TIME	HR	\$ 35.00	80	\$ 2,800.00	80	\$ 2,800.00	80	\$ 2,800.00	80	\$ 2,800.00
* 631.12	ALL-PURPOSE EXCAVATOR (INC OPERATOR)	HR	\$ 135.00	20	\$ 2,700.00	20	\$ 2,700.00	20	\$ 2,700.00	20	\$ 2,700.00
* 631.13	BULLDOZER (INCLUDING OPERATOR)	HR	\$ 85.00	20	\$ 1,700.00	20	\$ 1,700.00	20	\$ 1,700.00	20	\$ 1,700.00
* 631.172	TRUCK-LARGE (INC OPERATOR)	HR	\$ 80.00	40	\$ 3,200.00	40	\$ 3,200.00	40	\$ 3,200.00	40	\$ 3,200.00
* 631.18	CHAIN SAW RENTAL(INC OPERATOR)	HR	\$ 55.00	20	\$ 1,100.00	20	\$ 1,100.00	20	\$ 1,100.00	20	\$ 1,100.00
* 631.20	STUMP CHIPPER RENTAL (INC OPERATOR)	HR	\$ 150.00	20	\$ 3,000.00	20	\$ 3,000.00	20	\$ 3,000.00	20	\$ 3,000.00
* 631.22	FRONT END LOADER (INC OPERATOR)	HR	\$ 105.00	20	\$ 2,100.00	20	\$ 2,100.00	20	\$ 2,100.00	20	\$ 2,100.00
* 631.32	CULVERT CLEANER (INC OPERATOR)	HR	\$ 220.00	20	\$ 4,400.00	20	\$ 4,400.00	20	\$ 4,400.00	20	\$ 4,400.00
634.16	HIGHWAY LIGHTING	LS	\$ 40,000.00	1	\$ 40,000.00	1	\$ 40,000.00	1	\$ 40,000.00	1	\$ 40,000.00
639.18	FIELD OFFICE, TYPE A	EA	\$ 15,000.00	1	\$ 15,000.00	1	\$ 15,000.00	1	\$ 15,000.00	1	\$ 15,000.00
643.62	RECTANGULAR RAPID FLASHING BEACON	EA	\$ 6,000.00	0	\$ -	2	\$ 12,000.00	2	\$ 12,000.00	0	\$ -
643.71	TRAFFIC SIGNAL MODIFICATION - WATER/SPRING/MAIN/BRIDGE ST	LS		0	\$ -	1	\$ 60,000.00	1	\$ 60,000.00	0	\$ -
643.92	PEDESTAL POLE	EA	\$ 750.00	0	\$ -	18	\$ 13,500.00	12	\$ 9,000.00	0	\$ -
643.94	DUAL PURPOSE POLE W/ 35' TO 50' MAST ARM	EA	\$ 20,000.00	0	\$ -	7	\$ 140,000.00	4	\$ 80,000.00	0	\$ -
* 652.XX	TRAFFIC CONTROL	LS	LS	1	\$ 100,000.00	1	\$ 60,000.00	1	\$ 60,000.00	1	\$ 100,000.00
* 656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LS	\$ 10,000.00	1	\$ 10,000.00	1	\$ 10,000.00	1	\$ 10,000.00	1	\$ 10,000.00
659.10	MOBILIZATION	LS	LS	1	\$ 120,000.00	1	\$ 110,000.00	1	\$ 100,000.00	1	\$ 120,000.00
				SUB-TOTAL	\$ 1,439,265.00		\$ 1,225,210.00		\$ 1,058,360.00		\$ 1,250,315.00
				15% CONTINGENCY	\$ 215,889.75		\$ 183,781.50		\$ 158,754.00		\$ 187,547.25
				TOTAL CONSTRUCTION COSTS	\$ 1,655,200.00		\$ 1,409,000.00		\$ 1,217,200.00		\$ 1,437,900.00

* Undetermined Location



APPENDIX C

Selection Matrix



Criteria	Scoring (Max Points)	No Build Option		Roundabout, Option 1		Signal w/Turning Lanes, Option 2		Signal with Reduced Turning Lanes, Option 3		Circular Intersection, Option 4 ¹	
		Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score
Pedestrian Connectivity to Main St	15	Very poor	2	Not direct	8	Not direct	8	Traditional with direct connection	12	Relatively direct connection	10
Meets City Vision "Gateway"	15	Provides no gateway	0	Provides a significant gateway	15	Provides little to no gateway	3	Provides little to no gateway	3	Provides unique & historic layout	15
Vehicle Level of Service (LOS) ¹	10	Better than Options 3	7	Shortest delays	10	Longest delays	4	Better than Option 2	6	Has operational and safety concerns	5
Pedestrian Mobility	10	Between Option 2 and 3	5	Best crossing times	8	Worse crossing times	4	Better than Option 2	6	Best crossing times	8
Pedestrian Safety	10	Similar to Option 3	8	Less dual lane crossings than Option 4	4	No pedestrian-vehicle conflicts	10	Some pedestrian-vehicle conflicts	8	More multilane crossings than Option 1	2
Bicycle Accommodations	10	No accommodations	0	Can be challenging to navigate	4	Best with bike lanes	10	Shared lanes provided	4	Better than Option 1	7
Land Use Opportunity	10	No opportunity	0	Similar to Options 2 and 3	6	Similar to Options 1 and 3	6	Similar to Options 1 and 2	6	Largest footprint	2
Two-Way Main Street Flexibility ²	5	Similar to Option 3	4	Easy to convert to two-way	4	Easy to convert to two-way	4	Easy to convert to two-way	4	Maintains Front Street connection	5
Capital Costs ³	10	\$0	10	\$1.66M	6	\$1.41M	8	\$1.22M	10	\$1.44M	8
Operational Costs (signals)	5	Highest costs	0	None	5	Signals with most equipment	1	Signals with less equipment	2	None	5
Total Score	100		36		70		58		61		67

Footnotes:

1. Circular Intersection, Option 4 has not been approved by MaineDOT due to traffic operation and safety concerns as currently designed. Further refinement of the layout is required before receiving approval by MaineDOT.
2. Two-Way Main Street and Front Street traffic is subject to state approval and would be subject to a comprehensive traffic analysis and study involving public input.
3. Construction cost estimates are preliminary and will be refined during final design.



APPENDIX D

Planning Decisions Report

Downtown Development Study

Waterville, ME



June 29, 2015

Report prepared for:
City of Waterville

Planning Decisions, Inc.

Milan Nevajda, Planner
477 Congress Street, Suite 1005
Portland, ME 04101
Tel.: (207) 799-2226
Web: www.planningdecisions.com

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INTRODUCTION

As part of the Waterville Spring Street Intersection Analysis conducted by Gorrill-Palmer Consulting Engineers, Planning Decisions was asked to investigate the development potential of land that may become available in the vicinity of the intersection as a result of four different intersection design alternatives, and the fiscal impacts of potential development. Planning Decisions considered development scenarios based on whether the Maine Department of Transportation (MeDOT) turned over to the City unrestricted control of any excess right-of-way (ROW) that may be created after redesigning the intersection, if excess ROW lands were transferred with development restrictions, and if no excess ROW was turned over.

Local land use regulations, the physical conditions of possible development sites (such as topography, infrastructure, and other features that may constrain development), and the real estate market in downtown Waterville will determine development potential in the study area.

In our assessment of alternative possibilities for development near the intersection that meets the City's goals for the area, Planning Decisions:

1. identified and reviewed the current regulatory constraints and opportunities imposed on the parcels in the immediate vicinity of the intersection;
2. identified infrastructure and utilities located in the area that may impair or otherwise impact development potential of the parcels;
3. evaluated the overall development potential of the parcels through market research and a series of site visits and interviews with local development contacts, including real estate brokers, lending organizations, property owners, major investors, municipal staff, and downtown stakeholders;
4. created development scenarios reflecting the findings from our research; and
5. calculated the fiscal impacts of the development scenarios for the City.

Study Area

The intersection is located between downtown Waterville and the Hathaway Creative Center complex (Figure 1). Immediately surrounding the intersection are several parcels occupied by a variety of land uses. Five locations, roughly corresponding to the corners of the intersection, are of interest to the study. Table 1 lists the lots for which development potential was assessed. Other lots in the vicinity of the intersection were not investigated as they would not be directly impacted by a redesign of the intersection. Six lots may be impacted by the intersection improvements because they either have frontage on the intersection or stand to be expanded should new ROW land be made available after intersection improvements are completed.



Figure 1 - Study area

Table 1 - List of properties investigated as part of the study

Map Lot	Acres	Current Use	Zone	Assessed Land Value (\$)	Assessed Building Value (\$)	Total Assessed Value (\$)
044-176	0.27	Mixed-use, vacant	C-A	\$54,000	\$11,600	\$95,600
044-178	1.17	Municipal parking	C-A	\$49,700	\$10,100	\$59,800
044-179	0.15	Commercial storage	C-A	\$40,000	\$22,300	\$62,300
044-180	0.56	Vacant – fire damaged	C-A	\$66,600	\$60,600	\$127,200
044-307	1.75	Parking leased to Hathaway	C-A/C-C	\$63,900	\$20,700	\$84,600
044-308	2.01	Industrial	D-I	\$78,700	\$209,500	\$288,200

LAND USE REGULATIONS

Land use regulations, together with the physical conditions of the sites and the development market in Waterville, will determine the potential for development in the study area. There are two zoning districts and two overlaid shoreland districts enforced in the vicinity of the intersection (Figure 2):

1. General Commercial (C-A)
2. Downtown Industrial (D-I)
3. Shoreland zoning overlays: Class B and Class C

The C-A, and Shoreland-B zones are the only districts relevant to the study. The D-I and Class C Shoreland zones bear on lot 044-308, part of the Hathaway redevelopment complex (Figure 3), but as is elaborated below, the intersection improvements proposed will not alter the development potential of the lot. Building upon the existing parking area near Bridge and Water Streets is unlikely due to the presence of major infrastructure underground.

Use and Dimensional Requirements

The following section summarizes local land use regulations and their impact on development near the intersection. Table 2 provides an overview of the permitted uses and dimensional requirements applicable in the C-A and Shoreland-B zones.

Purpose of the land use zoning districts:

The purpose of the C-A district is to support “commercial establishments to which the public requires frequent and direct access.” The City of Waterville provides significant flexibility with regard to development within the C-A zone. The shoreland-B district is designed to “anticipate and mitigate the impacts of development in shoreland areas” in shoreland areas “devoted to intensive residential, recreational, commercial, institutional, or industrial activities or combinations of such activities.” The shoreland-B overlay applies within 250ft of the high-water mark of the Kennebec River.

Permitted uses

Residential construction within the C-A zone is limited to expansions of existing residential units (either to build a new accessory apartment, or to convert single-family or two-family units into—at most—three-unit dwellings). Apartments are also permitted because such uses are classified as commercial activities. A wide range of commercial office, retail, service, and hospitality uses are permitted in the C-A zone (Table 2). The shoreland-B zone does not apply any further restrictions on land uses beyond those listed in the underlying zone.

Dimensional requirements

There are no dimensional requirements listed for development within the C-A district except for a building height limit of what is serviceable by the Waterville Fire Department—an effectively five stories.

Additional dimensional standards apply within the shoreland-B zone, which affects lot 044-178—the municipal parking lot along Front Street. The most notable being a minimum lot size requirement of 40,000ft² per residential unit, or 60,000ft² for a commercial structure. Mixed-use development—treated as commercial land use according to municipal planning staff—could therefore create several dwelling units on upper floors above ground-floor commercial uses. It is unlikely, given the location of the parcels and these dimensional requirements, that residential development would occur unless dwelling units are a part of a mixed-use project.

The maximum lot coverage allowance in the Shoreland-B zone for new commercial buildings is 70% of the gross lot area. Any new construction on the Front Street parking lot must also be set back 75 feet from the shoreline (essentially along the furthest extent of the paved parking area toward the river) according to applicable dimensional standards in the shoreland-B zone.

Table 2 - Land use regulations in the study area

Zone	Permitted Uses	Min. Lot Size (ft ²)	Frontage (ft)	Setback	Coverage (%)	Height (Stories)
C-A	<ul style="list-style-type: none"> - Existing residential, existing accessory, and new accessory units - Conversions of single-family and two-family up to 3-family dwellings - Apartments, none on the ground floor of Maine Street - Business and professional offices - Retail stores - Commercial or public parking - Eating establishments - Commercial service establishments - Hospitality businesses - Indoor recreation and entertainment - Printing and news production - Nonprofit organizations - Daycares - Convenience stores with gas pumps - Homeless shelters - Exception: Light industrial 	N/A	N/A	N/A	N/A	5
Class B Shoreland	As defined in the underlying zone	Residential: 40,000/unit Commercial: 60,000/structure	Residential: 200ft* Commercial: 300ft*	75ft*	Residential: 20% Commercial: 70%	N/A

* Shoreland zone "frontage" and "setback" refer to the shore frontage not street frontage

Other Land Use Regulations and Parking Requirements

Apart from the shoreland-B zone requirements there are very few limitations on the type and form of development in the C-A zone. The most significant limiting factor therefore, is the off-street parking and loading requirement (Table 3). Residential units in the C-A zone are required to supply at least 2 parking spaces for each dwelling unit. Apartments, however, are only required to provide 1 space per unit and those spaces can be located within 1,000ft of the development if they are reserved for use by the apartment occupant(s). Commercial establishments must provide parking in relation to floor area and the type of use. Retail, office, and commercial service establishments must provide 1 space for every 200ft² of floor area.

Currently, the municipal parking lot at the Head of Falls site serves as designated off-street parking (secured with an easement) for use by the former Morning Sentinel building at 31 Front Street. Being approximately 800 feet from the Front Street parking lot area, it is, possible for public parking at the Head of Falls site to be counted toward parking requirements for a potential development at the municipal Front Street parcel. The Head of Falls parking lot lies outside of the 1,000ft range of other potentially developable parcels in the vicinity of the intersection. Use of the Head of Falls site would need to be negotiated with the City; access is neither guaranteed nor necessarily functional for activities on the site given the distances involved.

Table 3 - Parking requirements in Waterville

Land Use	Parking requirement
Residential	2 spaces per unit, plus 1 space per 6 units
Apartments (in the C-A zone only)	1 space per unit, if located within 1,000ft of the building entrance and reserved for tenant use
Subsidized elderly housing	1 space per unit
Commercial retail	1 space per 200ft ² of floor area
Commercial office	1 space per 200ft ² of floor area
Commercial service	1 space per 200ft ² of floor area
Hospitality (hotels, motels, etc.)	1 space per guest room
Home occupations	As required by the Code Enforcement Officer
Daycare	1 space per teacher and 1 space per 6 children
Hospitals and assisted living centers	1 space per 500ft ² of floor area
Places of assembly (restaurants, churches, etc.)	1 space per 3 seats or 60" of bench area
Theatres	1 space per 4 seats
<i>The planning board may reduce the required off-street parking spaces if two or more uses on the site can share parking. According to the Waterville zoning ordinance the minimum size of a parking space is 18.5ft by 8.5ft (157.25ft²). Historically, parking lot density in the City has achieved at most 241ft² per space when accounting for land needed for travel lanes and landscaping. Therefore, the area lost to laneways and landscaping is approximately 35% of total land available for parking.</i>	

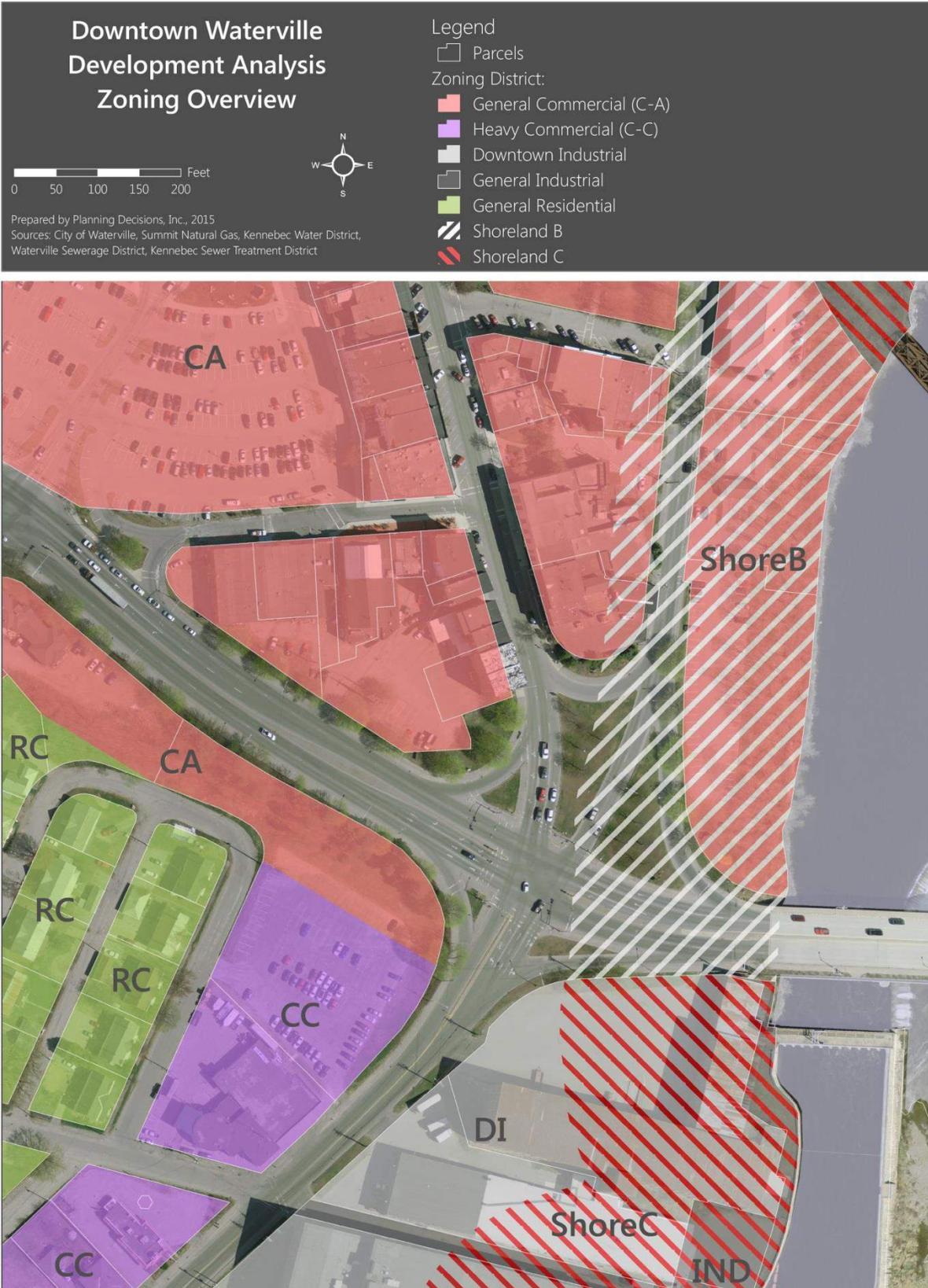


Figure 2 - Zoning in the study area



Figure 3 - Hathaway Creative Center and related buildings

SITE DEVELOPMENT CONSTRAINTS

The Spring-Main-Front-Bridge-Water Street intersection lies in an area affected by steep slopes and other physical features that limit the total developable area. Furthermore, when it was redesigned in the 1970s, significant utilities infrastructure was installed underground. New infrastructure, mainly related to natural gas, is also being added to the intersection (Figure 4). Buried infrastructure may create significant barriers to development due to the cost and complication related to its relocation or removal. The majority of the infrastructure in the vicinity of the intersection lies underneath the MeDOT ROW; its relevance as a constraint on development depends on whether any excess ROW is, or is not, transferred to the City.

Natural Site Constraints

Topography poses a constraint on development on the Front Street municipal parcel (044-178) and the lot leased to the Hathaway Creative Center (044-307). Roughly 75 feet from the riverbank the municipal parcel on Front Street begins to slope steeply toward the river. The area falls entirely within the Shoreland-B setback area, and so is not developable both because of the slope and land use regulations.

The vegetated area lining Spring and Water Streets on parcel 044-307 is also a steep embankment. Development could occur with a split-level building, but other factors pose a more significant constraint on development at this location: MeDOT access control to the parcel, and the need for parking to serve the Hathaway project.

Underground Infrastructure

A variety of infrastructure is located in the study area. Two factors must be considered with regard to underground infrastructure: 1) the size and function of the buried infrastructure, and 2) the area surrounding the infrastructure protected from development by easements to ensure access for maintenance purposes.

Minor infrastructure (such as small water and drainage pipes) does not pose a significant development constraint as it can be removed or relocated at relatively minimal expense. Large infrastructure, such as primary electrical transmission cables, sewer and drainage pipes are too costly to remove or relocate. The City of Waterville and utilities operating in Waterville typically secure maintenance easements of 30-feet on either side of a utility line. No structures can be built on top of the easement area (area highlighted in Figure 4).

Electrical Infrastructure

Buried power lines are located along all major roads connecting to the intersection. These lines converge to a central vault on the landscaped island between Front Street and the slip lane connecting Bridge Street traffic northbound to Front Street. The convergence of electrical lines

mainly impacts development potential on the Front Street parking lot in the MeDOT ROW. The presence of significant electricity infrastructure constricts development of buildings on the Front Street parcel to the area that is currently paved for public parking, west of the Bridge Street slip lane (this is only relevant if MeDOT transfers ownership of land occupied by the slip lane to the City if and when the slip lane is discontinued). Access easements for maintenance purposes, typically 30 feet on either side of major utility lines, essentially restrict the area on which buildings can be built to the existing paved parking area.

Water, Sewer, and Drainage Infrastructure

All water mains in the study area were constructed in the 1970s when the intersection was redesigned except for one 12-inch main that was originally installed in 1905. The 1970s water mains are larger than the older main and have sufficient capacity to manage water flow within the existing network. However, the older 12-inch main serves as a redundant feed and a looping back-up in the event that there is a problem with other mains. As a result, water infrastructure prevents the development of buildings in the excess MeDOT ROW abutting the Front Street parking lot. Development in other areas is not affected by water mains because they are located within the ROW of Water, Main, and Front Street.

Of primary concern regarding sewer infrastructure is a large 48-inch sewer pipe travelling along the shoreline of the Front Street parking lot, under Bridge Street, across the former Marden's building parking lot, and along Water Street into south Waterville. The pipe does not affect development potential on the Front Street parking lot because it lies within the Shoreland-B setback zone and because this portion of the site has very steep grades. The sewer pipe does limit development on the Marden's parking lot near the Bridge Street ROW—it would simply be too expensive to relocate the sewer infrastructure from this area.

There are several stormdrains near the intersection. Most of the infrastructure is minor, but one major pipe passes through the intersection from Spring Street and discharges in the Kennebec River near the Winslow Bridge. No building is likely to be constructed within the 30-foot easement surrounding this stormdrain. This affects the southern portion of the Front Street parking lot parcel, and the corner of Spring and Main Streets.

Natural Gas Infrastructure

Natural gas infrastructure does not pose a significant development constraint at this time. Existing pipes are located along Spring Street and do not yet affect the lots or the potential excess ROW that may be created after the intersection improvements.

Maine Department of Transportation Control of Access

New development in the study area must also factor in access to the parcels. MeDOT currently holds access control restrictions along all lot frontages in the intersection except for one access point to lot 044-180 from Spring Street. MeDOT control of access restrictions pose a concern for development of the 044-307 parcel—the parking lot currently leased to the Hathaway Creative

Center at the corner of Spring and Water Streets—but the restrictions will likely be reconsidered if the intersection is reconstructed. Access to the former Marden’s building and the Front Street parking lot is not expected to be affected by the intersection improvements.

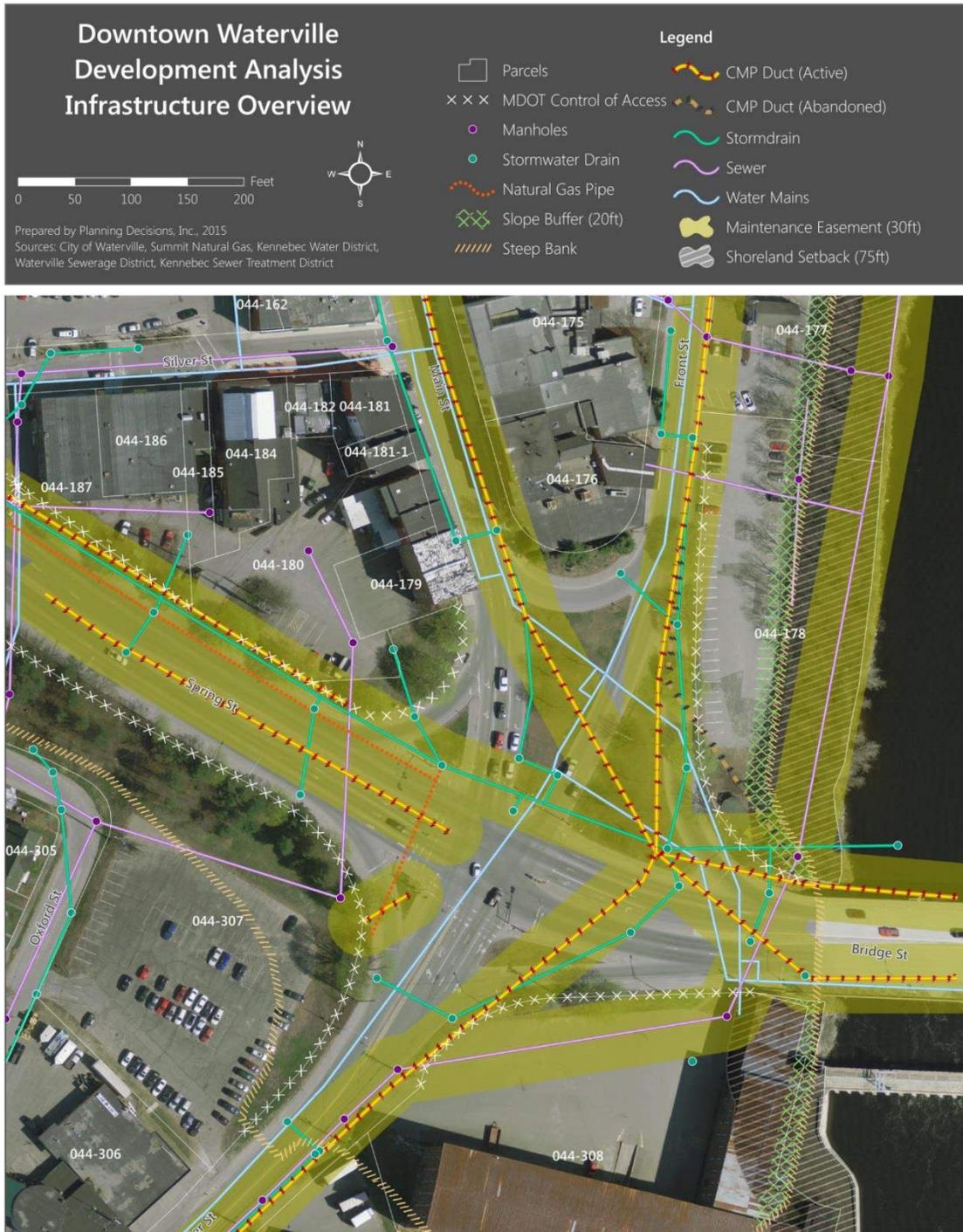


Figure 4 - Infrastructure overview of the study area

POTENTIAL DEVELOPABLE AREA

Based on underground infrastructure, site conditions, zoning, and Gorrill-Palmer’s four design alternatives for the intersection, Planning Decisions has identified two possible sites that may accommodate new development near the intersection (Figure 5—Figure 7). MeDOT control of access limitations significantly impair development on the 044-307 parcel (the parking lot leased for use by the Hathaway project). Parking demand and the presence of major sewer infrastructure preclude development along the street on the former Marden’s parcel (044-308).

There are minor changes to developable area across the intersection design alternatives, mostly affecting the areas represented by the slip lanes from Bridge Street to Front Street and Main Street to Spring Street. In all cases the developable areas are comprised of two types: areas that can accommodate a building or structure and areas that can be used to support a development—such as attractive landscaping or surface parking—but that are not suitable for buildings due to underlying infrastructure and other development constraints.

Potentially developable areas are greatly affected by the decisions regarding the ownership and use of excess ROW land currently owned by MeDOT. There are three possible scenarios that may emerge with the ROW land:

- 1) the land may be held by MeDOT, leaving only the possibility of landscaping the areas
- 2) MeDOT may transfer ownership of the land to the City or abutting property-owners with conditions that access and use of the land for future transportation needs must be retained—this would also create a “no-development” scenario.
- 3) MeDOT may transfer the land to the City or abutters with no conditions, leaving open the possibility of development (taking into account other limiting factors such as significant infrastructure and site conditions).

Roundabout Intersection Design

With the roundabout intersection design, the paved area of the Front Street parking lot, totaling 14,200ft², is readily available for development. If MeDOT were to relinquish control of the—to be unused—slip lane land, an additional 21,000ft² would be available for use. No structures can reasonably be built in the ROW land because of buried infrastructure. An additional 3,100ft² can be built upon at the northern end of the parcel. Use of this area would require replacing an 8” sewer pipe, which would add to the cost of a project but not so much so that construction is not feasible.

On the corner of Spring and Main Streets, the roundabout design could create an additional 5,100ft² of buildable area. It is possible to build a small structure in this space, but parking and access constraints present significant barriers. Development is entirely contingent upon MeDOT transferring unrestricted use of the land to the City or abutting property owners.

Downtown Waterville Development Analysis Developable Area - Roundabout -



Prepared by Planning Decisions, Inc., 2015
Sources: City of Waterville, Summit Natural Gas, Kennebec Water District, Waterville Sewerage District, Kennebec Sewer Treatment District

- Legend**
- Parcels
 - MDOT Control of Access
 - Manholes
 - Stormwater Drain
 - Natural Gas Pipe
 - Slope Buffer (20ft)
 - Steep Bank
 - CMP Duct (Active)
 - CMP Duct (Abandoned)
 - Stormdrain
 - Sewer
 - Water Mains
 - Maintenance Easement (30ft)
 - Shoreland Setback (75ft)

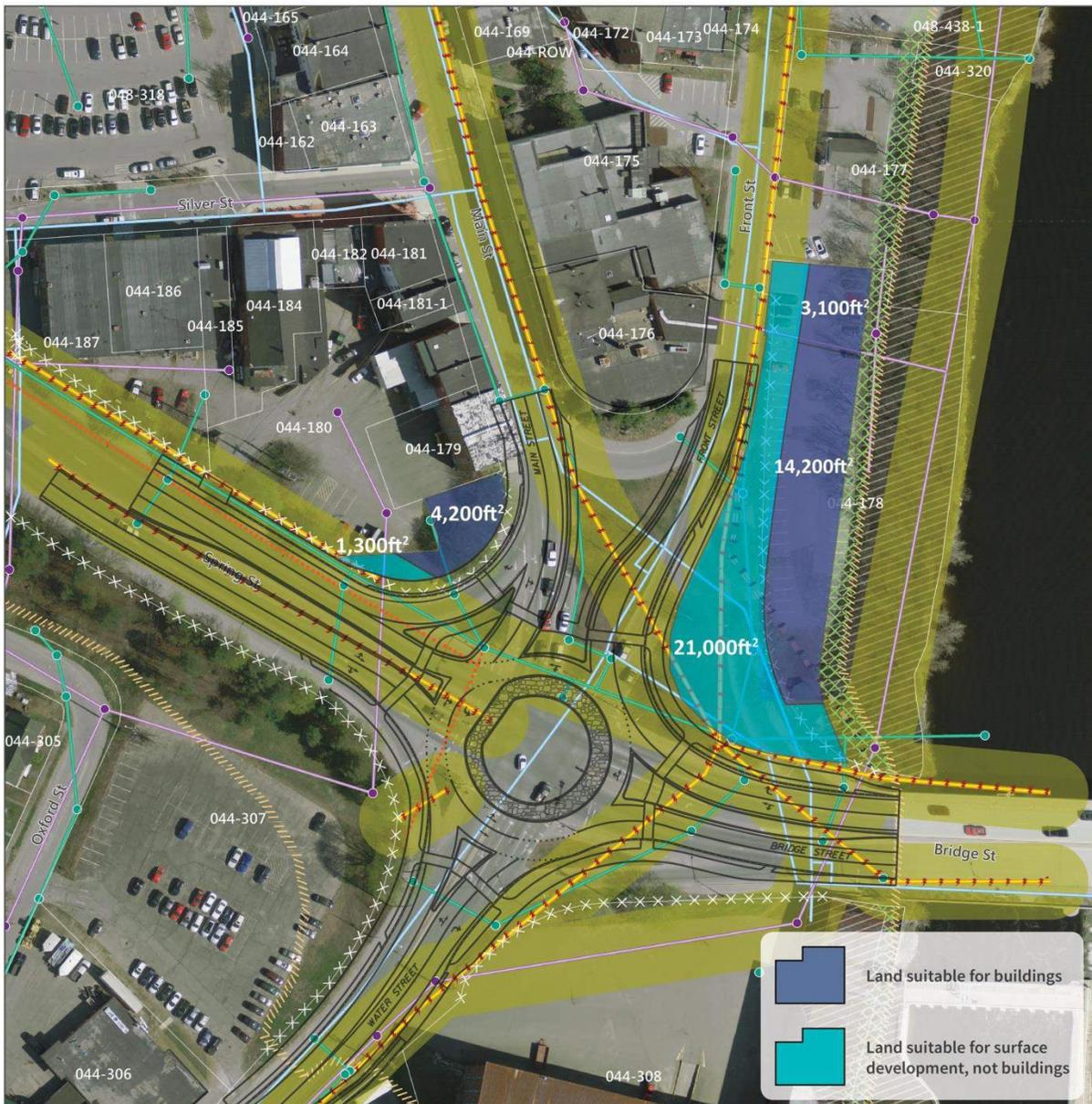


Figure 5 - Developable areas - Roundabout intersection design

Signalized Intersection Design Alternative 1

In the first signalized intersection design, the same development conditions exist as described in the roundabout design except that a slightly larger area becomes available in the slip lane area next to the Front Street parking lot parcel—again, no structures may be developed in this area but the space can be used to support development of the site and surrounding area by providing attractive landscaping and parking.

In the first alternative to a signalized intersection, 23,500ft² of excess ROW land may be available for use as a parking lot or landscaped area (instead of 21,000ft² in the roundabout scenario). Use of this land is contingent upon MeDOT relinquishing unrestricted ownership and use of the parcel to the City.

This intersection design may create 4,300ft² of developable land at the corner of Spring and Main Streets, and 1,400ft² of non-buildable area along Spring Street within the maintenance easement for a major stormdrain discharging into the Kennebec River. Use of this area is entirely dependent upon MeDOT transferring unrestricted use of excess ROW lands, but development is highly unlikely in any scenario because of the limited space available to construct a building and provide requisite off-street parking for the occupants.

Signalized Intersection Design Alternative 2

In the second alternative to a signalized intersection, slightly less land is available in the Front Street slip lane ROW (23,100ft²) than the previous signalized design, but more land would potentially be available at the corner of Main and Spring Streets (6,400ft² of buildable area and 3,700ft² of non-buildable area suitable for parking and landscaping).

This is the only intersection design scenario in which development at the Spring and Main Streets corner appears feasible because adequate space is available to provide parking and landscaping for the development. New construction, as well as expansion or redevelopment of 14 Main Street (044-179) on this lot, are possible development scenarios. Any development or use of the area is contingent upon MeDOT transferring unrestricted ownership and use of the land to the City or abutting property owners.

Downtown Waterville Development Analysis Developable Area Signaled Intersection 1

0 50 100 150 200 Feet

Prepared by Planning Decisions, Inc., 2015
Sources: City of Waterville, Summit Natural Gas, Kennebec Water District, Waterville Sewerage District, Kennebec Sewer Treatment District

Legend

- Parcels
- MDOT Control of Access
- Manholes
- Stormwater Drain
- Natural Gas Pipe
- Slope Buffer (20ft)
- Steep Bank
- CMP Duct (Active)
- CMP Duct (Abandoned)
- Stormdrain
- Sewer
- Water Mains
- Maintenance Easement (30ft)
- Shoreland Setback (75ft)

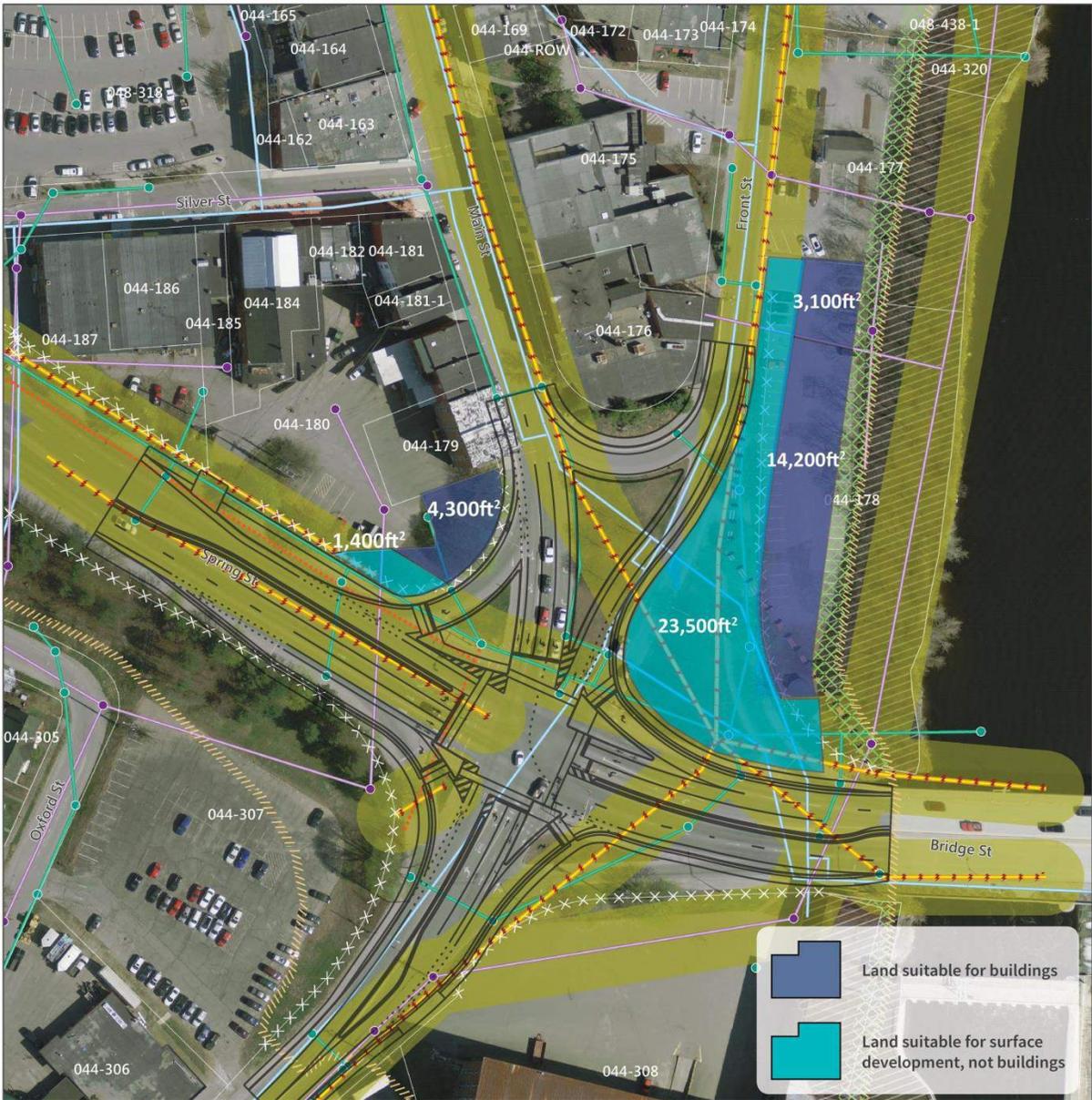


Figure 6 - Developable areas - Signaled intersection design 1

Downtown Waterville Development Analysis Developable Area Signaled Intersection 2

0 50 100 150 200 Feet

Legend

- Parcels
- MDOT Control of Access
- Manholes
- Stormwater Drain
- Natural Gas Pipe
- Slope Buffer (20ft)
- Steep Bank
- CMP Duct (Active)
- CMP Duct (Abandoned)
- Stormdrain
- Sewer
- Water Mains
- Maintenance Easement (30ft)
- Shoreland Setback (75ft)

Prepared by Planning Decisions, Inc., 2015
Sources: City of Waterville, Summit Natural Gas, Kennebec Water District, Waterville Sewerage District, Kennebec Sewer Treatment District

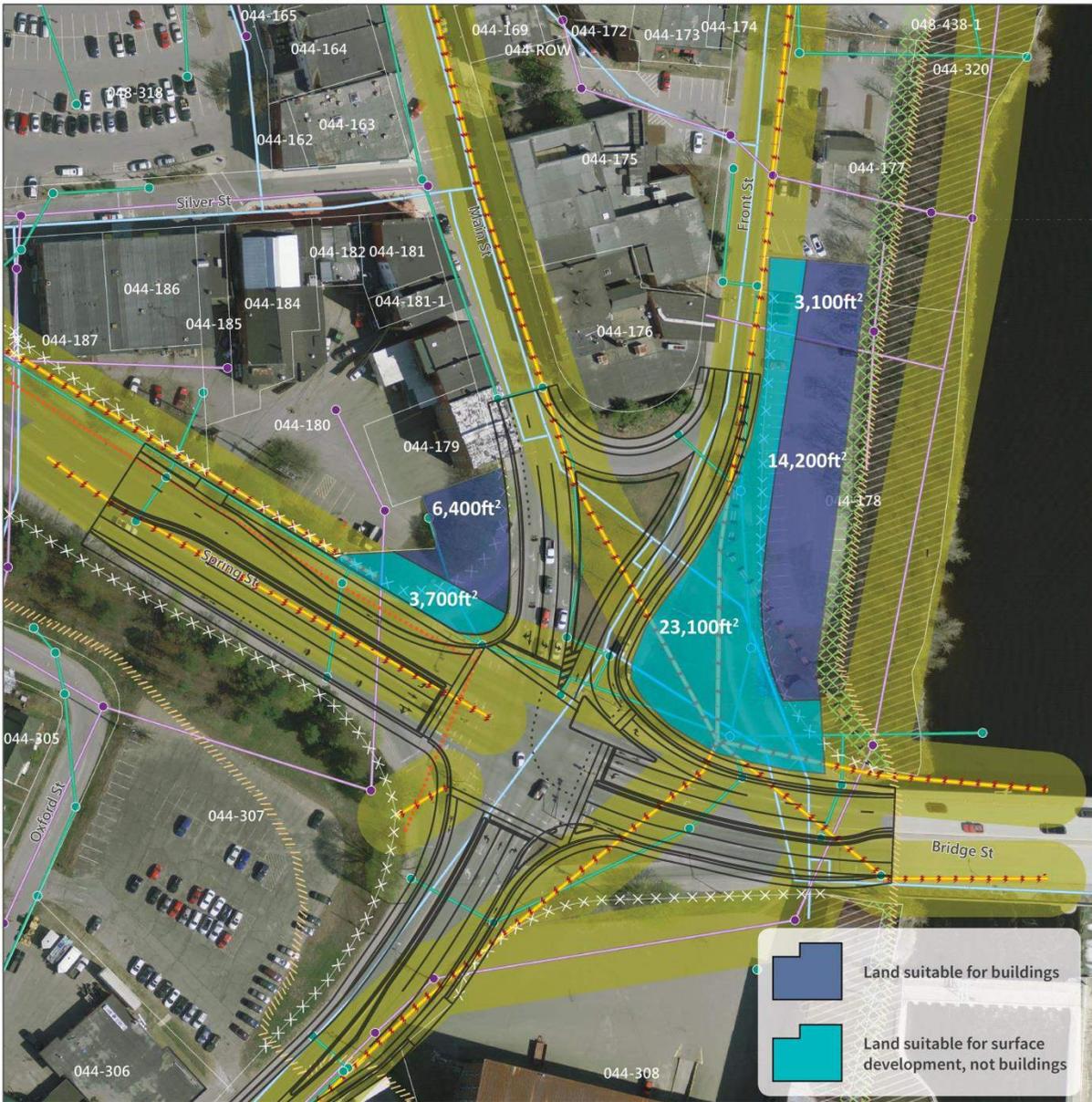


Figure 7 - Developable areas - Signaled intersection design 2

Design Option IV

In the fourth intersection design alternative, based on the conceptual design by Beyer Blinder Belle, significantly less land is available on the Front Street parcel as the ROW is pushed outwards to accommodate the proposed green island in the center of the intersection. The design creates a sliver of land along Front Street that is suitable for surface development, but not buildings due to underlying infrastructure. The fourth design alternative also consumes a small portion of the Front Street lot near the entrance to the Winslow bridge, thereby reducing the total area suitable for constructing buildings to approximately 14,600ft².

By eliminating the right turning lane from Main Street to Spring Street, this intersection design creates 4,700ft² of buildable area at this corner (plus an additional 3,700ft² of non-buildable area suitable for parking or landscaping); more than the roundabout and version 1 of the signalized intersection designs, but less than the second signalized intersection alternative.

The fourth intersection design is the only one in which additional buildable space is available between Main Street and Front Street to potentially create an extension of the Main Street strip. New construction, as well as an expansion or redevelopment of the Levine's property (044-176) would be possible in the 5,200ft² that is created through the intersection design. Any development or use of the area is contingent upon MeDOT transferring unrestricted ownership and use of the excess ROW land for development.

Downtown Waterville Development Analysis Developable Area - Design IV -



Prepared by Planning Decisions, Inc., 2015
Sources: City of Waterville, Summit Natural Gas, Kennebec Water District, Waterville Sewerage District, Kennebec Sewer Treatment District

- | Legend | | | |
|--------|------------------------|--|-----------------------------|
| | Parcels | | CMP Duct (Active) |
| | MDOT Control of Access | | CMP Duct (Abandoned) |
| | Manholes | | Stormdrain |
| | Stormwater Drain | | Sewer |
| | Natural Gas Pipe | | Water Mains |
| | Slope Buffer (20ft) | | Maintenance Easement (30ft) |
| | Steep Bank | | Shoreland Setback (75ft) |

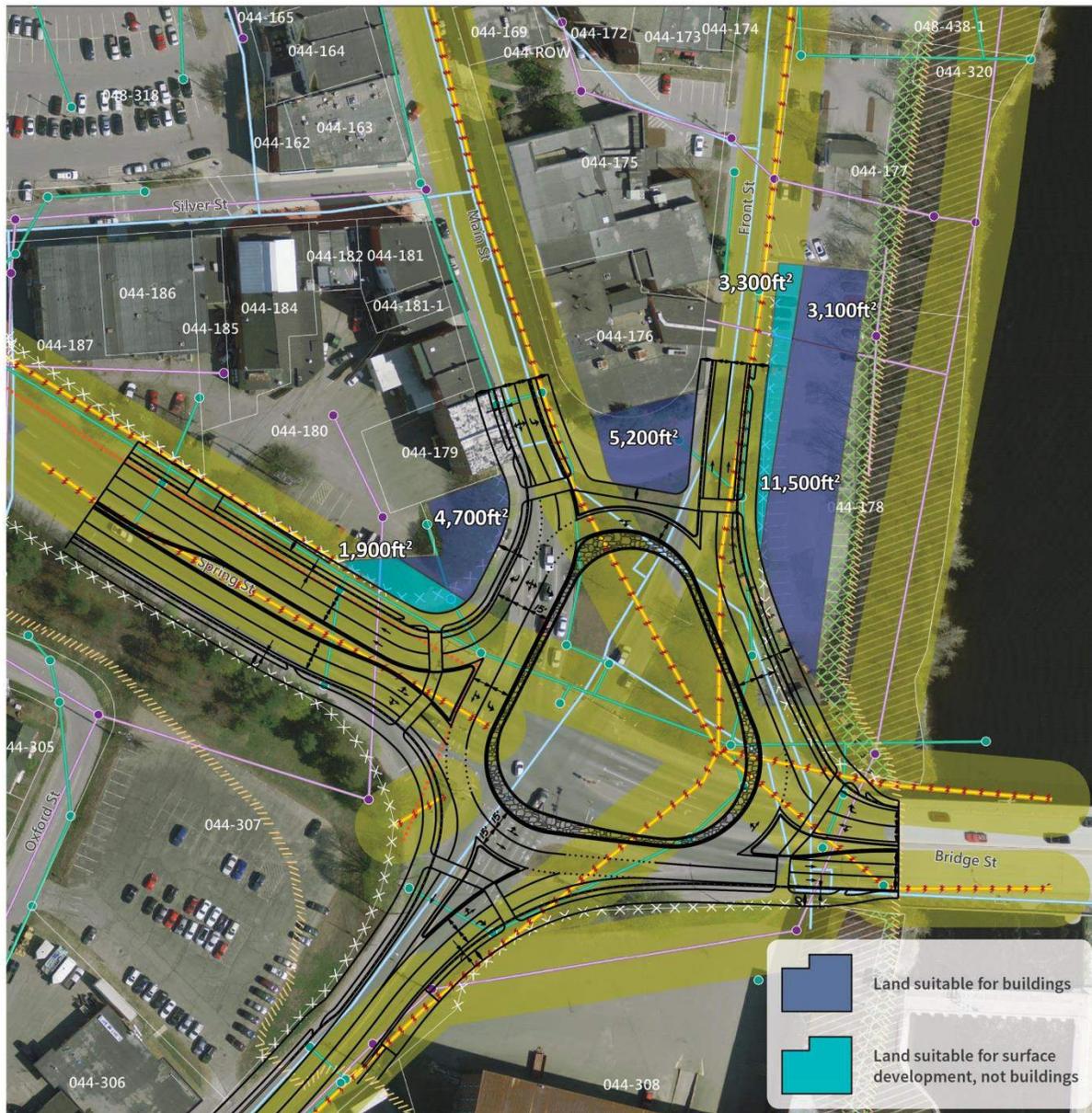


Figure 8 - Developable areas – Intersection design IV

WATERVILLE DEVELOPMENT MARKET

Planning Decisions conducted over 25 targeted interviews and two site visits (see Appendix A) to study the downtown Waterville development market. Interviews included municipal and quasi-municipal staff members, downtown property owners, key investors and important actors involved in downtown development, commercial and residential real estate agents familiar with the downtown market, and downtown development groups. The market faces persistent hurdles, related in large part to Waterville’s limited population base and higher concentration of low-income households. That said, there are signals that the downtown area may be dramatically different in ten years’ time due to investment and engagement by a small number of influential actors, including Colby College, MaineGeneral Health, private investors, and downtown advocacy groups.

Limited Population Base and Aged Building Stock

Downtown Waterville is a market facing challenges and constraints familiar to other cities in inland Maine. A limited population base, aging building stock, still-recovering real estate market, and limited investor capacity have resulted in a relatively stagnant market for both commercial and residential real estate. Combined with its limited population base, Waterville also has a slightly larger concentration of lower-income households; median household income in the city is 2% below the county median and 4% below the state median (Table 4). Household income levels are also partly responsible for lower property values compared to the county and state. The average value of a home in Waterville (\$118,100) is 24% below the county average (\$155,700) and 35% below the state average home price (\$182,900).

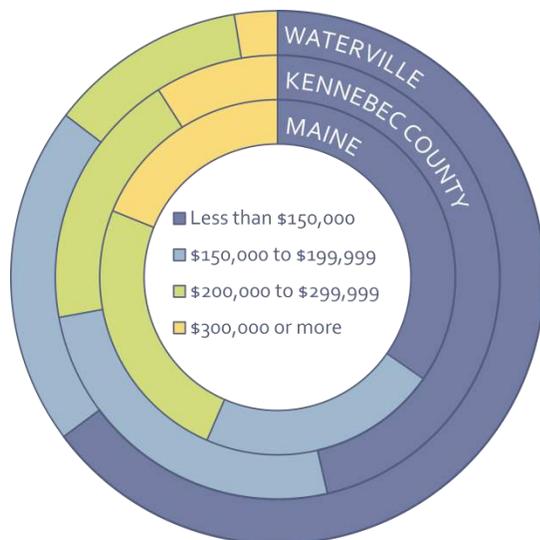


Figure 9 - Average value of occupied housing units, 2013.
Source: U.S. Census

Table 4 - Median income and home value, 2013

	Maine	Kennebec County	Waterville
Home Value	\$182,900	\$155,700	\$118,100
vs. Waterville	+35%	+24%	-
Median Income	\$69,717	\$68,363	\$67,043
vs. Waterville	+4%	+2%	-

Source: U.S. Census (2013)

The limited financial capacity of property owners and investors in Waterville is evident in several sites in the downtown area that have fallen into disuse and disrepair over the last 10 to 20 years. The buildings at the southern end of Main Street (the former Levine’s building, as well as the buildings located at 14 and 20 Main Street) are examples of old properties that have been difficult to maintain or redevelop into updated residential or commercial space. These buildings, located at the gateway to downtown from the south dampen the overall vitality of the area.

Part of the challenge that downtown Waterville faces is competition from relatively vibrant and dynamic downtown areas within driving distance; notably, Augusta and Bangor, but increasingly the Greater Portland area. Evidence of this can be seen with the commuting patterns of higher-income earners in Waterville like professors at Colby College, who, over the past decade, have increasingly chosen to commute to Waterville from elsewhere. On the whole, the number of jobs available in Waterville has remained relatively constant between 2002 and 2011 (rising slightly, in fact), but the resident population has declined by over 28%. The number of commuters coming to Waterville over this period grew by 14%, while Waterville residents holding jobs in the city or in surrounding communities has fallen by 29% and 28% respectively (Table 5).

Table 5 - Commuting patterns in Waterville, 2002-2011.
Source: US Census Bureau, Center for Economic Studies

	2002	2011	Change
Total Employed in Waterville	10,514	10,910	+3.7%
Population of Waterville	7,771	5,568	-28.3%
<i>Commuting to Waterville</i>	7,943	9,089	+14.4%
<i>Living & working in Waterville</i>	2,571	1,821	-29.2%
<i>Commuting from Waterville</i>	5,200	3,747	-27.9%

These factors—a low population, low-income households, limited financial capacity from the broad development market, and competition from nearby centers, contribute to a relatively stagnant development market. The Waterville Planning Department has seen very little investor and develop interest in the downtown area over the last several years

Parking

Access to parking in downtown Waterville is an additional barrier to development. The limited supply of parking was discussed in all interviews conducted over the course of this study. Particular sites, notably the buildings on the end of Main Street approaching the Spring Street intersection, are more sensitive to parking availability because of site limitations. Developing the Front Street parking lot would create significant challenges for redevelopment of the Levine’s property, for example. The City has worked to increase flexibility with regards to parking by allowing spaces to be located off-site, however there is limited potential for residential and office developers to make use of this flexibility because of the demands of their tenants (few residents are willing to walk up to 1,000-feet to reach their apartment door). The

Front Street parking lot is seldom used, and historically few downtown businesses have relied on the lot because of fast-moving and high-volume traffic on Front Street. Given that a redesign of the intersection may help reduce traffic speeds, and new activity coming from medical offices now located in the Morning Sentinel building, the parking lot may see increased use. Redevelopment of the Levine’s property could also increase use of the lot but this appears unlikely in the near term under its current ownership. Given other properties’ potential reliance on the property, any building on the Front Street parking lot must therefore be weighed against the parking challenges that may result for other development along Main Street.

Regulatory Environment and Historic District

Advantages to development in downtown Waterville include a very flexible regulatory environment, historic district designation, and strong community support for increased density and activity in the downtown area. C-A zoning in the downtown area applies virtually no dimensional or regulatory constraints on development apart from the five-story height restriction. Shoreland-B land use regulations impact the Front Street parcel but the shoreland setback area applies in an otherwise undevelopable area (because of steep slopes and major underground infrastructure). Off-site parking requirements in the C-A zone are the most lenient in the City. This regulatory flexibility allows potential developers considerable latitude with regards to design and construction on potentially developable land near the intersection.

Having the downtown designated as a historic district is an advantage in that it makes historic tax credits available to real estate investors. The credits have been “game-changers” for real estate investment already: Charlie Giguere, owner of the Silver Street Tavern, has redeveloped several old buildings downtown to provide new, market-rate housing units, which would not have been financially viable without the historic tax credits. Likewise, the Hathaway Creative Center relied heavily on historic tax credits, and future expansion of the Hathaway project will depend on continued use of the credits¹. Historic Tax Credit only apply to redevelopment or expansion of existing historic buildings; therefore, this development incentive is only potentially applicable to development at the corner of Spring and Main Streets if the development involves expanding or redeveloping the abutting property at 14 Main Street.

Waterville also benefits from an active and engaged group of downtown advocates, such as Waterville Main Street, the Alford Foundation, the Waterville Rotary Club, and Waterville Creates!—an arts-based community development and engagement organization. These groups have helped to support downtown businesses, encourage investment, and develop programming to attract visitors. More broadly, there is positive overall community support for development downtown—the majority of residents are interested in seeing the downtown area improve. The combination of strong community advocates, broader community buy-in, and a

¹ A need to increase awareness of historic tax credits was identified through interviews. A program to educate potential developers on and advertise the historic tax credits in Waterville may help increase investment in the downtown historic district.

supportive regulatory environment will help facilitate development should proposals for development be presented to the City.

Development Opportunities

While the development market in Waterville seems limited, a number of unique, large-scale projects have the potential to upturn economic trends in the downtown area. Singular projects from sophisticated developers or large institutions have the potential to redefine the Waterville market entirely, although the activities and their impacts in the downtown remain speculative.

The Hathaway Creative Center has had surprising success marketing high-end, residential units in the downtown area, and has nearly filled several thousand square feet of commercial office space by attracting large tenants such as MaineGeneral Health. The Hathaway experience has identified a market for higher-end, modern office spaces, of which there is a very limited supply in Waterville. Interviews with real estate brokers and downtown business and property owners agreed that high-end office space is limited partly because there are few developers with the financial resources, vision, and risk tolerance needed to serve this market niche. The Hathaway project includes plans for a high-end hotel and conference center, and several more residential units over the next ten years. The activity and influx of people that the Hathaway project may generate could have a transformative impact on businesses and the investment climate in the downtown area. While Hathaway has had success with office and residential development, retail tenants have been more difficult to attract, possibly because the Center is so segregated from the downtown.

Colby College, historically an insignificant player in downtown Waterville, recently inaugurated a new president who has expressed a commitment to investing in, and helping to drive downtown revitalization. During interviews, executive staff at Colby (and Thomas College) noted that downtown vitality was critical to the future success of the college. Though plans for investment in downtown Waterville are very preliminary, Colby is considering building—through reuse or new construction—a number of modern, high-end student and faculty housing units and high-end office space. The college also intends to catalyze new private sector investment downtown by assisting with financing, marketing, and other activities to attract businesses and residents.

The Alford Foundation and Waterville Rotary Club are also major players actively involved in revitalizing downtown Waterville. The Alford Foundation is working closely with Colby College, and the Waterville Rotary Club is preparing for a large investment in downtown as part of its centennial celebrations in 2018. MaineGeneral Health, another large institution in Waterville with an interest in seeing the downtown area improve, does not anticipate any real estate expansion over the next several years.

Development Market Conclusions

While the Waterville market does not appear to be “booming,” with continued economic recovery across the state, ongoing success and investment in existing projects like the Hathaway Creative Center, new (unexpected) investment driven by large institutions, and increased activity downtown led by groups such as Waterville Main Street and Waterville Creates!, there is potential for both commercial and residential real estate development over the next five to ten years. The Front Street parcel and the corner of Main and Spring Street are both suitable locations for small to mid-sized, mixed-use or commercial development. Apartment units marketed to middle- or higher-income households, of approximately 800ft² to 1,200ft² are feasible in downtown Waterville. Attractive, high-quality office space is also in demand as professional services providers are increasingly seeking central locations where clients and complementary services are available nearby. Amenities and attractions in the downtown area are beginning to attract increased attention from potential residents and business owners.

Development of the Front Street parcel or at the terminus of Main Street could generate property tax revenues and bring new activity to the downtown area. New buildings closer to the intersection could help reduce the scale of the intersection and thereby improve links between the downtown and Hathaway Creative Center. Use of these sites for development would, however, increase the demand for parking in the downtown; this must be balanced against the overall need for parking to support ongoing downtown revitalization and redevelopment of the Hathaway mill complex.

Thus, an alternative use of the potentially developable areas at Front Street and the corner of Main and Spring Streets is either *public* parking to support redevelopment and revitalization of the downtown or *private* parking to support continued development of the Hathaway complex. Redevelopment of Main Street properties near the intersection (especially the Levine’s property and the buildings at 14 and 20 Main Street) will be aided by publicly available parking nearby that may be counted toward parking requirements for future redevelopment projects.

The City has already engaged in conversations with the owners of the Hathaway development regarding leasing or selling the Front Street parcel for use as a parking lot. Current plans for these remaining Hathaway buildings include several apartment units, commercial kitchen space, business incubator facilities, a conference center, and a hotel. If this vision is realized, securing enough parking to support these activities will be a critical issue. The Hathaway Creative Center currently holds a 99-year lease, at \$100 for the life of the lease contract, on parcel 044-307 and has recently purchased a nearby lot to help meet its future parking needs.

Potential development scenarios that consider both the use of the sites as new development opportunities, and as parking to support redevelopment downtown or at the Hathaway complex are needed.

ALTERNATIVE USE SCENARIOS

This chapter presents development scenarios for each of the four intersection design options, beginning with three scenarios for the roundabout and signalized intersection designs that consider uses for potentially developable land on the Front Street parcel and at the corner of Spring and Main Streets. Three additional development scenarios for intersection design Option IV are discussed separately at the end of this chapter. All scenarios are based on site characteristics and the market research presented in preceding chapters. As discussed, the primary limiting factors for development around the intersection are site conditions (i.e. suitable land area) and off-street parking requirements.

Development Scenarios for the Roundabout and Signalized Intersections

In the roundabout and signalized intersection designs, the area that is suitable for construction of buildings on the Front Street lot is the same across all intersection design options. What changes between the intersection designs is the size of the parking and landscaping area that can be built in the MeDOT ROW. Thus, there are three alternative uses for the Front Street site:

- 1) Private development with on-site parking, involving:
 - a. a single-story commercial development with a retail/service/office component and a restaurant establishment adjacent; and
 - b. a multi-story (3-floor) mixed use development with the same commercial mix on the ground floor and residential suites on upper floors.
- 2) Public parking to support redevelopment in the downtown area
- 3) Private parking to support redevelopment of the Hathaway complex.

Given the requirement to provide adequate on-site parking and demand for parking from downtown businesses, maximum use of the developable area is not justified. In all scenarios described below, parking is provided with excess capacity to support downtown businesses.

Private Development on Front Street with On-site Parking – ROW Not Utilized

Should MeDOT elect not to transfer ownership of any excess ROW land to the City, or if MeDOT transfers the ROW land with restrictions on its use, no structures or parking can be built in the ROW area². All structures and parking will need to be built within the 17,300ft² of “buildable area” identified on Figure 5 through Figure 7 (because parking must be provided on-site, and lot access is located on the northern end of the parcel, the development scenarios do not consider removal or modifications to the 8” sewer main at the north end of the lot).

Figure 10 illustrates the massing of a possible 1-story building for the site and Figure 11 shows a multi-story alternative. Table 6 summarizes the parking requirements generated by the

² although parking is a use that could easily be removed if and when MeDOT wanted to reuse the ROW area for transportation needs, losing the parking at a future date would render any development on the lot non-functional. Therefore, the transfer of MeDOT ROW lands with restrictions scenario is considered a “no-build” (including parking) scenario.

proposed uses in both scenarios. The total area available for parking is based on the lot area for development less the building footprint (the “built” area) and land needed for travel lanes and landscaping (amounting to 35% of the “unbuilt” area). The number of available parking spaces is calculated assuming 20ft x 8.5ft spaces (170ft²) in a 90-degree angle parking arrangement.

Table 6 - Parking requirements for development on the Front Street parcel, with no ROW transfer or transfer with restrictions

Site	Scenario	Office (ft ²)	Restaurant (ft ²) ^a	Residential (ft ²)	Dwelling Units ^b	Parking for Development ^{c, d}	Public Parking Available ^d
Front Street	1-story	2,000 ^e	2,000 ^e	0	0	30	17
	Mixed-use	2,000 ^e	2,000 ^e	9,000 ^e	11	41	6

Total parking^d: all intersection scenarios - 47 spaces

a - assumes 60% of restaurant space is for dining purposes, and an average of 20ft²/patron in the dining area

b - assumes 850ft²/dwelling unit

c - assumes parking demand: office at 1 space/200ft², restaurant at 1 space/3seats, and residential at 1 space/unit

d - assumes 20ft x 8.5ft parking spaces, and 35% of the parking area is set aside for travel lanes and landscaping

e - assumes some loss of usable space to partitions, utilities, and other functional elements

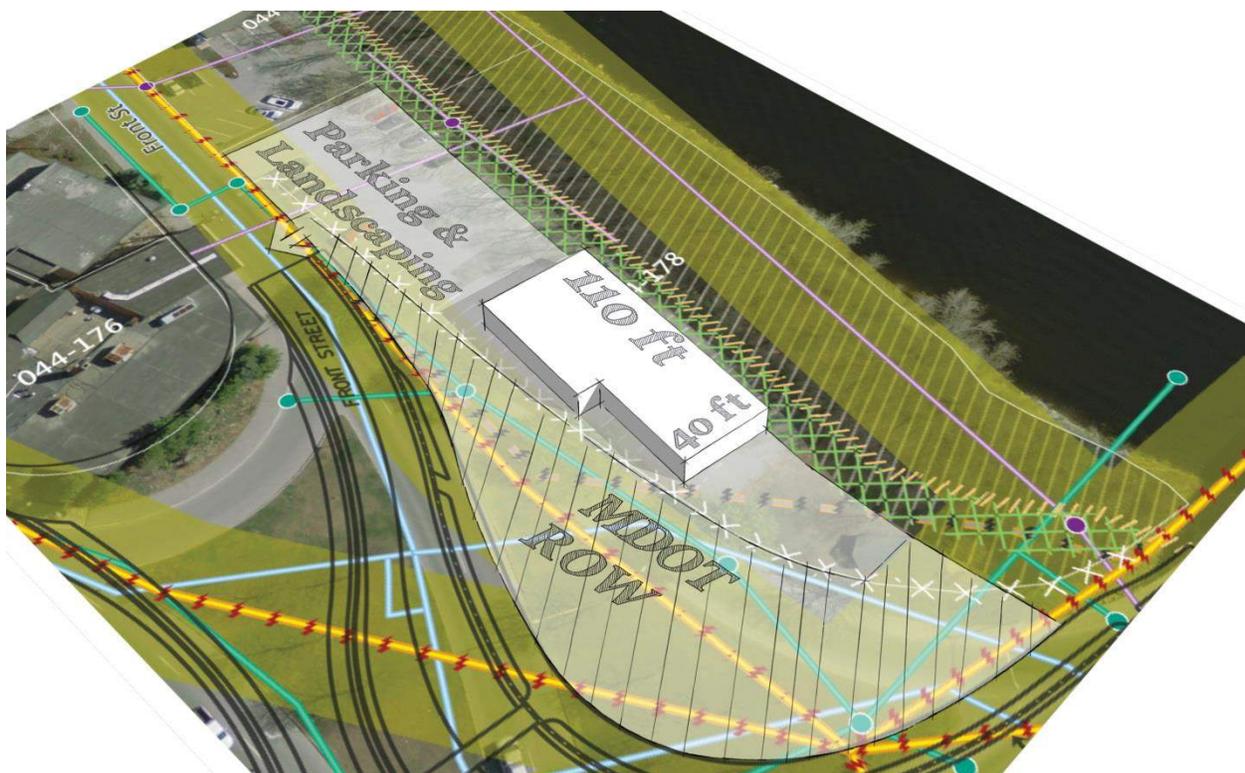


Figure 10 - Possible 1-story commercial development on the Front Street lot, no ROW use

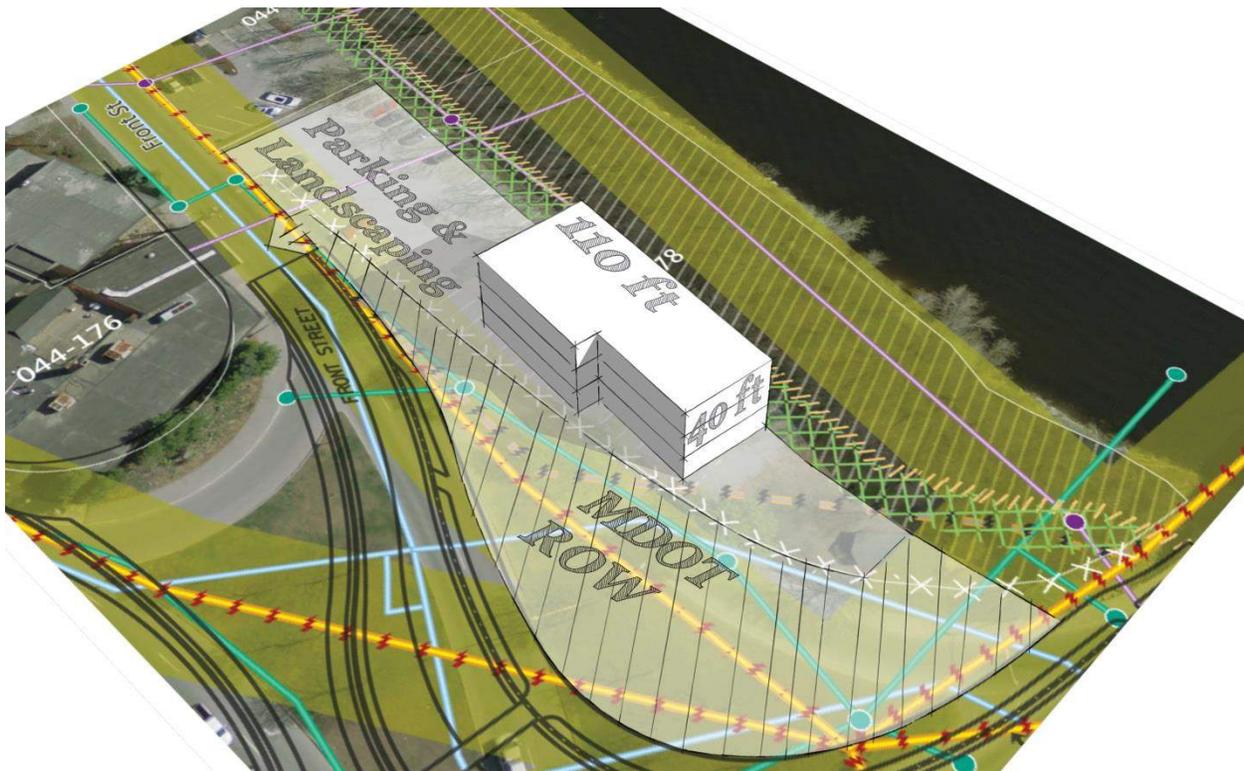


Figure 11 - Possible multi-story, mixed-use development on the Front Street lot, no ROW use

Front Street Lot Development – With ROW Transfer and Unrestricted Use

If MeDOT transfers use of excess ROW land to the City without restrictions, a larger area is made available for parking (no building can be built in the majority of the ROW land because of underlying infrastructure). This permits greater development of the site. Figure 12 and Figure 13 illustrate possible development on the parcel and Table 7 summarizes the parking requirements in both cases.

Table 7 - Parking requirements for development on the Front Street parcel, with ROW transfer and unrestricted use

Site	Scenario	Office (ft ²)	Restaurant (ft ²) ^a	Residential (ft ²)	Dwelling Units ^b	Parking for Development ^{c, d}	Public Parking Available
Front Street	1-story	5,000 ^e	5,000 ^e	0	0	75	29-38 ^f
	Mixed-use	5,000 ^e	5,000 ^e	20,000 ^e	24	99	5-14 ^f
Total parking ^d : roundabout - 104 spaces ; signalized version #1 - 113 spaces ; signalized version #2 - 112 spaces							
<i>a - assumes 60% of restaurant space is for dining purposes, and an average of 20ft²/patron in the dining area</i>							
<i>b - assumes 850ft²/dwelling unit</i>							
<i>c - assumes parking demand: office at 1 space/200ft², restaurant at 1 space/3seats, and residential at 1 space/unit</i>							
<i>d - assumes 20ft x 8.5ft parking spaces, and 35% of the parking area is set aside for travel lanes and landscaping</i>							
<i>e - assumes some loss of usable space to partitions, utilities, and other functional elements</i>							
<i>f - Public parking range is based on the intersection design scenarios</i>							

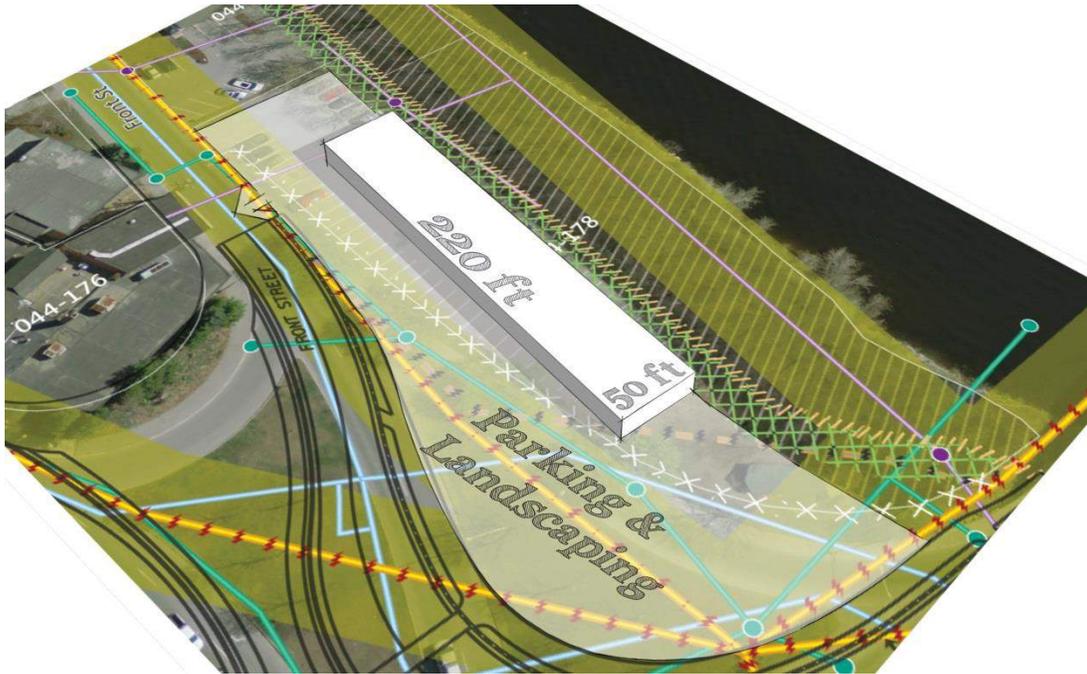


Figure 12 - Possible 1-story commercial development on the Front Street lot, with ROW use

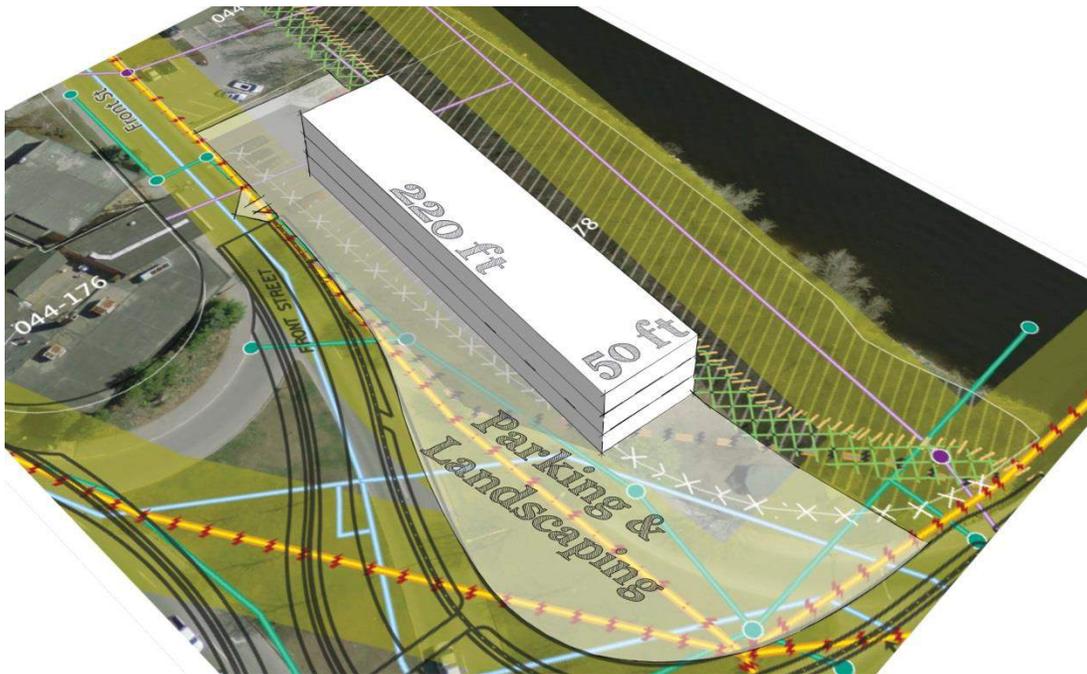


Figure 13 - Possible multi-story, mixed-use development on the Front Street lot, with ROW use

Spring-Main Corner Development – With ROW Transfer and Unrestricted Use

Development at the corner of Spring and Main street is contingent upon MeDOT transferring unrestricted use of excess ROW lands to the City. In the roundabout and first signalized intersection alternatives, the excess ROW land is not large enough to accommodate a building and requisite parking without the involvement of an abutting property owner. It is unclear whether the current property owners of lots 044-179 and 044-180 have the interest or capacity to purchase the land and build another structure on the site. Assumptions about the investment desires of these property owners are not considered, and therefore no development is assumed in these two intersection improvement alternatives.

Development at the Spring and Main Street corner may be possible in the second signalized intersection alternative, where enough excess ROW land is made available to support an independent development (see Figure 7). Commercial offices or services are potentially feasible at this corner.

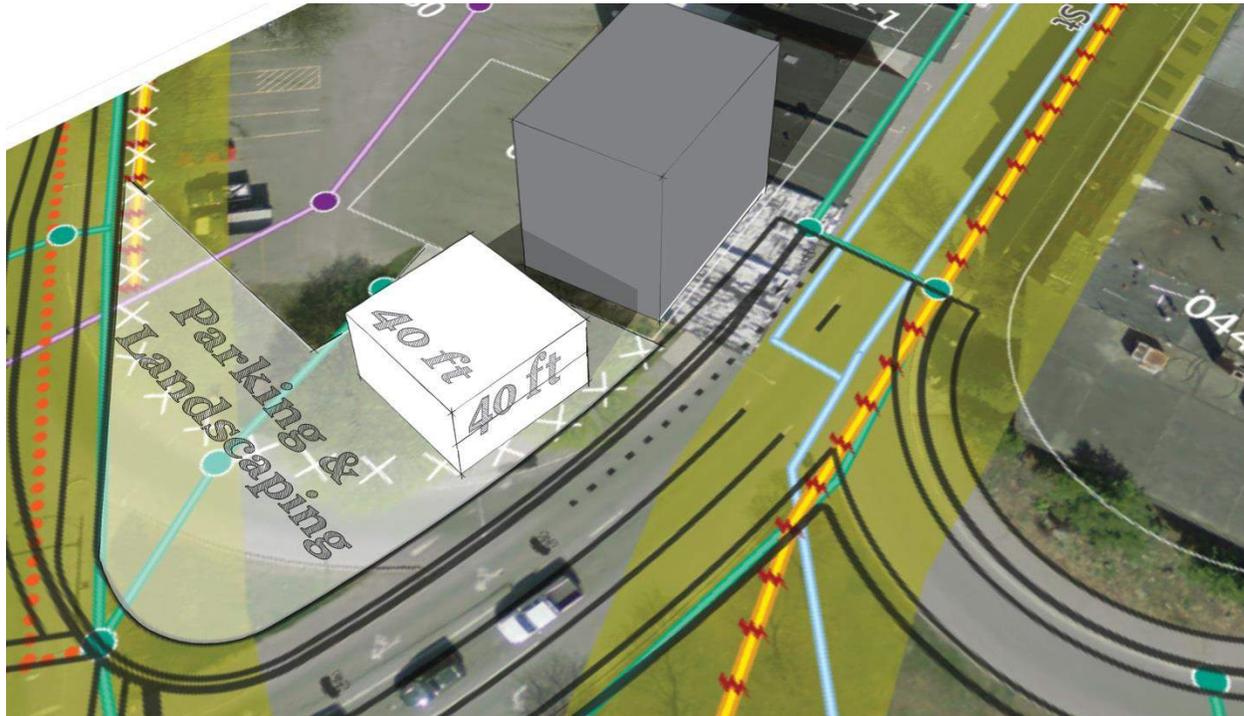


Figure 14 - Possible multi-story, mixed-use development on the Spring and Main corner, with ROW transfer

Site	Scenario	Retail/Office Space (ft ²) ^a	Residential (ft ²)	Dwelling Units	Parking for Development ^{b, c}	Public Parking Available ^c
Spring & Main	Commercial	2,700	0	0	32	15

Total parking^d: signalized version #2 - 32 spaces
a - assumes some loss of usable space to partitions, utilities, and other functional elements
b - assumes parking demand: office at 1 space/200ft²
d - assumes 20ft x 8.5ft parking spaces, and 35% of the parking area is set aside for travel lanes and landscaping

Development Scenarios for Intersection Design Option IV

In intersection design Option IV, virtually no ROW is available to be transferred for use as developable land for the Front Street parcel because the roadway is pushed outward from the intersection’s central green island. Furthermore, approximately 2,700ft² of the Front Street property is consumed by ROW in the new intersection design leaving approximately 11,500ft² for development of a building and providing necessary parking for use by the building occupants.

Private Development on Front Street

With respect to Front Street lot, the fourth intersection alternative is similar to the development scenarios described for the roundabout and signalized intersections in which the MeDOT ROW is not utilized, except with slightly less developable land available because the new ROW would edge into the existing lot area. All structures and parking will need to be built within the 11,500ft² of “buildable area” identified on Figure 8 (because parking must be provided on-site, and lot access is located on the northern end of the parcel, the development is not likely to require removal or modifications to the 8” sewer main at the north end of the lot).

Table 10 summarizes the parking requirements generated by potential uses in a single-story and multi-story development scenario on the Front Street parcel. As discussed above, the total parking area is based on total development area less the building footprint and land used for travel lanes and landscaping. With a building footprint of 3,000ft², approximately 30 parking spaces can be built on the remaining land. Parking demand is calculated assuming the site is developed with 1,000ft² of retail or office uses and a 1,500ft² attractive restaurant. This one-story development scenario requires 20 parking spaces to accommodate all uses on site, leaving 10 spaces available for other downtown businesses or residents. A multi-story alternative development scenario includes an additional 5,500ft² of middle- to upper-income housing units on the second and third floor of a mixed-use building. The multi-story development scenario generates a need for 26 parking spaces, leaving four spaces available for common use by downtown businesses or residents.

Table 8 - Parking requirements for development on Front Street in intersection design option IV

Site	Scenario	Office (ft ²)	Restaurant (ft ²) ^a	Residential (ft ²)	Dwelling Units ^b	Parking for Development ^{c, d}	Public Parking Available ^d
Front Street	1-story	1,000 ^e	1,500 ^e	0	0	20	10
	Mixed-use	1,000 ^e	1,500 ^e	5,500 ^e	6	26	4
<i>Total parking^d: 30 spaces</i>							
<i>a - assumes 60% of restaurant space is for dining purposes, and an average of 20ft²/patron in the dining area</i>							
<i>b - assumes 850ft²/dwelling unit</i>							
<i>c - assumes parking demand: office at 1 space/200ft², restaurant at 1 space/3seats, and residential at 1 space/unit</i>							
<i>d - assumes 20ft x 8.5ft parking spaces, and 35% of the parking area is set aside for travel lanes and landscaping</i>							
<i>e - assumes some loss of usable space to partitions, utilities, and other functional elements</i>							

Spring-Main Corner Development

As in the roundabout and version 1 of the signalized intersection design, it is unlikely that development could occur on the corner of Main and Spring Streets in intersection design Option IV. Limited land, multiple property ownership on nearby lots, limited parking, and a challenging lot configuration would result even if the MeDOT ROW was transferred to the City unencumbered. These factors make it difficult to develop buildings at this corner.

Front-Main Corner Development – With ROW Transfer and Unrestricted Use

It may be possible to construct a new building abutting the Levine’s property between Main and Front Street (or to build an extension of the Levine’s property). Two possible development scenarios (Table 9) are considered for this parcel: one with sufficient on-site parking for the development and one in which the lot is entirely developed and requisite parking is provided off-site (for example, on a public lot on the Front Street parcel). As with the corner of Spring and Main Street in the second signalized intersection design, commercial office or retail use is most reasonable at this location. With adequate on-site parking it may be possible to construct a building that offers approximately 2,000ft² of commercial space on two floors. This would allow for 14 parking spaces to be built on-site—enough to provide 10 spaces for commercial businesses at this location plus four extra parking spaces for use by other downtown businesses and residents.

Higher density development at this corner could provide up to approximately 10,000ft² of commercial space in downtown Waterville if a two-story building is constructed with a footprint that covers the entire lot. This would create a demand for 50 parking spaces off-site. Considering the parking supply challenges that currently exist in downtown Waterville, a development of this scale relying on off-site parking may not be justifiable. However, commercial development at this corner does achieve a number of community and economic development goals (i.e. to extend Main Street activity closer to the mill complex, to increase municipal revenue, to provide attractive real estate for commercial uses, to increase activity in downtown generally, to create an attractive gateway at the southern end of downtown Waterville, etc.). In light of these broader goals, developing approximately 7,500ft² of usable commercial space on two floors with no on-site parking may be justified. This would generate a demand for 38 parking spaces, which may be satisfied if the City were to provide parking nearby through a more coordinated parking strategy in downtown Waterville or by preserving the Front Street lot as public parking.

Table 9 – Parking requirements for development between Main and Front Streets in intersection design option IV

Site	Scenario	Office (ft ²)	Restaurant (ft ²)	Residential (ft ²)	Dwelling Units	Parking for Development ^{a, b}	Public Parking Available
Front & Main	w/parking	2,000 ^e	0	0	0	10	4
	no Parking	7,500 ^e	0	0	0	off-site	n/a

a - assumes parking demand: office at 1 space/200ft²
b - assumes 20ft x 8.5ft parking spaces, and 35% of the parking area is set aside for travel lanes and landscaping
e - assumes some loss of usable space to partitions, utilities, and other functional elements

FISCAL IMPACTS OF DEVELOPMENT SCENARIOS

This chapter presents the fiscal impact of possible development as described in the development scenarios in the previous chapters of this report. Revenue accruing to the City is compared against using the lots for parking to support redevelopment of downtown or the mill complex. The calculations assume all development is taxable.

Middle- and higher-end, mixed-use and commercial real estate products were identified as having potential in downtown Waterville. Average real estate prices were calculated per square foot for Grade-A office space, a higher-end restaurant, and apartment units marketed to middle- and high-income households, ranging in size from 800ft² to 1,200ft².

There are few precedents in the downtown market for these uses. The Hathaway Center is a unique example, but considering the scale and complexity of the project, and that it involves historic redevelopment of an industrial property, Hathaway property values are not likely to be representative of the assessed value of new construction of the type envisioned. The best precedents are the Morning Sentinel building and the Elm Street apartment complex. The Sentinel building was purchased in June, 2013 for \$625,000; permits have been filed for an additional \$375,000 in upgrades to the property—\$150,000 has already been invested. At 13,576ft² the market value of the property will be \$74/ft² with the upgrades. A new commercial office or mixed-use structure, with modern amenities would likely generate a higher market value—in the range of \$100/ft². Waterville’s current assessment ratio—the difference between assessed values and market values—is 86.9%. Potential revenue accruing to the City from commercial development with a market value of \$100/ft² will need to be discounted as a result.

The Elm Street residential development includes 40 units in a 33,660ft² building. The building is currently assessed at \$1,472,000 or approximately \$44/ft². A market value of \$60/ft² is therefore reasonable for new residential construction targeted to higher-income households, located near to downtown amenities. Again, the fiscal impact of such a development will need to be discounted to account for the assessment ratio.

There are two useful precedents for the value of property used for parking purposes. The Front Street municipal lot is currently valued at \$95,600 (Table 1), with \$10,100 assigned to parking “improvements”. The paved area totals roughly 22,500ft², giving a value for the parking area of \$0.45/ft². The Hathaway parking lot improvements (43,560ft²) are valued at \$19,600, or \$0.45/ft². As these are assessed values, no discounting is needed to calculate fiscal impacts for parking.

Alongside the estimated assessed value of improvements—commercial (\$10/ft²), apartments (\$60/ft²), and parking area (\$0.45/ft²)—is the value of land in downtown Waterville, which is approximately \$2.78/ft² in the C-A zone.³

³ Calculated using parcel information for taxable properties in the C-A district, excluding parcels in outlying areas also zoned as C-A.



Table 10 - Summary of fiscal impacts for Waterville of possible development in the study area

Scenario	Total Area (ft ²)	Office (ft ²)	Resto (ft ²)	Apts (ft ²)	Office Value ^a (\$)	Resto Value ^a (\$)	Apts Value ^a (\$)	Paved Area ^{b,c} (ft ² , \$)	Land Value ^b (\$)	Total Assessed Value (\$)	Annual Revenue (\$)	Revenue Over 10 Years (\$) ^d
Roundabout												
Front St. 1story - No ROW	38,300	2,500	2,500	-	\$217,250	\$217,250	\$-	21,645 (\$9,740)	\$106,474	\$550,714	\$15,090	\$150,896
Front St. multi-story - No ROW	38,300	2,500	2,500	10,000	\$217,250	\$217,250	\$521,400	21,645 (\$9,740)	\$106,474	\$1,072,114	\$29,376	\$293,759
Front St. 1story - Use ROW	38,300	5,500	5,500	-	\$477,950	\$477,950	\$-	17,745 (\$7,985)	\$106,474	\$1,070,359	\$29,328	\$293,278
Front St. multi-story - Use ROW	38,300	5,500	5,500	22,000	\$477,950	\$477,950	\$1,147,080	17,745 (\$7,985)	\$106,474	\$2,217,439	\$60,758	\$607,578
Signalized Alternative 1												
Front St. 1story - No ROW	40,800	2,500	2,500	-	\$217,250	\$217,250	\$-	23,270 (\$10,472)	\$113,424	\$558,396	\$15,300	\$153,000
Front St. multi-story - No ROW	40,800	2,500	2,500	10,000	\$217,250	\$217,250	\$521,400	23,270 (\$10,472)	\$113,424	\$1,079,796	\$29,586	\$295,864
Front St. 1story - Use ROW	40,800	5,500	5,500	-	\$477,950	\$477,950	\$-	19,370 (\$8,717)	\$113,424	\$1,078,041	\$29,538	\$295,383
Front St. multi-story - Use ROW	40,800	5,500	5,500	22,000	\$477,950	\$477,950	\$1,147,080	19,370 (\$8,717)	\$113,424	\$2,225,121	\$60,968	\$609,683
Signalized Alternative 2												
Front St. 1story - No ROW	40,400	2,500	2,500	-	\$217,250	\$217,250	\$-	23,010 (\$10,355)	\$112,312	\$557,167	\$15,266	\$152,664
Front St. multi-story - No ROW	40,400	2,500	2,500	10,000	\$217,250	\$217,250	\$521,400	23,010 (\$10,355)	\$112,312	\$1,078,567	\$29,553	\$295,527
Front St. 1story - Use ROW	40,400	5,500	5,500	-	\$477,950	\$477,950	\$-	19,110 (\$8,600)	\$112,312	\$1,076,812	\$29,505	\$295,046
Front St. multi-story - Use ROW	40,400	5,500	5,500	22,000	\$477,950	\$477,950	\$1,147,080	19,110 (\$8,600)	\$112,312	\$2,223,892	\$60,935	\$609,346
Spring & Main - Use ROW	10,100	3,200	-	-	\$278,080	\$-	\$-	5,525 (\$2,486)	\$28,078	\$308,644	\$8,457	\$84,569
Option IV												
Front St. 1story	17,900	1,000	1,500	-	\$86,900	\$130,350	\$-	10,010	\$4,505	\$221,755	\$7,440	\$74,396
Front St. multi-story	17,900	1,000	1,500	5,500	\$86,900	\$130,350	\$286,770	10,010	\$4,505	\$508,525	\$15,297	\$152,971
Front & Main on-site parking	5,200	2,000	-	-	\$173,800	\$-	\$-	2,080	\$936	\$174,736	\$5,184	\$51,839
Front & Main off-site parking	5,200	7,500	-	-	\$651,750	\$-	\$-	-	\$-	\$651,750	\$18,254	\$182,540

Average market value – offices \$ 100/ft²

Average market value – restaurant \$ 100/ft²

Average market value – apartments \$ 60/ft²

Average assessed land value, downtown C-A \$ 2.78/ft²

Assessed value of parking lot improvements \$ 0.45 /ft²

a - discounted to reflect assessment ratio of 86.9%

b - not discounted, values reflect current assessed valuation

c - Paved area: total area less structural footprint and 35% of undeveloped area for parking/landscaping

d - Value over 10 years is not discounted for inflation

"Resto": Restaurant, "Apts": Apartments

Alternative Parking Use

For both the Front Street parking lot and the corner of Spring and Main Streets, with the transfer of MeDOT excess ROW for unrestricted municipal use, a viable alternative to development is public or private parking to serve the downtown area or Hathaway redevelopment effort. The potential income generated from a private parking lot must be compared against potential revenues from development of the parcels. As a public parking lot, these parcels would not generate any revenue to the City and therefore this does not present a revenue opportunity.

The City currently leases the municipal parking lot at the corner of Spring and Water Streets (044-307) to the Hathaway Center for \$1/year with no annual revenue otherwise. The Hathaway Center currently holds two off-site parking lots across Water Street from the mill complex. Should the Hathaway development continue redeveloping over the coming years, and require additional parking beyond what is already available to the complex, it is reasonable to expect the City could charge annual lease rates equal to the property tax levy for a parking lot. This would be the value of the land plus improvements related to paving (at \$0.45/ft²).

Table 11 summarizes the value of paved parking lots located on developable land on the Front Street parcel, at the corner of Spring and Main Streets, and at the corner of Front and Main Streets. The calculations assume 40% of the usable area is “lost” for landscaping and improving gateway elements to downtown. All scenarios include the MeDOT ROW in the parking area. The range of potential revenue earned from using all developable areas for parking in the four intersection designs is between \$7,000 and \$13,600.

Table 11 - Value of land if used for parking

Scenario	Parking Area (ft ²)*	Value (\$/ft ²)	Annual Municipal Revenue (\$)
Front Street-Roundabout	22,980	\$0.45/ft ²	\$8,986
Main & Spring-Roundabout	3,300	\$0.45/ft ²	\$1,290
Roundabout Design Alternative:			\$11,873
Front Street-Signal V1	24,480	\$0.45/ft ²	\$9,573
Main & Spring-Signal V1	3,420	\$0.45/ft ²	\$1,337
Signalized Design Alternative 1:			\$12,582
Front Street-Signal V2	24,240	\$0.45/ft ²	\$9,479
Main & Spring-Signal V2	6,060	\$0.45/ft ²	\$2,370
Signalized Design Alternative 2:			\$13,635
Front Street-Option IV	10,740	\$0.45/ft ²	\$4,200
Main & Spring-Option IV	3,960	\$0.45/ft ²	\$1,549
Front & Main-Option IV	3,120	\$0.45/ft ²	\$1,220
Signalized Design Alternative 2:			\$6,969

* 40% of available land is not factored for parking to account for landscaping and gateway improvements

Fiscal Impacts of Potential Development at Front Street

Private Development with On-Site Parking

The fiscal impacts analysis presented in Table 10 shows that the City has the potential to develop the Front Street parcel in all intersection design scenarios, with a possible annual revenue ranging from roughly \$7,400 to slightly below \$61,000 depending on the intersection design, the intensity of development, and whether excess MeDOT ROW land is transferred to the City for unrestricted.

Where no MeDOT ROW is used, limited development—a one-story commercial building—in intersection design Option IV (which involves essentially no use of current ROW land as well as less land on the lot as currently configured due to the intersection redesign) could generate roughly \$7,400 each year for the City regardless of the intersection design alternative. This could increase in a more intense development scenario (while still not using the MeDOT ROW) to roughly \$29,400 in all other intersection design alternatives.

With use of the MeDOT ROW, the revenue range increases substantially. Low-intensity development with use of the ROW land could yield between \$29,300 and \$29,500 for the City each year, similar to the high-intensity development scenario with no ROW utilization in all but design Option IV (in which case the MeDOT ROW does not add significant area to the lot). High-intensity development with access to the ROW could generate approximately \$60,900 for the City in any intersection design scenario except for Option IV. It would be considerably more beneficial to the City if MeDOT transfers use of any excess ROW that remains after the intersection is redesigned. In the scenarios outlined, the highest revenue projected without use of ROW land occurs in Option IV at \$7,440 each year. The highest revenue projected with use of the ROW occurs in signalized intersection alternative 1, at \$60,968 annually.

In all development scenarios, excess parking is available to support redevelopment activity in the downtown area and Hathaway complex, but the number of parking spaces would be lower than if the Front Street site was used solely for parking.

Front Street Used as a Parking Lot to Support Other Development

If the Front Street lot was used for public parking, no revenue would be generated for the City except those that accrue from the indirect impact of development in downtown Waterville that may be enhanced (or made possible) by the availability of public parking nearby. In intersection design Option IV a public parking area may be necessary in the absence of a coordinated downtown parking strategy to support higher-density development at the corner or Front and Main Streets. This scenario is described in more detail below.

If the Front Street parcel is leased to the Hathaway Creative Center, annual revenues range from roughly \$4,200 annually in design Option IV to nearly \$9,600 in the first signalized intersection design alternative.

Fiscal Impacts of Potential Development at Spring & Main

Private Development with On-Site Parking

Given the site's strategic location—a gateway to downtown—and the relatively small footprint that a building could occupy at this location, one medium-intensity development scenario was considered that involves a two-story structure for commercial office or retail use. The revenue accruing to the City from this potential development could be nearly \$8,500 annually. Development at this corner is feasible only if the MeDOT transfers unrestricted use of excess ROW land to the City. This site has the additional challenge of needing to secure an access easement from the property owner of lot 044-180. Without the easement, development is unlikely unless the lot is purchased by an abutting property owner. While development is feasible, it will require coordination and cooperation with neighboring property owners.

Corner of Spring and Main Street Used as a Parking Lot to Support Downtown Development

With a public parking lot, no revenue is generated for the City except those that accrue from the indirect impact of public parking on increased development in downtown Waterville.

Given the separation between the Spring and Main Street corner and the Hathaway mills, it is not likely that the redevelopment of the mill complex would be able to make use of the Spring and Main Street corner for parking. Should an alternative lessee be identified in the downtown area, potential revenue accruing to the City could range between \$1,300 and \$2,400.

Fiscal Impacts of Potential Development at Front & Main (Option IV Only)

Private Development with On-Site Parking

On the land that is available in intersection design Option IV at the corner of Main and Front Streets two development scenarios have been prepared. One involves meeting parking needs on-site, while the other involves higher-density development with parking provided off-site. Revenue accruing to the City from the on-site parking scenario could be nearly \$5,200 annually. In the higher density scenario with off-site parking, annual revenue could total over \$18,200. Any development at the corner of Front and Main Streets is feasible only if the MeDOT transfers unrestricted use of excess ROW land to the City.

The higher-density scenario requires that 38 parking spaces are made available through a coordinated downtown parking strategy or a nearby (public or leased) parking lot. If the Front Street parcel is used to supply the requisite parking, the City would forego potential revenue from development of that parcel (between \$7,400 and \$15,200 according to the development scenarios described for Front Street in design Option IV). The City could earn \$4,200 per year to offset the forgone revenue by leasing use of Front Street for parking.

Corner of Front and Main Street Used as a Parking Lot to Support Downtown Development

It is possible to use land made available at the corner of Front and Main Streets for additional parking for downtown businesses and residents, however this scenario is not advisable given the prominence of the site as a gateway into downtown and because of the effect that this would have on creating a separation between downtown and the mill complex. Nevertheless, if the area is used for parking, it could generate approximately \$1,220 annually for the City in lease payments.

Additional Municipal Costs Resulting from Potential Development

The potential development outlined above is not likely to generate additional costs to the City for maintenance, services, or management. There may be a small reduction in public works costs if the Front Street parcel is developed as the City will no longer be responsible for maintenance and care of the parking area.

Development Potential Conclusions

Based on market research and site constraints, there is land available to support development in three locations north of the intersection—along Front Street, at the corner of Spring and Main Streets, and at the corner of Front and Main Streets—depending on the intersection design. There appears to be demand for higher-end commercial and residential space in Waterville, catering to middle and higher-income households. The degree of development that is likely to occur after intersection improvements are completed will be greatly impacted by whether or not MeDOT transfers unrestricted use of any excess ROW to the City.

Planning Decisions' market research uncovered a concern regarding parking availability in the downtown area and whether redevelopment along Main Street and at the Hathaway mill complex would be impaired if the municipal parking lot on Front Street was developed for other uses. Given the land that is available (with and without use of the MeDOT ROW area) the Front Street parcel may support new development *and* provide parking for nearby businesses. Historically, the Front Street parking lot has seen limited use (owing to the location of the lot, the fact that businesses are oriented to Main Street, and because of high-speed traffic moving north on Front Street from Bridge Street).

Should the market present an opportunity to develop a new building on the Front Street parcel, restricting such a development in order to preserve parking capacity does not appear justified except perhaps if intersection design Option IV is pursued and a coordinated downtown parking strategy is not employed to use existing parking more efficiently. For example, if the Levine's building (whose redevelopment appears most dependent on parking on Front Street) was redeveloped into a mixed-use building with 12,000ft² of ground floor commercial space and 10,000ft² of residential space on upper floors, it would generate a parking demand of approximately 70 spaces. Of this total, 60 spaces are associated with day-time use by staff and customers and 11 spaces (assuming an average apartment size of 850ft²) are required for

residential (evening) uses. Through a combination of limited development at the Front Street parcel, parking space-sharing between daytime and evening uses, and some use of the Head of Falls parking lot for daytime staff parking, it is feasible to have development along Front Street, at the corner of Spring and Main Streets, and at the corner of Front and Main Street without significantly impairing redevelopment of the Levine’s property and others downtown. It will be prudent for the City to establish a minimum public parking supply target for new development on the Front Street parcel to ensure some level of parking support for downtown revitalization. Particularly under Option IV it is important to consider development of the Front Street parcel and the corner of Main and Front Streets as a package given the off-site parking issue.

Waterville is at a crossroads—building momentum toward downtown investment and attracting new uses (and buildings) can help bolster other downtown development activity. With increased development, the Head of Falls site may become a more viable source of parking to alleviate long term pressure that may mount as a result of growing demand for parking downtown.

APPENDIX A

The following is an annotated list of interviews conducted by Planning Decisions staff over the course of this study.

Municipal and Utilities Staff

1) Ann Beverage – City Planner, City of Waterville

Beverage administers the City's land use regulations and routinely meets with prospective property developers in Waterville. Discussed land use regulations, existing and prospective site plan applications, and the conditions of the Waterville development market.

2) Greg Brown – City Engineer, City of Waterville

Discussed infrastructure and site constraint conditions near the intersection as well as infrastructure and other factors requisite for increased development in downtown Waterville (notably, parking demand).

3) Jefferson Longfellow – District Engineer Kennebec Water District

Conducted a site walk and reviewed water infrastructure near the intersection.

4) Jon J. Jansen – Superintendent, Waterville Sewerage District

Conducted a site walk and reviewed sewer infrastructure near the intersection.

5) Gary Dixon – Staff member, Waterville Sewerage District

Conducted a site walk and reviewed sewer infrastructure near the intersection.

6) Roland Lapointe – District Engineer Waterville Sewerage District

Conducted a site walk and reviewed sewer infrastructure near the intersection.

7) Lynn Woodard – Staff member, Kennebec Sanitary Treatment

Conducted a site walk and reviewed sewer infrastructure near the intersection.

8) Raymond A. Boucher – Manager, Central Maine Power

Reviewed electrical infrastructure near the intersection.

9) Diane Poulin – Project Coordinator, Summit Natural Gas of Maine

Reviewed natural gas infrastructure near the intersection.

Downtown property owners and developers

10) Julie Phelps – Property owner, former Morning Sentinel building

Phelps is a doctor with a practice in Waterville. She recently purchased the Morning Sentinel building on Front Street to relocate her offices in closer to downtown. Discussed reasons for her relocation, alternative properties for her practice, and the state of Waterville office space (supply and quality).

11) Paul Boghossian – Co-owner, Hathaway Creative Center

The Hathaway Creative Center is a unique commercial development project partly operating and partly in development. Discussed commercial and residential real estate market conditions in downtown Waterville, including the need for office space, marketability of the downtown area, developer interest, and property sale trends (length on the market, scale of demand, commercial property inventory and conditions thereof). Specifically discussed expansion plans for the Hathaway project and future parking demand at full build-out.

12) Tom Niemann – Co-owner, Hathaway Creative Center

Discussed commercial and residential real estate market conditions in downtown Waterville, including the need for office space, marketability of the downtown area, developer interest, and property sale trends (length on the market, scale of demand, commercial property inventory and conditions thereof).

13) Charlie Giguere – Owner, Silver Street Tavern

Giguere owns and operates the Silver Street Tavern, a successful business in the downtown area. Giguere has also developed a number of residential units across multiple buildings in the downtown area. He is also well connected to downtown property owners and is familiar with real estate and business trends in the downtown area. Discussed the residential real estate market in downtown Waterville, condition of the existing building stock, challenges related to new development and redevelopment of existing sites in the downtown area.

Important actors in downtown development

14) Buffy Higgins – Director, MaineGeneral Fund & MaineGeneral Health

MaineGeneral Health is a large institutional/commercial property owner in Waterville and a major potential actor in downtown office development. Discussed expansion plans by the hospital, the need for office space, visions for the downtown area, and commercial property inventory in Waterville compared with neighboring areas.

15) Kelly E. Doran – Interim Director, Colby College Physical Plant Department

Doran oversees facilities and space planning at Colby College. Discussed the Colleges plans for expansion into the downtown area, condition of existing buildings, and need for increased space given current enrollment trends and projects for the future.

16) Brian J. Clark – Director of Planning & Assistant to the President, Colby College

Clark is overseeing—with President David Greene, the College’s downtown expansion plans. Discusses the nature and timeline of those plans, studies conducted by Colby on downtown properties, and the commercial development market in Waterville.

17) Michelle Crocker – Branch Manager, Key Bank, Waterville

Discussed real estate market conditions and commercial real estate development opportunities in downtown Waterville, including the need for office space downtown.

18) Craig Day – Branch Manager, Camden National Bank

Discussed real estate market conditions and commercial real estate development opportunities in downtown Waterville, including the need for office space downtown.

Commercial and residential real estate brokers and agents operating in downtown Waterville

19) Don Plourde – Co-Owner, Coldwell Banker Plourde Real Estate

Discussed commercial and residential real estate market conditions in downtown Waterville, including the need for office space, marketability of the downtown area, developer interest, and property sale trends (length on the market, scale of demand, commercial property inventory and conditions thereof).

20) Gregg S. Perkins – Owner, Affiliated Realty

Discussed commercial and residential real estate market conditions in downtown Waterville, including the need for office space, marketability of the downtown area, developer interest, and property sale trends (length on the market, scale of demand, commercial property inventory and conditions thereof).

21) Christopher Paszyc – Broker & Partner, CB Richard Ellis/The Boulos Company

Discussed commercial and residential real estate market conditions in downtown Waterville, including the need for office space, marketability of the downtown area, developer interest, and property sale trends (length on the market, scale of demand, commercial property inventory and conditions thereof).

22) Tony Armstrong – Property Manager, Baldacci Real Estate

Armstrong is the commercial leasing agent for the Hathaway Creative Center. Discussed challenges and successes the Hathaway Creative Center has had with attracting commercial tenants, and the condition of the downtown real estate market.

23) Kevin Jenkins – Commercial Property Agent, Rizzo Mattson Realtors

Jenkins oversaw the sale of the former Levine’s building on Main Street two years ago. Discussed the property sale and intentions of the current property owner, including challenges faced by the site and overall real estate market conditions in downtown Waterville.

Downtown development groups and associations

24) Nate Rudy – Executive Director, Waterville Creates!

Waterville Creates! is an organization involved in fostering a vibrant downtown driven by arts and creative activities. Discussed plans for construction and development downtown for Waterville Creates! and opportunities for/barriers to development in the downtown area.

25) Jennifer Olsen – Executive Director, Waterville Main Street

Waterville Main Street is the primary organization leading development and improvement of the downtown area. Discussed real estate market trends, properties downtown, interest in development, business viability, retail and service consumer base, and residential demand in the downtown area.

Downtown Development Study
City of Waterville
Gorrill-Palmer Consulting Engineers, Inc.

June 29, 2015

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