



City of Keene, New Hampshire

CONSERVATION COMMISSION

Monday, July 19, 2021

4:30 PM

City Council Chambers

Commission Members

Alexander Von Plinsky, IV, Chair
Eloise Clark, Vice Chair
Kenneth Bergman
Art Walker
Andrew Madison

Councilor Robert Williams
Brian Reilly, Alternate
Thomas P. Haynes, Alternate
Steven Bill, Alternate
John Therriault, Alternate

1. Call to Order
2. Approval of Meeting Minutes – June 21, 2020
3. Applications: Standard Wetlands Permit Application: Patricia T. Russell Park Improvements and Stream Restoration by City of Keene. SLR, Milone & Macbroom, and Basswood Environmental
4. Informational
 - a. Subcommittee reports
 - Outreach Subcommittee
 - Arm Fund Subcommittee-Non Public Session
 - Goose Pond Forest Stewardship Subcommittee
 - b. Invasive Species
5. Discussion Items
 - a. Conservation Commission speaking events
 - b. Multiyear Pollinator Census results for Cheshire County
6. New or Other Business
7. Non-public
8. Adjournment – Next meeting date **Monday, August 16, 2021**

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1 **City of Keene**
2 **New Hampshire**

3
4
5 **CONSERVATION COMMISSION**
6 **MEETING MINUTES**
7

Monday, June 21, 2021

4:30 PM

**Hybrid Meeting
Council Chambers/via Zoom**

Members Present:

Alexander Von Plinsky, IV, Chair
Eloise Clark, Vice Chair (via Zoom)
Councilor Robert Williams
Councilor Andrew Madison
Art Walker
Ken Bergman (via Zoom)
Thomas Haynes, Alternate (Voting)
Brian Reilly, Alternate (Voting)
John Therriault, Alternate (Voting)

Staff Present:

Rhett Lamb, Community Development
Director/Assistant City Manager

Members Not Present:

Steven Bill, Alternate

8
9 **1) Call to Order**

10
11 Chair Von Plinsky called the meeting to order at 4:30 PM. Vice Chair Clark and Mr. Bergman
12 both participated remotely for personal reasons.

13
14 **2) Approval of Meeting Minutes – May 17, 2021**

15
16 Revisions: Line 62, change, “another Goose Pond through the Seasons walk,” to, “a Tap to
17 Toilet event.” Change the meeting adjournment to 5:34 PM.

18
19 Mr. Walker moved to approve the minutes of May 17, 2021, as amended, which Mr. Haynes
20 seconded, and the motion carried with a unanimous roll call vote in favor.

21
22 **3) Informational**

23 **A) Subcommittee Reports**

24 **i) Outreach Subcommittee**

25
26 Mr. Haynes reported progress on the Goose Pond through the Seasons walks, with Steve Bill
27 slated for a fall walk. Additionally, Mr. Haynes spoke to Councilor Steve Hooper about a

28 potential walk in August on Goose Pond through the lens of a camera; further details to be
29 determined. The Tap to Toilet event still pends for this fall. Mr. Haynes cited an email that
30 Commissioners received about an invasive species walks at the Ashuelot River Park on Monday,
31 June 28 at 6:00 PM. Vice Chair Clark reported that she would now send Nature Nuggets to Ms.
32 Marcou and Mr. Bohannon regularly on the 1st and 15th of each month. The Chairman said he
33 shared Nature Nuggets that spread popularly among a group of California friends.

34

35 **ii) *ARM Fund Subcommittee – Non-Public Session***

36

37 The Chairman canceled the non-public session at this time. Rather, he shared some remarks that
38 he asked the Commission to consider for a future non-public session. Briefly, he said he spoke
39 with Mr. Bergman and Mr. Haynes and would like the rest of the Commission to consider ways
40 to spur the Commission's land conservation efforts and work toward a plan to conserve
41 important parcels. He was unsure the best way to go about such a plan and would rely on
42 Commissioners in this effort. More soon.

43

44 Mr. Bergman said he sent the Chairman and Mr. Lamb two links, one on the NH Municipal
45 Association and another on University of NH Extension Service, that the Chairman can share
46 with the Commission if useful.

47

48 **4) Discussion Items**

49

A) NH DOT Roadway Rehabilitation Project No. 43057 Route 9

50

51 Mr. Lamb recalled discussing this letter from NH Department of Transportation (DOT) at the
52 last meeting that seeks input from the Commission on road resurfacing from the western end of
53 Route 9 in Keene to the roundabout at Base Hill Road. The letter indicated minor shoulder work,
54 adjustments to culverts, and possible associated crossings. NH DOT contacts impacted towns as
55 a standard process. This communication was sent to this Commission, the Heritage Commission,
56 the Historic District Commission, and general Staff to seek local awareness on topics and
57 resources. The Conservation Commission could comment via letter before the project design
58 goes to bid in October.

59

60 Mr. Therriault requested that any disturbances to the roadsides or verges be replanted with a
61 native wildflower mix instead of grasses. The Chairman wanted that to be a standard request
62 moving forward and wondered if there was one specific seed mix to reference. Mr. Therriault
63 said he and the Vice Chair discussed this, and several companies sell a New England regional
64 (Pennsylvania to Maine) pollinator mix of more than 20 annuals and perennials. Some seeds
65 would be wasted no matter what, but the seeds most appropriate to this zone would establish. He
66 suggested recommending a New England native wildflower mix.

67

68 Mr. Bergman wondered the capacity of those wildflower mixes to stabilize slopes against erosion
69 as well as grasses might. Mr. Therriault agreed and stated that was something NH DOT would
70 have to evaluate; he anticipated that some flowers would stabilize certain slopes and on the

71 steepest slopes DOT would have to decide whether to use better stabilizers. With that in mind,
72 Mr. Bergman suggested that the recommendation should state to use the wildflowers wherever
73 possible given slope considerations. Mr. Reilly noted that the segment of RT-9 to Sullivan was
74 beginning to grow in following road work the last two years, and he said it appeared to be a mix
75 of grasses and wildflowers on steep slopes.

76

77 Based on Commission consensus, Mr. Lamb was prepared to draft a letter to NH DOT on the
78 Commission's behalf for the Chairman to sign.

79

80 Councilor Williams said that he biked up the hill on RT-9 and he wants more attention paid to
81 making the road edges safer for bikes; although he does not think that RT-9 should be
82 recommended for biking, if someone found themselves there on a bike, he wanted it to be safe.
83 While he was there, he did not see many roadside invasive species but saw many issues where
84 the woods meet the grass, where there are significant vines and particularly honeysuckle, and the
85 Commission should consider the appropriate treatments for those invasives. The Chairman did
86 not think this project would expand far past the roadside so he was unsure if there could be
87 recommendations for those areas.

88

89 **B) Greater Goose Pond Forest Stewardship Committee**

90

91 The Chairman began referring to this as the Goose Pond Stewardship Committee, for short. Staff
92 had drawn-up a motion to establish this Subcommittee.

93

94 Mr. Therriault moved to establish a Greater Goose Pond Forest Stewardship Committee with the
95 charge to advise the Conservation Commission regarding implementation of the 2019 Greater
96 Goose Pond Forest Stewardship Plan including stewardship of natural resources, wildlife habitat,
97 forest ecology, and promotion of recreation and education opportunities, and to appoint the
98 following Conservation Commission members: Thomas Haynes as Chair, Art Walker, and
99 Steven Bill. Councilor Madison seconded the motion.

100

101 The Subcommittee would return with additional recommendations to include other members as
102 they are recruited. Mr. Reilly wondered if the motion language should state that additional
103 members would be added at the Commission's discretion. The Chairman confirmed that the
104 motion language was standard practice and Mr. Reilly was pleased.

105

106 The motion to establish the Greater Goose Pond Forest Stewardship Subcommittee passed with a
107 unanimous roll call vote in favor.

108

109 The Chairman said he was excited to see this move forward. Mr. Lamb said that Mr. Haynes had
110 done his homework, contacted the New England Mountain Biking Association, and received the
111 name of an ideal individual. The Subcommittee hopes to move quickly bringing other
112 membership to the Commission. Any Commissioners with suggestions should contact Mr. Lamb
113 and Mr. Haynes. Mr. Haynes was also working with Mr. Bohannon to find a community trails

114 person who is engaged actively with the pond. The Chairman said it was important to remember
115 that this is a public Subcommittee and if necessary, the net could be cast wider to invite broad
116 participation for a more successful project, even if individuals do not meet the specific outlined
117 roles. Councilor Williams invited members of the public watching the meeting at home.

118

119 The next Subcommittee meeting is scheduled for Thursday July 8 at 8:30 AM at City Hall, when
120 the group will start deciding their meeting schedule, consider other members, and discuss acting
121 on other recommendations outlined in the Stewardship Plan. The Chairman personally thanked
122 Mr. Haynes, Mr. Walker, and Mr. Bill for taking-on this large project that is a substantial part of
123 the Conservation Commission's work in recent years.

124

125 Mr. Bergman wondered if the Commission could receive a sense of what steps in the plan had
126 begun moving forward already or when earliest steps mentioned in the plan, like boundary
127 marking, are anticipated to begin. Mr. Lamb had not spoken with Mr. Bohannon recently but
128 there was not schedule of priorities that Mr. Lamb was aware of. Mr. Bohannon would be
129 working directly with the Subcommittee, so more details soon.

130

131 **C) Conservation Commission Speaking Events**

132

133 Councilor Madison said he spoke with prospective speakers about a potential late July event, and
134 most are busy. He thought it would be better to make this a winter series (November—March) of
135 speaking events, when most participants would be tempted to come inside for a talk. This
136 provides more time to plan, schedule speakers, and find the resources needed. Mr. Haynes
137 suggested a talk called What's the Buzz? on pollinators and Councilor Madison agreed that witty
138 titles entice participants. All Commissioners agreed this was a good plan to keep the community
139 engaged with Commission activities year-round.

140

141 **D) Multiyear Pollinator Census Results for Cheshire County**

142

143 Mr. Therriault had not received results yet from Moosewood Ecological and asked that this be
144 continued on next month's agenda. Mr. Walker asked how bee censuses are conducted. Mr.
145 Therriault said that usually a piece of land is monitored routinely for pollinators and that
146 provides an idea of population health in that particular area.

147

148 **E) Powers, Duties, and Guidelines/Mission Statement**

149

150 Mr. Lamb said that the correction was made to the website where the Commission powers and
151 duties are listed to enact language that the Commission amended a few years ago in Chapter Two
152 of the City Code. Therefore, the language Mr. Bergman was concerned with about promoting the
153 development of natural resources was rectified.

154

155 **5) New or Other Business**

156

157 Mr. Therriault reserved some flats of wild lupin seedlings, which is the only host flower for the
158 endangered Karner blue butterfly. He plans to plant some on his property and at the verges of the
159 pine woods at the Keene Country Club. If there are other places the Commission is responsible
160 for that would be good areas, he would have extra for planting late September/early October. The
161 best places to plant are at verges of pine forests; his research spoke of pines in general and did
162 not indicate particular species. The Chairman suggested near the Jonathan Daniels School
163 parking lot between the grass and Dinsmore Woods pines. Mr. Therriault said the soils must just
164 be reasonably fertile. Pine needles acidify soil when they fall, and the lupins like acidic soils. Mr.
165 Reilly referenced the Karner blue butterfly in association with the pine barrens in Concord, NH,
166 where the species is said to be thriving well.

167
168 Vice Chair Clark reminded the Commission that it had not paid its annual dues to the NH
169 Association on Conservation Commissions (NHACC) and needed to decide at this meeting
170 before remaining money in the Commission budget was lost at the end of the fiscal year on June
171 30. Mr. Lamb checked and confirmed that there was at least \$700 remaining in the Commission
172 budget and if unspent, it would not roll over to the next fiscal year beginning on July 1, when the
173 Commission receives its annual \$1,500. The Chairman wanted to use those funds before they
174 were lost and although he did take seriously that those are taxpayer dollars, he thought the
175 NHACC was doing important work in Concord, NH, on behalf of the Commission.

176
177 Vice Chair Clark moved to donate no more than the remainder of the Conservation
178 Commission's Fiscal Year 2020-2021 budget to the NH Association of Conservation
179 Commission's dues before June 30, 2021. Mr. Therriault seconded the motion, which passed
180 with a unanimous roll call vote in favor.

181
182 Regarding the Karner blue butterfly, Mr. Bergman said that there is a large pine bush near the
183 Albany, NY, airport where the pollinator is thriving. He also said that Harvard University has a
184 large collection of a famous Russian author and lepidopterous researcher, Vladimir Nabokov's
185 pollinators; he discovered the connection between the Karner blue and the lupin.

186
187 Mr. Lamb said that the Governor's Emergency Order allowing remote meetings was rescinded
188 but there is allowance for remote participation under NH RSA 91-A for good cause that must be
189 approved by the Commission. There was also still the public option to participate via Zoom, but
190 he was unsure how long that would last as well. The Chairman said it made sense to keep
191 meetings in person but thought there was no good reason to silence a helpful voice due to remote
192 participation.

193
194 Regarding the winter speaker series, Mr. Haynes thought it would be nice to offer honorariums
195 to bring in quality speakers but said that would be difficult with the Commission's \$1,500
196 budget. He wondered if there was a City process to request a higher budget for these educational
197 opportunities for the City. Mr. Lamb said he would research the origin of the budget limit. The
198 Council had just approved the Fiscal Year 2021-2022 budget and so the Commission could
199 request an increase from the City Council next year.

200

201 **6) Adjournment**

202

203 There being no further business, Chair Von Plinsky adjourned the meeting at 5:16 PM.

204

205 Respectfully submitted by,
206 Katryna Kibler, Minute Taker

207

208 Reviewed and edited by,
209 Rhett Lamb, Community Development Director/ACM

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Patricia T. Russell Park Improvements and Stream Channel Restoration

Carpenter Street, Keene, New Hampshire

Standard Wetlands Permit Application



Prepared for:

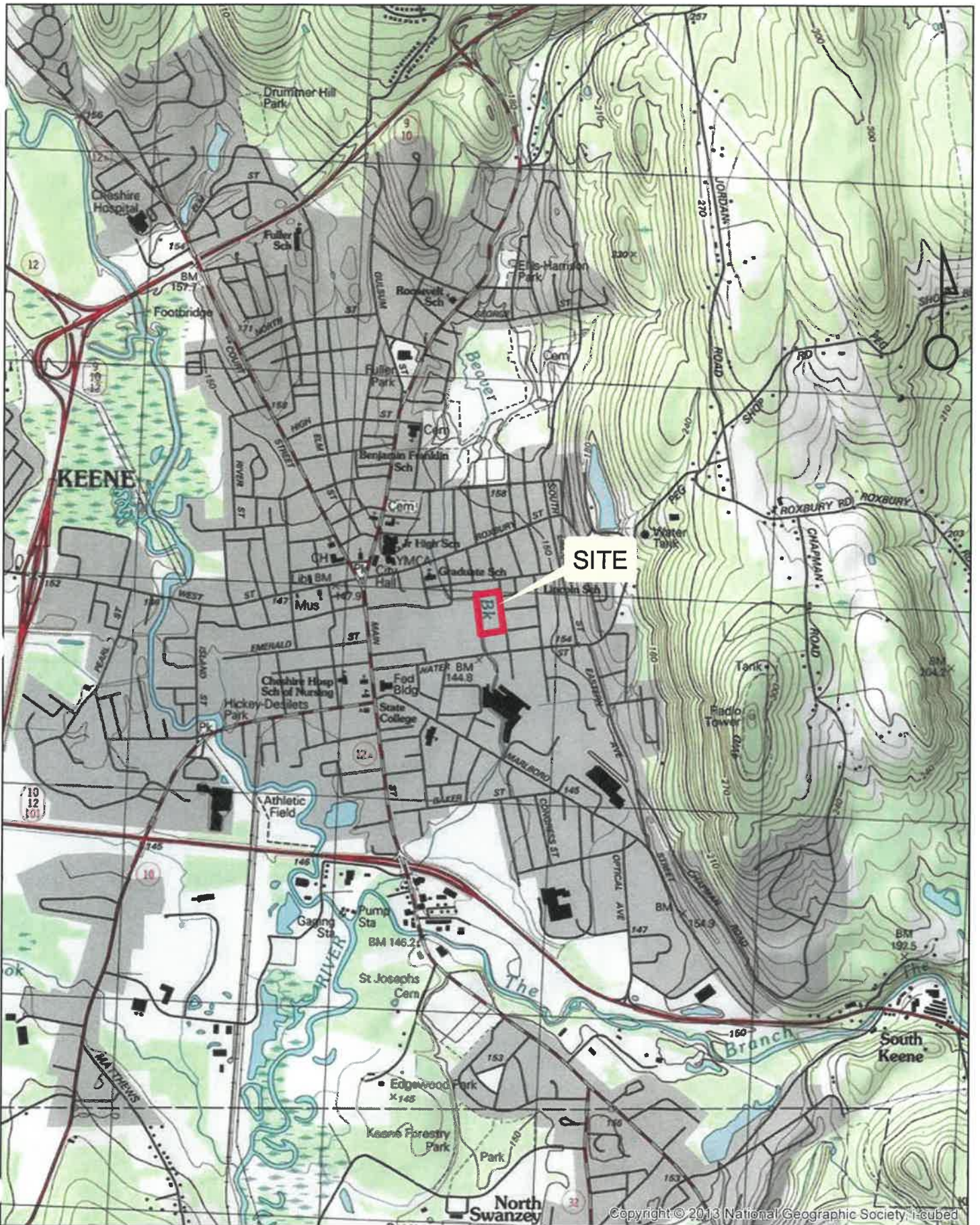
The City of Keene, New Hampshire
City Hall
3 Washington Street
Keene, NH 03431

Submitted to:

New Hampshire Department of
Environmental Services, Wetlands
Bureau
29 Hazen Drive
P.O. Box 95
Concord, NH 03302

June 16, 2021





**Patricia T. Russell Park Redesign
Site Location**

1 inch = 2,000 feet

Patricia T. Russell Park

Park Improvements and Stream Channel Restoration

Introduction

Keene serves as the economic hub of Cheshire County with 7 out of 10 large businesses located in Keene and 77% of residents working within the City limits. Currently, the City's demographics are changing and like many communities, the City is seeing an influx in the housing market as new residents are fleeing southern urban areas for quintessential northern New England communities. With a population of 23,000, Keene has an aging population and is predicted to have 30% of its population, over the age of 65, by the year 2030. This new population shift is timely for Keene's economic growth and success. With these demographic trends come new ideals requiring new resources. One of the most important of these being accessible, public open space. Russell Park and the east side neighborhood sits at the crux of this change. The park lies within an affordable, multigenerational area that serves low income to middle class housing, senior assisted living/ independent housing, work force housing, multifamily and single family homes, as well as commercial businesses and rehabilitation centers.

In 2010, the Cheshire Medical Center created a region-wide initiative, Healthy Monadnock, to create the healthiest community in the nation by 2020. Keene began to refocus on the true impact and vitality that our parks and trails play toward the success of our community's health. As a beacon to the surrounding neighborhood Russell Park (formerly Carpenter Street Field) will provide accessible and equitable opportunity to all, incorporating fundamental ideas developed through the Healthy Monadnock vision that aim to develop goals to reduce obesity, lower blood pressure, increase physical activity, create multigenerational play and social engagement, and reduce crime and juvenile delinquency through program opportunities. In addition, the Park will link to the Cheshire Rail Trail that leads directly into downtown Keene. The park renovation will connect the neighborhood to a regional rail trail system that stretches county wide, and connects to the West Side's various trail networks and Bike Park.

In 2012, the Parks and Recreation Department adopted its first Active and Passive Recreation Management Plan. One of the Plan's key issues was to institute Long Range Capital Planning and Park Site-Specific Master Plans with recommendations to determine the best and most appropriate uses in each specific park and whether they should be repurposed or reconfigured to maximize their service to the community. Additionally, in 2012, the City began conversations about revitalizing the East Side of the community. The purpose was clear: from the annual issues of flooding, the lost industry, the change in housing use from single family to multi-family (filled with college students) and the connectivity to downtown, various zoning issues needed to be updated.

The project began with the rezoning of the Marlborough Street corridor. The City first established a boundary line that included Patricia T. Russell Park and in the spring of 2015, the City hired the Conway School of Landscape Design to create a masterplan for the park to utilize as a funding mechanism as a future Capital Improvement Project. The master plan was instrumental in building community engagement and creating a vision to reprioritize this forgotten East side park.

In 2020, the City hired Milone & Macbroom (MMI), now SLR, to update the masterplan and create construction documents for the largest renovation project the City has seen in decades. Carefully designed, this project is focused on the three pillars set forth by the National Recreation and Parks

Association: Health and Wellness; Environment; and Conservation, along with the NH State SCORP four key components: Connectivity to the Outdoors; Consistent Stewardship and Conservation; Economic Vitality; and Education, Ethics and Benefits.

Existing Conditions

Patricia T. Russell Park (formerly Carpenter Field) is approximately 6 acres in size, bordered on the east by Carpenter Street, the south and west by commercial development and north by a wooded area associated with nearby residences. The Park is home to the City of Keene's largest open play space field for lacrosse, ultimate Frisbee and Rugby. A perennial stream, Beaver Brook, enters from the west and makes a sharp 90 degree turn, heading south, along the western boundary. Beaver brook was straightened and channelized in the past, and receives stormwater flow from the field as well as many drain pipes and culverts from the adjacent neighborhood. The park is maintained as a large open lawn field with sparse trees along the margins. It is generally flat sloping toward the southeast corner of the site. The entire field and much of the surrounding area is within the 100-year floodplain, as identified on FEMA National Flood Hazard Layer (NHFL) mapping. A small walking trail follows along the north side of Beaver Brook, from the park to Harrison Street.

On January 7, 2021, a Wetland, Stream and Vernal Pool Report was completed by Basswood Environmental LLC for the purposes of gaining baseline data for the Patricia T. Russell Park project. The report identified that the resources encompassed by the park are of generally low quality. The most outstanding feature is Beaver Brook, which shows signs of extensive past disturbance and degradation.

Vegetation communities within the park are composed of vegetation along the stream banks, the forested portion at the north end of the park and along the trail, and the maintained field. The stream corridor and forested areas are dominated by non-native invasive species, including Japanese knotweed (*Fallopia japonica*), multiflora rose (*Rosa multiflora*), Morrow's honeysuckle (*Lonicera morrowii*), and garlic-mustard (*Alliaria petiolata*). Overstory species include trees commonly associated with floodplains, including silver maple (*Acer saccharinum*) and eastern cottonwood (*Populus deltoides*).

The only wetland resource identified on site consists of a subtle depression on the south end of the field, draining into Beaver Brook. The wetland area identified is of very low quality and is contained entirely within the maintained turf field, and as a result is routinely disturbed through mowing and compaction. It shows signs of past filling and grading activity and does not provide for any suitable wetland functions other than minimal flood flow alteration.

The soils within the wetland and surrounding field appear to have been imported as fill, as indicated by their sandy structure that is not indicative of the mapped soils on site according to soil mapping provided by the United States Geological Survey. This is not unusual in urban environments and any grading/fill activities appear to have been performed long ago and thus allow the formation of hydric soil indicators in areas of frequent ponding.

Proposed Improvements

The redesign of Patricia T. Russell Park will improve the overall usability and aesthetic appeal of the park for the surrounding community and the City as a whole. A project of this magnitude requires a variety of

background data and historical information to be collected, including property and topographic surveys and natural resource inventories needed to satisfy several local, State, and Federal permit applications. MMI partnered with Doucet Survey and Basswood Environmental LLC, to collect this necessary data.

Because the City of Keene is known for its sustainability and its approach to achieving greener initiatives, the design of Russell Park will incorporate these philosophies by doing three critical things; (1) adding green infrastructure (rain gardens) to treat stormwater from contributing on-street parallel parking, (2) installing a stormwater quality basin to filter stormwater discharge prior to entering Beaver Brook, and mitigating Beaver Brook flow velocities and improving habitat by excavating and reconfiguring the existing bank - addressing the 90-degree turn in the brook that was created by the Army Corp decades ago. The final plan will also address invasive plant management along the banks and create a more naturalized vegetated riparian buffer to improve ecological benefits to the stream corridor.

Trees will be planted within the park to help provide more shade and to increase the value of the green space. The opportunity to increase the number of shaded areas outside of the heat island of the large playing surface is significantly needed. Planting masses of native shrubs and herbaceous plants will be distributed throughout the park, in rain gardens and along the stream corridor to increase pollinator species in the downtown.

The Park will include a multi-use trail that encircles the playing field. This trail meanders through the park interacting with different active and passive use areas – through a bocci ball area in the northeast corner, diverse seating and picnic areas along Beaver Brook to a restroom area in the south east, accessible to users of the new on-site new parking area and new parallel parking spaces along Carpenter Street. Additionally, a new and improved natural turf playing field, a team gathering pavilion, and shaded bleachers help to elevate the park to a more sophisticated athletic destination. The Park will serve as home to two specific large field users— the Monadnock Wolfpack Rugby Club (part of a New England men’s league) and the Keene Crush youth lacrosse league. These two programs plan to host tournaments and regular season games that will draw players and spectators into downtown Keene.

The Park will also feature new playgrounds, an amenity that the Park has never had. The playground designs (by Earthscape) take on natural forms, made of natural materials, not the standard steel and plastic structures found throughout many parks and school yards. Through the various community engagement opportunities, the call for a more environmentally friendly playscape was communicated and received clearly! The goal of designing the playground elements are one where children can explore, be creative and inspired to connect play, to nature. Along the walking path will be additional play or educational features that connect back to the playground, allowing for multi-generations to play and exercise together in different ways. While Keene has several playgrounds, none of these focuses specifically on natural play and access.

While many users of the park don’t know it, storm drainage from the adjacent east end neighborhood accumulates in roadway catchbasins and is diverted through the City’s drainage network to a single large pipe that runs below the open lawn area and discharges into Beaver Brook. As identified in Keene’s Drainage Master Plan, prepared by VHB in 2015, this single pipe is undersized and needs to be replaced. With the current proposed improvements to the park now is the time to make this upgrade. As part of a this project but under separate funding, SLR engineers designed modifications to the area’s stormwater utilities and in locating the outfall for this pipe, designed a stormwater quality basin (to slow down stormwater and filter out contaminants and sediments prior to being directly discharged into the

brook). This stormwater quality basin will provide a great educational opportunity to learn about sustainable methodologies that can improve infrastructure through green initiatives and the resiliency of the aquatic environment within Beaver Brook.

This project reaches far beyond just being a small recreational neighborhood park; it will help to educate residents and officials to current environmental challenges and what small techniques can be employed, locally, to mitigate the challenges of climate change, all the while making the Park more resilient to these global warming effects. It will serve both the active and passive recreational users and meet both the City's Comprehensive Master Plan and the Department's Active and Passive Recreation Management Plan.

Community Engagement

The Patricia T. Russell Park project started as an idea, it grew into a concept, and now is a vision for the community. The project was first conceived to help with storm water capacity when the area was last flooded in 2012. The City took a strong initiative to work on improving the Beaver Brook corridor. Through two separate community engagement processes starting in 2015 (with the Landscape Masterplan – Conway School of Landscape Design) and recently in 2020 (Milone and MacBroom), the project has focused on improving play and green infrastructure to the park.

On May 6, 2015, the first of two public forums were held to gather public input on the design direction for the landscape master plan for the Patricia T. Russell Park. Twenty-five citizens, users of the field, and city officials met with students from the Conway School who facilitated a workshop where participants were asked to identify their favorite features at the Park and what features they would like to see incorporated into the design. On June 6, 2015, students from the Conway School returned to show design alternatives and receive feedback on them. Twenty-two attendees, half of whom participated in the first forum, shared with the students what they would like to see in the final design. In addition to the two public forums, there were over thirty responses to an on-line bulletin board that was open for over one month.

In 2020, Milone and MacBroom started where the Conway School Masterplan left off and developed a Public Participation Plan that identified a project team made up of consultants and City Staff and a Working Group that included City leaders and members of the community. A project specific website, with embedded survey, was created and flyers were distributed throughout the community., Word of mouth, radio and social media announcements, invited the community to participate. The first virtual workshop identified the history, scope and project goals as well as a brief introduction to the site analysis. This initial workshop ran for 2 months and included 283 respondents, with 85% of people identified as residents and 76% of attendees having lived/ worked in Keene for over 10 years. Respondents identified a perceived future park space to be a "safe, fun, family destination."

The second public outreach event was a video visioning workshop where the public was asked to provide feedback on two conceptual alternative plans as well as style preferences for park elements. 204 people viewed the video and 21 respondents identified: "clean lines, natural materials, rustic accents, organic layouts/ forms and casual feel" as important design features to include in the park. Participants commented on the proposed plant pallettes asking for: "Anything to out compete the Japanese Knotweed and Native, pollinator species only." The most recent survey shows that 86% of the respondents would like to get closer to Beaver Brook. To date, we have received more than 275 completed surveys.

Section 3 – Compliance with Standard Permit Conditions and Project-Specific Required Information

Standard Permit Conditions (Env-wt 307: CONDITIONS APPLICABLE TO ALL ACTIVITIES IN JURISDICTIONAL AREAS)

307.01 – Applicability

307.02 – Coverage under State General Permits.

Required information and conditions per the New Hampshire General Permit (2017) is included in this document and will be submitted concurrently to the NH field office of the U.S. Army Corps of Engineers for review and comment (*See Appendix A: U.S. Army Corps of Engineers Supplemental Materials*).

307.03 – Protection of Water Quality

The project has been designed to be a net improvement on the water quality of Beaver Brook through the treatment of stormwater via stormwater detention and rain gardens. The site itself will also not contribute to further groundwater degradation through the additional plantings and rehabilitation of the turf area. Impacts from the construction phase of the project will be mitigated through the use of BMPs designed for the project and detailed on construction plans. A separate Alteration of Terrain (AoT) permit application has been submitted with additional detail regarding stormwater flow, detention, and treatment. Erosion and sedimentation controls will be employed throughout the project, and will be maintained during and after the completion of the project. (*See Section 7 Plans SE-1 through SE-3 for erosion control details*).

307.04 – Protection of Fisheries and Breeding Areas

Beaver Brook is not identified as an important fishery, however some fish habitat is present and will be protected by the use of erosion and sediment controls. The limited work within the OHW will be performed during low water, and will not require impact to the stream bed.

307.05 – Protection Against Invasive Species Spread

A core component of this project is an invasive species management plan (*See Section 7 Plan GR: General Notes – Invasive Species Management Plan for details*).

307.06 – Protection for Rare, Threatened or Endangered Species and Critical Habitat

NH Natural Heritage Bureau and New Hampshire Fish and Game (F&G) Correspondence dated April 5, 2021 (NHB21-0665, *See section 8*) indicates that there are no known sensitive species documented in the Project Area. Common nighthawk (State Endangered) is identified in the urbanized center of Keene and nests on buildings. Wood turtles (State Species of Special Concern) have been identified in the Ashuelot River basin approximately 1 mile from the project. Consultation with F&G indicated that some design changes were necessary (*See Section 8 – Agency and Stakeholder Review*).

These changes have been incorporated into the final design and include elimination of herbicide from the invasive management plan, the use of natural materials only for stabilization of Beaver Brook, and the covering and/or burying of bank armoring to allow for turtle passage.

307.07 – Consistency with SWQPA

Project is not located in Shoreland

307.08 – Prime Wetlands

N/A

307.09 – Shoreline Structures

No Shoreline Structures are Proposed.

307.10 – Dredging Activity Conditions

Dredging is not proposed. Bank and OHW disturbance will be performed between April 1st and October 1st during low water, and all BMPs will be followed.

307.11 – Filling Activity Conditions

Detailed cut/fill information is provided in the concurrent AoT application. No fill will be placed within identified wetland areas or surface waters.

307.12 – Restoring Temporary Impacts and Site Stabilization

See *Section 7 – GR General Notes* and *SE1-SE3 Sediment and Erosion Control* for the construction sequence and notes regarding the stabilization of the site pre-construction through post-construction.

307.13 – Property Line Setbacks

Work along Beaver Brook will be within 10-feet of abutting property owners and wholly on abutting land along the western bank. The City has obtained easements for performing the work associated with this project on some of these properties and is pursuing the remaining properties prior to construction.

307.14 – Rock Removal

N/A

307.15 – Use of Heavy Equipment in Wetlands

The single wetland area identified during a site-wide survey will not be impacted by the project. Erosion controls will be placed to avoid any indirect impact from construction from runoff or sedimentation.

307.16 – Adherence to Approved Plans

Plans approved under the Standard Wetlands Permit, U.S. Army Corps General Permit, Alteration of Terrain Permit, and City of Keene Floodplain Permit, including all conditions will be followed.

307.17 – Unpermitted Activities

N/A

307.18 – Reports

Annual mitigation monitoring reports will be developed and submitted to NHDES. See *Section 7 – GR General Notes – Invasive Management Plan and Mitigation Area Monitoring Plan*.

Project Specific Required Information (Env-wt 514 BANK AND SHORELINE STABILIZATION: ALL PROJECTS)

Env-wt 514.03 Application Requirements

- (a) See *Section 5 – Wetland report and Functional Assessment* for a description of the stream and wetland resources on site, including photographs of the proposed impact areas. The primary source of erosion is the abrupt turn in the brook. The project proposes to lessen this turn and provide a flood area to reduce floodflow velocity and thus erosion. A mix of armoring and native plantings will be used for site stabilization due to the high flow velocities at the site. See *Section 7 – SD-6 Site Details* for specifications regarding armoring, plantings, and *Section 7 – LA-1 to LA-4 Landscape Plans* for additional layout and planting detail.
- (b) In addition to the plans in (a) above, *Section 7 – IA Impact Analysis Plan* provides cross section details at several locations associated with the greatest stream bank impact.
- (c) Hardscape and Rip-rap specifications are located in *Section 7 – SD-6 Site Details*.
- (d) A wall is not proposed for the purposes of bank stabilization.

Section 4 – Compensatory Mitigation Proposal

The bulk of the on-site mitigation is detailed on a series of plans and previously developed supplemental information. The impact plan (IA, below) is the only plan specifically developed for the mitigation proposal due to the project being effectively an enhancement effort, thus rendering additional plans likely redundant. This information, required as part of the mitigation proposal, is indexed as follows:

Section 5 – Wetland Report and Functional Assessment

- Site Description
- Site photos

Section 6 – Plans

- GR – General Notes
 - o Invasive Species Management and Mitigation Area Monitoring Plan
 - o Construction Sequence
- LA-1 to LA-4 – Landscape Plans
 - o Detailed planting plan, species list, and notes
- IA – Impact Plan
 - o Bank Impact calculations, area, and cross-sections.

This plan has been developed through consultation between the project team and NHDES during a mitigation pre-application meeting held on April 6, 2021, and subsequent email correspondence.

The project as proposed will impact 309 linear feet of the eastern bank of Beaver Brook, which will be graded eastward to create additional space to provide for a reduction in floodflow velocity and bank stabilization. A core component of this project is the enhancement of not only this area to be impacted, but the remaining banks of the brook which are currently in a degraded state. The 309 square feet of impact is intended to be mitigated through stream enhancement activities within this area as well as the approximately 1,837 linear feet of bank proposed for enhancement, including invasive species management, native species plantings, and living bank stabilization measures wherever possible. The stream channel bottom/centerline is not proposed to be impacted by this project.

The current state of Beaver Brook is that of an urbanized stream, artificially channelized along the park. Invasive species, including large patches of Japanese knotweed (*Fallopia japonica*), Morrow's honeysuckle (*Lonicera morrowii*), and multiflora rose (*Rosa multiflora*) are present along the banks of the stream (See description in *Section 5 – Wetland Report and Functional Assessment*).

The goals of the stream enhancement are many-fold, and are compounded by the additional stormwater treatment improvements that are to be made on site. Achievable goals of the project include (Applicable list items follow Env-wt 806.2(a)):

- The planting plan is intended to increase the native biodiversity on site and provide for a more robust ecosystem as the plants become established.
- Sediment dynamics within the stream channel will be indirectly improved through bank stabilization measures that are currently needed in areas of high flow velocity, such as around the sharp southward turn in the brook.
- The habitat complexity of the impact and enhancement areas will be increased through the increased species count and structural diversity of the proposed plantings, as well as the reduction and management of invasives. Special provisions to allow for potential wood turtle passage are also included as a result of consultation with NH Fish and Game (*See Section 8 – Agency and Stakeholder Review*).
- Thermal regimes of the brook will improve as the plantings age, with several tree species proposed to be planted as large saplings which will provide an immediate benefit.
- Water quality will improve through the implementation of stormwater improvements. The major direct outfall into the brook from the municipal storm drain will be rerouted into a stormwater quality basin, which will also provide treatment for the parking area. Rain gardens planted with native species are also to be installed to intercept runoff into the brook.
- A primary goal of the project is to reduce floodflow velocity. The 309 feet of impact is intended to provide a floodplain area at and above OHW to slow flood waters and reduce the possibility of bank failure. There will also be no net increase in fill within the floodplain as part of the project, which will eliminate an increase in downstream flood impacts.

Because the project is effectively a restoration and enhancement project in relation to Beaver Brook, the overall construction sequence is integral to the mitigation area. Supplemental activities are proposed to ensure the success of the mitigation area and adhere to the requirements in Env-wt 800. To this end, an Invasive Species Management Plan has been developed and is included in conjunction with the Mitigation Monitoring Plan. The monitoring plan includes measurable benchmarks with actionable thresholds to ensure the success of the bank stabilization measures, plantings, and invasive management for a period of not less than 5-years post construction. An extensive planting plan has also been developed to ensure the greatest chance of full site colonization in the shortest window.

Introduction

The redesign of Patricia T. Russell Park (formerly Carpenter Field), in the City of Keene, New Hampshire is proposed to improve the overall usability and aesthetic appeal of the park for the surrounding community and the City as a whole. Milone & MacBroom, Inc. (MMI) and their team of engineers and landscape architects have begun the redesign process and are contracted by the City to see it through to completion. A project of this scope requires a variety of background information to be collected, including natural resource surveys needed to satisfy several local, State, and Federal permit applications. MMI partnered with Erik Lema, Owner and Principal Scientist with Basswood Environmental LLC (Basswood) to conduct a wetland delineation, stream resource survey, vernal pool survey, and wetland functional assessment. The results of these surveys are summarized in this report and are intended to provide context for existing conditions on site.

Patricia T. Russell Park is approximately 6 acres in size, bordered on the east by Carpenter St., the south and west by commercial development, and on the north by a wooded area associated with nearby residences. A perennial stream, Beaver Brook, runs along the western boundary of the park. The park is maintained as a large open field with sparse trees along the margins. It is generally flat with a gentle slope toward the southeast corner of the site. Beaver brook appears to have been straightened and channelized in the past, and receives stormwater flow from the field as well as many drain pipes and culverts along its length. The entire field and much of the surrounding area is within the 100-year floodplain, as identified on FEMA National Flood Hazard Layer (NHFL) mapping. A small walking trail follows along the north side of Beaver Brook, from the crossing of Harrison St in the northwest until it enters the park. This portion of trail, including Beaver Brook, was included in the survey area.

Vegetation communities within the park are composed of vegetation along the stream banks, the forested portion at the north end of the park and along the trail, and the maintained field. The stream corridor and forested areas are dominated by non-native invasive species, including Japanese knotweed (*Fallopia japonica*), multiflora rose (*Rosa multiflora*), Morrow's honeysuckle (*Lonicera morrowii*), and garlic-mustard (*Alliaria petiolata*). Overstory species include trees commonly associated with floodplains, including silver maple (*Acer saccharinum*) and eastern cottonwood (*Populus deltoides*).

Survey Methods

A New Hampshire Certified Wetland Scientist with Basswood (Erik Lema, NHCWS #286) performed the field surveys on May 8th, 2020. Wetland boundaries under State and Federal jurisdiction were determined using the technical criteria described in the 1987 *U.S. Army Corps of Engineers Wetland Delineation Manual* and the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North-central and Northeast Region*. This methodology uses a standardized three-parameter approach whereby potential indicators of wetland vegetation, soils, and hydrology are evaluated to determine if a given area is to be considered a wetland under state and/or federal jurisdiction. Data on these three parameters are collected on U.S. Army Corps of Engineers Wetland Determination Data Forms on all wetlands encountered.

A functional assessment is performed for all identified wetlands in accordance with the U.S. Army Corps of Engineers *Highway Methodology Workbook Supplement* (1999). This involves an evaluation of 13 variables concerning the ecological function and socio-economic value of the wetland resources. Each variable is assigned a value of Principal, Suitable, or Unsuitable, depending on the capacity of the wetland being evaluated. The rationale for assigning these values is listed on the data form and presented as a series of numbers corresponding to various attributes within the Supplement.

Streams are identified as channelized flow with a defined bed and bank. Where perennial streams are located, both the top-of-bank (TOB) and the ordinary high water (OHW) line, if different, were flagged and GPS-located. Both of these measurements are required for stream crossing regulations and impact calculations.

Vernal pool habitat is assessed on site according to the definition in Env-Wt 104.44 of the New Hampshire Wetland Rules. This involves identifying seasonal bodies of water on site that may support primary or secondary vernal pool indicator species, including wood frog (*Lithobates sylvaticus*), spotted salamander (*Ambystoma maculatum*), or blue-spotted salamander (*Ambystoma laterale*) egg masses, caddisfly larvae (Trichoptera spp.), and fingernail clams (Sphaeriidae spp.), among others. The high-water mark of any pools identified are flagged with consecutively numbered red flagging, and located with a GPS unit capable of submeter accuracy. NH Fish and Game data forms are completed to document the physical and biological characteristics of the pools.

Jurisdictional resource boundaries are GPS located with a Juniper Geode™ GPS receiver capable of sub-meter accuracy. The boundaries of resources are flagged with sequentially numbered flagging. Pink flagging is used for wetlands, blue for streams (TOB and OHW), and red for vernal pools. Resources within maintained areas (e.g. lawns and playing fields) were GPS-located only and not flagged due to frequent maintenance and mowing.

Results

One jurisdictional wetland and one stream (Beaver Brook) are located within the survey limits. No vernal pool resources are located on site, and no opportunity for vernal pool formation is present. A map of the surveyed resources is included as Appendix A, which also serves as a key to the location and direction of the photos included as Appendix C. U.S. Army Corps of Engineers Wetland Data Forms can be found in Appendix B along with the Functional Assessment data form. A summary of the resources follows.

Wetland W-1

The only wetland resource identified on site consists of a subtle depression on the south end of the field, draining into Beaver Brook. This depression is identified as a wetland due to the presence of stressed plants, signs of pooled water, some wetland vegetation, and the presence hydric (wetland) soil indicators upon examination. The wetland is contained entirely within the maintained field, and as a

result is routinely disturbed through mowing and compaction. Likewise, the soils present within the wetland and surrounding field appear to have been imported as fill, as indicated by their sandy structure that is not indicative of the mapped soils on site according to soil mapping provided by the United States Geological Survey. This is not unusual in urban environments and any grading/fill activities appear to have been performed long ago and thus allow the formation of hydric soil indicators in areas of frequent ponding.

The functional assessment identifies few functions and values that are provided by this wetland due to the highly disturbed nature of the site. With proximity to Beaver Brook, and located entirely within the 100-year floodplain, this wetland provides some flood storage capability, although this is limited by its small size and subtle topography. It is overall of very low quality and serves little ecological function.

Stream S-1 (Beaver Brook)

Beaver Brook is identified as the only jurisdictional stream within the survey area. It is perennial and relatively uniform in width due to past straightening and channelization. The original stream channel is no longer recognizable and its exact location is unknown. The OHW of the current channel is approximately 15-20 feet wide. The bankfull width ranges from 25 to 35 feet in width. The banks are identified as the first break in slope leading from the OHW mark, which is identified by scour, incision, or drift debris. The TOB follows some streamside development, including concrete retaining walls, bridge abutments, and the fill slope of a commercial driveway along the western side of the site.







The substrate is sandy with intermittent areas of cobble/boulder substrate, likely the result of filling activities. Numerous culverts and drains are present along the banks, draining adjacent areas into the stream. It is largely unvegetated within the channel, and exposed for most of its length on site, although invertebrates and fish were observed in areas with greater canopy cover at the north end of the site where greater amounts of cover objects are present.

Conclusion

The resources encompassed by the Patricia T. Russell Park are of generally low quality. The most outstanding feature is Beaver Brook which shows signs of extensive past disturbance and degradation. This resource does provide some amount of aesthetic appeal to the park grounds and may provide greater appeal through enhancement. The wetland area identified is of very low quality and currently serves as a portion of the recreational field when dry. It shows signs of past filling and grading activity and does not provide for any suitable wetland functions other than minimal floodflow alteration.



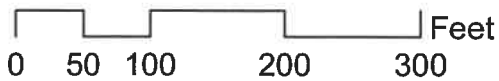
Legend

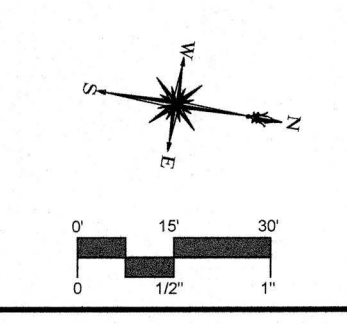
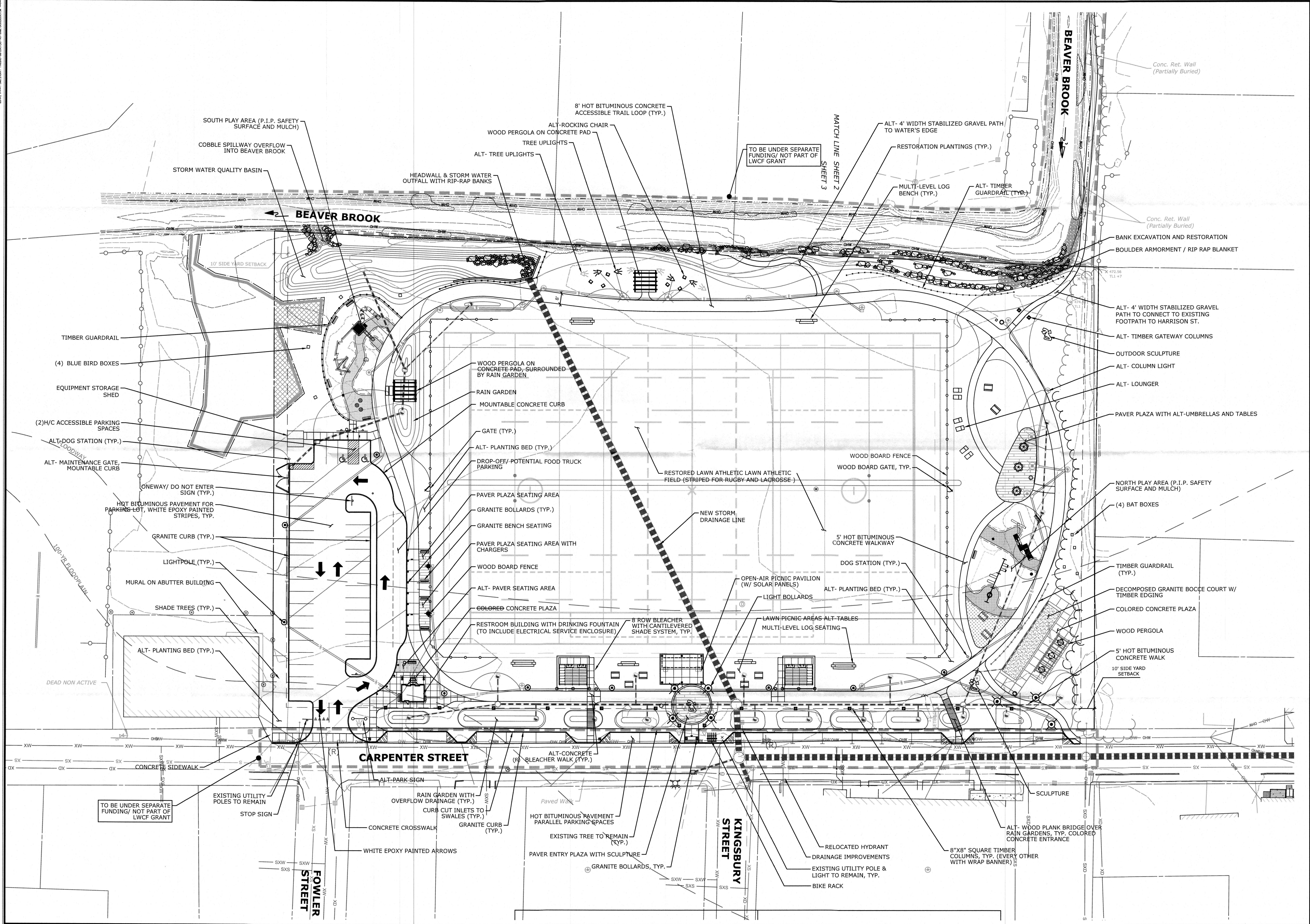
-  Ordinary High Water
-  Top of Bank
-  Wetland
-  Upland/Wetland Data Plots
-  Photo Location and Direction
-  NHDOT Roads

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix A: Natural Resource Map

Patricia T. Russell Park
Keene, New Hampshire





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 SPRINGFIELD, MA 01104
 413.241.6650
 WWW.MILONEANDMACBROOM.COM | SLRCONSULTING.COM

DESCRIPTION	DATE	BY

OVERALL SITE PLAN
 PATRICIA T. RUSSELL PARK
 PARK IMPROVEMENTS AND STREAM CHANNEL RESTORATION
 CARPENTER STREET
 KEENE, NH

JW	CP	MA
DESIGNED	DRAWN	CHECKED
SCALE: 1"=30'		
DATE: JUNE 14, 2021		
PROJECT NO: 3865-04		
SHEET NO: 08 OF 33		
SP		