



City of Keene, New Hampshire

CONSERVATION COMMISSION

CORRECTED

Monday, June 20, 2022

**3:30 PM**

ROOM 22, Parks & Recreation  
Center

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Commission Members

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

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 – May 16, 2022
3. Greater Goose Pond Forest Stewardship Subcommittee Report
4. NHDES Standard Dredge & Fill Wetlands Permit Application – Keene/Swanzey Floodplain Compensatory Storage
5. Work Groups reports
  - a) Outreach
  - b) Arm Fund
  - c) Invasive Species
6. Discussion Items:
  - d) Conservation Commission speaking events
  - e) Airport proposed wildlife control fence
  - f) Budget Discussion
  - g) NHACC 2022 Membership
  - h) Senate Bill 267 Upland Invasive Species Program
  - i) Debrief site walk of 0 Washington St. Ext. property (TMP# 229-006-000)
7. New or Other Business
8. Adjourn – Next meeting date: **Monday, July 18, 2022**

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1 City of Keene  
2 New Hampshire

3  
4  
5 CONSERVATION COMMISSION  
6 MEETING MINUTES  
7

Monday, May 16, 2022

4:30 PM

Room 22,  
Parks & Recreation Center

**Members Present:**

Alexander Von Plinsky, IV, Chair  
Eloise Clark  
Councilor Robert Williams  
Art Walker  
Ken Bergman (Arrived at 4:32 PM)  
Thomas Haynes, Alternate  
Brian Reilly, Alternate  
Steven Bill, Alternate (Arrived at 4:34 PM)  
John Therriault, Alternate (Voting)

**Staff Present:**

Corinne Marcou, Administrative Assistant  
Mari Brunner, Senior Planner

**Members Not Present:**

Councilor Andrew Madison, Vice Chair

8  
9 **1) Call to Order**

10  
11 Chair Von Plinsky called the meeting to order at 4:30 PM.

12  
13 **2) Approval of Meeting Minutes – April 18, 2022**

14  
15 A motion by Mr. Walker to approve the April 18, 2022 minutes was duly seconded by Mr. Haynes  
16 and the motion carried unanimously. Mr. Bergman and Mr. Bill were absent the vote.

17  
18 **3) Introduction of Mari Brunner, Senior Planner**

19  
20 Senior Planner, Mari Brunner, will be taking over as Staff Liaison. Ms. Marcou will still be  
21 available; she expressed her appreciation for her time with the Commission, which led her to apply  
22 to her local Commission.

23  
24 **4) Guest Speaker**

25 **A) Chris Casadei, Procurement Forester, Hull Forest Products, Bennington, NH**

26  
27 Chair Von Plinsky welcomed Chris Casadei to speak about the recent land procurements in Keene,  
28 which the City also participated in the auction. Mr. Casadei introduced himself, stating that he had

29 been an active forester in Connecticut (CT) since 1999, including the Department of Environment  
30 and Energy Protection. Since Hull Forest Products had purchased two concentration yards—one in  
31 Bennington on the Antrim line and one in Bradford—he split his time between the two. Now, he  
32 lives in Claremont. Mr. Casadei continued that Sullivan and Cheshire Counties grow the finest red  
33 oak in the world and the opportunities here are endless. He said this was not the last the  
34 Commission would see of him.

35  
36 Mr. Casadei stated that the properties Hull purchased in Keene are gems. He began with the smaller  
37 southern property, which Hull called Beaver Brook South. He said this is not a long-term  
38 ownership; Hull actively buys land and conserves it. This parcel abuts the river and, RT-9, and  
39 Beaver Brook North, which he identified on a map. The south parcel gets a lot of traffic and he said  
40 they would do a very conservative timber management effort. Most of what is seen and accessed  
41 from the old RT-9 would not be touched at all because of the streams, cliffs, and topography—they  
42 would keep that area as a reserve as well as what is in between Beaver Brook and the road. Hull is  
43 in negotiation with the State right now to manage that parcel and bring it out to Washington Street.  
44 They know the land history of this property and many others that were split by the new RT-9 in the  
45 1970's. He showed an established access road they could have used to come out onto RT-9 to keep  
46 a smaller footprint. However, the State would rather they exit near to the Washington Street  
47 extension; where the topography dips and goes back up, they would create a temporary logging  
48 access. He pointed out key topographical features on the map in regard to adjacent properties.

49  
50 Ms. Clark noted that the lines on the map were unclear and asked Mr. Casadei to point out where  
51 the actual logging would occur. Mr. Casadei pointed the area out on the map. Ms. Clark expressed a  
52 question and was interrupted, when Mr. Casadei said that the State might want to trade their piece  
53 to thin it for health reasons. He demonstrated on the map where the topography is very steep with  
54 streams and where the cutting would occur. He pointed out adjacent properties under contract,  
55 where they would do very strict management.

56  
57 Mr. Casadei continued stating that he has spoken with Andy Bohannon, Director of Parks,  
58 Recreation, and Facilities. Mr. Casadei stated that he told Mr. Bohannon that Hull's ownership of  
59 this parcel "would not be long-term and it's yours when the time comes." He said, "Our intention is  
60 to certainly sell this back to the City of Keene once we get it healthy and looking good." Mr.  
61 Casadei continued stating that he created a foot trail into the property, which he demonstrated on  
62 the map and called West Canyon Trail. He said Hull loves the exposure of this lot and that people  
63 would see this. He said they take a lot of pride in conservation and what they do, and it seems the  
64 more people involved with what they are doing dissuades negative perceptions of logging. He said  
65 Hull is conservation minded and this parcel would be "weeded like a garden would be." He said the  
66 timber is healthy and overstocked and this would be a light treatment.

67  
68 Mr. Bergman asked where the barrier is that obstructs and ends the road you can drive on toward  
69 the falls. Mr. Casadei showed a gate on the map situated with the Washington Street Extension. He  
70 said the road is paved beautifully as a Class VI road and the gate is questionable.

71



72 Ms. Clark asked whether Mr. Casadei knew about Keene’s Hillside Protection Ordinance. Mr.  
73 Casadei replied that he was familiar with all of Keene’s and NH’s logging regulations. Ms. Clark  
74 said that some of the area in question is very steep and—she was interrupted—Mr. Casadei stated  
75 that anything questionable and he considers inoperable, they will not touch. Ms. Clark noted that  
76 the City also has serious flooding issues, and the parcel is one of the prime flood storage areas,  
77 which was why the City wanted to buy it. Mr. Casadei said one of the things that attracted Hull to  
78 this property was that this is the last unobstructed waterway from the north into Keene, with Otter  
79 Brook and Surry Lake as Army Corps of Engineers flood control in Keene. He understood that  
80 Beaver Brook was prone to a lot of flooding problems in Keene, which is why Hull does not want  
81 to keep this property forever.

82  
83 The Chairman asked whether they were only targeting the prime red oak. Mr. Casadei said the  
84 south parcel was a hemlock, pine, red oak mix. They would remove the poorly formed, suppressed,  
85 and declining, the soft maple, and the problematic beech. He said this is not a regenerative harvest  
86 but shifting the growth potential to the growing stock. He would not have huge open spots in the  
87 canopy, but would switch to the beautiful red oak, white pine, and hemlock cover type so it can  
88 grow healthily for the next 40 years.

89  
90 Ms. Clark asked whether they would do a liquidation cut after that. Mr. Casadei said no, and Ms.  
91 Clark said that was good to hear. He did not think Hull Forest Products would have ownership of  
92 the parcel the next time it needs treatment, which was why he wanted to be very transparent with  
93 this Commission. Mr. Casadei said Hull is spending time and efforts on making the parcel healthy  
94 and they are therefore invested in the wise use of the land.

95  
96 Councilor Williams asked what makes a healthy forest; how does clearing the trees help the  
97 ecology? Mr. Casadei replied that in the wildlife timber management process they try to mimic the  
98 natural process. He said that Mother Nature in NH will place as many trees on a piece of ground as  
99 can possibly grow. Over time, he continued that the dominant trees are established, and the other  
100 trees are suppressed, perish, and are recycled on site. In a climax type cover site like this one, he  
101 said the white pine would go and hemlock and red oak would take over. He recalled that white pine  
102 has a good life of approximately 125–150 years, hemlock up to 250 years, and red oak and sugar  
103 maple up to 450 years. He called those the climax species. Because society needs wood and we are  
104 living in this forest, forest management has evolved to mimic the natural process and keep the  
105 forest extremely healthy and growing to the best of its ability. He continued that all tree health and  
106 productivity begin in the soil. He said that suppressed trees suspect to disease are not growing to  
107 their potential and are taking some sunlight and nutrients from the dominant trees. He called  
108 preservation one thing and said there would be some at small scales, but they are after conserving  
109 resources. He called that “forestry in a nutshell.” Mr. Casadei said that logging is a part of NH  
110 history and “we’re logging whether you like it or not. The key is doing it right and that’s what I  
111 need to convey so we don’t have comments like ‘Oh Jesus, they are up there clear cutting the  
112 wetlands again.’” Mr. Casadei still thinks logging is pretty foreign in Keene. He cited typical  
113 outreach they do in CT and said the more people they can get this message of conservation out to

114 the better and “if we don’t, I don’t care, we’ll just do what we do.” He called this wood lot a gem  
115 because there is a lot of traffic.

116  
117 Mr. Reilly said it sounded like Hull was doing this to prepare the lot for the future rather than taking  
118 commercially viable trees out of it. Mr. Casadei replied “100%.” He said this is a single tree  
119 selection. Mr. Reilly asked what was in it for Hull if they would not own it in the future and log it.  
120 Mr. Casadei said they would get a fair amount of timber and pulp wood from this cut because there  
121 are still great sections of wood in there. He said it would not bode well for his company’s  
122 perception to clear cut this land. He said that long-term forest management is the goal on that  
123 parcel, not liquidating what is there for a timber asset.

124  
125 Mr. Bill asked what wood products they would be pulling, the minimum size trees, and how many  
126 trees in a given plot. Mr. Casadei said they are saw millers and lumber people. They also export  
127 logs and manufacture lumber. They will utilize hemlock down to 8” tips and the hard wood for logs  
128 down to 10” tips. Everything below that down to a 4” tip they sell as pulp logs for paper. They  
129 would utilize the product overall down to a 4” tip. Mr. Casadei continued addressing how intensive  
130 the cut would be. He said a forester looks at basal area and how much is covered by stump base,  
131 which gives them indications of size class, etc. If it were 100% stocked, they would likely remove  
132 approximately 1/3, focused on the dangerous and declining products. Mr. Bill asked how many  
133 logging roads would be required for that scale. Mr. Casadei pointed them out on the map without  
134 indicating a number; there would be no new roads.

135  
136 Mr. Bergman asked the best estimate of how long they would be operating on the south parcel. Mr.  
137 Bergman also asked whether Mr. Casadei’s assertion that he would then sell to the City of Keene  
138 was a figure of speech and Mr. Casadei replied, “Yeah, it was a figure of speech. Everything is for  
139 sale but all I said was I met with Andy.”

140  
141 Mr. Bergman asked how many years this would take, and Mr. Casadei stated the whole operation  
142 would be completed this summer 2022 and negotiations could begin after that. Mr. Bergman asked  
143 whether Hull Forest Products makes any commitment to favoring public purchase. Mr. Casadei  
144 stated, “Well, I shook his hand and said we were going to do it. So, I’m going to do what I said I’m  
145 going to do. I’m not going to put this out to bid unless things go awry with you folks.” The logging  
146 job on the south portion would likely take five weeks. He said that Hull forest products owns  
147 thousands of acres in New England, and this is a small parcel that sold for less than timber value.

148  
149 The Chairman recalled Mr. Casadei citing a 30–40% harvest and said that would not be uniform  
150 based on terrain. As the City, the Chairman said the Commission was trying to determine whether  
151 some portions of the parcel would be cleared more than 40%. Mr. Casadei said he did not care for  
152 the term “cleared.” He said it is a silvicultural thinning and the treatment would be selection with  
153 group selection; he, the forester may select a tree to remove or a small group of trees. Mr. Casadei  
154 said clearing is what was happening on Timberlane Drive.

155

156 Mr. Haynes asked whether this would be mechanical harvesting and Mr. Casadei said yes (track  
157 buncher, skidder, yard loader; very low impact) but there would be some chainsaw use when  
158 needed.

159  
160 The Chairman asked whether Mr. Casadei would be open to walking through those woods with the  
161 Commission. Mr. Casadei replied stating he needed that as the only way this would work because  
162 the Commission's phones would be ringing off the hook. The Chairman would work on scheduling  
163 a site visit.

164  
165 The Chairman continued asking whether the details were the same for the north parcel and Mr.  
166 Casadei said no. Mr. Casadei continued describing the north parcel, exhibiting the boundary line. It  
167 is a five-acre piece and he is doing a land swap. Mr. Kevin Rule and his siblings are getting a  
168 portion of the north parcel with deeded access, and Hull would receive the equal portion of the Rule  
169 property. Additionally, they would be conducting a liquidation harvest on part of the north parcel,  
170 which would be a 14' and up cut, meaning that those trees 14' and taller would be 80% removed.  
171 Mr. Casadei said that any big trees showing wildlife habitat would not be cut, and extremely large  
172 trees would be retained for carbon storage and seed. There would be large buffer zones along the  
173 Brook and vernal pools. They would be thinning the Rule property. Mr. Casadei stated that they are  
174 not clear cutting the north parcel, but are focusing on natural regeneration.

175  
176 Mr. Haynes asked how large the buffers would be. Mr. Casadei said it varies. Mr. Haynes asked for  
177 a range. Mr. Casadei said it would be easier to show the Commission. The Chair asked for more  
178 specifics and Mr. Casadei said, "It just depends." He said it depends on what the ground looks like  
179 and "if we're going to leave a footprint, we're not doing it." He said this is on the highest industry  
180 standard of timber harvesting. He said he was "not beating around the bush." He is focused on  
181 growing the trees that are there, minimizing regeneration to keep a park like aesthetic and hopefully  
182 getting red oak to grow. He said the objective is to get what they can within the parameters of good  
183 health and logging to promote regeneration. Mr. Casadei said the reason why this type of harvest  
184 gets a bad name is due to an example liquidation cut to the north, where they only took what was  
185 good. He stated that Hull takes what they can but also the unhealthy growing stock so all that is left  
186 is healthy.

187  
188 Ms. Clark asked where the access is for the northern site. Mr. Casadie oriented the access on a map  
189 near to Timberlane drive. There is a road that goes along their boundary line to the north.

190  
191 Mr. Haynes asked whether timber harvesting would occur on adjacent parcels as well. Mr. Casadei  
192 said yes. He continued stating that he is not a consultant forester but a procurement forester and  
193 would "go after" any private parcels on the map he showed. Mr. Haynes noted there are plans to  
194 sell the south parcel and asked if the same were true of the north parcel. Mr. Casadie said of course,  
195 this is also not a long-term holding.

196  
197 Mr. Bergman asked whether logging trucks would be traversing Timberlane Drive. Mr. Casadie  
198 said yes. Mr. Bergman asked whether they would be using the base or full length of the Drive. Mr.

199 Casadei replied that they would come down Timberlane Drive to Elm Street and turn right onto  
200 Court Street. Mr. Bergman said Court Street is busy, and Mr. Casadei replied, “Yeah, but it will get  
201 me out of town.” Unfortunately, Mr. Casadei said there would be trucks passing homes on  
202 Timberlane Drive. Mr. Casadie said, “If you want to live in the forest, we need to do some  
203 logging.”

204  
205 Councilor Williams said that the City Council would hear about more potholes caused by this  
206 project. Mr. Casadie said he understood.

207  
208 Mr. Bill asked how much truck traffic was anticipated and Mr. Casadie said, “It depends on how  
209 big this gets.”

210  
211 The Chairman asked whether that would be the sole point for trucks from that north parcel. Mr.  
212 Casadie replied in the affirmative, stating that the State does not want them coming out onto RT-9  
213 and, “If you can have any leeway with the State coming out onto 9-10 there, I will do it.” He said he  
214 has to have emergency vehicle access, and he is not crazy about the safety and exposure of being in  
215 the neighborhoods.

216  
217 The Chairman continued and was interrupted by Mr. Casadie further explaining the exit routes out  
218 of the logging areas.

219  
220 Mr. Bergman asked whether Hull Forest Product’s goal and ambitions extended outside the two  
221 parcels that were relevant to this Commission. Mr. Casadei said yes, because of the mobilization  
222 and efficiency, part of his job is meeting all adjacent landowners and trying to buy them.

223  
224 The Chairman asked about the timeline. Mr. Casadei said they would do the north parcel first. The  
225 Chairman asked whether they were looking at this like a decade long process. Mr. Casadei said,  
226 “Let’s finish this meeting first and we can talk about that.”

227  
228 Ms. Clark asked whether there would be a supervising forester and Mr. Casadei said he would be.  
229 Ms. Clark knew he was procuring but was unsure—she was interrupted—Mr. Casadei said the  
230 beauty of being a procurement forester is that he knows what must be done there; he is not a fan of  
231 consulting forestry.

232  
233 Mr. Bill asked whether, before they begin logging, are they required to go for—he was  
234 interrupted—Mr. Casadei said it had all been permitted by the State Natural Heritage Review Board  
235 and nothing popped up there.

236  
237 Mr. Bergman asked whether Mr. Casadei had seen any white oak in the area and Mr. Casadei said it  
238 was very rare, stating it does not grow well around here. Ms. Clark said that if you go to Walpole in  
239 the CT valley you can find—she was interrupted—Mr. Casadie said a couple white oaks down  
240 through there, good.

241

242 The Chairman asked whether there was anything further Mr. Casadei needed to say about the north  
243 parcel. Mr. Casadei said no, stating now that there was a full understanding of what he was doing  
244 with his parcels, the second reason he was present was because the City is an adjacent landowner.  
245 He said he is close personal friends and colleagues with Wayne Young, who manages timber in  
246 NH. Mr. Young wrote the 1991 Goose Pond Management Plan, which Mr. Casadei said he  
247 reviewed.

248  
249 Mr. Haynes noted that there is a 2019 updated Greater Goose Pond Stewardship Plan as the  
250 foundation for managing the Greater Goose Pond Forest. It is a good plan that was written by the  
251 consulting forester, Jeff Littleton of Moosewood Ecological, and Swift Corwin wrote the forestry  
252 portion. Mr. Haynes said that document is available on the Conservation Commission's website and  
253 Mr. Casadei said, "I did all the homework I could, and this was all I found." Mr. Casadei asked if  
254 the Commission wanted to discuss this anymore and as Mr. Haynes suggested, the Commission  
255 agreed that Mr. Casadei needed to review the current plan first before coming back and talking to  
256 the Commission. Mr. Casadei asked if the Commission was happy with the plan and when the  
257 Commission replied in the affirmative, he said that was "not good news for me, I was hoping you  
258 had not looked at it since the 90s." He said it is remarkable forest. Mr. Bergman noted there is a  
259 management advisory committee for the whole Goose Pond area under the Conservation  
260 Commission supervision; Mr. Haynes is the Chair. Mr. Haynes said it is a small group using the  
261 stewardship plan as their base to do what they want to do—he was interrupted—Mr. Haynes was  
262 able to continue stating that they are working in partnership with Parks and Recreation as they  
263 oversee the Greater Goose Pond Forest.

264  
265 The Chairman said they would stay in touch about those two parcels.

266  
267 Mr. Casadei initiated a next item of discussion, stating that he was interested in putting a substation  
268 on the north parcel with windmills in conjunction with the Department of Environment and Energy  
269 Protection in CT. He had spoken with the TransAlta electricity generation company, which  
270 instructed him to work directly with Siemens and Gamesa, which owns the equipment and staffs the  
271 Antrim facility. He met with Siemens Gamesa (renewable energy company) and he said he would  
272 share notes relevant to the City of Keene because he "would not do this without a partnership, I say  
273 partnership, without working with you guys."

274  
275 The Chairman asked whether he was talking about a substation—he was interrupted—Mr. Casadei  
276 said he was talking about where his log landing is on the north property, stating that it is perfect for  
277 a utility substation that would generate wind power for the City of Keene. He likes windmills  
278 because the timber underneath it can still be managed.

279  
280 Mr. Bergman said he could understand a large windmill operation somewhere like North Dakota,  
281 where Mr. Casadei mentioned, because—Mr. Bergman was interrupted—Mr. Casadei said that is  
282 not the model here. Mr. Bergman said North Dakota is open plains. Mr. Casadie said it is different  
283 than here and the difference is, "No one cares, and we care."

284



285 Mr. Casadei said there is a development company that does the whole wind project and then they  
286 turn it over to Siemens, which runs it in perpetuity. He stated that the Canadian developer's priority  
287 for this site was at least 10 windmills. The developer would be paid to prospect, convene  
288 landowners, permit with the City and State, gather the wind data for approval, figure out who would  
289 buy the power, and to secure the financing for the whole project. Mr. Casadei that he already did the  
290 prospecting and more, thus he said he and the City did not need a developer to do this. If they could  
291 get enough financing together and bought and dealt directly with Siemens Gamesa, it would be  
292 much more cost effective. He asked whether the City had its own utilities and Ms. Brunner replied  
293 no, Eversource is our provider. Mr. Casadei asked if the City could have its own utilities. Ms.  
294 Brunner said the City of Keene is not interested in having its own utilities. The City is planning to  
295 start a Community Power Program, which is a community choice aggregation group buy-in  
296 program for the whole City. Ms. Brunner said she could talk to the City but—she was interrupted—  
297 Mr. Casadei said it was all up in the air.

298  
299 The Chairman said that Mr. Casadei had shifted gears to above the Commission's pay grade. Mr.  
300 Casadei knew the City had 2030 energy goals. The Chairman said this was a conversation for  
301 another day, he was glad it was brought forward—he was interrupted—Mr. Casadei said they  
302 would not solve anything, and he was not looking for signatures, but these things take a lot of time  
303 and that would determine Hull's length of holding. Mr. Casadei stated, "That does not mean once  
304 it's all flowing that I will sell it back to the City of Keene." He said there were also a lot of private  
305 landowners very interested in this lucrative wind generation.

306  
307 Ms. Clark said there was a study many years ago at the Transfer Station near the north parcel and  
308 they did not feel there was enough wind to justify towers there, so it seemed to her studies were  
309 needed first—she was interrupted—Mr. Casadei said absolutely and cited costs. Mr. Casadei  
310 continued stating that because there is a meteorological station only 10 miles away there was a lot  
311 of meteorological data that would be pertinent to this site. Ms. Clark said not necessarily—she was  
312 interrupted—Ms. Clark continued that the topography there is different, and they chose that site  
313 specifically because of the topography—she was interrupted.

314  
315 Mr. Casadei thanked the Commission for their time and hoped these conversations would continue.  
316 The Chairman thanked him for coming—he was interrupted. While over their pay grade now, Mr.  
317 Casadei said the Conservation Commission should have a strong say in the wind power suggestion.  
318 Mr. Casadei's future correspondence with the Commission should be directed to Ms. Brunner and  
319 Mr. Bohannon.

- 320  
321 **5) Informational**  
322 **A) Subcommittee Reports**  
323 **i) Outreach Subcommittee**  
324

325 Ms. Brunner reminded the Chairman that Outreach and ARM Fund are actually working groups and  
326 not official subcommittees like the Greater Goose Pond Stewardship Subcommittee.

327

328 The Outreach group had nothing new to report.

329

330 **ii) *ARM Fund Subcommittee***

331

332 Nothing to report.

333

334 **iii) *Greater Goose Pond Forest Stewardship***

335

336 Mr. Haynes said the group would meet again on May 20, with the goal to finalize trail signs. There  
337 are two trail maintenance workshops scheduled in June and July. Those sites are ready to begin  
338 planning with the trail person, Lew Shelley. The first workshop would be about building and  
339 maintaining trails and the second workshop would focus on water issues. These workshops would  
340 teach volunteers and participants how to take care of some primary issues around the pond. Next  
341 year, the group hopes to apply for a recreation trails grant through the Division of Parks and  
342 Recreation for some spots that need major work. A bird walk was scheduled for May 21 at 8:00  
343 AM, meeting at the new parking lot (South Trailhead). Participants could sign-up online or by  
344 calling Parks and Recreation. Walk-ins would likely be welcome.

345

346 **B) *Invasive Species***

347

348 Councilor Williams said that the Garlic Mustard Challenge went well. While there were not many  
349 participants, it was a good group that collected eight bags of the plant, which should help reduce  
350 regrowth next year.

351

352 The next event is June 20 at 5:00 PM in Woodland Cemetery to clear Japanese knotweed. This is  
353 the same date as the Commission's next meeting because the City does not observe Juneteenth.  
354 Councilor Williams will coordinate with Chair VonPlinsky after the meeting to resolve this conflict.

355

356 Ms. Clark congratulated Councilor Williams on his great coverage of the Garlic Mustard Challenge  
357 in the Sentinel.

358

359 **6) Discussion Items**

360 **A) *Conservation Commission Speaking Events***

361

362 Councilor Madison was not present. There would not be a June speaking event, but the Chairman  
363 hoped for one later in the summer.

364

365 **B) *Budget Discussion***

366

367 The Chairman said there was \$1,500 in the Commission budget that would run out on June 30,  
368 2022. Of this, \$150 was already committed to Steve Lamonde's honorarium for the bird walk, and  
369 that check would have to be written by June 30. Mr. Haynes emailed him the paperwork, but Ms.  
370 Marcou had yet to receive it.

371 Mr. Bergman mentioned the Antioch students who sought funding and the Chairman said that was  
372 last fiscal year.

373  
374 With the remaining \$1,350, the Chairman noted the dues from the NH Association for Conservation  
375 Commissions. The Commission overpaid on dues last year to make up for underpaying previous  
376 years. They seek \$774.45. Additionally, ARLAC sought their annual \$125 contribution for e-coli  
377 sampling in the watershed and the Society for the Protection of NH Forests had \$55 dues.

378  
379 With the aforementioned expenses paid, the Chairman said \$395.55 remained.

380  
381 Ms. Clark noted that ARLAC would always accept further assistance.

382  
383 The Chairman said that this Commission does not use the NHACC services well, but the NHACC  
384 does a lot of important lobbying for Keene in Concord, which he said was vital, and he had no  
385 problem paying the dues. Mr. Bill wondered if the NHACC could negotiate a number of workshops  
386 since the City does not use the rest. The Chair said that he would be surprised as every dollar  
387 counts. He thought it would be good to reexamine what they offer and how the Commission could  
388 better utilize those services. Ms. Clark said the luncheon workshops offered are free to members  
389 and are excellent; there are two or three each fall and spring.

390  
391 In response to Ms. Brunner, the Chair said most NHACC communications go to the City, but he  
392 gets notifications of the bill and some other things. All members should get NHACC updates of  
393 events.

394  
395 Mr. Bergman asked about the Bee City USA dues of \$200, which Mr. Therriault replied would be  
396 due the next fiscal year in March.

397  
398 The Chairman asked, if rules were no object, for what else the Commissioners saw a need for  
399 funding. Mr. Haynes said there were a few Goose Pond projects that would require more than the  
400 remaining \$395. First, he would like the Commission to co-sponsor the trail maintenance  
401 workshops with the Department of Parks and Recreation; the fee is \$600, and he hoped the  
402 Commission would contribute \$200–\$300. Second, he hoped the Commission would contribute to  
403 Peter Poanessa’s trail sign costs; he hoped for a few hundred dollars. The Chairman said it made  
404 sense to try to support those efforts. Mr. Haynes wondered if they should leave some of the budget  
405 for bags and seeds for the invasives effort. The Department of Public Works has agreed to provide  
406 bags when needed. Mr. Bill suggested splitting some of these expenses between this and the next  
407 fiscal year. Mr. Haynes said the trails workshop funds were needed before June 30, but the signs  
408 could perhaps be \$100 this year and \$100 next year.

409  
410 Mr. Therriault recalled the call for an endowment in the Greater Goose Pond Forest Stewardship  
411 Plan, which could make the Goose Pond work self-sustaining. Mr. Haynes said that had not  
412 happened and the catch was that without funding, that money would have to come from potential  
413 timber harvesting, which was not in the Subcommittee’s purview at this point.



414 The Chairman suggested paying the \$125 to ARLAC, \$150 to Steve Lamonde (already allocated),  
415 \$774.45 to the NHACC, \$55 to the Society for the Protection of NH Forests, \$300 as the trail  
416 workshops co-sponsor, and the remaining \$95.55 to the trail signs work (the remainder to be paid  
417 after July 1).

418  
419 Ms. Marcou needed to know before the end of June whether these checks would be written/cashed.  
420 Ms. Marcou wondered whether there could be carry-over requests, which are allowed if approved  
421 by the City Manager and Finance Director. She would investigate.

422  
423 A motion by Ms. Clark for the Conservation Commission to pay the NH Association for  
424 Conservation Commissions \$774.45, the Ashuelot River Local Advisory Committee \$125, the  
425 Society for the Protection of NH Forests \$55, and Lew Shelley of SnowHawk, LLC., \$300 as co-  
426 sponsors of the trail maintenance workshops, was duly seconded by Mr. Therriault. The motion  
427 carried unanimously.

428  
429 The remaining \$95 for trail signs would be decided next month. Steve Lamonde was not included in  
430 this motion because the Commission previously voted to approve dispensing those funds.

431  
432 Mr. Haynes was grateful the Commission was supporting the Goose Pond work. The Chair said the  
433 upcoming events are great work.

434  
435 **C) Joint Council Meeting – Eversource Scenic Roads**

436  
437 The Chairman thought the Commission had discussed this already.

438  
439 Councilor Williams spoke to the City Manager about the amount of red tape and number of  
440 meetings that these applicants must go through. He hoped there would be a more efficient way in  
441 the future. The Chairman suspected a line in the Statute must be deleted. Ms. Brunner said that it is  
442 actually in the City Code, which set-up this process. The City Council could have chosen for these  
443 matters to go only to the Planning Board for one public hearing. However, the City Council chose  
444 to have it come to them, which makes it go to multiple meetings and then the Conservation  
445 Commission was added to the process. The Chairman said it made sense that it was a City  
446 Ordinance. Councilor Williams has brought it up to Staff.

447  
448 **D) Instream Flow Program – Ashuelot River, May 17, 2022 in Surry; May 18, 2022**  
449 **in Swanzey**

450  
451 There would be a few tests at the locations and dates listed; one in Surry off of Dort Road and one  
452 in Swanzey by the bridge at Sawyer Crossing off Matthews Road.

453  
454 **E) Land Conservation Investment Program (LCIP) Property Field Visit, May 25,**  
455 **2022**

456

457 The Chairman emailed Joselyn Duffy, who agreed to walk with anyone on the Commission through  
458 the three parcels: goose pond area, part of the Shaw property, and a third. Meet at 2:45 PM on May  
459 25 at the South Trailhead at Goose Pond (new parking lot). The Chairman said Ms. Duffy  
460 mentioned an easement on the Shaw property and they were seeking help from Staff notifying the  
461 owner of that property about the visit in the later afternoon that day.

462

463 **7) New or Other Business**

464

465 Mr. Bergman provided a report on the potential Airport wildlife fence to protect the runways from  
466 incursions by wildlife. The original plan was for that fence to run along Airport Road, which is used  
467 heavily daily by birders, walkers, and nature lovers, who found the idea abhorrent. Mr. Bergman  
468 began communicating with the Airport Director, David Hickling, again after one year of no contact  
469 and asked for an update on the fence. There have been recent developments at the Airport like the  
470 new solar farm near the Wastewater Treatment Plant. He said the bottom line is perhaps the most  
471 important, where Director Hickling stated, “All discussions regarding this project are now still  
472 focused on the fence being located away from Airport Road, and everyone seems to agree that is the  
473 logical placement.”

474

475 Mr. Bergman recalled first walking around the runways with the Airport Director and Mr. Bergman  
476 proposed placing the fence at the end of the shorter runway facing the main marsh, which is not  
477 acceptable to the FAA because there must be sufficient clearance. Otherwise, the fence could be  
478 placed along the margins of the longer runway but would still have to go through the marsh; if they  
479 do the work in a biologically quiet time of year like winter, Mr. Bergman did not think it would be  
480 too disturbing and that once in place, different types of wildlife would adapt.

481

482 Mr. Bergman read more from Director Hickling’s letter, which stated, “No funding has been  
483 approved at this point but we have had meetings with the NH DOT to discuss the funding. We are  
484 awaiting a scope and fee proposal from our engineering firm (McFarland Johnson) for partial  
485 design, environmental and permitting. Once we have that we will submit an application for the  
486 funding of this portion of the project with the hope of receiving that funding in time to complete  
487 this phase later this year. If we are able to fund this and complete it this year, we will apply for  
488 funding for the completion of the project next summer.” Mr. Bergman said that sounded like  
489 probably putting in the fence next summer.

490

491 Mr. Therriault said that if they had not submitted for funding from the FAA yet, they would not see  
492 funds for at least 18 months. Mr. Bergman said Director Hickling was likely being optimistic. Mr.  
493 Bergman asked Mr. Hickling if they would consult during the design phase with the Commission or  
494 other user groups and the Director responded of course. Mr. Bergman was unsure if the Swanze  
495 Conservation Commission would be involved like they were with the solar farm planning that this  
496 Commission was not involved with. He said it is odd because the City owns the land, but it is in  
497 another town. The timeline is not clear but clearly many months away; there are also other projects  
498 happening at the Airport, but this is the project of greatest relevance to the Commission.

499

500 Mr. Haynes said at this point we do not know where the fence will be yet. Mr. Bergman said we  
501 don't know exactly, the engineers will have to mediate between the FAA, Director Hickling, and  
502 the Commission. Director Hickling wants funding but to also keep people happy and he is aware of  
503 the great bird sightings occurring at the Airport. He added that water levels in the marsh are really  
504 low. He was unaware of whether there was also work going on rerouting that diversion from  
505 Wilson Pond to the Ashuelot River. Mr. Bergman wondered if there was a line for this fence in the  
506 recent City Council budget approval; Councilor Williams would need to check. The Chairman  
507 would add this to future discussion items to stay abreast.

508  
509 Mr. Therriault shared pollinator books that would be donated to Keene Public Library and he would  
510 be doing a reading for children in July. May 20 is world Bee Day, per the United Nations.  
511 Pollinator Week in the United States is June 20–26. Last, he shared a photo from the Parks and  
512 Recreation Department pollinator strip at the Monadnock View Cemetery. They broke ground on  
513 the 180 square foot parcel along Park Avenue fence line; Mr. Therriault delivered the seeds to the  
514 Parks Department. Ideally vegetation will grow in three to four weeks after seeded. It could be  
515 added to each year until it ideally spans the fence line. The Chairman said that Cheshire County  
516 Conservation District is doing something for Pollinator Week and suggested reaching out to  
517 Amanda Littleton. Ms. Clark said that was a decent size plot to start with.

518  
519 Ms. Clark continued that she liked this meeting room and Ms. Brunner would attempt to schedule  
520 future meetings at this location at Parks and Recreation.

521  
522 Mr. Haynes recalled that an alternate needs to be moved into a regular spot and that Mr. Bill is in  
523 line to be the next regular member.

524  
525 The Chairman stated that they would likely see more of Mr. Casadei and the Chairman would reach  
526 out to schedule the site visit. He encouraged everyone to list everything else they want to ask him.  
527 He called it an intense presentation and he imagined lingering questions. Mr. Bill asked if the public  
528 access to Beaver Brook Falls there would be impacted by their work and the Chairman thought that  
529 was a great question to ask Mr. Casadei. Mr. Haynes wanted to bring in Matt Kelley as a consulting  
530 forester because it seemed like a second opinion would be helpful. The Chair would reach out to  
531 Mr. Kelley and Mr. Casadei to try to coordinate. Mr. Bergman wondered if residents of Timberlane  
532 Drive were aware of this upcoming traffic. Ms. Marcou said that Mr. Casadei would have to reach  
533 out to the Assessing Department because there is an application in process just like Timberlane  
534 Drive and Drummer Hill clearing. She was unsure if the abutters would be noticed but she could  
535 look into that process. Ms. Brunner said they must file a notice to cut with the City only. There  
536 would be no public hearing or anything like that. Mr. Bergman suggested letters to the Sentinel. Mr.  
537 Haynes mentioned the Drummer Hill Association and reaching out to them. Ms. Marcou said to  
538 mention it to Charlie Ferrando, who lives on Timberlane Drive. Ms. Brunner said that  
539 neighborhood has great word of mouth. Mr. Haynes would reach out about this proposed logging.

540  
541 **8) Adjournment**  
542

543 There being no further business, Chair Von Plinsky adjourned the meeting at 6:07 PM.

544

545 Respectfully submitted by,  
546 Katie Kibler, Minute Taker  
547 May 23, 2022

548

549 Reviewed and edited by,  
550 Corinne Marcou, Administrative Assistant  
551 Mari Brunner, Senior Planner

## Corinne Marcou

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**From:** Linda Admin <admin@nhacc.org>  
**Sent:** Monday, June 6, 2022 12:39 PM  
**To:** Sparky Von Plinsky; Corinne Marcou  
**Cc:** Brian Reilly; Eloise Clark; Ken Bergman  
**Subject:** Membership Renewal  
**Attachments:** Conservation Commission Member Update Form (2).docx

Dear Keene Commissioners,

Thank you for renewing your membership in NHACC. Together we can accomplish much more, effect change on the local and state level, and build strength in unity. Your participation in the Association makes a difference in the conservation of our wonderful natural resources.

NHACC is available as a resource to you. We offer many programs that are free for members like the Lunch and Learn workshops and regional roundtables. We keep our members informed through our E-newsletters and legislative alerts, and our useful revised edition handbook (copies still available at \$20 for members). NHACC members get a reduced rate at the annual meeting and conference in November. We are also available to consult on the often difficult issues that come before your commission.

Please fill out the attached Commission Update Form, so that we can stay current with our membership. We will add all commissioners to the E-newsletter and legislative alerts subscription. Revised handbooks are available for sale through the office - [admin@nhacc.org](mailto:admin@nhacc.org) .

Thank you again for your support and for all the good work you do to protect New Hampshire's natural beauty and resources.

Respectfully,  
Barbara Richter  
Executive Director

NHACC  
54 Portsmouth Street  
Concord NH 03301  
603-224-7867  
[www.nhacc.org](http://www.nhacc.org)

CHAPTER 153  
SB 267-FN-A - FINAL VERSION

02/03/2022 0082s  
03/31/2022 1288s  
21Apr2022... 1441h  
4May2022... 1779h

2022 SESSION

22-3006  
08/04

SENATE BILL            ***267-FN-A***

AN ACT                establishing the upland invasive species program, program fund, and program coordinator in the department of agriculture, markets, and food.

SPONSORS:            Sen. Giuda, Dist 2; Sen. Rosenwald, Dist 13; Sen. Carson, Dist 14; Sen. Gannon, Dist 23; Sen. Sherman, Dist 24; Sen. Watters, Dist 4; Rep. Renzullo, Hills. 37; Rep. Pearl, Merr. 26; Rep. Suzanne Smith, Graf. 8; Rep. Weston, Graf. 8

COMMITTEE:           Energy and Natural Resources

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ANALYSIS

This bill:

- I. Establishes the position of upland invasive species program coordinator in the department of agriculture, markets, and food.
- II. Establishes the upland invasive species remediation program and fund.
- III. Makes an appropriation to the upland invasive species remediation fund.

---

Explanation:           Matter added to current law appears in ***bold italics***.  
Matter removed from current law appears [in brackets and struck through.]  
Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

CHAPTER 153  
SB 267-FN-A - FINAL VERSION

02/03/2022 0082s  
03/31/2022 1288s  
21Apr2022... 1441h  
4May2022... 1779h

22-3006  
08/04

STATE OF NEW HAMPSHIRE

*In the Year of Our Lord Two Thousand Twenty Two*

AN ACT establishing the upland invasive species program, program fund, and program coordinator in the department of agriculture, markets, and food.

*Be it Enacted by the Senate and House of Representatives in General Court convened:*

1 153:1 New Section; Upland Invasive Species Program. Amend RSA 430 by inserting after section 57  
2 the following new section:

3 430:58 Upland Invasive Species Program and Fund.

4 I. There is established an upland invasive species program in the department which shall  
5 address invasive species infestations. The program shall be administered by an upland invasive species  
6 program coordinator. This position shall be a classified position and the coordinator shall be qualified by  
7 reason of education and experience. The upland invasive species program coordinator shall:

8 (a) Make maps statewide of invasive species infestations.

9 (b) Notify municipalities of invasive species infestations.

10 (c) Hold a valid commercial, not for hire, category B pesticide applicators license.

11 (d) Maintain an active upland invasive species program that includes a combination of  
12 mechanical, cultural, biological, and chemical controls for the purpose of preventing and inhibiting the  
13 spread of invasive species.

14 (e) Subsidize the purchase of herbicides by municipalities, when funding is available.  
15 Municipalities shall provide the coordinator with copies of invoices paid by them no later than November 1  
16 of each year. Based on the invoices received, the coordinator shall, if necessary, distribute  
17 reimbursements on a pro-rata basis and make payments to such municipalities no later than December  
18 15.

19 (f) Develop and distribute invasive species program information around the state.

20 (g) Coordinate with the department of environmental services and the department of natural  
21 and cultural resources to ensure that any upland invasive species remediation efforts do not adversely  
22 impact the water quality of any municipal water supply or body of water under the supervision of those  
23 departments.

24 (h) Invite the participation of state and federal agencies, municipalities, universities, the  
25 general public, or others in helping to manage, educate, and raise awareness of invasive species.

26 II. Each city and town shall designate an existing employee, agency, or other designee as the  
27 contact point for the upland land invasive species coordinator in order to address local invasive species  
28 issues.

**CHAPTER 153**  
**SB 267-FN-A - FINAL VERSION**  
**- Page 2 -**

1           III. All state agencies shall cooperate with the upland invasive species program coordinator to  
2 develop programs and policies addressing the proliferation and spread of upland invasive species on  
3 agency-owned land.

4           IV. There is hereby established in the state treasury a fund to be known as the upland invasive  
5 species remediation fund which shall be kept distinct and separate from other funds. The commissioner  
6 of the department of agriculture, markets, and food may accept funds from any federal, state, or private  
7 source, including grants, gifts, or donations of any kind, for the purpose of funding the purchase of  
8 necessary equipment and materials in support of invasive species remediation. The fund shall be  
9 nonlapsing and continually appropriated to the commissioner of the department of agriculture, markets,  
10 and food for the purposes of this section. However, the fund shall not be used for any costs associated  
11 with personnel or staffing.

12           153:2 New Subparagraph; Upland Invasive Species Remediation Fund. Amend RSA 6:12, I(b) by  
13 inserting after subparagraph (382) the following new subparagraph:

14                       (383) Moneys deposited in the upland invasive species remediation fund established in  
15 RSA 430:58.

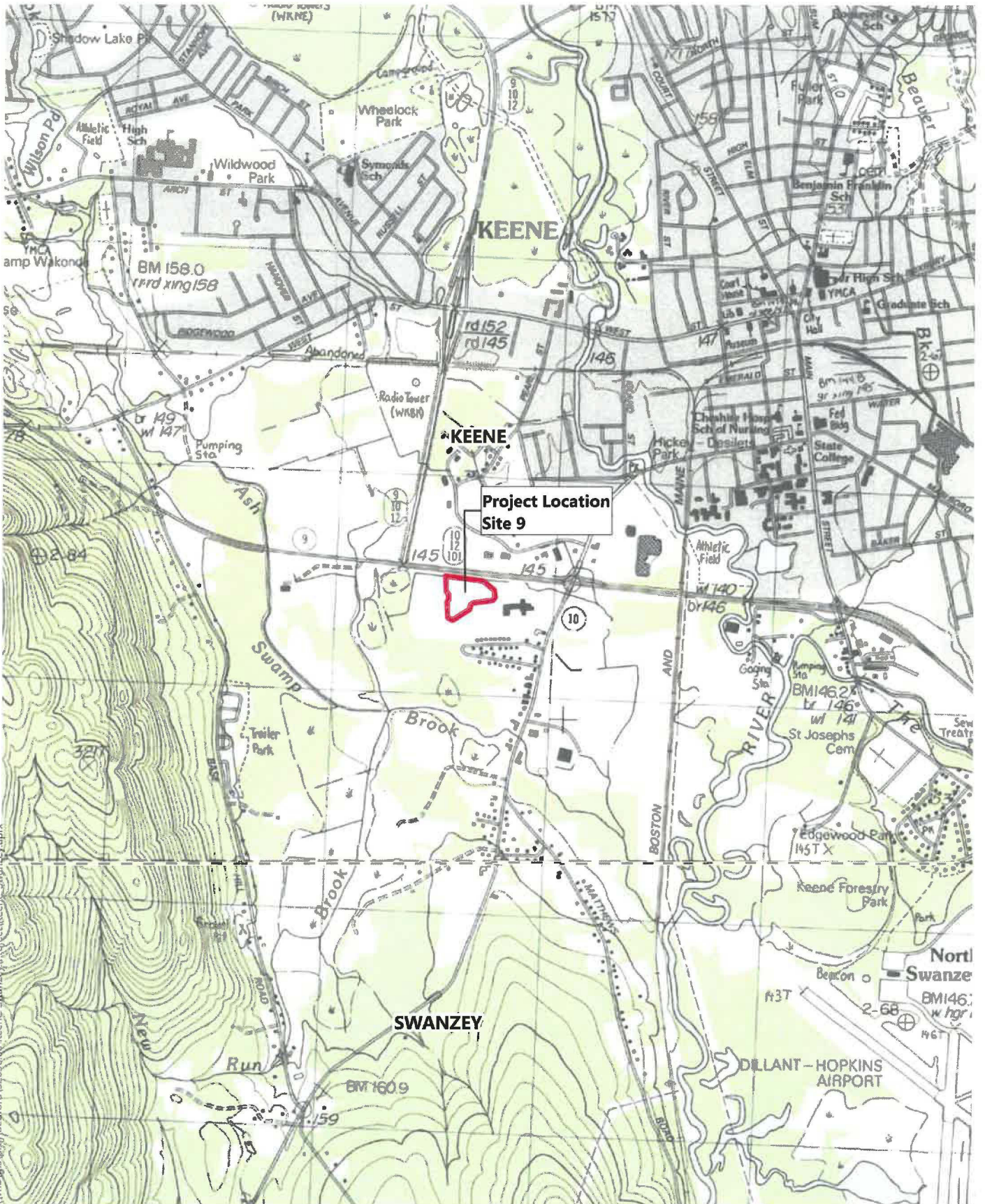
16           153:3 Appropriation; Upland Invasive Species Remediation Program. There is hereby appropriated  
17 to the department of agriculture, markets, and food the sum of \$150,000 for the fiscal year ending June  
18 30, 2022 which shall be nonlapsing, for the purpose of funding the upland invasive species remediation  
19 fund established in RSA 430:58 to be used for the purpose of purchasing materials, equipment,  
20 herbicides, and securing necessary office and storage space. The governor is authorized to draw a  
21 warrant for said sum out of any money in the treasury not otherwise appropriated.

22           153:4 Effective Date. This act shall take effect June 30, 2022.

Approved: June 07, 2022  
Effective Date: June 30, 2022



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Keene-Swanzey 40100



Keene, New Hampshire

Project Location

Town Boundary

USGS Site Location Map



# 1. Introduction

On behalf of the NH Department of Transportation (NHDOT, "the Applicant"), VHB has prepared this Wetlands Permit Application pursuant to the New Hampshire Revised Statutes Annotated (RSA) Chapter 482-A, Fill and Dredge in Wetlands, and Wetland Bureau Code of Administrative Rules, Chapters Env-Wt 100 through Env-Wt 900. This application, including the appendices, were formatted to align with the NHDOT *Required Order of Application Package* list, dated June 2020.

This project is consistent with the intent of the Restoration/Enhancement Activities Rule (Env-Wt 525), and we therefore request that NHDES classify this project as a Minimum Impact Project. However, we note that the proposed impacts to a "tax ditch" (Tier 1 intermittent stream) exceed the 200 linear feet threshold for a Major Impact Classification in accordance with Env-Wt 407.03(a). Impacts are further detailed in **Section 8** of this **Application Narrative** below. As suggested by Karl Benedict (NHDES), we have therefore included items normally required for a major project in this application, including NHDES *Attachment A: Minor and Major Projects*.

## Brief Project Background

This project involves the development of a floodplain compensatory storage site in Keene, NH to offset approximately 19.9 acre-feet (ac-ft) of floodplain impacts from four NHDOT highway construction projects completed in Keene over the last decade related to the upgrade of NH Routes 9, 10, 12, and 101, as part of the NHDOT Keene-Swanzey 10309 series of projects. Refer to the **Floodplain Impact Summary** (Figure 4) provided in **Appendix K** for the location of these projects.

Although the NHDOT has completed mitigation projects to offset wetland impacts resulting from these projects, a viable floodplain mitigation strategy has not been implemented. Since the construction of floodplain compensatory storage within the Ashuelot River watershed remained unresolved, the NHDES wetland permit for the Multi-Use Trail over NH 101 (NHDES File No. 2015-01505) required NHDOT to provide, among other measures, floodplain compensation within the Ashuelot River watershed to compensate for the impacts resulting from the completed Keene-Swanzey projects.

Wetlands and floodplains are prevalent in this low-lying valley, which is underlain by former glacial lakebed sediments and is bisected by the Ashuelot River and its several tributaries. Flooding is an important concern in the City of Keene, which has seen city-wide flooding several times over the last several decades, making this project a priority for the Applicant and the City.

As a result of a detailed site selection process that prioritized undeveloped lands (detailed in **Section 4** of this **Application Narrative** below), avoidance of wetlands and streams, and the appropriate geographic position relative to the impacted floodplain, among other factors, "Site 9" was selected as the preferred alternative of the 19 parcels evaluated. Site 9 ("the Site") is an area within NHDOT-owned right-of-way (ROW) that is located mostly outside of known wetlands and is large enough to provide the required compensatory storage area. Refer to **Figure 1, USGS Site Location Map**.

## 2. Site Description and Existing Conditions

The Site is underlain by former glacial lakebed sediments and primarily consists of open upland meadow habitat (that was historically an agricultural field that grew corn) which extends into early successional forest habitat that dominates the southwestern portion of the Site. Dominant vegetation observed within the open upland meadow portion of the Site includes species of clover (*Trifolium* spp.), broom sedge (*Carex scoparia*), Canada goldenrod (*Solidago canadensis*), common cinquefoil (*Potentilla simplex*), cow vetch (*Vicia cracca*), orange hawkweed (*Hieracium aurantiacum*), gray birch saplings (*Betula populifolia*), meadow hawkweed (*Hieracium caespitosum*), milkweed (*Asclepias syriaca*), sensitive fern (*Onoclea sensibilis*), interrupted fern (*Osmunda claytoniana*), soft rush (*Juncus effusus*), and white yarrow (*Achillea millefolium*), along with a few invasive plants including glossy buckthorn saplings (*Frangula alnus*) and oriental bittersweet (*Celastrus orbiculatus*). Dominant vegetation observed within the southwestern forested portion of the Site consists of quaking aspen (*Populus tremuloides*), gray birch (*Betula populifolia*), and some white pine (*Pinus strobus*) in the overstory, with Canada goldenrod, giant goldenrod (*Solidago gigantea*), glossy buckthorn, Virginia creeper (*Parthenocissus quinquefolia*), common cinquefoil, and scattered patches of interrupted fern and sensitive fern in the understory, along with various invasive species listed below. Refer to the **Natural Resource Map** (Figure 3) and **Representative Site Photo Log** provided in **Appendix I**. Wetland hydrology was absent from both the center upland meadow and southwestern forested area at the time of observation. Furthermore, soils sampled throughout the Site were observed to be too bright (high chroma) to meet any hydric soil indicators. Common soils observed consisted of a fine sandy loam texture and varied in color from 10YR 4/4 to 10YR 4/2 without redox concentrations.

Invasive species were identified and are categorized as NHDOT Type I and Type II based on the NHDOT's *Best Management Practices for the Control of Invasive and Noxious Plant Species* manual dated 2018. Type I species are plants that reproduce only by seeds, while Type II species are plants that reproduce by seeds and vegetative means (i.e., root or stem fragments) making them easier to spread. Type I invasive species observed within and along the Site include a species of honeysuckle (*Lonicera* sp.), multiflora rose (*Rosa multiflora*), oriental bittersweet, glossy buckthorn, and autumn olive (*Elaeagnus umbellata*). A small quantity of purple loosestrife (*Lythrum salicaria*), a Type II invasive species, was observed within the tax ditch northwest of and outside of the Site during the June 2020 field work. No purple loosestrife was observed within the tax ditch directly abutting or overlapping the proposed work during the more recent 2021 and 2022 site visits. The invasive species mapping within the Site is depicted on the **Wetland Plans** provided in **Appendix L**. Note that since the invasive species mapping was conducted in November 2021 after routine mowing of the open meadow area, no invasive species were mapped in that portion of the Site - however, Type I species may be present in small quantities.

No perennial streams are located on the Site, and the Ashuelot River is over 0.5 mile to the northeast and Ash Swamp Brook is approximately 0.3 mile south of the Site. Wetlands were delineated around the Site perimeter, as detailed in **Section 5** of this **Application Narrative** below and shown on the **Natural Resource Map** (Figure 3) provided in **Appendix I**. The wetland east of the Site is a large relatively flat wet meadow, while the wetlands along the northern and western perimeters are constructed wetland ditches known as "tax ditches."



### Tax Ditches

A tax ditch system was historically established throughout the City of Keene ("the City") by the Natural Resource Conservation Service (NRCS, formerly the Soil Conservation Service or SCS) primarily to channelize/straighten and deepen streams to lower groundwater levels and drain wetlands on adjacent properties to support agricultural land uses. Today, this system of tax ditches is maintained by the City in an effort to reduce the risk of localized flooding events.

Although some of these tax ditches are, in fact, channelized streams or have stream characteristics, other tax ditches, including those within and adjacent to the Site, have characteristics of emergent/scrub-shrub palustrine wetland ditches or linear cattail marshes, as detailed further in **Section 5** of this **Application Narrative** below. The portion of this tax ditch east of the Winchester Street Roundabout in the agricultural land was determined to be a stream and given a riverine classification. This determination was made when that site was delineated during the initial site selection process due to the more typical stream channel and bed characteristics observed in that location. This is also consistent with the National Wetland Inventory (NWI) mapping of the tax ditches which does not map them at all west of the roundabout but maps them as a stream east of the roundabout. The National Hydrography Dataset (NHD) for New Hampshire published on February 11, 2022, and accessed via the online viewer, maps the tax ditches along the Site with a dashed line style to represent intermittent flow up to their southern confluence with Ash Swamp Brook, which is mapped as a solid line in this dataset indicating perennial flow. In light of this information, coupled with the tax ditch characteristics within and along the Site, we consider them to be characteristically palustrine wetlands and functionally Tier 1 intermittent streams since they were created with the intention of conveying surface water flow. Furthermore, in accordance with Env-Wt 901.03(f), if temporary crossings (in place for less than two years) are restored to pre-installation conditions when the crossings are removed, they are exempt from the requirements of Env-Wt 903 and 904.

### NHDES Wetlands Permit Planning Tool (WPPT) Review

Based on a review of the NHDES WPPT, it was determined that there are no Priority Resource Areas (PRAs) within the vicinity of the Site. Furthermore, there will be no impacts to Class A waters, outstanding resource waters, impaired waters, or designated rivers.

Based on a review of the NHDES OneStop Database and PFAS Mapper, it appears that the potential to encounter contaminated soil or groundwater on the Site is negligible. The closest hazardous waste generator and underground storage tank belong to Filtrine Manufacturing Company which is located adjacent to the southern border of the Site.

Typically, all topsoil within an existing state-owned ROW is classified as Limited Reuse Soil (LRS); however, a request to refine the definition of LRS pertinent to this Site, since the ROW extends far off the road, was documented in a NHDOT memorandum dated November 25, 2020. With this approval, the LRS ROW within the Site extends approximately 92 feet off the edge of the roadway pavement instead of encompassing the entirety of the Site, as depicted on the **Wetland Plans** provided in **Appendix L**. Topsoil excavated from the LRS area may be stockpiled and reused for site restoration only within the LRS area. The remainder of the excavated LRS soil will be removed from the site for proper treatment and disposal.

### 3. Proposed Project Description

The project seeks to create a minimum of 19.9 ac-ft of excavated compensatory floodplain storage that is hydraulically connected to the overall Ashuelot River floodplain. The current design exceeds this goal by providing approximately 20.2 ac-ft of proposed floodplain storage connected to the existing tax ditch along NH Route 10/12/101. Although the project is focused on creating floodplain storage, some wetland habitat may develop indirectly due to the excavation of the Site close to the estimated seasonal high water table. Based on field topographic survey, boring logs, monitoring well measurements, and field observations, groundwater elevations are assumed to range from approximately 464 feet and 467 feet with a median elevation of approximately 466 feet. These elevations are consistent with observed standing water elevations in the tax ditch along the northern perimeter of the site observed during site visits and historic monitoring well readings.

Given that most of the Site is upland, the proposed jurisdictional impacts are limited, as described in the bullets below. This project is expected to be advertised from construction bids in late fall/early winter of 2022 with construction planned for 2023.

- › **Floodplain Compensatory Storage Grading:** Since the purpose of the Project is to provide additional floodplain storage, the central component of the work will be the removal of over 32,000 cubic yards of soils from the Site. The range of elevations where storage is proposed is between elevations 465 to 470 feet NAVD88 and has a direct hydraulic connection to the floodplain. The grading plan is designed to create variation in final elevations (rather than a uniformly flat site) to support diverse vegetation communities and increase visual interest and habitat value post-construction. Narrow zones of permanent and temporary grading impacts are proposed along the southern edge of the tax ditch to tie it into the re-graded site.
- › **Temporary Access:** Two temporary 48-inch culvert crossings of the northern tax ditch are proposed to provide an entrance and exit onto the adjacent roadway within NHDOT ROW. It was determined that two crossings of the northern tax ditch were needed as opposed to one given the anticipated size of the construction vehicles to allow for efficient and safe entrance and exit between the Site and the adjacent public roadway (i.e., correct angles to facilitate merging, etc.).
- › **Restoration:** The Site will be restored and planted with various herbaceous seed mixes and woody plant species that were selected for the various planting zones based on factors such as their prevalence in the adjacent plant community and their habitat preferences. Only NH native plant species are included in the planting plan. The woody plants consist of shrubs ranging in height from 1.5 to 3 feet tall and trees ranging in height from 3-6 feet tall depending on whether they are live stakes, grown in nursery containers, or balled and burlapped (B&B); a mix of plant sizes were selected within the planting zones for structural diversity. The four planting zones include:
  - Zone 1 - below elevation 466 feet,
  - Zone 2 - between elevations 466 and 467 feet,
  - Zone 3 – above elevation 467 feet, and
  - Zone 4 - the access restoration – existing grades above elevation 469.

Refer to the **Planting Plan** on Sheet 10 of the **Wetland Plans** provided in **Appendix L** for planting tables (that detail the selected species, size, spacing, quantity, etc.) and notes.



- › **Future Management:** Following construction, the current routine mowing of the open meadow portion of this Site will be discontinued to allow the planted vegetation to establish and mature into a native plant community. The Site will be monitored for a minimum of three years post-construction in accordance with the **Project Monitoring Plan** provided in **Appendix J**. In summary, this monitoring will include twice annual site visits (with annual reporting to NHDES) to:
  - Inspect the slopes for potential erosion issues,
  - Assess the health, survivorship, and abundance/cover of the planted vegetation,
  - Document the establishment of invasive species, and
  - Recommend general remediation measures for any identified issues (i.e., erosion, invasive species >10-15% cover, replacement of unhealthy/dead planted vegetation, etc.).
- › **Deed Restriction/Conservation Easement:** The Site will be placed into a deed restriction or conservation easement to ensure the Site is protected for flood storage in perpetuity. This conserved area may include a larger property contiguous to the Site and progressing south towards Ash Swamp Brook (totaling approximately 80 acres). This site was purchased in the 1970s for a proposed roadway bypass project that is no longer planned. The Monadnock Conservancy is an active project partner that has expressed interest in serving as the third-party steward for this conservation easement. The easement documentation (including a baseline documentation report, stewardship management plan, property survey, conservation easement deed, etc.) is expected to be prepared late 2022/early 2023 with the easement in place by late 2023.

## 4. Alternatives Analysis

A detailed site alternatives analysis - including environmental review pursuant to the National Environmental Policy Act (NEPA) - was conducted in 2019-2021 in consultation with a project Technical Advisory Group (TAG).

Site screening to identify an appropriate floodplain mitigation site started at a landscape level using geographic information system (GIS) data and other desktop resources to identify high priority floodplain mitigation sites in the City of Keene. An analysis of "Floodplain Mitigation Focus Areas" identified priority sites based on criteria that included:

- › Prioritization of undeveloped lands, using data from the City of Keene and the USGS National Land Cover Database,
- › Avoidance of wetland impacts, using US Fish and Wildlife Service (USFWS) NWI wetlands, hydric soils, and FB Environmental Associates (FBE) delineations (NHDOT sites), and
- › Determination of appropriate geomorphic position relative to the impacted floodplain, within or directly adjacent to the Federal Emergency Management Agency (FEMA) mapped floodplains elevations of 466 ft to 478 ft.

City tax parcel data identified a total of 19 parcels that contained at least 5 acres of Floodplain Mitigation Focus Area. This list was further narrowed to 10 priority sites by selecting sites that were determined compatible with adjacent land uses, were close to the impact location, and limited environmental impact such as tree clearing. Once the initial screening was completed, CAD and LiDAR topographic data was used to estimate the maximum potential compensation flood storage volume for potential mitigation sites. Each of the 10 sites were ranked

according to the potential compensatory storage available (refer to the **Priority Screening Parcels** (Figure 5) provided in **Appendix K**):

- › High Priority Sites (green, greater than 120% of target flood storage),
- › Medium Priority Sites (yellow, between 80%-120% of target flood storage), and
- › Low Priority Sites (red, less than 80% of target flood storage).

Three of the 10 sites were ranked as low priority sites and were therefore eliminated from further study. On May 5, 2020, members of the TAG, VHB, and NHDOT visited the set of seven remaining parcels in the field. As a result of this site visit, two parcels (Parcels 114-021 and 114-025) were eliminated from further consideration due to their location within an active low floodplain with a mature floodplain forest community.

A total of five sites remained and were selected for field studies, which included development of an existing conditions survey (property boundaries and topography), wetland delineations, preliminary cultural resource reviews, rare species coordination, updated compensatory storage volumes, and development of 30% design plans. Refer to the **Priority Screening Parcels** (Figure 6) provided in **Appendix K**.

The wetland delineation revealed that Site 8 is primarily wet meadow, resulting in its elimination. Site 9 (i.e., the proposed Site) is dominated by open field, with an inclusion of primary succession forest in the southwest portion of the site, populated by young gray birch, poplar, and other small trees, saplings, and shrubs. The Legere (111-007) and Krif (115-010 and 115-013) sites are similar locations - both are currently farmed and have an unnamed perennial tributary running through the parcels and wetlands present along their margins. Refer to the **Priority Screening Parcels Delineated Natural Resources** (Figure 7) provided in **Appendix K**.

Conceptual 30% design plans and refined compensatory storage estimates were developed for the remaining four alternative sites. Development of these plans included a more detailed, site-specific approach than the preliminary compensatory storage estimates to reflect improved data. This more precise analysis included field verification of property lines, avoidance of grading impacts to wetlands, utilities, or other features identified in the field, and incorporation of sloped grades to ensure that water could drain out of the mitigation area as floodwaters recede. As part of this refined analysis, surface elevations for each of the four sites were mapped, along with proposed excavation depth. The Legere (111-007) and Krif (115-010 and 115-013) sites were determined to be less practicable than Site 9 due to private ownership and the presence of an unnamed tributary and wetlands. Analysis of the Legere (111-007) and Krif (115-010 and 115-013) sites also revealed that it would be difficult to achieve the target compensatory storage volume of 19.9 ac-ft, despite promising preliminary estimates for these sites. Compensatory flood storage for the conceptual designs of the Legere (111-007) and Krif (115-010 and 115-013) sites is less than 19.9 ac-ft due to the need to avoid and minimize impacts to stream channel and banks. Upon evaluation of the 30% conceptual designs, it became apparent that substantial impacts to adjacent stream banks would be required to meet the 19.9 ac-ft target for these sites.

Based on the results of screening evaluations, field data collection, conceptual design development, and feedback from members of the TAG, Site 9 was determined to be the preferred alternative for the compensatory floodplain storage site. Site 9 avoids the acquisition of private property, avoids substantial wetland impacts, and avoids historic properties. The Site is close to the Winchester Street Roundabout (Project 10309H), the largest source of floodplain fill, and is located within the same hydraulic reach of the Ash Swamp Brook floodplain. Refer to **Section 10** of this **Application Narrative** below for more information regarding the consultation with the TAG.



## 5. Wetland Resources

VHB Senior Environmental Scientist Kristopher Wilkes (NH CWS #288) verified the previously delineated wetlands within the Site in the summer of 2020, invasive species were mapped in November 2021, and detailed wetland data was collected in March 2022. Wetlands around the Site were delineated by FBE in 2014. Wetland verification was performed in accordance with the procedures and standards outlined in the *1987 Corps of Engineers Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (January 2012). Wetland verification and delineation also relied upon the *Field Indicators for Identifying Hydric Soils in the United States, Version 8.2*, published by the Natural Resource Conservation Service and the *Field Indicators for Identifying Hydric Soils in New England, Version 4.0*, published by the New England Interstate Water Pollution Control Commission in June 2020. Dominant wetland vegetation was assessed using the *2018 National Wetland Plant List* published by the U.S. Army Corps of Engineers. Lastly, wetlands were classified using the USFWS methodology *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979, revised 1985). Wetland function and values were assessed using the Wetland Function-Value Evaluation Forms in accordance with the *Highway Methodology Workbook Supplement* (USACE, 1999).

Additionally, an assessment for potential vernal pool habitat was conducted within the Site in accordance with *Identifying and Documenting Vernal Pools in New Hampshire – Third Edition*, 2016, published by the New Hampshire Fish and Game Department, Nongame and Endangered Wildlife Program. No potential vernal pools were identified. Invasive plant species within the Site were identified and delineated in the field in November 2021 for inclusion on the general project plans to be provided to the Contractor. The invasive species mapping is also shown on the **Wetland Plans** provided in **Appendix L**.

### Wetland 9-1

Wetland 9-1 (W9-1) is a series of ditches along the southern edge of NH 101 with two branches that border the western and northern boundaries of the Site. The northern portion of this wetland merges with Wetland 9-3 (W9-3) northeast of the Site. These excavated flood control ditches have developed into palustrine emergent marsh habitat with persistent emergent vegetation and scrub-shrub components, resulting in the following wetland classifications: Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated, Excavated (PEM1Ex) and Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated, Excavated (PSS1Ex). Wetland vegetation observed within these ditches includes narrowleaf cattail (*Typha angustifolia*), reed canary grass (*Phalaris arundinacea*), sensitive fern, white meadowsweet (*Spiraea alba*), swamp dewberry (*Rubus hispidus*), soft rush, marsh speedwell (*Veronica scutellata*), cinnamon fern (*Osmundastrum cinnamomeum*), and rough-stemmed goldenrod (*Solidago rugosa*). Furthermore, numerous cut woody stems were observed along the embankments during the data collection effort in March 2022 that are likely gray birch saplings, red maple saplings, silky dogwood (*Cornus amomum*), northern arrowwood (*Viburnum recognitum*), and a species of willow (*Salix* sp.) based on twig/bud identification and review of past site visit notes and photos. Note that not all these species were located within the sampling area for the Wetland Determination Data Forms. Based on the wetland data collected in March 2022, wetland hydrology indicators include surface water (A1), high water table (A2), soil saturation (A3), drainage patterns (B10), and FAC-neutral test (D5). Note that the high-water table may be the result of recent rain and snow melt. Wetland soils were observed to meet the following Hydric Soil Indicators

throughout the wetland, with some areas meeting multiple indicators: A11: Depleted Below Dark Surface, F2: Loamy Gleyed Matrix, F3: Depleted Matrix, and F6: Redox Dark Surface. Refer to the **Wetland Determination Data Forms** for sampling points Wet-1, Up-1, Wet-2, and Up-2 provided in **Appendix H**.

#### Functions and Values

Principal functions of Wetland 9-1 include floodflow alteration, sediment/toxicant retention, and nutrient removal. These functions were largely determined based on the position of this excavated wetland ditch to the adjacent paved roadway with no curb, combined with its dense vegetation, concave topography, location within the 100-year floodplain of Ash Swamp Brook and/or the Ashuelot River, and aquifer transmissivity of less than 2,000 square feet per day according to NH GRANIT. Potential sediment/toxicant and nutrient sources include the nearby roadways, agricultural and athletic fields, and numerous commercial properties. Refer to the **Wetland Function-Value Evaluation Form** provided in **Appendix B**.

#### **Wetland 9-3**

Wetland 9-3 (W9-3) is a wet meadow located east of the Site that consists of emergent marsh and scattered scrub-shrub components resulting in the following wetland classifications: Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated, Partially Drained/Ditched (PEM1Ed) and Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated, Partially Drained/Ditched (PSS1Ed). Wetland vegetation observed within W9-3 includes reed canary grass, white meadowsweet, swamp dewberry, sensitive fern, soft rush, various species of sedge, cut woody stems of gray birch and northern arrowwood, and rough-stemmed and Canada goldenrods. Note that not all these species were located within the sampling area for the Wetland Determination Data Form. Based on the wetland data collected in March 2022, wetland hydrology indicators include high water table (A2), soil saturation (A3), drainage patterns (B10), and FAC-neutral test (D5). Note that the high-water table may be the result of recent rain and snow melt. Wetland soils were observed to meet the Hydric Soil Indicator A11: Depleted Below Dark Surface at the sampling point location. Indicators F2: Loamy Gleyed Matrix and F3: Depleted Matrix were observed elsewhere within this wetland. Refer to the **Wetland Determination Data Forms** for sampling points Wet-3 and Up-3 provided in **Appendix H**.

#### Functions and Values

Principal functions of Wetland 9-3 include floodflow alteration, sediment/toxicant retention, nutrient removal, and groundwater recharge. These functions were largely determined based on the position of this flat wet meadow to the adjacent paved roadway with no curb, combined with its dense vegetation, connection to the roadside drainage swales (W9-1), location within the 100-year floodplain of Ash Swamp Brook and/or the Ashuelot River, and aquifer transmissivity of less than 2,000 square feet per day according to NH GRANIT. Potential sediment/toxicant and nutrient sources include the nearby roadways, agricultural and athletic fields, and numerous commercial properties. Refer to the **Wetland Function-Value Evaluation Form** provided in **Appendix B**.

## 6. Floodplains

The Site is located within the FEMA Special Flood Hazard Area, Zone AE Floodplain of Ash Swamp Brook (south of the Site) and the Ashuelot River (east of the Site) as shown on the effective Flood Insurance Rate Map No. 33005C0266E dated May 23, 2006. This project proposes to grade the Site to create more compensatory flood storage area within the floodplain. Refer to the **Floodplain Map** (Figure 2) provided in **Appendix C**.



For context regarding the origin of this project, Executive Order 11988 (issued May 24, 1977) establishes a policy on floodplain management, and specifically directs agencies to “avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” Consequently, the purpose of this project is to provide floodplain compensatory storage within the Ashuelot River watershed to offset 19.9 ac-ft of impacts incurred by the Keene-Swanzey highway construction projects completed over the last decade.

## 7. Rare, Threatened, and Endangered Species

The following is a discussion of rare, threatened, and endangered species identified within the vicinity of the Site by the NH Natural Heritage Bureau (NHB) DataCheck tool and USFWS Information for Planning and Consultation (IPaC) system.

### 7.1 Natural Heritage Bureau

A search for the occurrence of rare plant, animal, or natural communities within the vicinity of the Site was completed using the NHB online DataCheck tool. A project report provided by NHB, dated February 28, 2022, indicated that there are no recorded occurrences for sensitive species within or near the Site. However, since a negative result does not mean that sensitive species are absent, typical wildlife best management practices (BMPs) will be implemented throughout construction, as detailed in **Section 8.2** of this **Application Narrative** below. Refer to the **NHB DataCheck Report** provided in **Appendix D**.

### 7.2 US Fish and Wildlife Service

The Site was reviewed for the presence of federally listed or proposed, threatened, or endangered species, designated critical habitat, or other natural resources concerning the USFWS IPaC System. Results dated April 13, 2022, indicate the potential presence of the federally threatened northern long-eared bat (*Myotis septentrionalis*, “NLEB”) and federal candidate monarch butterfly (*Danaus plexippus*); no critical habitats were identified. Refer to the **USFWS IPaC Report** provided in **Appendix E**.

#### Northern Long-Eared Bat

The proposed project is located within the federally protected range of the NLEB, which is a federally threatened species. Tree clearing activities are one of the largest threats to the NLEB. Based on the current plans, approximately 3 acres of early successional forest habitat is proposed to be cleared. The proposed project is not within 150 feet of known occupied maternity roost trees, nor within a ¼ mile of known hibernaculum. The nearest known NLEB site is in Sullivan, northeast of Keene.

Review with the USFWS was conducted during the preparation of the National Environmental Policy Act (NEPA) Categorical Exclusion documentation for this project. The FHWA FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bats Determination Key revealed that further consultation between NHDOT and USFWS would be required. Upon review of the Proposed Action under the 4(d) Rule, a USFWS verification letter was generated through the IPaC system on December 11, 2020. This review found that the Proposed Action may affect the NLEB in a manner consistent with the description of activities addressed by the USFWS Programmatic Biological Opinion (PBO) dated January 5, 2016. Any take that may occur incidental

to the Proposed Action is not prohibited under the 4(d) Rule. Therefore, the USFWS PBO satisfied the project's responsibilities under the ESA Section 7(a)(2) relative to the NLEB at that time.

However, the USFWS announced a proposal to reclassify the northern long-eared bat as endangered under the Endangered Species Act on March 22, 2022, with a final decision to be published by the end of November 2022. The proposed reclassification, if finalized, would remove the current 4(d) rule as these special rules may only be applied to threatened species. Consequently, projects that have completed the 4(d) consultation, but will be ongoing after December 2022 will likely need to reinitiate Section 7 consultation with USFWS if the lead federal agency (FHWA in this case) retains discretion over the action and anticipates impact to the species as a result of the project. The USACE will also retain discretion to decide on the Section 404 permit that would be required based on the Section 7 determination. If the reclassification is finalized, the FHWA FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bats would remain in effect and its Determination Key will be used by NHDOT for consultation with the USFWS on the NLEB. The status of this decision will be monitored to ensure this project remains in compliance with the evolving standards.

Nevertheless, since the early successional forest habitat within the Site is potentially suitable summer habitat and portions of the habitat to be impacted are greater than 300 feet from any roadway, a Phase 2 Summer Presence/Probable Absence Acoustic Monitoring Survey targeting the NLEB will be conducted during the summer of 2022 in accordance with the USFWS 2022 Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines.

#### Monarch Butterfly

Since the monarch butterfly is a candidate species but is not listed as threatened or endangered, conservation measures are not required but should be implemented when feasible to demonstrate environmental stewardship. This species can be found anywhere where nectar producing plants are present, especially in open fields or meadows. Monarch butterflies will only breed in places with milkweed since that is the primary food source for their larva. The open portion of the Site does contain open meadow habitat with nectar producing plants (i.e., goldenrods) and scattered milkweed. However, this Site is routinely disturbed via mowing and will be replanted post-construction with native seed mixes that will likely restore its potential butterfly habitat suitability. The candidate status of this species does not provide protection under the Endangered Species Act, and no further coordination with the USFWS is required at this time.

### 7.3 Wildlife

The NHF&G Wildlife Action Plan (WAP) identifies ranked habitat tiers that recognize the highest quality habitats in the state. Habitat tiers were created by the NHF&G Department using biological data, landscape data, and human influence information. Habitat tiers are separated into three rankings, which are 1) *Highest Ranked Habitat in the State*, 2) *Highest Ranked Habitat in Biological Region*, and 3) *Supporting Landscape*.

The southeastern portion of the Site is bordered by the Highest Ranked Habitat in the Biological Region between the successional forest area and the adjacent industrial development. The Site is also near mapped Supporting Landscape habitat to the southwest. Refer to the **Ranked Habitat Map** (Figure 8) provided in **Appendix K**. The Site mostly contains the developed or barren land habitat type with a few patches of grassland habitat. Refer to the **Habitat Type Map** (Figure 9) provided in **Appendix K**. The proposed activities will involve clearing of large portions of the early successional forest habitat (which is not represented in the WAP data) but will not adversely impact the surrounding more valuable habitat areas.



## 8. Impact Analysis

### 8.1 Proposed Impacts and Avoidance and Minimization

This project proposes limited temporary and permanent impacts to Wetland 9-1 to provide construction access and to tie the graded site elevations into the existing tax ditch system, as detailed below. Refer to the **Construction Notes** and **Construction Sequence Narrative** on Sheets 7 and 9 of the **Wetland Plans** provided in **Appendix L**.

#### Temporary Impacts

This project involves the construction of two temporary 48-inch high-density polyethylene (HDPE) culverts along the northern tax ditch to create an entrance and exit for construction vehicles between the Site and NH 10/12/101 (Impacts B and C). These culverts would allow for flow capacity greater than the 25-year design storm. In addition to these culverts, temporary sheet piling will be installed within this wetland in two places to prevent sedimentation of the ditch during the excavation along the southern slope (Impacts B and D). The total proposed temporary jurisdictional impact is 4,631 square feet (sq ft)/583 linear feet (lin ft).

#### Permanent Impacts

To tie the graded site elevations into the existing tax ditch system, minimum permanent impacts along the southern edge of Wetland 9-1 are required (Impacts A and E). The total proposed permanent jurisdictional impact is 3,181 sq ft/545 lin ft. Avoidance of these permanent impacts was not possible to ensure adequate flood storage functionality of the Site by tying into the existing floodplain wetland resources.

#### Impact Classification

Based on the total 7,812 sq ft/1,128 lin ft of impact, this project could be classified as a Major Impact Project in accordance with Env-Wt 407.03(a) since greater than 200 lin ft of impact are proposed to the tax ditch/Wetland 9-1 (which functions as a Tier 1 intermittent stream). Therefore, we included the NHDES Attachment A: Minor and Major Projects form in this application. However, we believe this project is consistent with the intent of the Restoration/Enhancement Activities Rule (Env-Wt 525) and request that NHDES classify this project as a Minimum Impact Project.

### 8.2 Best Management Practices

Standard BMPs will be applied throughout project construction in accordance with applicable NHDES and NHDOT BMP Manuals to reduce the risk of erosion and sediment-laden runoff from entering the adjacent tax ditches and wetlands. Perimeter controls such as silt fence and/or silt sock will be installed upslope of the natural resources to ensure that surface water runoff from unstabilized areas does not carry silt, sediment, and other debris outside of the limits of work. Temporary steel piling is proposed within Wetland 9-1 along the proposed grading limits to prevent sedimentation of the ditch during the excavation activities. Two temporary 48-inch HDPE culverts will be installed in the northern tax ditch to convey stormwater drainage through the wetland ditches beneath the temporary construction access points during construction. All installed temporary erosion control measures shall be inspected daily and repaired/replaced as necessary. Only wildlife-friendly erosion controls composed of natural materials will be used. No photo-biodegradable plastic netting will be used. For more information, refer to the **Construction Notes**, **Construction Sequence Narrative**, and **Erosion Control Plan** on Sheets 7, 9, and 12, respectively, of the **Wetland Plans** provided in **Appendix L**.

In accordance with Env-Wt 307.12, areas remaining un-stabilized for a period of more than 3 days following final grading or temporary suspension of work shall be temporarily seeded and mulched. Erosion control blankets shall be installed on all slopes that are greater than 3 feet horizontal and 1 foot vertical (3:1). Upon the completion of the proposed work, all disturbed and graded areas located upslope of the erosion control measures will be seeded and mulched as needed. Disturbed areas that have been seeded and mulched will be considered stable once 75-percent vegetative growth has been achieved after two growing seasons in accordance with Env-Wt 307.12(f). Refer to the **Planting Plan** on Sheet 10 of the **Wetland Plans** provided in **Appendix L** for further details. Additionally, the Site will be monitored post-construction in accordance with the **Project Monitoring Plan** provided in **Appendix J** to ensure the established goals for the Site are achieved and recommend applicable remediation measures.

Since invasive plants are known to occur within the project area, all work including daily removal of plant material from construction equipment, shall be constructed in accordance with NHDOT's *Best Management Practices for the Control of Invasive and Noxious Plant Species* (2018). Only clean equipment that is free of plant material and debris shall be delivered to the project site and utilized during construction. All machinery entering and leaving any area containing invasive plants will be inspected for foreign plant matter (i.e., stems, flowers, and roots) and soil embedded in the tracks or wheels. If foreign plant matter or soil is present, the operator shall remove the plant material and soil from the machine using hand tools.

### 8.3 Mitigation

This project does not require mitigation as its purpose is to serve as mitigation for floodplain impacts associated with four past NHDOT projects. Furthermore, this project should be considered self-mitigating as it will improve the functions and values of resources within and along the Site through the increased flood storage space and restoration plantings and will likely lead to the creation of wetland habitat. Additionally, the Site will be placed into a conservation easement as described in **Section 3** of this **Application Narrative** above.

## 9. Cultural Resources

The project will not affect historic properties pursuant to Section 106 of the National Historic Preservation Act. A Phase IA Archaeological Sensitivity Assessment was prepared by Monadnock Archaeological Consulting, LLC on June 19, 2020, and submitted to the NH Division of Historical Resources (NHDHR) for review on July 1, 2020. A Request for Project Review (RPR) was submitted to the NHDHR on September 29, 2020. On October 21, 2020, NHDHR responded with a recommendation of "No Historic Properties Affected" and concurred with the results of the Phase IA Archaeological Sensitivity Assessment. Documentation of the "No Historic Properties Affected" determination is provided in a Section 106 Memo, which was executed on January 25, 2021. Refer to the NHDHR Section 106 Consultation documentation provided in **Appendix F**.

## 10. Federal Agency and Local Coordination

### Federal Coordination

The project proposes approximately 3,181 sq ft (545 lin ft) of permanent jurisdictional impacts and approximately 4,631 sq ft (583 lin ft) of temporary jurisdictional impacts to the tax ditch/Wetland 9-1 which requires Section 404 authorization under the US Army Corps of Engineers (USACE) State Programmatic General



Permit (NAE-2016-02415). As such, Appendix B – Corps Secondary Impacts Checklist has been completed. Refer to the **USACE Appendix B Checklist** provided in **Appendix G**.

This project does not require a Section 10 permit pursuant to the Rivers and Harbors Act of 1899 since there are no navigable waters present within the Site.

In accordance with Env-Wt 311.06(j), this project was presented at two NHDOT Natural Resource Agency Coordination (NRAC) Meetings held on December 18, 2019, and October 21, 2020. Refer to the **Meeting Minutes** provided in **Appendix A**. USACE and EPA representatives were present for these meetings and had the opportunity to provide comments or questions.

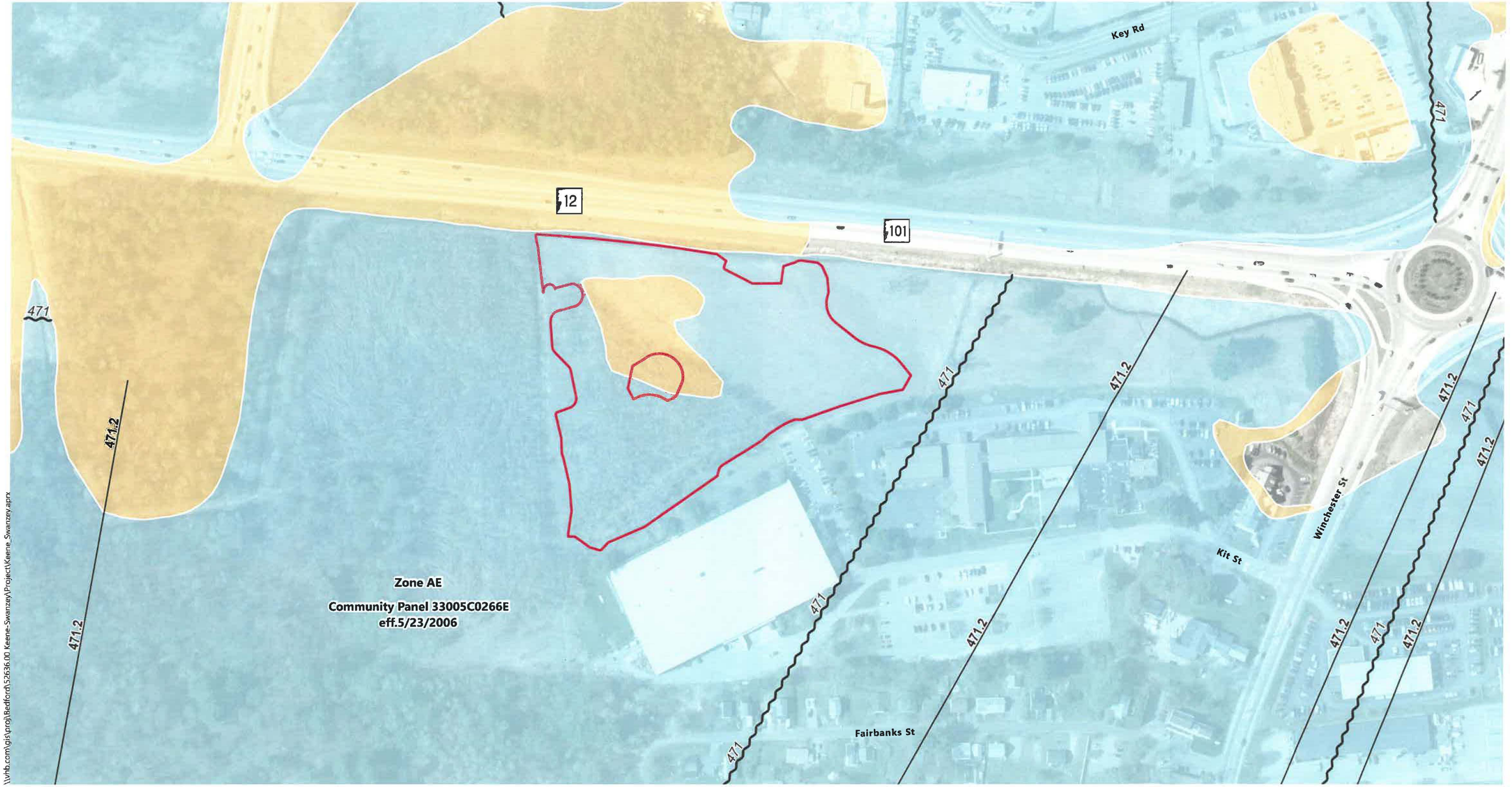
#### Local Coordination

In accordance with Env-Wt 311.06(h) and NH RSA 482-A:3(l)(a)(1), a complete copy of this application will be shared with the Keene Conservation Commission for their review concurrently with the NHDES and City submissions. Public Information Meetings for this project were held on January 21, 2020, and December 1, 2020. Notes from these meetings were excluded from this application package due to redundancy with the other meeting minutes included in Appendix A, but they can be provided upon request.

#### Technical Advisory Group Coordination

During the preliminary design and NEPA phase, NHDOT formed a Technical Advisory Group (TAG) including City of Keene staff, Town of Swanzey staff, NHDES staff, NHB staff, and Ashuelot River Local Advisory Committee (ARLAC) representatives to provide detailed review of project methods, process, and results. Members of the TAG include Kirk Mudgett (NHDOT), Marc Laurin (NHDOT), Tim Mallette (NHDOT), Stephen LaBonte (NHDOT), Amy Lamb (NHB), Lori Sommer (NHDES), Barbara Skuly (Ashuelot River LAC), Rhett Lamb (City of Keene), Don Lussier (City of Keene), Michael Branley (Town of Swanzey), and Pete Walker (VHB). In 2021, Peter Throop (Monadnock Conservancy) joined the TAG. The TAG met on the following dates: March 25, 2020, May 5, 2020, September 24, 2020, and December 14, 2021. Refer to the **Meeting Minutes** provided in **Appendix A**. NHDOT will continue to coordinate with the TAG through final design for input on the project.





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- Limit of Grading/Disturbance
- Cross-Sections
- ~ Base Flood Elevation
- Light Blue Area: 1% Annual Chance Flood Hazard
- Yellow Area: 0.2% Annual Chance Flood Hazard

**Keene-Swanzey Floodplain Mitigation Project (NHDOT #40100)**



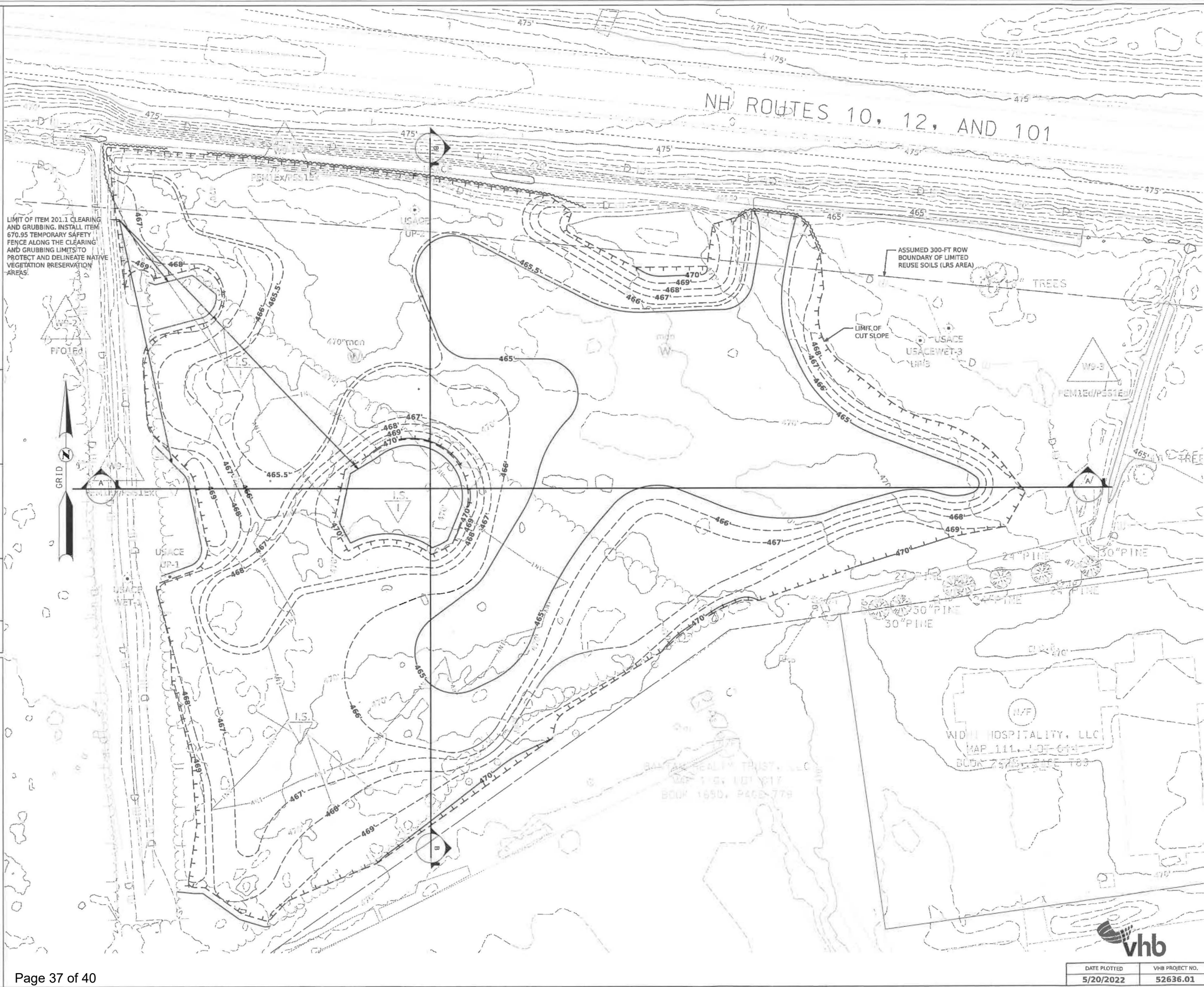
Keene, New Hampshire

**Floodplain Map**

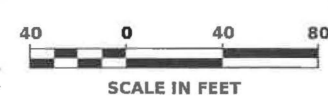
Source: VHB, City of Keene, NHGRANIT, FEMA  
Aerial - NHGRANIT 2015



SDR PROCESSED	\$DRNAME\$	DATE	\$DATE\$
NEW DESIGN	AHF	DATE	5/20/2022
SHEET CHECKED	\$CHECKEDNAME\$	DATE	5/20/2022
AS BUILT DETAILS		DATE	



- ### CONSTRUCTION NOTES
- LIMITS OF AUTHORIZED WORK SHALL BE IDENTIFIED AND MARKED PRIOR TO CONSTRUCTION, INCLUDING UPLAND AREAS TO BE RETAINED.
  - PLANT AND SOIL MATERIALS FROM LOCATIONS WITH INVASIVE SPECIES SHALL BE HANDLED AND DISPOSED IN ACCORDANCE WITH NHDOT BEST MANAGEMENT PRACTICES FOR THE CONTROL OF INVASIVE AND NOXIOUS PLANT SPECIES MANUAL (2018).
  - ALL SOIL MOVING EQUIPMENT SHALL BE THOROUGHLY CLEANED TO MAKE IT FREE OF SOIL, NON-NATIVE INVASIVE SPECIES OR OTHER DEBRIS THAT COULD CONTAIN OR HOLD SEEDS PRIOR TO BEING DELIVERED TO THE PROJECT SITE. EQUIPMENT SHALL BE CONSIDERED FREE OF NON-NATIVE OR INVASIVE SPECIES AND OTHER SUCH DEBRIS WHEN A VISUAL INSPECTION BY THE ENGINEER, COMPLETED PRIOR TO THE EQUIPMENT BEING MOVED TO THE SITE, DOES NOT DISCOVER SUCH MATERIAL PRESENT.
  - NATIVE TOPSOIL IN LOCATIONS THAT ARE FREE FROM INVASIVE SPECIES MAY BE STOCKPILED AND SPREAD WITHIN THE RESTORED GRADED AREAS TO ESTABLISH THE FINAL GRADES AND TAKE ADVANTAGE OF THE AVAILABLE SEED BANK THESE SOILS CONTAIN. TOPSOIL SALVAGE SHALL INVOLVE REMOVAL AND STOCKPILING OF THE TOP 4-6 INCHES OF THE NATIVE SOIL SURFACE (I.E., SOIL "A-HORIZON"), UNLESS A DEEPER DEPTH IS APPROVED BY THE ENGINEER. TOPSOIL SALVAGED SOURCED FROM LIMITED REUSE SOIL (LRS) AREA MAY ONLY BE REUSED FOR FINAL PLACEMENT WITHIN THE LRS AREA SHOWN ON PLANS.
  - SEGREGATE AND STOCKPILE THE EXCAVATED INVASIVE FREE SOIL WITH EROSION CONTROLS AS NEEDED. TEMPORARY STOCKPILE AREAS SHALL NOT RESULT IN ADDITIONAL WETLAND IMPACTS BEYOND THOSE INCLUDED IN THE PROJECT WETLAND PERMITS. IDENTIFY, SEPARATE, AND TRACK LIMITED REUSE SOIL (LRS) FROM NON-LRS. STOCKPILE LRS SEPARATE FROM NON-LRS.
  - ANY IMPORTED HUMUS/SOILS SHALL BE FREE OF INVASIVE PLANT MATERIAL, TOXIC SUBSTANCES, DEBRIS, AND LARGE ROCKS AND BE SUITABLE FOR ESTABLISHING AND MAINTAINING NATIVE VEGETATION.
  - IN ALL AREAS OF GROUND DISTURBANCE, FINAL GRADING, SEEDING, MULCHING, AND PLANTING SHALL OCCUR AS OUTLINED IN THE DESIGN PLANS. ESTABLISHMENT OF FINAL GRADES IN THE PLANTING AREAS MAY REQUIRE SOIL DE-COMPACTION IN AREAS WHERE THE USE OF MACHINERY RESULT IN SOIL COMPACTION DURING THE CONSTRUCTION PHASE. IN AREAS OF SEVERE SOIL COMPACTION, OR IN AREAS WHERE IMPORTED TOPSOIL IS NEEDED, THE USE OF A SOIL MIX MAY BE REQUIRED.
  - TEMPORARY EROSION CONTROL BLANKETS AND SILT FENCE SHALL BE USED ON AND AT THE BASE OF SLOPES GREATER THAN 8 PERCENT. WELDED PLASTIC OR 'BIODEGRADABLE PLASTIC' NETTING OR THREAD IN EROSION CONTROL MATTING OR OTHER SOIL EROSION AND SEDIMENT CONTROL PRODUCTS ARE NOT PERMITTED. WILDLIFE FRIENDLY OPTIONS MADE OF WOVEN NATURAL FIBERS WILL BE PERMITTED.



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 SUBJECT TO CHANGE  
 DATE 5/20/2022

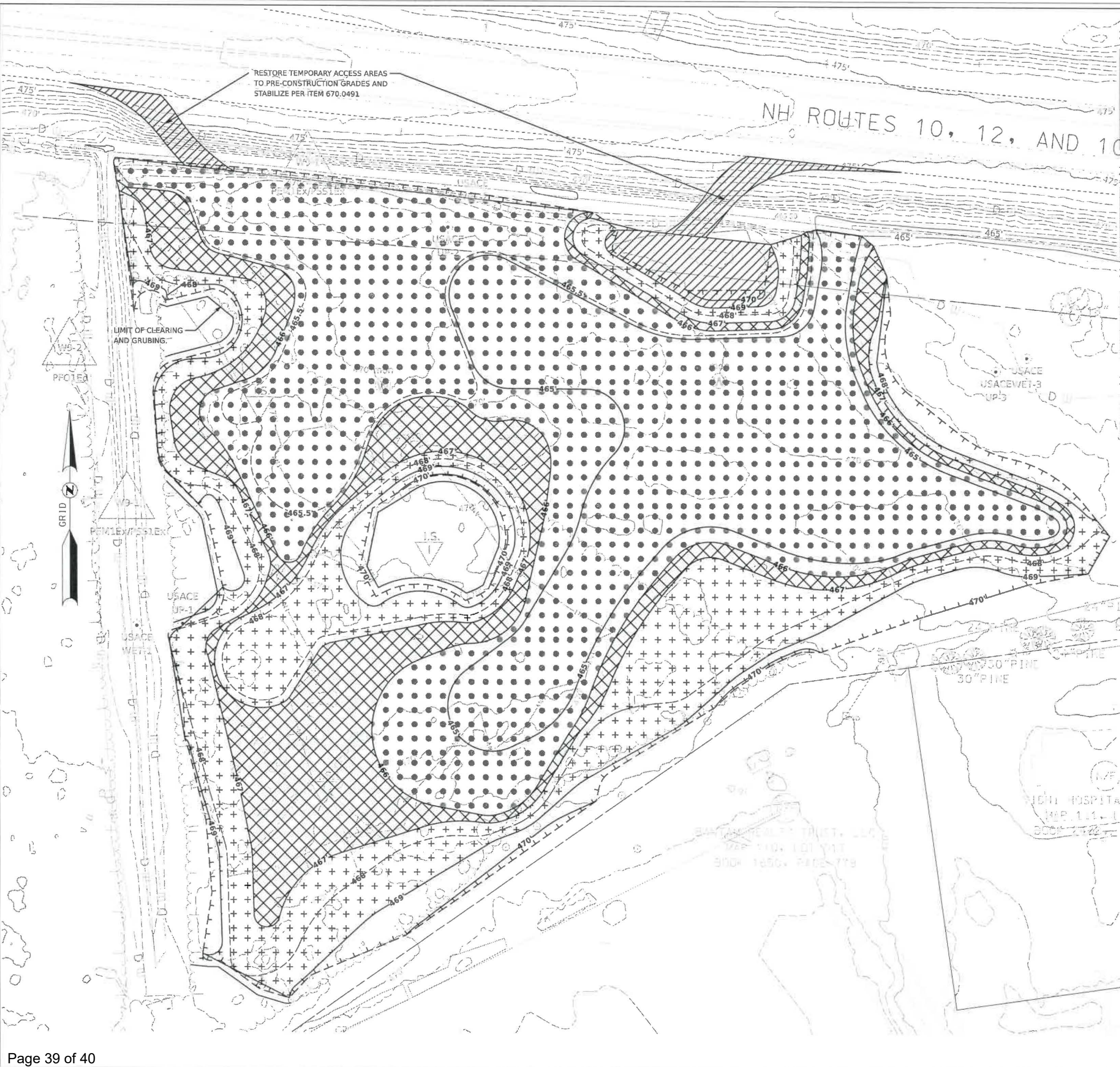
STATE OF NEW HAMPSHIRE KEENE	
DEPARTMENT OF TRANSPORTATION	BUREAU OF ENVIRONMENT
<b>KEENE-SWANZEY FLOODPLAIN MITIGATION PROPOSED GRADING PLAN</b>	
DATE PLOTTED 5/20/2022	VHB PROJECT NO. 52636.01
DGN 40100_GRADINGPLAN	STATE PROJECT NO. 40100
SHEET NO. 7	TOTAL SHEETS 12

SDR PROCESSED	\$DRNAME\$	DATE	\$DATE\$
NEW DESIGN	AHF	DATE	5/20/2022
SHEET CHECKED	\$CHECKEDNAME\$	DATE	5/20/2022
AS BUILT DETAILS		DATE	





SDR PROCESSED	DATE	SDRDATE\$
NEW DESIGN	DATE	5/31/2022
SHEET CHECKED	DATE	5/31/2022
AS BUILT DETAILS	DATE	



**ZONE 1 - BELOW ELEVATION 466 FT**

DOT Item No.	Common Name	Scientific Name	Status	Spacing/Rate	Plant Size/Type	Quantity
644.23	New England Wetmix (Wetland Seed Mix)			18 lbs/acre	Hydro-seed, broadcast	58 lbs
650.4	Silky Willow	<i>Salix sericea</i>	OBL	1.5-3 feet	Live stakes	1600
650.4	Pussy Willow	<i>Salix discolor</i>	FACW	1.5-3 feet	Live stakes	1600
650.4	Red Osier Dogwood	<i>Cornus sericea</i>	FACW	1.5-3 feet	Live stakes	1600
650.2	Broadleaf Meadowsweet	<i>Spiraea latifolia</i>	FACW	3-6 feet	#1-2 Container	51
650.2	Black Elderberry	<i>Sambucus canadensis</i>	FACW	3-6 feet	#2-3 Container	51
650.2	Red Maple	<i>Acer rubrum</i>	FAC	6-7 feet	4'-5' #1-5	154
650.2	Silver Maple	<i>Acer saccharinum</i>	FACW	6-7 feet	4'-5' #1-5	154
650.2	American Elm	<i>Ulmus americana</i>	FACW	6-7 feet	4'-5' #1-5	103

**ZONE 2 - BELOW ELEVATION 466-467 FT**

DOT Item No.	Common Name	Scientific Name	Status	Spacing/Rate	Plant Size/Type	Quantity
644.24	New England Erosion Control/Restoration Mix For Moist Sites			35 lbs/acre	Hydro-seed, broadcast	39 lbs
650.4	Northern Arrowwood	<i>Viburnum recognitum</i>	FAC	1.5-3 feet	Live stakes	1100
650.4	Gray Dogwood	<i>Cornus racemosa</i>	FAC	1.5-3 feet	Live stakes	1100
650.2	Broadleaf Meadowsweet	<i>Spiraea latifolia</i>	FACW	3-6 feet	#1-2 Container	18
650.2	Yellow Birch	<i>Betula alleghaniensis</i>	FAC	6-7 feet	3'-6' #1-7	80
650.2	Red Maple	<i>Acer rubrum</i>	FAC	6-7 feet	4'-5' #1-5	80

**ZONE 3 - ABOVE ELEVATION 467 FT**

DOT Item No.	Common Name	Scientific Name	Status	Spacing/Rate	Plant Size/Type	Quantity
644.25	New England Wildflower Mix			23 lbs/acre	Hydro-seed, broadcast	35 lbs
650.4	Gray Dogwood	<i>Cornus racemosa</i>	FAC	1.5-3 feet	Live stakes	750
650.4	Witch Hazel	<i>Hamamelis virginiana</i>	FACU	2-3 feet	#2-3 Container	48
650.2	Black Cherry	<i>Prunus serotina</i>	FACU	8-10 feet	3'-6' #1-7	72
650.2	Quaking Aspen	<i>Populus tremuloides</i>	FACU	8-10 feet	3'-6' #1-7	60
650.2	Gray Birch	<i>Betula populifolia</i>	FAC	8-10 feet	3'-6' #1-7	60

**ZONE 4 - ACCESS RESTORATION**

DOT Item No.	Common Name	Scientific Name	Status	Spacing/Rate	Plant Size/Type	Quantity
644.25	New England Wildflower Mix			23 lbs/acre	Hydro-seed, broadcast	5 lbs
650.2	Quaking Aspen	<i>Populus tremuloides</i>	FACU	10-15 feet	3'-6' #1-7	16
650.2	White Pine	<i>Pinus strobus</i>	FACU	10-15 feet	3'-6' #1-7	16

**PLANTING NOTES**

1. A MINIMUM OF 45 DAYS PRIOR TO COMMENCING PLANTING OPERATIONS, THE CONTRACTOR SHALL SUBMIT A PLANTING PLAN THAT ILLUSTRATES NATURAL PLACEMENT AND CLUSTERING OF THE PROPOSED WOODY SPECIES IN THE PLANTING ZONES FOR REVIEW. THE PLANTING PLAN WILL INCLUDE ALL SPECIES PROPOSED, NOTING ANY APPROVED SUBSTITUTIONS. THE PLANTING PLAN MUST BE APPROVED BY THE ENGINEER PRIOR TO DELIVERY OF PLANT MATERIALS TO THE SITE. FINAL PLACEMENT AND CLUSTERING OF TREES AND SHRUBS SHALL BE IN ACCORDANCE WITH THE APPROVED PLAN.
2. CONTRACTOR SHALL FOLLOW ALL TEMPORARY EROSION CONTROL REQUIREMENTS PER THE PLANS, SPECIFICATIONS, AND ENVIRONMENTAL PERMITS, INCLUDING TEMPORARY EROSION CONTROL SEEDING AS NEEDED WITH THE SPECIFIED TEMPORARY SEED MIX. THE PURPOSE OF THIS PLANTING PLAN IS TO GUIDE INSTALLATION OF FINAL PLANTINGS.
3. NATIVE SEED MIXES SHALL BE USED TO ESTABLISH SOIL STABILIZATION IMMEDIATELY FOLLOWING GRADING. ACCEPTABLE SEED MIXTURES INCLUDE NEW ENGLAND WETLAND MIX, NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR MOIST SITES AND NEW ENGLAND WILDFLOWER MIX (SEE PLANTING TABLE).
4. IN ADDITION TO PERMANENT SEEDING, THE CONTRACTOR SHOULD OVERSEED WITH ANNUAL RYE AT A RATE OF 40 LBS/AC TO LIMIT THE ESTABLISHMENT OF INVASIVE PLANT SPECIES.
5. DUE TO THE IMPORTANCE OF ESTABLISHING THE NATIVE SPECIES PLANT COMMUNITY SHOWN ON THE PLANS, NO SUBSTITUTION IN QUANTITIES, SIZE, KIND, OR QUALITY OF PLANTS FROM THESE SPECIFICATIONS WILL BE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER. NO HORTICULTURAL VARIETIES WILL BE USED.
6. A MINIMUM OF 6 INCHES OF TOPSOIL SHALL BE PLACED PRIOR TO PLANTING. TOPSOIL SHALL CONSIST OF HUMUS (PLANTING ZONE 1) OR SALVAGED TOPSOIL (ZONES 2 AND 3), OR MIXTURE OF THE TWO. THE CONTRACTOR SHALL TAKE CARE TO PROHIBIT USE OF SALVAGED SOILS FROM AREAS DOMINATED BY INVASIVE SPECIES, WHICH ARE COMMON IN THE FORESTED PORTION OF THE SITE. SEE PLANS FOR THE LOCATION OF INVASIVE SPECIES POPULATIONS.
7. FOLLOWING SEEDING, A LAYER OF MULCH OR COIR FIBER MATTING SHALL BE APPLIED TO ALL SEEDED AREAS. MULCH SHALL BE ANCHORED BY CRIMPING OR TACKIFIER TO PREVENT DISPLACEMENT BY WATER OR WIND EROSION. NO HAY CONTAINING WEED MATERIAL WILL BE PERMITTED. EROSION CONTROL BLANKET ANCHORS SHALL BE BIODEGRADABLE.
8. DO NOT APPLY PERMANENT SEED MIX BETWEEN OCTOBER 1 AND DECEMBER 1 AND DO NOT APPLY PERMANENT SEED MIX OVER SNOW COVER. RATHER, APPLY A TEMPORARY SEED MIX AT A RATE OF 70 LBS/AC DURING THIS PERIOD AND THEN PLANT WITH THE APPROVED PERMANENT SEED MIX BETWEEN APRIL 1 AND MAY 1 OF THE YEAR FOLLOWING CONSTRUCTION.
9. LIVE STAKES (SEE PLANTING TABLE) SHALL BE INSTALLED DURING THE DORMANT SEASON (NOVEMBER TO MARCH).
10. NURSERY-SUPPLIED PLANTS SHALL BE INSTALLED IN THE APPROPRIATE PLANTING ZONES SHOWN ON THE PLANS AS SOON AS POSSIBLE AFTER COMPLETION OF EARTHWORK.
11. PLANTING SHALL BE MAINTAINED IN ACCORDANCE WITH NHDOT LANDSCAPING SPECIFICATION ITEM 650.



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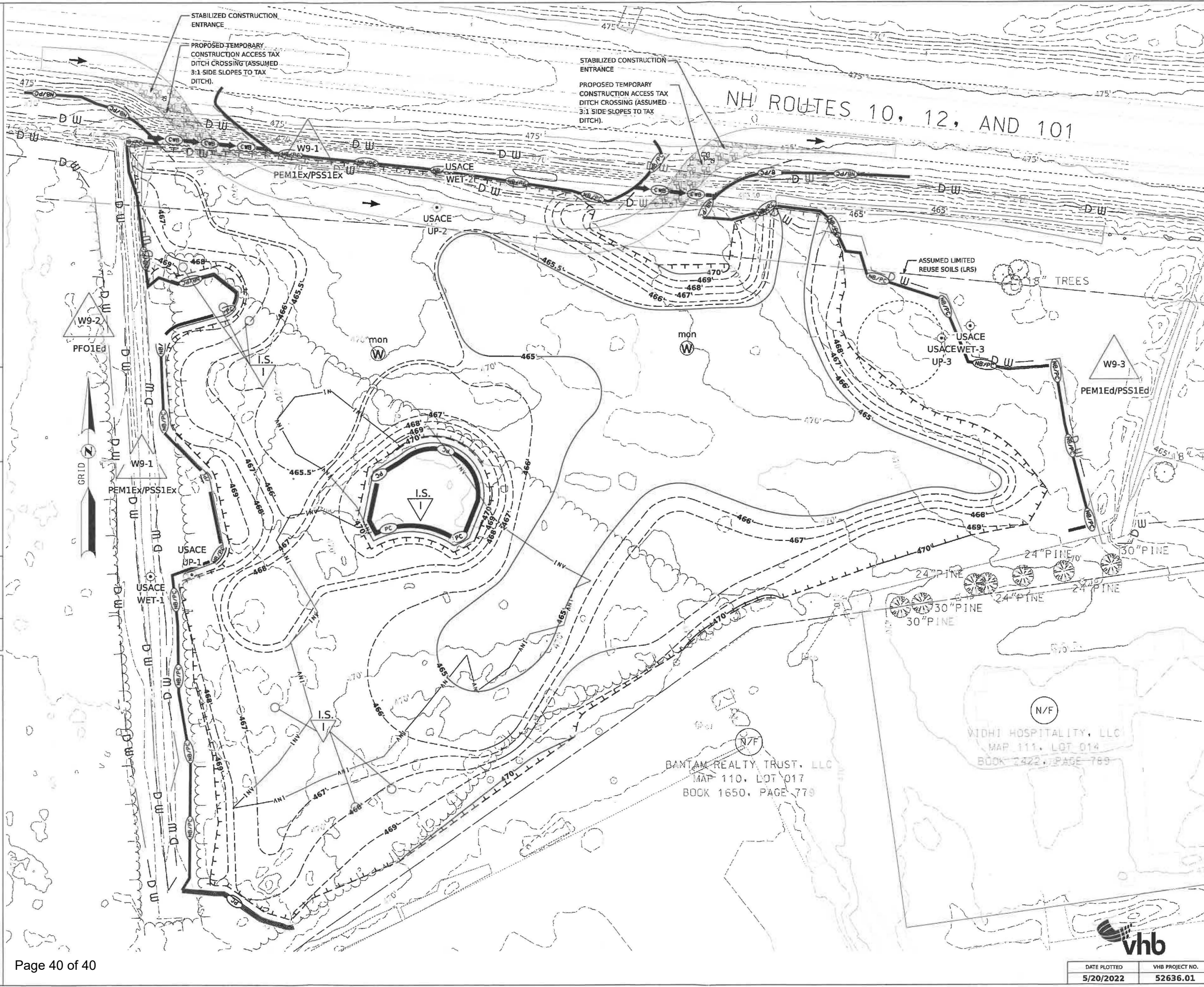
STATE OF NEW HAMPSHIRE  
KEENE  
DEPARTMENT OF TRANSPORTATION BUREAU OF ENVIRONMENT  
**KEENE-SWANZEY  
FLOODPLAIN MITIGATION  
PLANTING PLAN**

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
5/31/2022	52636.01	40100 PLANTING	40100	10	12





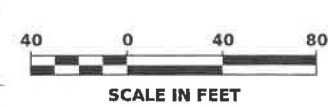
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EROSION CONTROL PLAN LEGEND	
	<b>PERIMETER CONTROL</b>
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
	<b>NATURAL BUFFER/PERIMETER CONTROL</b>
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
	<b>CHANNEL PROTECTION</b>
	STONE CHECK DAMS
	STRAW WATTLES
	CHANNEL MATTING
	CLASS D EROSION STONE
	CLASS C STONE
	<b>CLEAN WATER BYPASS</b>
	PUMP THROUGH PIPE
	DRAIN THROUGH PIPE
	OR CHANNEL

BANTAM REALTY TRUST, LLC  
MAP 110, LOT 017  
BOOK 1650, PAGE 779

WIDHI HOSPITALITY, LLC  
MAP 111, LOT 014  
BOOK 1422, PAGE 769



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STATE OF NEW HAMPSHIRE  
KEENE  
DEPARTMENT OF TRANSPORTATION BUREAU OF ENVIRONMENT  
**KEENE-SWANZEY**  
**FLOODPLAIN MITIGATION**  
**EROSION CONTROL PLAN**

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
5/20/2022	52636.01	40100_PERMIT_ERO	40100	12	12

