June 27, 2018

Portsmouth Conservation Commission
c/o Peter Britz, Environmental Planner / Sustainability Coordinator
City Hall
1 Junkins Avenue, 3rd Floor
Portsmouth, NH 03801

RE: Torrington Properties, Waterstone Property Group; Cate Street Re-development
Work Session - Conditional Use Permit for Buffer Encroachment
Fuss & O'Neill Reference No. 20180317.A10

Dear Members of the Conservation Commission:

On behalf of Torrington Properties and Waterstone Properties Group, Fuss & O'Neill is requesting a Work Session with the Conservation Commission to discuss the Re-development of parcels, Tax Map 172 Lot 1, Map 173 Lot 2, Map 165 Lot 2 and Map 163 Lots 33 & 34, which in their entirety will be referred to as the "Site".

New Connector Road – Buffer Encroachment:

Today, the existing pavement, Cate Street, Site access driveways and parking areas all encroach on the buffer to Hodgson Brook's wetland.

As part of the Re-development plan, the development Team is proposing to construct a new connector road between the Route 1 Bypass and Bartlett Street from the intersection with Borthwick Avenue at the Route 1 Bypass to the Intersection of Cate Street and Bartlett Streets. The proposed road will be accompanied by a bike trail which is to be just inside the edge of existing pavement along what is now the access drive to the large expanse of pavement to the east of the Frank Jones Center. The proposed connector road will be located a variable distance (5-ft minimum and up to 30-ft) south of the bike trail, further away from Hodgson Brook than the existing vehicle access is today.

In the wide sections of the separation, the team is proposing to install bioretention basins (rain gardens) to treat stormwater runoff from the bike trail and from the north half of the proposed roadway. Stormwater from the south half of the roadway will be collected by hooded, deep sump catch basins and then routed through a manifold style drainage system to a 4-ft wide treatment swale and stone berm level spreader prior to flowing into Hodgson Brook. Today all of the Site's stormwater either flows to Hodgson Brook overland right off the pavement edge or through two direct drainage outfall pipes.

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Massachusetts
New Hampshire
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While the proposal will encroach on the buffer to the wetland, this encroachment is far less impacting than the current encroachment and is needed to provide much improved stormwater treatment. The current Site does not treat or control stormwater flowing to the brook at all. The proposal will create a large improvement in how stormwater from the Site is treated, controlled and enters Hodgson Brook and its wetlands.

Hodgson Brook and Wetland Assessment:

Working with Gove Environmental Services, the team has set out to assess the condition of Hodgson Brook in order to evaluate measures to improve its condition. The following is the assessment that Gove Environmental Services has provided to the team:

Assessment of Hodgson Brook and its banks:

- Lots of small debris mainly consisting of cans, bottles and plastic bags.
- Small amounts of larger debris were found in the actual channel of the brook. Items found include cinder blocks, granite slabs, a steering wheel, vehicle wheel, as well as large and small pieces of plastic.
- Larger debris on the project side of the bank include the internal bed of a pull-out couch, some granite slabs, asphalt and natural debris mainly dead trees and sticks.
- Knot weed is abundant in areas along the bank of the project side. The plant looks to not have spread as much as expected so might have only just been established recently. Only one small patch was found on the opposite side.
- Rugosa rose was also found on the bank of the project site seemingly in sporadic clumps.
- Towards Route 1 there was also an abundant number of grape vines wrapped around the surrounding vegetation on the top of the bank.
- The invasive plants together with existing trees seem to be holding the bank together though in areas it could use some stabilization.
- One specific area on the project side of the bank looks to be an area used for snow removal via dumping into the brook. Due to the nature of the snow removal assuming it is via plow the asphalt is being torn up and pushed into the brook along with sand and other small debris found in the snow.
- An area towards Route 1 seems to require some attention to stabilize the bank which looks to be collapsing in on itself. The area lies directly over a culvert discharge area which also seems to need some attention.

See attached photolog of debris and invasive plants.

Hodgson Brook and Wetland Improvement Measures being Explored:

Gove Environmental Services has developed a list of Brook cleanup and improvement measures for the team to consider. These are below in summary and attached in detail.

Gove Environmental Services Recommendations for Brook and Wetland Improvement:

Would not need a permit:

- Clean up of loose debris cans bottle and plastic bags along the project side of the bank
- Verify health of trees along the bank of the brook
- Use plantings of native fauna to help stabilize the bank after removing or managing invasive species and debris from the bank

Would need a permit:

- Remove larger debris granite slabs asphalt and pull out couch on the project side of the bank
- Work to eliminate the knot weed using methods suggested in the attached document provided by NH Department of Agriculture
- Work to manage the Rugosa rose by pulling seedlings, digging out larger plants or using herbicide (Management is also described in Invasive species by numbers attached)
- Remove debris from stream channel including granite blocks, asphalt, plastic bags, and other large and small items. Re-establish the area being eroded away near Route 1
- Removal of dead trees

Design Components to improve the Brook and Wetland condition:

In addition to the measures provided by Gove Environmental Services, Fuss & O'Neill has developed the following items that are being incorporated into the design in order to improve the overall health of the Brook and its wetlands.

- Respect the existing Treeline
    - Effort has been taken to generate a design that to the extent most practical maintains the existing Treeline and pulls impervious back form the top of bank.
    - In most locations the bike trail is at least 2-ft to the south of the existing edge of pavement.

- Disconnect the Site drainage from the Road drainage system and ultimately the Brook to the greatest extent possible.
- Explore the viability of infiltration of stormwater for the Site.
    - Implement if possible.
    - Explore detention onsite if infiltration not feasible.
- Provide treatment, utilizing Low Impact Development (LID) techniques where viable, for the road and bike trail stormwater, and properly control its release to Hodgson Brook and its wetlands.
- Reduce the site impervious cover
    - Current site schematics reduce the impervious coverage for the Site by over seven percent.
    - This reduction alone will reduce stormwater volume flowing to Hodgson Brook for the Site.
    - The reduced impervious will also allow for provision of more vegetative cover and stormwater treatment.

Currently, we foresee a buffer impact of 2.08 Acres created by the project, however, excluding the outlet swale all of the encroachment is in areas the existing site already encroaches. As discussed above, the bulk of this encroachment is needed to make improvements on site to benefit Hodgson Brook.

If you have any questions or concerns, please do not hesitate to contact me at (207) 363-0669 x2314 or by email (rlundborn@fando.com).

Sincerely,

Rick Lundborn, PE
Branch Manager

/BH

Enclosures: Overall Concept Plan
Plan and Profiles
Gove Environmental Services, Assessment of Hodgson Brook
Gove Environmental Services, Recommendations for Brook Improvements

c: Torrington Properties
Waterstone Properties Group
Gove Environmental Services
August Consulting, PLLC

Site: Cates St. Portsmouth

Assessment of the brook and bank of the brook is as follows:

- Lots of small debris mainly consisting of cans, bottles and plastic bags
- Small amounts of larger debris were found in the actual channel of the brook. Items found include cinder blocks, granite slabs, a steering wheel, vehicle wheel, as well as large and small pieces of plastic.
- Larger debris on the project side of the bank include the internal bed of a pull-out couch, some granite slabs, asphalt and natural debris mainly dead trees and sticks.
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- Rugosa rose was also found on the bank of the project site seemingly in sporadic clumps.
- Towards Route one there was also an abundant number of grape vines wrapped around the surrounding vegetation on the top of the bank.
- The invasive plants together with existing trees seem to be holding the bank together though in areas it could use some stabilization.
- One specific area on the project side of the bank looks to be an area used for snow removal via dumping into the brook. Due to the nature of the snow removal assuming it is via plow the asphalt is being torn up and pushed into the brook along with sand and other small debris found in the snow.
- An area towards route one seems to require some attention to stabilize the bank which looks to be collapsing in on itself. The area lays directly over a culvert discharge area which also seems to need some attention.

See attached photolog of debris and invasive plants.

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Photo #1: looking at the small debris and larger plastic piping as well as some larger chunks of asphalt on the bank.

Photo series #2: Shows several of the larger items found in the channel of the brook.

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Photo #3: Looking at some of last years remaining knot weed growth from the edge of the bank all the way up to the top of the bank.

Photo #4: looking at the knot weed left and the rose bush right as well as downed trees.

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Photo #5: Looking at the steep unvegetated bank of the project area and the general channel of the brook.

Photo #6: Looking at the area being used for snow management.

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Photo #7: Looking at the asphalt that has been pushed into the brook from the area used for snow management.

Photo #8: Looking at the area used for snow management from the top of the bank.

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Photo #9: Looking at the area near Route 1 where the culvert area has eroded a large area.

Photo #10: Looking from the top of the bank down to the area eroded by the culvert also noting that storm water runoff is starting to erode above the culvert.

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Clean up ideas for the bank of Hodgsons Brook and the channel of Hodgsons Brook

Would not need a permit:

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- Verify health of trees along the bank of the brook
- Use plantings of native fauna to help stabilize the bank after removing or managing invasive species and debris from the bank

Would need a permit:

- Remove larger debris granite slabs asphalt and pull out couch on the project side of the bank
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- Work to manage the rugosa rose by pulling seedlings, digging out larger plants or using herbicide (Management is also described in Invasive species by numbers attached)
- Remove debris from stream channel including granite blocks, asphalt, plastic bags and other large and small items
- Re-establish the area being eroded away near route 1
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Control Methods for Japanese knotweed

New Hampshire
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Douglas Cygan
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There are two affective methods for controlling Japanese knotweed (*Polygonum cuspidatum*), henceforth referred to as knotweed. It is advised that you evaluate the site conditions where the knotweed occurs to determine which method is best suited for control. One involves smothering and the other uses herbicide.

Smothering

(PHOTO 1)

(PHOTO 2)

(PHOTO 3)

If you wish to avoid the use of herbicides you may want to try smothering. Not only does it eliminate the need for chemicals, but there are also no soil disturbance/erosion issues. Here are the general guidelines:

1. Allowing the knotweed to grow in the spring without attempting to control it;
2. Cut the knotweed at the base and close to the ground around the first week in June (PHOTO 1) (this helps to weaken the rooting system);
3. Pile the cut stems on an impervious surface such as a tarp, plastic, pavement, etc. so they can dry out (after turning brown the stems can be composted);
4. Apply a layer of mulch, grass clipping or other cushiony material over the sharp cut stems to prevent them from puncturing the plastic (PHOTO 2, an old tarpaulin was used);
5. Cover the entire area with the biggest heavy-duty dark colored plastic (7mil thick), tarp or heavy duty weed fabric you can find. If more than one piece is used make sure to overlap the seams by about 2 feet. Also, make sure the cover material extends at least 5-10 feet beyond the limit of knotweed in all directions (PHOTO 3);
6. Weight the top of the tarp/plastic and seal the edges with rocks, sticks, soil, sand, mulch, wood chips etc. (PHOTO 3). Do not puncture the tarp/plastic as this can allow knotweed stems to survive. If there are any tears or holes, patch them. Covering with wood chips or mulch does several things including improving the visual aesthetics; blocks UV rays from the sun, which photo-degrades plastic; and insulates it from cold temperatures so it doesn't crack.
7. After 5 years the covering material can be removed and the area replanted.

Although this method may take a while, it has been very successful in sensitive areas here in NH.

Foliar Herbicide Treatment


(PHOTO 1)


(PHOTO 2)


(PHOTO 3)

To achieve 95%-100% control in one application, use the following guidelines:

1. Allow the knotweed to grow in the spring without doing any type of management until the first week in June;
2. Cut the knotweed at the base as close to the ground as possible during the first week of June (see PHOTO 1 above and note below);
3. Pile the cut stems on an impervious surface such as a tarp, plastic, pavement, etc. so they can dry out (after turning brown the stems can be composted);
4. Allow the knotweed resprout and again, do not do any management until after flowering, which usually occurs in early to mid September ;
5. Just after flowering (early to mid September) an herbicide application using a 5% solution of a glyphosate based product, such as Roundup, should be applied as a foliar spray using a pump, backpack sprayer or mist blower (PHOTO 2). Apply to thoroughly wet all foliage, but not to the point of runoff. **Read and follow the product label!**

If resprouting occurs the following year then a re-treatment will be needed following the above described guidelines (As was the case in PHOTO 3).

Note:
Knotweed is herbaceous (non-woody), so although it may be imposing, the stems cut quite easily and can be done using motorized trimmers with metal blades, or hand tools such as a machete or stout sickle, even loppers and hand pruners work just fine. **Mowing is not recommended** as it can promote the spread of knotweed by moving vegetative propagules to new locations. A properly timed cutting will eliminate the tall canopy and make follow-up operations much easier. The best time to cut is in early June and once in the season is all that's required to weaken the rooting system. The best time to apply herbicides to knotweed is in the fall (September to October) once the flowers have died off. The two primary reasons for waiting are: honeybees voraciously forage on knotweed flowers and by waiting till after flowering the herbicide treatment will not coincide with their activity; and secondly, this is also the time of year when carbohydrates start flowing back down into the rooting system (rhizomes) for over wintering. Glyphosate is the herbicide of choice for controlling knotweed. It is effective, has no soil activity, it is readily available, and somewhat inexpensive.

Control of Invasive Plants

New Hampshire
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Markets & Food
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This guide lists garden plants and weeds which are already causing significant changes to natural areas in the Mid-Atlantic. **Measures for controlling each species are indicated by number, e.g., (3), in the text with a full explanation at the end of this article.** Click on the word Control: to jump to that section. Then click your "back" button to return to the text. Following each section suggested alternative plants are given. These alternatives are native plants, well adapted and needing little care, attractive to birds and butterflies, and an important part of the food web for our indigenous species.

INVASIVE TREES

NORWAY MAPLE (*Acer platanoides*) has large leaves similar to sugar maple. To easily confirm that the plant is Norway maple, break off a leaf and if it's truly Norway maple it will exude milky white sap. Fall foliage is yellow. (Exception: cultivars such as 'Crimson King,' which have red leaves in spring or summer, may have red autumn leaves.) The leaves turn color late, usually in late October after native trees have dropped their foliage. This tree suppresses growth of grass, garden plants, and forest understory beneath it, at least as far as the drip-line. Its wind-borne seeds can germinate and grow in deep shade. The presence of young Norway maples in our woodlands is increasing.

Control: (1); (7), (8), (9), or (10); (11) in mid-October to early November, before the leaves turn color.

TREE OF HEAVEN (*Ailanthus altissima*), is incredibly tough and can grow in the poorest conditions. It produces huge quantities of wind-borne seeds, grows rapidly, and secretes a toxin that kills other plants. Its long compound leaves, with 11-25 lance-shaped leaflets, smell like peanut butter or burnt coffee when crushed. Once established, this tree cannot be removed by mechanical means alone.

Control: (1) - seedlings only. Herbicide - use Garlon 3a (9) with no more than a 1" gap between cuts, or (10); plus (11) on re-growth. Or paint bottom 12" of bark with Garlon 4 Ultra (in February or March to protect surrounding plants). USE MAXIMUM STRENGTH SPECIFIED ON LABEL for all herbicide applications on Ailanthus. Glyphosate is not effective against Ailanthus.

INVASIVE SHRUBS

AUTUMN OLIVE (*Eleagnus umbellata*): Formerly recommended for erosion control and wildlife value, these have proved highly invasive and diminish the overall quality of wildlife habitat.

Control: (1) - up to 4" diameter trunks; (7) or (10) or bury stump. Do not mow.

MULTIFLORA ROSE (*Rosa multiflora*), formerly recommended for erosion control, hedges, and wildlife habitat, becomes a huge shrub that chokes out all other vegetation and is too dense for many species of birds to nest in, though a few favor it. In shade, it grows up trees like a vine. It is covered with white flowers in June. (Our native roses have fewer flowers, mostly pink.) Distinguish multiflora by its size, and by the presence of very hard, curved thorns, and a fringed edge to the leaf stalk.

Control: (1) - pull seedlings, dig out larger plants at least 6" from the crown and 6" down; (4) on extensive infestations; (10) or (11). It may remain green in winter, so herbicide may *applied when other plants are dormant. For foliar application, mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants.*

BUSH HONEYSUCKLES (*Lonicera spp.*), including Belle, Amur, Morrow's, and Tatarian honeysuckle. (In our region, assume that any honeysuckle is exotic unless it is a scarlet-flowered vine). Bush honeysuckles create denser shade than native shrubs, reducing plant diversity and eliminating nest sites for many forest interior species.
Control: (2) on ornamentals; (1); on shady sites only, brush cut in early spring and again in early fall (3); (4) during the growing season; (7); or (10) late in the growing season.

BLUNT-LEAVED PRIVET (*Ligustrum* obtusifolium). *Control:* (1); (7) or (10); or trim off all flowers. Do not cut back or mow.

BURNING BUSH, WINGED EUONYMUS (*Euonymus alatus*), identified by wide, corky wings on the branches.
Control: (1); (7) or (10); or trim off all flowers.

JAPANESE BARBERRY (*Berberis thunbergii*), and all cultivars and varieties.
Control: (1); (7) or (10); or trim off all flowers.

INVASIVE WOODY VINES

All of these vines shade out the shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle. DO NOT PLANT NEXT TO OPEN SPACE.

JAPANESE HONEYSUCKLE (*Lonicera japonica*), including Hall's honeysuckle, has gold-and-white flowers with a heavenly scent and sweet nectar in June. This is probably the familiar honeysuckle of your childhood. It is a rampant grower that spirals around trees, often strangling them.
Control: (1); (3); (10); (11) in fall or early spring when native vegetation is dormant. Plan to re-treat repeatedly.

ORIENTAL BITTERSWEET (*Celastrus orbiculatus*) has almost completely displaced American bittersweet (*C. scandens*). The Asian plant has its flowers and bright orange seed capsules in clusters all along the stem, while the native species bears them only at the branch tips.
Control: (1); keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits; to eradicate use Garlon 3a (10).

JAPANESE KNOTWEED, MEXICAN BAMBOO (*Polygonum cuspidatum*) can grow in shade. The stems have knotty joints, reminiscent of bamboo. It grows 6-10' tall and has large pointed oval or triangular leaves.
Control: Cut at least 3 times each growing season and/or treat with Rodeo (10) or (11). In gardens, heavy mulch or dense shade may kill it.

INVASIVE HERBACEOUS PLANTS

GARLIC MUSTARD (*Alliaria petiolata*, *A. officinalis*), a white-flowered biennial with rough, scalloped leaves (kidney-, heart- or arrow-shaped), recognizable by the smell of garlic and taste of mustard when its leaves are crushed. (The odor fades by fall.)
Control: Pull before it flowers in spring (1), removing crown and roots. Tamp down soil afterwards. Once it has flowered, cut (2), being careful not to scatter seed, then bag and burn or send to the landfill. (11) may be appropriate in some settings.

JAPANESE STILT GRASS (*Microstegium vimineum*) can be identified by its lime-green color and a line of silvery hairs down the middle of the 2-3" long blade. It tolerates sun or dense shade and quickly invades areas left bare or disturbed by tilling or flooding. An annual grass, it builds up a large seed bank in the soil.

Control: Easily pulled in early to mid-summer (1) - be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to landfill. Mowing weekly or when it has just begun to flower may prevent it from setting seed (3). Use glyphosate (11) or herbicidal soap (less effective) on large infestations. Follow up with (5) in spring.

MILE-A-MINUTE VINE, DEVIL'S TAIL TEARTHUMB (*Polygonum perfoliatum*), a rapidly growing annual vine with triangular leaves, barbed stems, and turquoise berries in August which are spread by birds. It quickly covers and shades out herbaceous plants.
Control: same as for stilt grass.

SPOTTED KNAPWEED (*Centaurea maculosa*), a biennial with thistle-like flowers.
Control: Do NOT pull (1) unless the plant is young and the ground is very soft - the tap root will break off and produce several new plants. Wear sturdy gloves. (2); (6); (10) or (11).

CONTROL MEASURES

(1) PULL seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs.
(2) DEADHEAD to prevent spread of seeds of invasive plants. Cut off seeds or fruits before they ripen. Bag, and burn or send to a landfill.
(3) MOW or CUTTING at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year.
(4) CONTROLLED BURNING during the spring, repeated over several years, allows native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective.
(5) Use a CORN-BASED PRE-EMERGENCE HERBICIDE on annual weeds. This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
(6) In lawns, SPOT TREAT with BROAD-LEAF WEEDKILLER. Good lawn-care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations.
(7) CUT DOWN the tree. Grind out the stump, or clip off re-growth.
(8) GIRDLE tree: cut through the bark and growing layer (cambium) all around the trunk, about 6" above the ground. Girdling is most effective in spring when the sap is rising, and from middle to late summer when the tree is sending down food to the roots. Clip off sucker sprouts.
(9) FRILL: Using a machete, hatchet or similar device, hack scars (several holes in larger trees) downward into the cambium layer, and squirt in glyphosate (or triclopyr if recommended in text above). Follow label directions for Injection and Frill Applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.
(10) CUT STEM / CUT STUMP WITH GLYPHOSATE (or triclopyr if specified above). Follow label directions for Cut Stump Application. Clip off sucker sprouts or paint with glyphosate. See Note on Herbicides.
(11) FOLIAR SPRAY WITH GLYPHOSATE herbicide (see Note on Herbicides). Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn't been entirely killed.

NOTE ON HERBICIDES: It is highly recommended that small populations try to be controlled using non-chemical methods wherever feasible. However, for large infestations, and for a few plants specified above, herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some

plants; for these, triclopyr (Garlon) may be indicated. When using herbicides, read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

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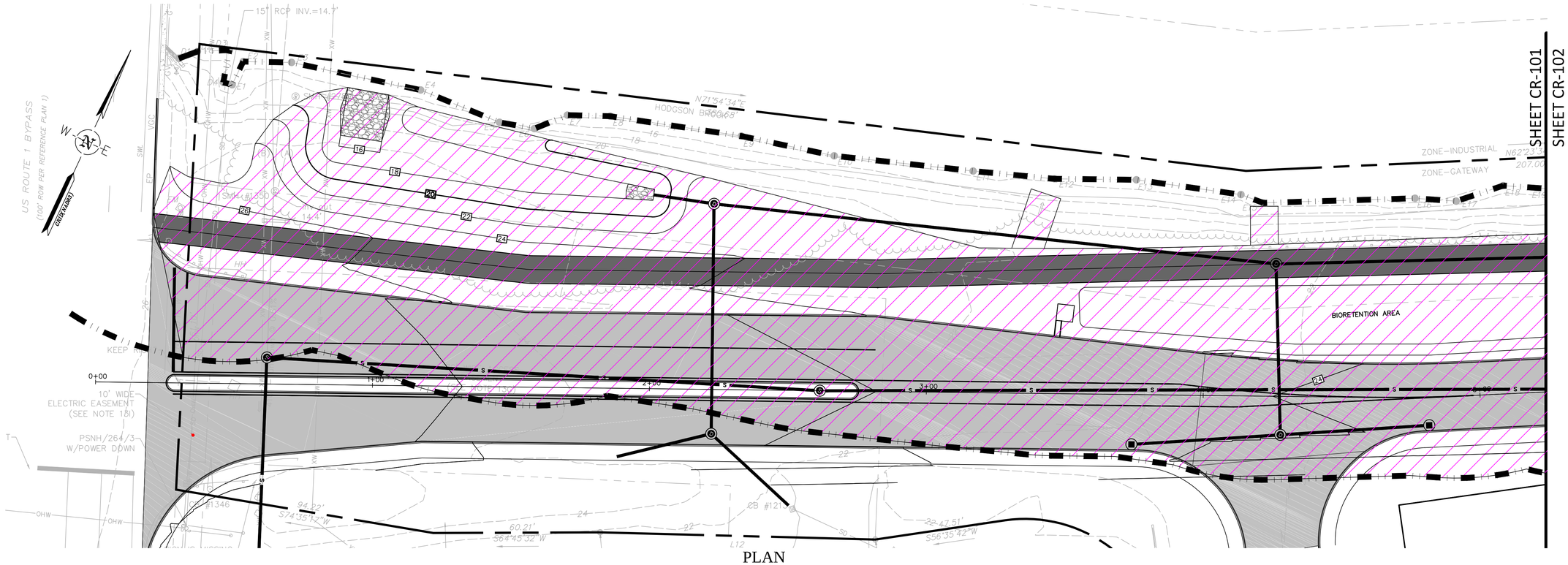
GRAPHIC SCALE

FUSS&O'NEILL
LIBBY HOUSE
5 FLETCHER STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.985.1600
www.fando.com

WATERSTONE PROPERTY GROUP
OVERALL CONCEPT PLAN
CATE STREET DEVELOPMENT
CATE STREET/ ROUTE 1 PORTSMOUTH, NH

PROJ. No.: 20180317.A10
DATE: 04/02/2018

C-2



PLAN

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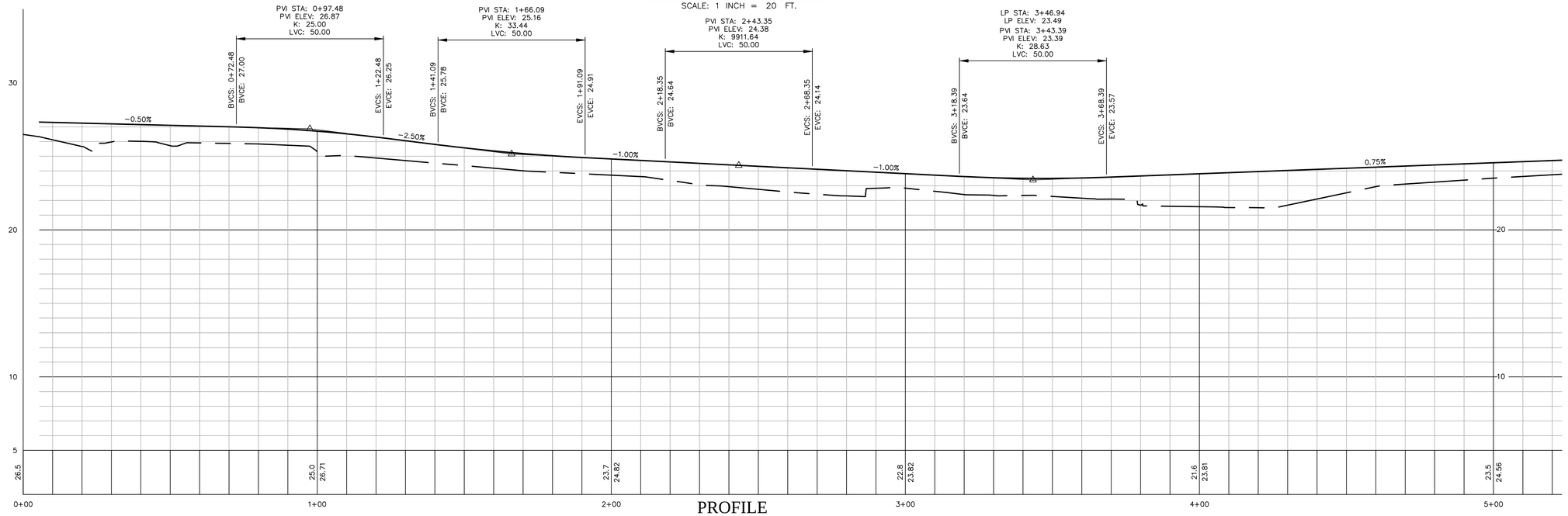

PROFILE

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FUSS & O'NEILL
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WATERSTONE PROPERTY GROUP

ROADWAY PLAN & PROFILE

CATE STREET DEVELOPMENT

CATE STREET/ ROUTE 1 PORTSMOUTH, NH

PROJ. No.: 20180317.A10
DATE: 04/02/2018

CR-101

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SHEET CR-101
SHEET CR-102
SHEET CR-102
SHEET CR-103
EDGE OF JURISDICTIONAL WETLAND (SEE NOTE 6)
N62°23'34"E 172.00'
WOODEN GUARDRAIL IN DISREPAIR
LIMIT 15 TONS OR 70% OR LEGAL LOADS
1" I.P.F. FLUSH (HELD)
J/N&T/318/10
CONCRETE BLOCK WALL
ZONE GATEWAY
BIORETENTION AREA
CATE STREET
1-1/4" I.P.F. FLUSH (HELD FOR LINE)
LOT 2

PLAN
SCALE: 1 INCH = 20 FT.

PVI STA: 5+76.29
PVI ELEV: 25.13
K: 66.51
LVC: 50.00
BVCS: 5+51.29
BVCE: 24.94
EVCS: 6+01.29
EVCE: 25.51
HP STA: 8+15.49
HP ELEV: 28.58
PVI STA: 8+21.75
PVI ELEV: 28.82
K: 12.49
LVC: 50.00
BVCS: 7+96.75
BVCE: 28.44
EVCS: 8+46.75
EVCE: 28.19
PVI STA: 10+57.87
PVI ELEV: 22.91
K: 49.87
LVC: 50.00
BVCS: 10+32.87
BVCE: 23.53
EVCS: 10+82.87
EVCE: 22.53
1.50%
-2.50%
24.1 25.49
24.2 26.99
28.4 28.49
27.5 26.86
22.7 24.36
6+00
7+00
8+00
9+00
10+00

PROFILE
HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.			XX/XX	XX

SCALE:
HORZ.:
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

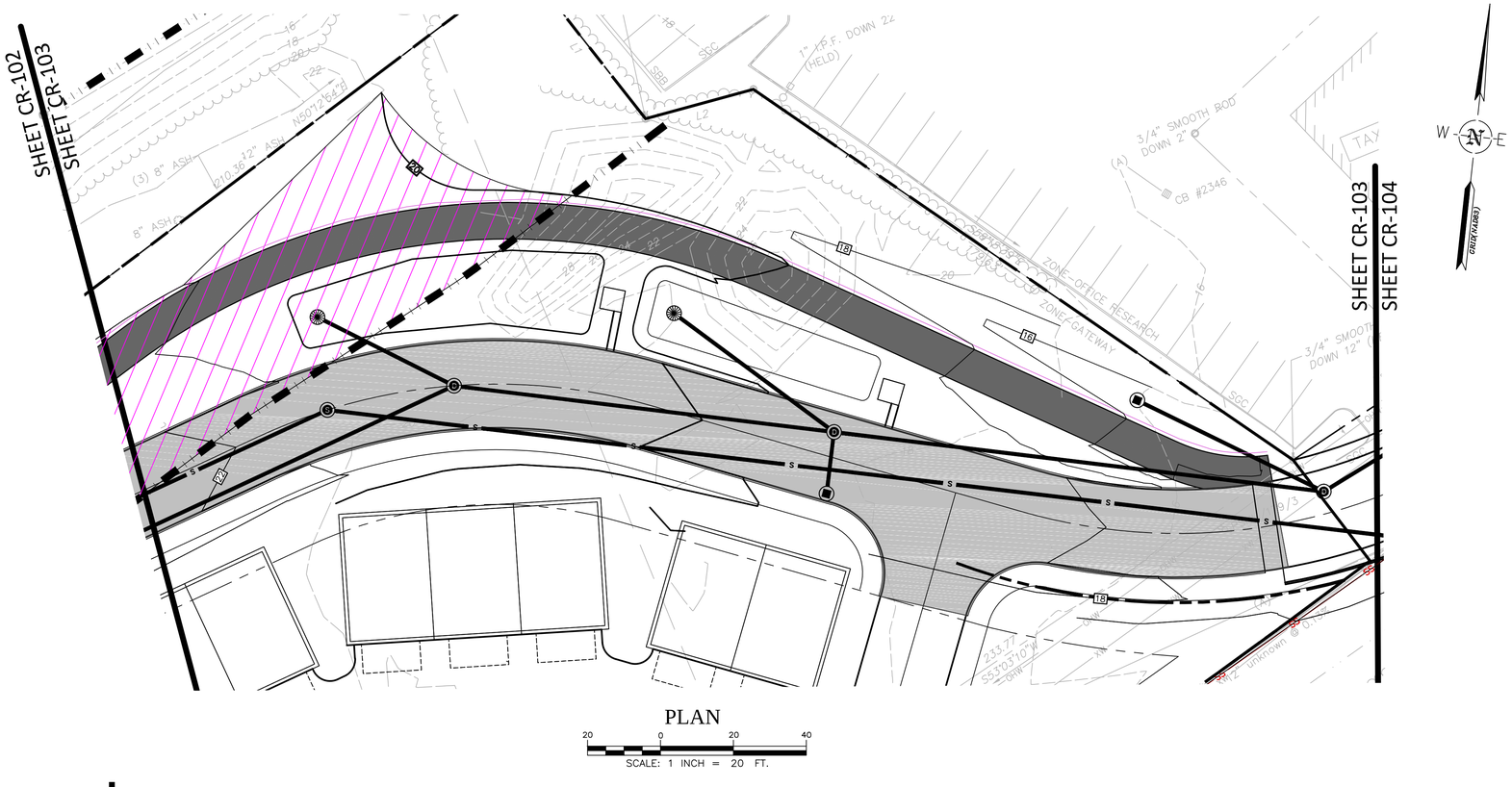
FUSS & O'NEILL
LIBBY HOUSE
5 LIBBY HOUSE STREET, SUITE 1
KENNEBUNK, MAINE 04043
207.363.0669
www.fando.com

WATERSTONE PROPERTY GROUP
ROADWAY PLAN & PROFILE
CATE STREET DEVELOPMENT
CATE STREET/ ROUTE 1 PORTSMOUTH, NH

PROJ. No.: 20180317.A10
DATE: 04/02/2018

CR-102

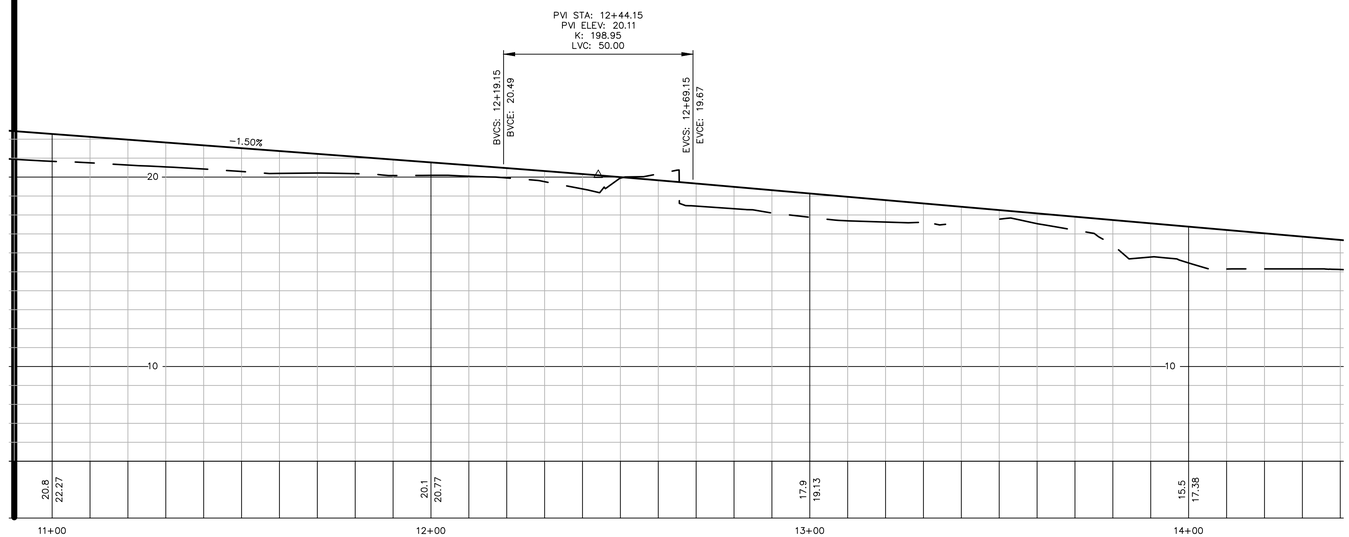
File Path: G:\03\17\A10\Civil\3Dwg\20180317A10_STP01.dwg Layout: CR-102 Plotted: Mon, June 25, 2018 - 3:37 PM User: danield
MS VIEW: LAYER STATE: Plotter: NONE CTB File: FO 2008 MONO.CTB.STB



PLAN

20 0 20 40

SCALE: 1 INCH = 20 FT.



PROFILE

20 0 20 40

4 0 4 8

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

No.	DATE	DESCRIPTION	XX/XX	DESIGNER	XX	REVIEWER
1.						

SCALE:
HORZ.:
VERT.:
DATUM:
HORZ.:
VERT.:

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WATERSTONE PROPERTY GROUP

ROADWAY PLAN & PROFILE

CATE STREET DEVELOPMENT

CATE STREET/ ROUTE 1 PORTSMOUTH, NH

PROJ. No.: 20180317.A10
DATE: 04/02/2018

CR-103

File Path: G:\0317A10\Civil\3Dwg\20180317A10_STP01.dwg Layout: CR-103) Plotted: Mon, June 25, 2018 - 3:37 PM User: danield
MS VIEW: LAYER STATE: Plotter: NONE CTB File: FO 2008 MONO.CTB.STB