



DiPrete Engineering

January 13, 2025

Ms. Breeka Li Goodlander, Agent
Town of Franklin Conservation Commission
355 East Central Street
Franklin, MA 02038

RE: Louise Drive Extension
Franklin, MA
MassDEP NOI Number 159-1300
Project #: 3343-001-A01

Dear Ms. Goodlander,

DiPrete Engineering has received the peer review comments from BETA, dated November 21, 2024. We have reviewed these comments and offer the following in response. The original comments are provided in italics with responses in bold.

General:

1. *SW1. BETA notes that the hydrologic calculations assume a subdivision consisting of four residences of various sizes with a driveway and lawn area provided for each lot. These structures and impervious areas are not illustrated on the plans and it is assumed that the actual design of the residences may vary. In the event that the actual as-built residences differ significantly from design assumptions, the stormwater management system may need to be revised to accommodate a larger flow. BETA recommends the Commission consider a suitable condition to ensure the basins are properly sized for the final subdivision layout.*

Acknowledged, we have no objection to a condition for restriction to residence sizes in the event drywells are not utilized for the rooftop drainage.

2. *SW2. Section 2.1 of the stormwater report identifies Charlton-Hollis-Rock outcrop complex as HSG D. However, the NRCS WSS identifies this soil group as HSG B. Based upon the depth achieved in the test pits and the lack of exposed ledge shown on the plans, BETA recommends that the calculation be modified to reflect this soil classification.*

The Charlton-Hollis-Rock outcrop complex soil (103D) has been switched to HSG B soil as identified on NRCS WSS.

3. *SW3. Consider providing a grate or similar measure at the 24" HDPE outlet (FES-11) to prohibit access by pedestrians and wildlife.*

A proposed grate for the flared end has been added to FES-11 which is referenced on the Pond Complex Details plan (sheet 9 of 11). "Grating for Flared End" detail has been added to Detail Sheet (Sheet 11 of 11).



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4. *SW4. Review HydroCAD model for Pond 121: Downstream Defender. A 15" HDPE outlet is used in the model, but a 12" HDPE outlet is proposed on the plans.*

The pipe shown on the plans has been updated to be a 15" pipe to match the designed pipe network.

5. *SW5. Provide sizing calculations for catch basin grates.*

The pipe network sizing calculations have been provided in the Stormwater report in Appendix A4.1.

6. *SW6. Recommend providing fencing around the detention basin system to discourage residents from entering the basins.*

A Fence has been added around the entire proposed pond complex, which is shown on sheets 6, 7, & 9 of 11.

7. *SW7. Confirm the legal right to construct drainage infrastructure, including DMH-8, within the Mass Co. Electric Easement.*

The Mass Electric Easement allows for passage of electric lines and poles as needed, and the property owners maintain the ability for vehicle passage and drainage improvements across the easement as evidenced by the easement crossing roadway and drainage lines elsewhere within the subdivision (Byron's Way and "Lot 2").

8. *SW8. Indicate the current condition of the existing off-site detention pond to which the water quality unit will be routed.*

The off-site existing detention pond has some nuisance vegetation closest to the roadway and along the downgradient berm under current conditions. There is an included additional O&M Report which is for the purpose of maintaining the off-site existing detention pond. We propose the Commission add a condition to assure the continuous maintenance of this pond per the submitted O&M Report.

Stormwater Management Regulations:

9. *SW9. Provide detail for proposed swale and method of stabilization (§153-15.A.10).*

A "Riprap Swale Cross Section" Detail has been added to the plan set and riprap has been added for stabilization, both items are shown on the Pond Complex Details plan (sheet 9 of 11).

Best Development Practices Guidebook:

10. *SW10. Indicate if proposed seed mix and plantings will reflect native vegetation, particularly near woodland areas (BDPG Page 7).*



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Planting notes have been added to Notes and Legend (sheet 3 of 11) of the plan set which includes the proposed seed mix.

11. *SW11. Confirm that landscaping plan has been designed in accordance with the planting bed and seeding guidelines outlined on Pages 14-15.*

Planting bed guidelines are not applicable for our project. The seeding guidelines per the guidebook have been referenced.

MassDEP Stormwater Standards:

12. *SW12. Provide stamp and signature on MassDEP Stormwater Checklist.*

Stamp has been added to the MassDEP Stormwater Checklist.

No Untreated Stormwater (Standard Number 1):

13. *SW13. Revise riprap apron size to match the outlet protection calculations, including a minimum size of 35' long x 41' wide with a d-50 of 11 inches.*

Riprap apron has been edited to mimic what is shown in the outlet protection detail. Stormwater will dissipate while flowing over the curb weir at the end of the riprap apron. The riprap apron/ FE detail on Pond Complex Details (Sheet 9 of 11) has been fixed to show the D_{50} of 13".

14. *SW14. Demonstrate that the swale can convey anticipated flow rates with erosion. Controls such as check dams and a riprap lined outlet may be required to prevent scour at the discharge location.*

Riprap was added to the conveyance swale to prevent erosion which is a D_{50} of 10". The RipRap swale cross section detail is shown on Pond Complex Details (Sheet 9 of 11). The hydroCAD attachments in the Stormwater report in Appendix A5.1 have been updated to include a riprap lined swale.

15. *SW15. The existing conditions plan identifies several stone walls located immediately downgradient of the outfall location. Demonstrate that these stone walls will not substantially impede flow discharged from the outfall.*

Per field visit on January 8th 2025, it was determined that the stone walls would not substantially impede flow as the grade slopes offsite to the northeast, and there are substantial openings in the stone wall offsite, in particular at a low point which appears to presently act as a natural weir:



View from property corner to east of site: existing rock opening at low point adjacent to tree.

16. *SW16. Recommend providing a level spreader at the outfall to mitigate potential impact of concentrated discharge onto the abutting property and the wetland resource areas.*

As mentioned in Number 13, The riprap outlet apron was increased. There is a curb weir at the end of the riprap apron to mimic a level spreader, spreading out the flow over a more widespread area.

17. *SW17. Clarify if the "curb outlet weir" detail represents the overflow weirs for the sediment forebay and detention basin.*

There is no curb outlet weir on any of the ponds. The "Curb Outlet weir" detail has been removed from the plan set.

Post-Development Peak Discharge Rates (Standard Number 2):

18. *SW18. Provide comparison or pre- and post-development peak discharge rate and runoff volume to design point 2: Ex Detention Pond. As no stormwater runoff is conveyed to this design point*



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under existing conditions, a net increase in peak discharge rate and runoff volume is anticipated, in violation of Standard 2.

This existing detention basin was designed to manage stormwater runoff from the entirety of the future Byron's Way and Louise Drive at the time of former approval, including the new section of roadway not built at the time and currently proposed. The applicant is diverting a majority of the new paved roadway to the new stormwater BMP in order to provide treatment via newer practices to the greatest extent practical, and therefore the design flow reaching the existing pond will, by comparison, decrease.

19. *SW19. Clarify the ultimate discharge location of the offsite detention pond. BETA notes that, if the peak discharge rates from both design points are combined, then the post-development, sitewide peak discharge rates exceed the pre-development, sitewide peak discharge rates. If the ultimate discharge location is the same for both points of analysis, then an additional point of analysis should be provided representing this final location.*

The ultimate destination for stormwater leaving the offsite detention pond is the wetland abutting the northeast corner of the property. As noted above the existing detention pond was previously designed factoring in the entirety of the full-build roadway, and this current project only proposes to construct that portion of roadway previously approved but not built historically. The design flow reaching the detention pond will therefore decrease via the flow captured and managed by the new stormwater BMP system. Comparing the relative change in flow at Design Point 1 from the BMP will be a conservative study, as compared to also including the relative decrease in flow from the original roadway design to smaller roadway area contributing to the existing detention pond.

20. *SW20. Provide HydroCAD subcatchment summaries, including cover type area breakdown and time of concentration calculations, for Wpre-01 and Wpre-02.*

The 100 year storm summaries have been included in the stormwater report which include Wpre-01 and Wpre-02. This is shown in Appendix A3.2.5 HydroCAD 100-Year Storm Analysis.

21. *SW21. Revise soil group for the southernmost portions of subcatchments WPre-02 and WPost-03. Based on NRCS soil mapping, this area is Hollis-Rock-outcrop-Charlton complex with HSGR D.*

The Hollis-Rock-outcrop-Charlton complex soil (104C) has been switched to HSG D soil as identified on NRCS WSS.

22. *SW22. Confirm that the limits of the areas modelled as "grass," as depicted on the watershed plans, accurately reflect the likely limits of disturbance for each residence, accounting for grading required to construct residences along slopes.*

The areas that are being graded on the watershed plans have been edited to use grass as the modeled cover type.

23. *SW23. Clarify material to be used for drainage pond complex maintenance access and model cover type appropriately. Typically, gravel or similar stone material is used for maintenance paths.*



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The maintenance access paths will consist of reinforced turf, The paths have been added to the Pond Complex Details plan (sheet 9 of 11). The hatch is referenced in the Notes and Legend (sheet 3 of 11).

24. *SW24. Revise cover type used for sand filter footprint to be impervious "Water Surface" to avoid "double-counting" the infiltration that will occur in this area.*

The cover type for the sand filter footprint has been revised to be a water surface which prevents the infiltration from being double counted.

Recharge to Groundwater (Standard Number 3):

25. *SW25. Recommend a condition that an agent of the town observe native soils after excavation for basins to confirm design assumptions.*

A note has been added as number 11 to the "Grading, Drainage, and Utility Notes" on the Notes and legend (sheet 3 of 11) that mentions, "An agent of the town shall observe native soils after excavation for basins to confirm design assumptions".

26. *SW26. The NRCS soil classification of HSG C conflicts with the loamy sand encountered in test pits near the sand filter. BETA recommends infiltration tests be conducted to verify infiltration rate.*

The test pit in the sand filter was taken to determine the soils under the ground for infiltration in that exact spot. Regarding the comment number 27 below, the proposed sand filter infiltration rate will be adjusted to 2 in/hr. If there was an infiltration test conducted at this location, the infiltration rate for the sand filter would not change as the soil infiltration rate would not be taken into account in the design calculations.

27. *SW27. In accordance with Volume 2, Chapter 2, page 59 of the handbook, the design infiltration rate for sand filters is 2.0 inches/hour. The design is based on a rate of 2.41 inches /hour and should be adjusted.*

The infiltration rate in the sand filter node (114) has been adjusted to 2 inches/hour.

28. *SW28. Test pits were completed on May 23, 2024, outside of the time of probable high groundwater elevation (November to April). (§153-15.A.9). The Sand Filter will have inadequate separation to groundwater if groundwater levels rise during the seasonal high period. Provide mounding analysis to demonstrate that the sand filter will function if the actual separation to groundwater is less than 2 feet.*

Note that the soil evaluations determine the seasonal high groundwater table not through direct measurement only. The soil morphology and evidence of mottling is observed within the test pits in order to determine evidence of previous high groundwater elevation. The properties and color of the soil determine if there was historically any water at a certain elevation. The test pit is not looking only for the current presence of water but the evidence that water was previously present.



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Using DTH 24-6 as an example, the current groundwater seepage depth observed at the time of excavation was 77 inches deep, however the soil morphology indicated our seasonal high groundwater table should be established at 31 inches in depth.

As described below, the average separation between the bottom of sand filter and groundwater table is approximately 3.1 feet.

29. *SW29. Provide 2' separation to groundwater from the bottom of the sand filter sand layer, rather than from the bottom of pond. The sand layer is necessary to achieve the required storage volume for water quality and therefore must remain unimpeded by groundwater during storm events. BETA notes that a seasonal high GW elevation of 354.42' is listed on the table on Sheet 9, but an elevation of 355.42' is more accurate based on test pit DTH 24-6.*

The GW elevation has been corrected in the table on sheet 9 to reflect the 355.42' elevation. However, based on consistent water tables downgradient from the sand filter, this represents the MINIMUM groundwater separation, at the high side existing grade of 358. At the low side existing grade of 355, the seasonal high groundwater table is at elevation 352.42. Therefore, the separation from bottom of sand to groundwater on the low side will be 4.58 feet, and average depth to groundwater over the bottom of the system is $(4.58+1.58)/2 = 3.08$ feet.

30. *SW30. The detention basin grading includes cuts as great as 6 feet below existing grades which is greater than the 34" groundwater depth encountered in this area. Revise detention basin design such that the basin bottom is above the estimated seasonal high groundwater.*

The Detention basin has been altered to bring the bottom elevation to 348.00 which is not within the groundwater table. The detention pond has been altered to recover the volume that was lost from the elevation change, and to step the bottom in order to minimize depth of excavation from existing grade and towards groundwater elevation accordingly.

31. *SW31. Include low permeability core in embankment for sediment forebay and sand filter to prevent seepage through the berm.*

The low permeability core in embankment has been added to the sediment forebay which is shown on the Pond Complex Details plan (sheet 9 of 11)

32. *SW32. Revise outlet from sediment forebay to be at the bottom of the forebay to prevent permanent ponding in the forebay.*

The goal of the sediment forebay is to capture coarse sediment and is expected to contain water during and after storms. The way to capture sediment is to create an outlet for the forebay higher than where the sediments will collect and settle within the forebay. The water within the forebay will evaporate or naturally infiltrate over time leaving sediment to be removed during maintenance.

33. *SW33. Provide drawdown calculations for the Detention Basin to confirm that the proposed low flow outlet can fully drain the basin within 72 hours.*



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As per page 80 of the Stormwater Report, the outflow from the Detention Basin reaches 0 cfs (no outflow at approximately Hour 26 of the storm event).

34. *SW34. Revise drawdown calculation for Sand Filter to use a drawdown rate matching the HydroCAD model, as drawdown will be restricted by native soils rather than the proposed sand layer. Per the MA Stormwater Handbook, V2C2 Page 59, design the sand filter to draw down within 24 hours or less.*

The pond will drain down within 24 hours for the water quality storm as shown on pages 102 & 103 of the submitted stormwater report.

Total Suspended Solids (Standard Number 4):

35. *SW35. Provide TSS removal calculations for both treatment trains.*

The TSS removal for the site meets the proposed pond treatment requirements. The existing detention pond and Louise Drive roadway have previously been approved for the treatment requirements. Although the existing detention pond was designed to handle the full extents of the roadway, the proprietary device (WQ-DMH-17), Downstream Defender, provides additional treatment over that proposed during the originally approved pond design. The proposed pond complex and associated BMPs have been calculated to meet the TSS and phosphorus removal requirements under current regulations.

36. *SW36. Revise TSS removal worksheet to exclude pretreatment devices; the 80% TSS removal provided by the sand filter is inclusive of required pretreatment.*

The TSS removal worksheet has been edited to exclude the sediment forebay, as per the Massachusetts Stormwater Handbook. The resulting calculation results in 93% TSS removal.

37. *SW37. Revise TSS removal worksheet to exclude the detention basin; stormwater runoff treated by the sand filter will be infiltrated into the ground and therefore additional treatment in the detention basin is not possible.*

Following the diversion and infiltration of the lower flow storm events, a majority of runoff will be diverted through the detention basin. The detention basin TSS removal calculation accounts for the decrease in load following outflow from the sand filter. There will be only 15% of the sediment load remaining for the overflow from the sand filter, and the detention basin will remove 50% of this load, for a remaining sediment load of approximately 7.5% from the beginning stormwater concentration.

38. *SW38. Provide water quality calculations for WQ-DM-17 demonstrating that it will remove at least 90% of TSS and 60% of total phosphorus (§153-16.A.1(a))*

The existing detention basin was originally permitted to treat runoff associated with the contributing paved area including the entirety of Louise Drive proposed to be constructed under this application. A majority of the roadway and offsite watershed are routed to the new BMP series which will remove a minimum of 90% TSS and 60% phosphorus, with runoff unable to be routed to this BMP series due to wetland and topography constraints will tie into



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the existing drainage system already designed to account for this stormwater. The Downstream Defender is a "belt-and-suspenders" approach to additional treatment prior to runoff reaching the existing detention pond. The Downstream Defender has been third-party tested to remove 50% TSS. The letter stating this has been attached to the Stormwater Report in Appendix A3.4.

Erosion and Sediment Controls (Standard Number 8):

39. *SW39. Revise SWPPP to include the name, address, and telephone number of owner, civil engineer, and person responsible for implementation of the plan (§152-2.A).*

The SWPPP includes the name, address, and telephone number of the owner and civil engineer. The person responsible for implementation of the plan has not yet been awarded. The following verbiage has been added to sheets 1, 3, & 4 of the SWPPP, "Contractor to fill out this section after the contract is awarded and before any construction begins."

40. *SW40. Provide perimeter controls along the stream near the stream crossing.*

Perimeter controls have been added along the stream near the stream crossing.

41. *SW41. Remove silt fence from the perimeter controls section of the SWPPP. Silt fence is not permitted as a perimeter control per the Town of Franklin BDPG.*

Silt fence has been removed from the perimeter controls section of the SWPPP on page 15 and straw wattle has replaced as the perimeter control default.

42. *SW42. Provide seed mix and schedule for temporary/permanent stabilization, including how soon after disturbance these measures will be implemented. The SWPPP references "site stabilization" notes in the Site Plans, but BETA could not locate the referenced notes.*

The site stabilization notes have been added to the "Sequence And Estimated Dates Of Construction Activities" notes on the Notes and Legend (sheet 3 of 11)

43. *SW43. Provide approximate location(s) of soil/material stockpile area on plans with erosion and sedimentation control measures to limit transport of materials. Areas should be located outside of buffer zones to the extent practicable.*

The soil/material stockpile area is on the plans and the erosion control has been added to the plans on the Soil Erosion Sediment Control Plan, (sheet 5 of 11).

44. *SW44. Clarify location of temporary sediment basins and swales identified in the SWPPP. A reference is made to the plans in Appendix A, but no site maps have been provided. If the proposed basin, sand filter, and sediment forebay are used as construction-period erosion controls, they must be thoroughly cleaned and restored prior to the end of construction.*

The language on page 19 of the SWPPP has been altered to include. "The project is not intending to provide sediment traps or basins. In the case that construction is sequenced in such that a concentration of stormwater results from alterations, the traps may be put online



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as described below. SWPPP will be actively maintained by the SWPPP specialist during construction and any changes will be tracked."

45. *SW45. Revise sequencing plan to exclude infrastructure not applicable to the project, such as the underground infiltration system. Ensure that the detention basin, swale, and water quality unit are included in construction sequencing.*

The sequencing in the SESC has been edited to remove the underground infiltration system and include the detention basin, swale, and water quality unit. Numbers 3, 9, and 12 of Phase 1A have been edited.

Operations/Maintenance (Standard Number 9):

46. *SW46. Indicate the Owner(s) of the stormwater management system, the names, addresses, and phone number of the person(s) responsible for operation and maintenance, and the person(s) responsible for financing maintenance and emergency repairs (§153-18.A & B). The provided O&M Plan indicates that an "Owners Association" will be created upon completion of construction, but such an association would presumably require future residences to be sold and occupied. An Owner who can meet the requirements of the Maintenance Agreement outlined in §153-18 should be identified to account for the event in which an "Owners Association" cannot be immediately formed at the completion of construction.*

The current owner of the land shall be the person responsible for the operation and maintenance of the properties until such time that an owners association is created. This verbiage has been added to the O&M plan on page 2.

47. *SW47. Provide signature of owner on the O&M Plan (§153-18.B.5).*

As this signed document commits the owner to maintaining a specific stormwater system not approved at this time, this owner signature will be provided on the O&M plan following approval of the project. We agree this can be a condition of approval,

48. *SW48. Include provision in the O&M Plan requiring a documentation submittal to the DPW confirming when maintenance has been satisfactorily completed (§153-18.B.6).*

At the end of each checklist in the O&M plan report, there has been a checklist item added stating, "Submission of checklist/tables to the Department of Public Works at the end of each checklist completion to confirm that maintenance has been satisfactorily completed". Can be seen on sheets 13 17, 24, 27, 32, 35, 38, & 40.

49. *SW49. Revise the "transfer of ownership" section to include the requirements outlined in §153-18.D).*

The following requirements have been added into the O&M Report.

(1) "The owner(s) of the stormwater management system must notify the Director of changes in ownership or assignment of financial responsibility."

(2) "The maintenance schedule in the maintenance agreement may be amended to achieve the purposes of this bylaw by mutual agreement of the Director and the responsible parties.



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Amendments must be in writing and signed by all responsible parties. Responsible parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility."

50. *SW50. Identify proposed snow storage areas on the plans and the O&M Exhibit.*

Snow Storage areas have been added to O&M plan and the plan set on the Site Plan (sheet 6 of 11).

51. *SW51. Include operation and maintenance requirements for the conveyance swale and the stream crossing and add to maintenance checklist.*

An operation and maintenance checklist has been added detailing the requirements for the conveyance swale, (Riprap-Lined Channel or Swale) and the stream crossing, (wetland crossing).

52. *SW52. Verify that the detention basin can be safely accessed by a maintenance vehicle. Proposed grading for the sediment forebay and sand filter may impede access to the basin.*

There has been a reinforced turf access path added to the plans which is shown on the Pond Complex Details plan (sheet 9 of 11)

53. *SW53. Clarify if a residence will be constructed on Lot 16 and evaluate the need for stormwater easements within this lot to access the pond complex.*

Yes, there is the intention to have a residence constructed on Lot 16. There will be a proposed future drainage easement and reinforced turf maintenance access path for access to the pond complex. This is shown on the Site Plan (sheet 6 of 11).

54. *SW54. Clarify operation and maintenance responsibilities for the existing detention pond and whether the owners of the proposed Lot 13 will share maintenance responsibility due to the proposed pipe connection to the Byron's Way drainage system.*

The HOA, not the owners of lot 13, will maintain existing and proposed BMPS. The Operation & Maintenance documents will be completed, signed and filed with the town following approval – as noted in response #47, we are in agreement of this being a condition of approval.

Illicit Discharges (Standard Number 10):

55. *SW55. BETA recommends that the signed illicit discharge compliance statement be provided during the permitting process.*

The signed illicit discharge compliance statement will be provided following approval and prior to discharge of stormwater to the BMP series, as required/allowed by the MassDEP.



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Please feel free to contact me if you have any further questions regarding this matter.

Sincerely,
DiPrete Engineering Associates, Inc.

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