CONSERVATION COMMISSION

AGENDA

Monday, March 17, 2025	**5:00 PM**	**Room 22, Recreation Center**

Commission Members

Councilor Andrew Madison, Vice Chair
Art Walker
Councilor Robert Williams
Barbara Richter
Steven Bill
Gary Flaherty
Bob Milliken, Alternate
Thomas P. Haynes, Alternate
John Therriault, Alternate
Alexander Von Plinsky, Alternate
Kenneth Bergman, Alternate

SITE VISIT: Commission members will conduct a site visit of the properties located at 21 & 57 Route 9 (TMP#s 215-007-000 & 215-008-000) at ~4:00 PM prior to the meeting.

1. **Call to Order**
2. **Approval of Meeting Minutes** – January 21, 2025
3. **Planning Board Earth Excavation Permit Referral:**

   PB-2024-20 – 21 & 57 Route 9 – Applicant Granite Engineering LLC, on behalf of owner G2 Holdings LLC, proposes to expand the existing gravel pit located at 21 & 57 Route 9 (TMP#s 215-007-000 & 215-008-000). A Hillside Protection CUP is requested for impacts to steep slopes. Waivers are requested from Section 25.3.1.D & Section 25.3.13 of the LDC related to the required 250' surface water resource setback and the 5-ac excavation area maximum. The parcels are a combined ~109.1-ac in size and are located in the Rural District.
4. **Report-outs:**
   a) Greater Goose Pond Forest Stewardship Subcommittee
   b) Invasive Plant Species
   c) Land Conservation
   d) Pollinator Updates
5. **Discussion Items**:
   a) Citywide approach/strategy for invasive species management
   b) Airport wildlife control fence
   c) Land Stewardship Updates (easement monitoring)
   d) NHDOT Route 101 Project
   e) Master Plan Update
   f) Outreach
6. **New or Other Business**
7. **Adjourn** – Next meeting date: Monday, April 21, 2025

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City of Keene
New Hampshire

CONSERVATION COMMISSION MEETING MINUTES

Tuesday, January 21, 2025 **5:00 PM** **Room 22, Recreation Center**

Members Present:
Councilor Andrew Madison, Chair
Councilor Robert Williams, Vice Chair
Art Walker
Steven Bill (Remote)
Gary Flaherty
Barbara Richter
Robert Milliken, Alternate (Voting)
Alexander Von Plinsky, IV, Alternate
Thomas Haynes, Alternate
John Therriault, Alternate
Ken Bergman, Alternate

Staff Present:
Mari Brunner, Senior Planner

Members Not Present:
Deborah LeBlanc

SITE VISIT: At 4:30 PM, prior to the meeting, a quorum of the Conservation Commission conducted a site visit of the property located at 19 Ferry Brook Road.

1) Call to Order

Chair Madison called the meeting to order at 5:00 PM.

2) Elections and Introductions

A) Elections

A motion by Ms. Richter to nominate Councilor Madison as Chair for the 2025 calendar year was duly seconded by Mr. Milliken and the motion carried unanimously on a roll call vote.

A motion by Chair Madison to nominate Councilor Williams as Vice Chair for the 2025 calendar year was duly seconded by Mr. Walker and the motion carried unanimously on a roll call vote.

Vice Chair Williams explained that the City Council passed an Ordinance to align with NH law, which made it so that the City Council is no longer required to have a representative on the

Conservation Commission. Now, Chair Madison and Vice Chair Williams would be serving as a regular citizens and not ex-officio members. In the future, there may or may not be a Councilor on the Commission.

B) Introductions

Chair Madison welcomed introductions from the newly appointed Commissioners, Gary Flaherty and Bob Milliken. Mr. Flaherty said he had been living in Keene for approximately one year since moving from Hollis, where he was on the Conservation Commission for five years. Mr. Flaherty is a 40-year certified wetland soil scientist in NH, so he quipped that he is dangerous with information. Mr. Milliken said he had lived in Keene for over 40 years and worked for the School District and in IT. He is very interested in helping this Commission.

3) Approval of Meeting Minutes – December 16, 2024

Revisions: Line 84, edit a Scrivener's error to the run on sentence by adding a period after the word "foam" and deleting the word "so." Line 48, change the word "ribbing" to "cribbing." Lines 43–45, revise as: "Mr. Haynes said he had one meeting with the City Engineer, Bryan Ruoff, and Parks & Recreation Director, Carrah Fisk-Hennessey, to share the initial idea and invite them to that Subcommittee meeting at Goose Pond."

A motion by Mr. Flaherty to adopt the December 16, 2024 minutes as amended was duly seconded by Mr. Walker and the motion carried unanimously on a roll call vote.

4) Planning Board Referral: Major Site Plan & Surface Water Conditional Use Permit Application, 19 Ferry Brook Rd – Applicant SVE Associates, on behalf of owner Cheshire County Shooting Sports Education Foundation, proposes a gravel shooting berm located within the 75' surface water buffer. The parcel is 55-ac in size and is in the Rural District

Chair Madison welcomed a presentation from the applicant, Liza Sargent of SVE Associates, on behalf of Cheshire County Shooting Sports Education Foundation. Ms. Sargent showed site plans that depicted the indoor shooting range, the berm used at the shooting range, and two different wetlands. She said the Foundation wanted to maintain the earthen berm within the 75-foot buffer. As a part of the application process, the applicant's original intention was to ask for a reduction to the 30-foot buffer, but they thought it would be better to keep the 75-foot buffer and ask to maintain the berm. She said there was approximately 1,200 square feet of berm within the 30-foot buffer, so the applicant proposed to double that area as a constructed wetland adjacent to one of the existing wetland areas. She showed where an existing topsoil pile would be removed, and a rock pile would be moved outside of the 75-foot buffer.

Mr. Therriault asked if some of the topsoil pile would be deposited along the top of the berm. Ms. Sargent said yes, to help vegetate is. Mr. Therriault asked what would be planted in the new

topsoil and Ms. Sargent said the standard Department of Transportation seed mix. Mr. Therriault suggested a northeast pollinator mix to grow wildflowers that would help the native pollinators and mentioned the availability of several online nursery companies, like Prairie Moon Nursery. Another Commissioner suggested a good list of seed mix from New England Wetland Plants in Amherst, MA.

Mr. Bill asked if there were any existing issues with invasive plants at the site that would be affected by these changes. Ms. Sargent said there were none that she was aware of.

Vice Chair Williams asked if there was any concern with lead in the soil from past uses. Otto A. Busher, III, Chairman of the Board of Directors of the Cheshire County Shooting Sports Education Foundation said there were no problems with lead. The topsoil pile came from one of the Keene cemeteries. The berm was a free gift from the State of NH moved from roadwork, so he said there were no issues with invasive species or anything else. At this time, the berm was being used for copper coated lead and copper bullets, and he said that shotguns were not used in that area. Mr. Busher said there was no shotgun range on this site or hunting allowed on the 160-acre property, so there would not be lead shot.

Mr. Von Plinsky understood the intended location for the constructed wetland, but asked the plan for it; would it just be a hole in the ground? Mr. Busher said they hired a consultant who developed a plan to replicate the wetlands, but they were not pursuing a contractor until spring, and planned to try as much of the work as possible themselves. The group deconstructed the dam (to the north of the berm) manually and did a lot of revegetation.

Ms. Richter asked if the constructed wetland would be hand dug. Mr. Busher said if it could be, noting that there was not an approved plan yet, but said hand dug as much as possible. Ms. Richter asked about revegetation. Chris Danforth, of Danforth Environmental, certified wetland scientist, said he was asked to create a restoration plan for this project. He approached the task by determining where the water table is through test pits. He then brought the elevation of the grades down to approximately 50% in the water table and 50% above, creating a mounded pool configuration, which he compared to an egg carton. That configuration would enhance the variety of plants that would grow because of the variable hydrology. Mr. Danforth said he created a planting plan with shrubs and trees, as well as a wetland seed mix that would go in the entire area. He showed an area on the plans that would be a graded slope to achieve the desired elevation in the wetland and that slope would be planted with trees and shrubs as well. The conservation mix would be used along the upland buffer area. Mr. Danforth showed the existing wetland boundary on the map and where the new wetland was proposed just adjacent to the existing.

Chair Madison asked if the Commission's role was only to offer comments. Ms. Brunner explained that this was a referral from the Planning Board, which would be holding a public hearing on the application on Monday, January 27, at 6:30 PM. The Planning Board would review whether or not to grant the Surface Water Conditional Use Permit for the berm within the

75-foot wetland buffer. The Planning Board typically relies on the Commission's input and advice when making that decision. In this instance, Ms. Brunner thought that the Surface Water regulations focused on trying to minimize impact to the buffer where possible. She said this berm was constructed approximately 10 years prior, so it had been in the buffer for a long time, and thus the applicant's approach is mitigation. She said the applicant proposes to construct a wetland area that is double the size of the portion of the berm that is in the 30-foot buffer—which she called the more critical piece that is closer to the wetland—as potential mitigation. Ms. Brunner thought the Planning Board might value the Conservation Commission's input on whether that would be reasonable mitigation or the best way forward. She said the alternative would be for the applicant to remove the berm from the buffer, but she reiterated that it had been there for 10 years, and so that was the decision.

Mr. Bergman recalled the Commission reviewing a permit for an application on Gunn Road. He remembered discussing changes in the buffer size by Ordinance within the last 5–10 years. He asked if this berm pre-existed the change in buffer size? Ms. Brunner said that the berm did pre-exist the change to the regulations that allow for the buffer reduction. However, she said that the buffer reduction is really for uses that are in general prohibited. In the regulations, certain uses are allowed without any sort of approval (e.g., hiking trails) and some uses are completely prohibited (e.g., septic systems). The situation in this application was for a use that is allowed with a Conditional Use Permit (CUP). If it was not allowed with even a CUP, the applicant would have to seek a buffer reduction. So, Mr. Bergman said that approval of this request would not majorly deviate from recent practices of the City, Conservation Commission, or Planning Board. Ms. Brunner said it was consistent with similar requests.

Chair Madison said it sounded like the only recommendation to the Planning Board was to use a northeast pollinator mix to reseed the berm. He asked for any other recommendations. Mr. Von Plinsky said he spoke with a member of the Foundation onsite during the site visit and recommended working with the Natural Resources Conservation Service regarding plantings and observing the plantings to make sure they establish. Mr. Flaherty recommended that the Planning Board focus on erosion control. Mr. Bergman asked if the berm had a grass cover to stabilize the slope. Chair Madison imagined it had been vegetated over the years and Mr. Flaherty agreed that was the indication at the site visit.

Ms. Richter said this proposal seemed like the most appropriate use for restoration vs. trying to enforce the buffer, stating that trying to move the berm would be more mess and trouble than recreating an adjacent wetland. She said it looked like a standard plan that should be all right.

Chair Madison made the following motion, which was duly seconded by Mr. Flaherty. On a roll call vote of 6–0, the Conservation Commission sent its comments regarding the pollinator mix, working with the Natural Resources Conservation Service regarding plantings and vegetation, and erosion control to the Planning Board, otherwise stating no objections to the Major Site Plan & Surface Water Conditional Use Permit Application for 19 Ferry Brook Rd. Mr. Bill abstained.

All members of the public left the meeting.

5) Report-Outs:

A) Greater Goose Pond Forest Stewardship Subcommittee

Mr. Haynes reported that the Subcommittee met on Friday, January 10 and talked about signage, maps, and trail work. These would be ongoing conversations. Mr. Haynes put up another batch of signs in the Park and would be slowly creating more.

Mr. Haynes explained that most of the January 10 meeting was focused on the proposed bridge by the spillway. Lew Shelley, the trail builder, attended the meeting to present on different styles of bridges, materials, and support beams. The Subcommittee worked through and agreed upon a design and support beams it would like. The preferred beams would be much lighter than the initial ones considered. Now, the Subcommittee would be working with the City Engineer, Bryan Ruoff, to develop a sketch and schematic. At the Subcommittee's meeting on Friday, February 14, it would discuss fundraising because the goal is for this to be a community project.

Ms. Richter asked if the intention was for the bridge to span the entire spillway. Mr. Haynes said no, and shared some images to demonstrate, explaining that it would be further back just before getting into the vegetation—where the span would be much shorter—and not directly over the spillway. He said the intention is to not have any issues with the Bureau of Dams because of something over the spillway. The Subcommittee did not want to go down any further than where he showed because it gets more steeply eroded, so he said this was the best spot they could determine. At this point, he said the Bureau of Dams was okay with the project as long as the City could demonstrate that during a massive 100-year flood, the water coming over the spillway would not destroy the bridge.

B) Invasive Species

Vice Chair Williams reported that due to winter, there was little to report. He and Mr. Von Plinsky presented their invasive species letter to the City Council, which was forwarded to the Municipal Services, Facilities, & Infrastructure (MSFI) Committee. When the MSFI Committee first received the letter, it was unclear what it would do with it, but at a subsequent meeting, the City Manager said she would bring forward updates potentially at the January 22 MSFI meeting. Vice Chair Williams said it was exciting that City staff would be bringing forward some ideas for invasive species.

C) Land Conservation

No updates.

D) Pollinator Updates

Mr. Therriault reported that on January 22, there would be a Bee City USA webinar on their revised renewal process that he would attend. During the New Business section of the agenda, he intended to request a motion to pay the Commission's annual $200 Bee City USA dues renewal.

6) Discussion Items:

A) Citywide Approach/Strategy for Invasive Species Management

Chair Madison referred to the update from Vice Chair Williams above.

B) Airport Wildlife Control Fence

Mr. Bergman said there were no updates as everything on the project was pending.

C) Land Stewardship Updates (easement monitoring)

Chair Madison reported that Ms. LeBlanc resigned from the Commission. Ms. Richter agreed to take on easement monitoring in her place and Ms. Brunner would get Ms. Richter the necessary materials. Mr. Bill offered to help Ms. Richter and they would coordinate come spring.

D) NHDOT Route 101 Project

Ms. Brunner reported that there was a meeting in December that she was unable to attend. Mr. Flaherty said he attended and that it was productive, with a great presentation; he noted the need in terms of health and safety. Mr. Von Plinsky agreed, noting that the design chosen was his preferred design from the original meeting. He said the last few hundred yards of the current area of Swanzey Factory Road would revert back to the ownership of the abutting landowner; the City does not own it. Mr. Von Plinsky had hoped that area could be turned into a park or something similar along the river but unfortunately, that would not be possible. Overall, he said it seemed like it would be a great set-up and one of the few win-wins he had seen in road design. If heading away from downtown Keene, Mr. Bergman asked if the exit would be before the current Swanzey Factory Road. Mr. Von Plinsky said no, if heading away from Keene, it would be beyond that toward Marlborough. Mr. Therriault asked if there was any indication of when the project might start. Mr. Flaherty said a few years and cited $17 million involved in the project so far. Mr. Bergman asked if it would be near Ciardelli Fuel and Mr. Flaherty said yes, adding that there would be another roundabout there as well.

E) Master Plan Update

Ms. Brunner reported that the Master Plan was in the Task Force phase, with each Task Force based on one of the Strategic Pillars: housing, economy, mobility, neighborhoods, workforce, and environment. There were also six online discussion boards for each of the Pillars. There was still time for members of the public to join Task Forces, with all of them kicking-off during the week after this meeting. Each Task Force would meet three times over the course of three

months and all meetings would be virtual. Ms. Brunner encouraged anyone unable to participate in the Task Forces to engage with the Discussion Boards at www.KeeneMasterPlan.com. City staff and project consultants were reviewing those Discussion Boards weekly to garner ideas and share them with the Steering Committee and Task Forces. Staff's next task would be developing lists of key studies and best practices from other communities, and the Task Forces would produce lists of goals and strategies that the community would be asked to prioritize in a survey. More updates to come.

F) Outreach

No updates.

7) New or Other Business

Following Ms. LeBlanc's resignation, Chair Madison said he had reached out to someone working locally as a wetland scientist who was interested in joining the Commission. So, the Chair hoped to have the position filled by the next meeting.

Chair Madison also shared that the Council agreed to have the City's boards and committees file annual reports with the City Council. These would be requested and not required by July 1 of each year. Chair Madison said that he would be assuming this responsibility of reporting on behalf of the Commission. If any of the Subcommittees or work groups had data to share for reporting, such as on invasive species cleared or volunteer hours at Goose Pond, the Chair welcomed that information to help him when the time comes.

Mr. Bergman returned to the topic of Ms. LeBlanc's replacement, noting that he could see the value of adding a wetlands scientist to the Commission, but he wondered if any existing alternates wanted to move up as regular members. Chair Madison said that would be fine but would also have to go through the Mayor and City Council process. Ms. Brunner thought that changing an alternate to a regular could happen through the course of one City Council meeting whereas a new appointment would take two. Chair Madison asked if any alternates were interested in shifting to a regular member and Mr. Therriault said he was, so Chair Madison said he would share that information with the Mayor. In that case, Ms. Richter suggested still inviting the other wetlands scientist to join as an alternate and Mr. Haynes agreed.

Mr. Therriault asked for a motion to renew the Bee City USA annual dues for $200. Chair Madison asked the status of the Commission's budget. Ms. Brunner said that at the last meeting, the Commission voted to pay its annual $950 dues to the NH Association of Conservation Commissions, but that payment had not been processed yet. That had been the only expenditure from the Commission's $2,000 budget so far this fiscal year.

A motion by Ms. Richter for the Conservation Commission to renew its Bee City USA membership for $200 was duly seconded by Mr. Milliken and the motion carried unanimously on a roll call vote.

Mr. Bill referred to the permit for the gun club, noting that they were planning for a 25-year flood and asked if that was the standard the Commission and the City was held to. He wondered if Commission could ask about the status of the project in a 50-year flood. Chair Madison said it could be a follow-up question to the Planning Board. Mr. Bill said the City would run into this issue more and more with permitting and when considering variable climates, so he wondered if the Commission could have people entertain the possibility of floods beyond 25 years. Chair Madison said that the Conservation Commission's role was more so to comment and advise. If the Commission wanted to make that an actual rule, it would have to go through the Land Development Code, which would require approval by the Planning Board and City Council. Ms. Brunner agreed that part of the Commission's purview is advising the Planning Board on the Master Plan and issues of land use, so this would be a great concern to share with the Planning Board as a part of the Master Plan update that drives regulatory updates. For this specific permit, Ms. Brunner said that the City's standard at this time was the 25-year storm, unless the project was on a steep slope, then it would be a 50-year storm. It was the Commission's purview to advise more stringent standards to the Planning Board and City Council but there would be a process to get adopted. Chair Madison agreed that in the future, with the changing climate and more frequent heavier storms, the Commission could advise the Council to start looking at greater flood protection requirements.

8) Adjourn – Next Meeting Date: *Tuesday*, February 18, 2025, at 5:00 PM

There being no further business, Chair Madison adjourned the meeting at 5:49 PM.

Respectfully submitted by,
Katryna Kibler, Minute Taker
January 27, 2025

Reviewed and edited by,
Mari Brunner, Senior Planner

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February 14, 2025

City of Keene – Planning Board
Community Development Department
3 Washington Street
Keene, NH 03431
Attn: Megan Fortson, Planner
Evan Clements, Planner
Mari Brunner, Senior Planner

RE: G2 Holdings LLC - Excavation Permit Package Review
Tax Map 215 Lots 7 & 8 – 57 Route 9 – Keene, NH

Dear Board Members,

As requested, Fieldstone Land Consultants, PLLC (Fieldstone) has performed a review of the documents submitted for the above referenced project for completeness to the applicable City of Keene Land Development Code. The following documents were submitted for our review:

- Transmittal Letter prepared by Granite Engineering LLC, dated December 19, 2024.
- Earth Excavation Permit Application, dated December 12, 2024
- Community Development Department Certified Notice List, dated December 12, 2024
- Owner Affidavit
- Project Narrative
- Natural Heritage Bureau Environmental Review, dated February 6, 2024
- Hydrogeologic Investigation Report, dated December 18, 2024
- Acid Mine Drainage Report, dated December 18, 2024
- Request for waivers to Article 25.3.1.D and Article 25.3.13 with exhibits
- Gravel and Earth Removal Plan Set, dated December 20, 2024
- Hillside Protection Conditional Use Permit Application with Exhibits
- Copy of Alteration of Terrain Permit and Stormwater Management Application, dated December 20, 2024

- City Response Letter, dated February 3, 2025
- Stormwater Pollution Prevention Plan, Dated January 30, 2025
- Stormwater Management Report, dated January 22, 2025
- Revised Plan Set, last revised February 3, 2024

Fieldstone has completed a review of the materials provided against the City Land Development Code. More specifically the submission materials have been reviewed under Article 25 – Earth Excavation Regulations and Article 26 Section 26.19.4 which handles the Earth Excavation Permit.

Section 25 Earth Excavation Permit:

1. Section 25.2B: This project will require state and federal permits and these permits have not been obtained yet. Fieldstone would recommend that these permits be considered as conditions of approval when and if the project reaches that point.
2. Section 25.2C: The reports prepared and submitted indicate that this project has the potential to cause adverse impacts associated with the excavation project operations. This section outlines hazards as noise, traffic, dust or fumes, visual impacts, degradation of roadways, erosion and soil instability, sedimentation, adverse impacts to surface and ground waters, loss or fragmentation of important habitat, air quality degradation, pollution of soils or diminution of the value of abutter properties. Based on the materials provided it appears that this project will result in adverse impacts to surface and groundwaters. This is outlined in the Acid Mine Drainage Potential Report and we believe the stormwater management report does not currently adequately address the surface water conditions.
3. Section 25.3D: Surface Water Resources. The excavation perimeter shall be set back at least 250-ft, and the access driveway shall be set back at least 150-ft, from any surface water resource. The proposed excavation is located within 250-ft in a number of locations and the applicant is seeking a waiver from this section.
4. Section 25.3.3: The ground water table elevations need to be revisited in the reports. There appears to be conflicting data from the test pits and soil borings regarding the location of the estimated seasonal highwater table. Depending on the results of this work other portions of Section 24.3.4 may or may not be applicable. For example, the excavation depths in Period 8 appear to show depths of excavation below the water table. Test pits and record boring logs show seasonal high-water tables that are encountered and proper separation for infiltration does not appear to be provided. Based on our review of the data it appears this project will need an exception from 25.3.3A as excavation appears to be proposed below 6 feet from the seasonal high-water table.
5. Section 25.3.4.A.1: We have reviewed the soil logs and their proximity on the property. The number of observations appear to be appropriate at this stage but additional data may be required to support the current design since the current design does not appear to have adequate separation to water. Additional investigation may also be required depending on the consultant's responses surrounding concerns for potential impacts.

6. Section 25.3.4.A.2: The surface data table on Sheet 11 of 22 does not accurately represent elevations (existing and proposed) and separation to seasonal. The Hydrogeologic Investigation performed by SLR shows that boring log SLR-10 observed water at 840.1+/-, SLR-11 observed water at 817.8+/- and SLR-12 observed water at 888.5+/-. The finish grades in these areas appear to show interference. The plans do not show all of the record borings locations. For example, SLR-12 appears to be missing and the excavation at this location is approximately 855+/- based on what we understand to be its location. This appears to be 30+ feet below the observed seasonal water table.

SLR

TABLE 1
GROUND SURFACE, WELL, AND GROUNDWATER ELEVATIONS
Tax Map 215, Lot 7
Route 9, Keene, New Hampshire
Project # 144.16535.00023

Well ID	Ground Surface Elevation (feet)	Proposed Excavation Depth	Well Elevation At Top PVC (feet)	Total Well Depth (feet)	Bottom Well Elevation from Ground Surface (feet)	PVC Well Screen Interval (feet)	Depth to Groundwater Date	Depth to Groundwater from Ground Surface (feet)	Groundwater Elevation (feet)
SLR-10	883 ±	854 ±	884.7 ±	55	828 ±	5-55	3/22/22	42.9	840.1 ±
SLR-11	863 ±	856 ±	865.3 ±	45.2	817.8 ±	5-45	3/22/22	dry at 45.2	817.8 ±
SLR-12	890 ±	858 ±	892.7 ±	39.5	850.5 ±	4.5-39.5	3/22/22	1.5	888.5 ±

7. Section 25.3.4B2: The data for the wells depicted on the plans (3 wells) should be provided and documented for baseline information. It would seem appropriate that the Hydrogeologic Investigation provide the well data (depth of water and baseline testing of these wells since they are located on the site. The monitoring plan may want to include one or more of these wells too.
8. Section 25.3.4B3A: The soil logs and borings in Period 8 do not seem to meet the requirements outlined in this section.
9. Section 25.3.4C: The proposed monitoring plan for this project does not match the frequency outlined in this section. The City shall determine if they are comfortable with the proposed frequency and if relief is required from this section of the regulations.
10. Section 25.3.6: This section states " When the proposed operation includes the excavation of bedrock materials, the applicant shall demonstrate that excavation activities will not adversely impact surface or ground water quality through the unearthing of toxic or acid forming elements or compounds resident in the bedrock or soils. Such demonstration shall be made by obtaining the opinion of a NH licensed engineer or professional geologist. Excavation of bedrock shall not be permitted where bedrock contains toxic or acid forming elements or compounds." Per the Acid Mine Drainage Potential Report prepared by Frontier Geoservices this project has the potential to produce acid mine drainage. The

report outlines that borings 1 through 8 have the elements or compounds that could produce acid mine drainage.

11. Section 25.3.7: This Section addresses Stormwater Management and states "Excavation activities within the excavation perimeter and the access driveway shall not cause adverse impacts from stormwater runoff and/or groundwater drainage, including erosion, sediment transport, water quality degradation, and/or increases in volume or velocity of water leaving the site".
    a. The stormwater management report and design for this project is currently incomplete as it does not evaluate the pre and post conditions. The submitted report does not include preconstruction conditions or properly model the phasing of the project and the phased conditions throughout the project.
    b. This should include monitoring the same observation points and modeling the closest downstream structures that route the runoff from the site.
    c. The original approvals for this site included the submission of a stormwater management report prepared by TFMoran that properly evaluated the pre and post conditions and storm events. Since this is an expansion of this project we would anticipate a similar submission for the expansion of this project. The submission should also account for the phasing of the project showing that the project meets the standards throughout the phasing periods.
    d. Other details to consider in the stormwater management report:
        i. The model should account for ledge and the associated impervious conditions and shallow ledge. The post conditions do not account for the amount of exposed ledge or shallow ledge resulting from the project. All of the subcatchments show 0% impervious cover and low CN's for the actual anticipated conditions. We believe the CN's used are not representative of post-construction conditions.
        ii. Outlet structures seem to have orifice plates bolted to headwalls but do not seem to provide for emergency outlets for larger storms or in the event of clogging.
        iii. The report should compare peak rates and volumes at the two observation points.
        iv. Confirm adequate depths to ESHWT are being provided.
        v. Verify inlet conditions and culvert cover for cross-culverts.
        vi. Ditch (reach) modeling and capacity analysis should account for stone check dams.
        vii. The report and plans need to include an inspection and maintenance manual outlining all stormwater practices with recommended inspection and maintenance.
    e. It is unclear what the intentions are for handling stormwater and the transition between Phases or Periods.
12. Section 25.3.8: A review of site photographs and the plans provided shows that the project

is currently not constructed per the prior approved plans. The drainage at the entrance is not completed and as such dust control and the transportation of dirt/mud off the site onto the adjacent roadway is occurring.

13. Section 25.3.10: Note #21 of the Operations Notes makes reference to known important Archeological sites. Please clarify if there are any such sites on-site.
14. Section 25.3.12: Per this section a fence or barricade shall be installed and the plans have a detail addressing this. Please clarify the intent regarding the timing of the installation of this fence for each phase or period of construction.
15. Section 25.3.13: Per this section the excavation areas shall not exceed 5-acres. The applicant is seeking a waiver from this section.
16. Section 25.3.17: The access driveway and associated drainage and construction details does not appear to be completed as designed and approved for the initial approval of this project. This is evident if you compare the existing conditions plans with the details depicted on Sheet 10 of 22. There needs to be some clarification on what the intent is with the front end of this project and how it will be brought into compliance with the approved plans.
17. Section 25.3.25: The plans should be revised to incorporate notes addressing record keeping per this section.
18. Section 25.3.26: The applicant shall provide the Community Development Department copies of all local, state and/or federal permits required for this project.
19. Section 25.4.1D: To meet this requirement the Stormwater Management Report should appropriately model the pre and post condition design storms and evaluate observation points to ensure that the project will not have negative impacts to downstream areas. reclamation plan should be revised to incorporate notes from this section to ensure compliance with the City Code. This includes notes pertaining to incremental reclamation, topsoil, vegetation, monitoring and remediation as applicable.
20. Section 25.4.6: We would recommend that the reclamation plans be revised to incorporate the remediation note outlined in this section.

Plan Review – General Review Comments:

1. Sheet 1 of 22 – Operations notes #3 should mention the 250-foot wetland setback to excavation setback as applicable too.
2. Sheet 1 of 22 – Operations notes #10 is not correct. The subject site is not self-contained and this note should be revised accordingly. There are areas of the site that are not self-contained including but not limited to existing access roads, etc.. This note misrepresents current and proposed conditions.
3. Sheet 1 of 22 – Operations notes #17 appears to conflict with the updated existing conditions plan as fuel is currently stored on-site. We would recommend the preparation and submission of a Source Control Plan due to the presence of hazardous materials on-site and the nature and size of the proposed project.
4. Existing Conditions Sheets should show setbacks and buffers. The limit of disturbance line

on the updated existing conditions plan seems to represent a wetland impact on the east portion of the site. Please clarify and correct plan as applicable.

5. Sheet 5 of 22 – The temporary sedimentation basin needs additional detail. There appears to be no erosion and sedimentation controls, berm detail, emergency outlet controls and contour labels. Are other access improvements going to be included with this initial work?
6. Sheet 6 of 22 – the 30" culvert in Period 1 has two outlets labeled and I would check the cover over this pipe as the grading appears to be too shallow.
7. Sheet 10 of 22 – What is the plan for transitioning form the temporary basin and into this final design? Reviewing the soils data seems to indicate that the basin design is too low and the excavation in areas will intercept SHWT. It looks like the existing trailer and facilities are in the way and should be moved.
8. Sheet 12 and 14 of 22 – Additional Basin details are needed. Contour labels, berm detail, emergency outlet and associated details.
9. Has an EPA Notice of Intent (NOI) been filed for the current site operations? Please provide appropriate materials so we can verify compliance with the initial approved site plan.
10. A reclamation bond will need to be established for the project prior to work commencing.
11. The exiting conditions plan seems to indicate that the site is not currently in compliance with the previously approved plans. The plan appears to be missing drainage culverts, a stormwater management basin (infiltration basin), an outlet structure, an emergency spillway, slope benching, a reinforced drainage swale, drainage at the entrance, access roadway grading, stop sign at entrance, etcetera. See photo of entrance which depicts current conditions and a deviation from the approved plan.

12. Existing conditions plans should show setback and wetland buffer areas to ensure there are no impacts to those areas.

13. We have highlighted two areas on the aerial photography below. Further information should be provided for these areas as they appear to be new impact areas. The arrow on the image also represents an area that appears to be seeing more drainage as there is significant erosion and soil loss which is visible from NH Route 9. We recommend that this area be investigated further.

14. The phasing plans need to meet the detail and note requirements outlined in this section. It is difficult to decipher what improvements are required for each phase and how phases transition.

This concludes our first review of the technical components for the above referenced project. Please feel free to contact us should you have any questions or require additional information.

Sincerely,
FIELDSTONE LAND CONSULTANTS, PLLC

Chad E. Branon, P.E.
Civil Engineer/Principal

FIELDSTONE
LAND CONSULTANTS, PLLC
Surveying ⌖ Engineering
Land Planning ⌖ Septic Designs
206 Elm Street, Milford, NH 03055 - Phone: 603-672-5456 - Fax: 603-413-5456
www.FieldstoneLandConsultants.com

February 14, 2025

City of Keene – Planning Board
Community Development Department
3 Washington Street
Keene, NH 03431
Attn: Megan Fortson, Planner
Evan Clements, Planner
Mari Brunner, Senior Planner

RE: G2 Holdings LLC - Excavation Permit Package Review
Tax Map 215 Lots 7 & 8 – 57 Route 9 – Keene, NH

Dear Board Members,

As requested, Fieldstone Land Consultants, PLLC (Fieldstone) has performed a review of the documents submitted for the above referenced project for completeness to the applicable City of Keene Land Development Code. The following documents were submitted for our review:

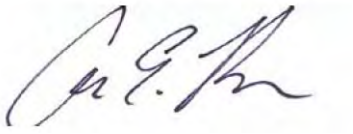
- Transmittal Letter prepared by Granite Engineering LLC, dated December 19, 2024.
- Earth Excavation Permit Application, dated December 12, 2024
- Community Development Department Certified Notice List, dated December 12, 2024
- Owner Affidavit
- Project Narrative
- Natural Heritage Bureau Environmental Review, dated February 6, 2024
- Hydrogeologic Investigation Report, dated December 18, 2024
- Acid Mine Drainage Report, dated December 18, 2024
- Request for waivers to Article 25.3.1.D and Article 25.3.13 with exhibits
- Gravel and Earth Removal Plan Set, dated December 20, 2024
- Hillside Protection Conditional Use Permit Application with Exhibits
- Copy of Alteration of Terrain Permit and Stormwater Management Application, dated December 20, 2024

- City Response Letter, dated February 3, 2025
- Stormwater Pollution Prevention Plan, Dated January 30, 2025
- Stormwater Management Report, dated January 22, 2025
- Revised Plan Set, last revised February 3, 2024

Fieldstone has completed a review of the materials provided against Section 26.19.4 of the Earth Excavation Submittal Requirements. Section 26.19 of the City Land Development Code addresses the requirements for the submission of and Earth Excavation Permit. We believe the material provided satisfies the threshold for the application to be deemed complete. The technical elements of the materials submitted will need to be reviewed against the applicable regulations and standards. Fieldstone will commence with the technical review as requested.

This concludes our completeness review for the above referenced project. Please feel free to contact us should you have any questions or require additional information.

Sincerely,
FIELDSTONE LAND CONSULTANTS, PLLC



Chad E. Branon, P.E.
Civil Engineer/Principal

City of Keene, NH

Earth Excavation Permit Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME: G2 Holdings, LLC	**TYPE OF APPLICATION BEING SUBMITTED:** ☐ EARTH EXCAVATION PERMIT ■ MAJOR AMENDMENT ☐ MINOR AMENDMENT ☐ PERMIT RENEWAL
PROJECT ADDRESS(ES): 57 Route 9	

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER	APPLICANT
NAME/COMPANY: G2 Holdings, LLC	**NAME/COMPANY:** G2 Holdings, LLC
MAILING ADDRESS: 250 North Street, Jaffrey, NH 03452	**MAILING ADDRESS:** 250 North Street, Jaffrey, NH 03452
PHONE: 603-325-8457	**PHONE:** 603-325-8457
EMAIL: cody@mygordonservices.com	**EMAIL:** cody@mygordonservices.com
SIGNATURE:	**SIGNATURE:**
PRINTED NAME: Cody Gordon	**PRINTED NAME:** Cody Gordon

AUTHORIZED AGENT (if different than Owner/Applicant)	FOR OFFICE USE ONLY:	
NAME/COMPANY: Granite Engineering, LLC	**TAX MAP PARCEL #(s):** ____-____-____-____-___ ____-____-____-____-___	
MAILING ADDRESS: 150 Dow Street, Suite 421, Manchester, NH 03101		
PHONE: 603-518-8030	**PARCEL SIZE:**	**DATE STAMP:**
EMAIL: jdaigneault@graniteeng.com	**ZONING DISTRICT:**	
SIGNATURE:		
PRINTED NAME: Justin Daigneault	**PROJECT #:**	

City of Keene, NH

Hillside Protection Conditional Use Permit (CUP) Application

If you have questions about how to complete this form, please call: (603) 352-5440 or email: communitydevelopment@keenenh.gov

SECTION 1: PROJECT INFORMATION

PROJECT NAME: GRAVEL AND EARTH REMOVAL PLAN, G2 HOLDINGS, LLC

PROJECT ADDRESS(ES):
57 ROUTE 9, TAX MAP 215, LOTS 7 & 8

AREA OF PRECAUTIONARY SLOPES TO BE IMPACTED:
(in square feet)
Lot 7 = 202,015 SF

SECTION 2: CONTACT INFORMATION

PROPERTY OWNER	APPLICANT
NAME/COMPANY: G2 Holdings, LLC	**NAME/COMPANY:** G2 Holdings, LLC
MAILING ADDRESS: 250 North Street, Jaffrey, NH 03452	**MAILING ADDRESS:** 250 North Street, Jaffrey, NH 03452
PHONE: 603-325-8457	**PHONE:** 603-325-8457
EMAIL: cody@mygordonservices.com	**EMAIL:** cody@mygordonservices.com
SIGNATURE:	**SIGNATURE:**
PRINTED NAME: Cody Gordan	**PRINTED NAME:** Cody Gordan

AUTHORIZED AGENT (if different than Owner/Applicant)	FOR OFFICE USE ONLY:	
NAME/COMPANY: Granite Engineering, LLC	**TAX MAP PARCEL #(s):** ___-___-___-___-___ ___-___-___-___-___	
MAILING ADDRESS: 150 Dow Street, Suite 421, Manchester, NH 03101		
PHONE: 603-518-8030	**PARCEL SIZE:**	**DATE STAMP:**
EMAIL: jdaigneault@graniteeng.com	**ZONING DISTRICT:**	
SIGNATURE:		
PRINTED NAME: Justin Daigneault	**PROJECT #:**	

Narrative

As part of the application for the City of Keene Earth Excavation Permit, the following are narrative descriptions detailing how each development standard outlined in Article 25.19.4.B, of the Land Development Code has been addressed:

1. **The location, boundaries, and zoning district**
   The applicant and the property owner, G2 Holdings LLC, propose expansion at the existing Route 9 gravel pit located on Tax Map 215, lot 7. The expansion is proposed on Map 215; Lots 7 & 8 in the City of Keene and extends into the town of Sullivan on Map 5, lots 46 and 46-1. The lots within the City of Keene are situated in the Rural 'R' zoning district. Access to the existing operation is off NH Route 9. The proposed expansion will utilize the same access roadway.

2. **Types of materials to be excavated and means**
   Bedrock will be the primary material excavated from the site. Eight overburden wells were drilled within the perimeter of the proposed excavation and determined that bedrock was shallow, less than 5' in most cases. 6 bedrock wells were then drilled within the perimeter to measure groundwater. Processing of the excavated materials (crushing, screening, sorting, and stockpiling) to create marketable construction materials will occur onsite. The construction material and equipment storage area will be relocated depending on the progress of the gravel operation. Said area will start at the upper limits of current excavation and systematically relocate as excavation progresses. Excavation activities are proposed between the hours of 7:00 am and 5:00 pm, Monday through Friday. The sale and loading of stockpiled materials are anticipated to occur from 8:00 am to 1:00 pm on Saturdays; however, no other excavation activities are expected on this day. No excavation activities, including the sale of stockpiled materials, are proposed on Sundays, or legal holidays, except when prior written consent to temporarily operate during other hours is provided by the community development department due to a local or regional emergency.

3. **Project duration and phasing**
   Based on discussion with the City on March 4, 2024, the project is proposed to be permitted in its entirety. The project will be broken out into eight (8) permit periods. Six months prior to a period being completed, the applicant will submit to the Planning Board for an amendment for the next phase.

   Each period is based on a maximum "open area" of 5 acres. The breakout is a recommendation to the contractor and does not necessarily reflect the order in which the project will be completed. Phase 1 consisted of the original gravel pit that was previously permitted 2022, exceeded the 5-acre maximum, and received a waiver approval by the City of Keene Planning Board on August 22, 2022. Each period

as part of Phase 2 will expand upon that area and be reclaimed as it's exhausted. The estimated project timeline will exceed five years and is estimated at 13 years. The applicant must submit to the Department of Environmental Services and the city of Keene a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit. Below is an anticipated breakout for each:

- Permit Period 1 – 4.99 AC, Volume – 358,800 CY January 2025 – May 2027
- Permit Period 2 – 4.10 AC, Volume – 271,000 CY June 2027 – March 2029
- Permit Period 3 – 2.14 AC, Volume – 16,450 CY April 2029 – May 2029
- Permit Period 4 – 0.39 AC, Volume – 939 CY (Sullivan) June 2029 – July 2029
- Permit Period 5 – 4.08 AC, Volume – 366,530 CY August 2029 – January 2031
- Permit Period 6 – 3.82 AC, Volume – 262,692 CY Feb. 2031 – November 2032
- Permit Period 7 – 4.06 AC, Volume – 306,210 CY (Sullivan) Dec. 2032 – December 2034
- Permit Period 8 – 7.62 AC, Volume – 496,500 CY January 2035 – April 2038

Phasing notes:

A. Sheet Existing Conditions plan reflects the current conditions of the earth excavation materials and processing area. The area will be used for material stockpiling, storage, rock crushing, cleaning, and processing for the project's entirety. There is a large sedimentation area in the western portion of the site that stormwater drains to and infiltrates. This area is also used to provide water for material processing and dust control devices. It will also provide infiltration from associated excavation areas during the excavation process.

B. Period 1, located directly north of this area is where excavation will begin. Access will be off the existing gravel haul road located in the lower eastern portion of the site. As excavation begins, the contractor will excavate a sediment area in the southern portion of the pit area. This sediment area will be used to hold any stormwater runoff associated with the current pit phase. As the excavation footprint increases, so will the size and depth of the sediment retention area. The floor of the pit will slope to the south to the sediment pond located within the pit's floor. The sediment basin will be required to be dredged after accumulative sediment has reduced its ability to adequately infiltrate any stormwater it captures. In the event the pond does not have the ability to infiltrate, it will act as a sediment retention pond, and an outlet structure will be located within the floor of the pond. The stormwater will be held and released at a slow rate, and directed to the existing sediment retention pond to the south. Once Period 1 has been excavated to final grade, all limits of disturbance within the pit

will be reclaimed by being loamed and seeded. Sediment shall be removed from the retention pond prior to loaming and seeding.

C. The proposed haul road and associated culverts will be constructed connecting phase 1 and 2 along with erosion control measures including stone lined ditches, check dams, silt fence, and erosion control blankets.
D. Period 2 construction will commence like the procedures outlined for Period 1. A sediment retention pond will be constructed in the southern portion of the pit. As the pit is excavated, the floor will be sloped to capture runoff and detain it in the pond. If it becomes apparent that this pond is not able to infiltrate stormwater, then an outlet device will be installed and directed to the now completed and reclaimed sediment area in the previous phase.
E. Once period 2 has been completed to finish grade, the area is to be reclaimed. Sediment shall be removed from the retention pond prior to loaming and seeding. The haul road that runs east to west and connects period 2 to the proposed haul road running north to south) will also be reclaimed. The 15" and 24" culverts, along with the ditch that was constructed along the west side of the existing haul road up to the start of period 3 must remain.
F. Period 3 and 4 include the construction of the haul road that accesses the northern portion of the site that extends into the town of Sullivan, periods 5,6, and 7. Erosion control devices and culverts are to be installed.
G. Period 5 involves construction of a sediment retention pond in the southern portion of the pit. As the pit is excavated, the floor will be sloped to capture runoff and detain it in the pond. If it becomes apparent that this pond is not able to infiltrate stormwater, then an outlet device will be installed and directed to the now completed and reclaimed sediment area in period 2. Once period 5 has been completed to finish grade, the area is to be reclaimed. An access through period 5 to access period 6 will remain open for truck movements to the haul road constructed in periods 3 and 4.
H. Period 6 will be a continuation of Period 5. The pit floor will be sloped to the south, and temporary sediment basins will be used to control and minimize sediment transport from the excavation site to the reclaimed area of Period 5. Once Period 6 has been completed to finish grade, the area is to be reclaimed. An access through period 6 to access period 7 will remain open for truck movements to the haul road constructed in periods 3 and 4.
I. Period 7 will be a continuation of Period 6. The pit floor will be sloped to the south, and temporary sediment basins will be used to control and minimize sediment transport from the excavation site to the reclaimed area of Period 6. Once Period 7 has been completed to finish grade, the entire excavation area is to be reclaimed.
J. The haul road will be reclaimed. Associated ditches and culverts are to remain, however the gravel portion of the road will be loamed and seeded.

K. Period 8 is the final phase of the project. As the pit floor is excavated, the existing sediment area will remain and be used for control of stormwater. As the pit floor approaches the proposed final grade, the infiltration pond will be constructed, loamed and seeded. Stormwater directed to this pond will be captured in sediment traps and slowly released to this area while construction continues. Once final grades have been completed, all areas are to be reclaimed. The infiltration area will remain in place. The access road will be loamed and seeded.

4. **The number of Acres impacted**
   The work area in the City of Keene is 26.75 Acres

5. **Volume of earth material to be removed**
   Total volume removed is approximately 1,771,972 cubic yards at a rate of 102,000 cubic yards of material per year.

6. **Description of maximum breadth, depth, and slope**
   - Permit Period 1 – Average Breadth = 250’ Depth = 66’ +/- Slope = 1:2
   - Permit Period 2 – Average Breadth = 180’ Depth = 70’ +/- Slope = 1:2
   - Permit Period 5 – Average Breadth = 350’ Depth = 60’ +/- Slope = 1:2
   - Permit Period 6 – Average Breadth = 435’ Depth = 80’ +/- Slope = 1:2
   - Permit Period 7 – Average Breadth = 290’ Depth = 80’ +/- Slope = 1:2 (Sullivan)
   - Permit Period 8 – Average Breadth = 375’ Depth = 32’ +/- Slope = 2:1

7. **Location and Access and perimeter visual barriers**
   Access to the existing operation is off NH Route 9. The proposed expansion will utilize the same access roadway and maintain the same visual barriers that were permitted during the previous phase of development. A NHDOT driveway permit was approved for this location and access has already been constructed. No glare or odor impacts are expected from the proposed gravel pit use. The project is remotely located, separated primarily from abutters with woodlands. The gravel pit observes the appropriate setbacks from property lines. The nearest property lines of parcels not owned by the applicant are as follows:
   - North: 830 feet
   - South: 300 feet
   - East: 2,260 feet
   - West: 455 feet

8. **Elevation of estimated highest annual average groundwater table.**
   Eight overburden wells were performed within the excavation area and the water table was not found in these locations. Six bedrock monitoring wells were drilled within the proposed footprint of the excavation a minimum of 50’ below the proposed pit bottom, and water was not found in those wells. Four test pits were dug within the

perimeter of the excavation area and the estimated seasonal high water table was found in two of the pits, at 20" and 32", with ledge directly below within five to six feet. The ESHWT observed in the test pits is interpreted to be the result of a very low residence time groundwater. The overburden is relatively thin across most of the site. As rain falls or snow melts, the water infiltrates into the ground. Due to the relatively high hydraulic conductivity of the sand and gravel overburden the groundwater doesn't stick around long. It moves downgradient to a discharge point, i.e. seep, creek, Otter Brook, and generally presents itself as surface water discharge. Additionally, some of this water is taken up through evapotranspiration.

9. **Proposed methods of disposal of boulders, stumps, vegetation, and other debris**
   Except for the exposed rock ledge face, all areas that have been affected by the excavation or otherwise stripped of vegetation shall be spread with topsoil or stripping, if any, but in any case, covered by soil capable of sustaining vegetation, and shall be planted with seedlings or grass suitable to prevent erosion. Areas visible from a public way, from which trees have been removed, shall be replanted with tree seedlings, set out in accordance with acceptable horticultural practices. Earth and vegetative debris resulting from the excavation shall be removed or otherwise lawfully disposed of. All slopes, except for exposed ledge, shall be graded to natural repose for the type of soil of which they are composed to control erosion or at a ratio of horizontal to vertical proposed by the owner and approved by the regulator. Changes of slope shall not be abrupt but shall blend with the surrounding terrain. Stumps, vegetation, and leaf debris will be stored, ground, and processed into mulch for use in perimeter erosion control measures as needed, or surface composted on site for use in enriching loam for site reclamation.

10. **Proposed methods for controlling stormwater, drainage, erosion, and sedimentation**
    The elimination of any standing bodies of water created in the excavation project that may constitute a hazard to health and safety; and the topography of the land shall be left so that water draining from the site leaves the property at the original, natural drainage points and in the natural proportions of flow. For excavation projects that require a permit from the Department of Environmental Services pursuant to RSA 485-a:17, the provisions of that statute, and rules adopted under it, shall supersede this paragraph as to areas of excavation sites covered thereby. The excavator shall file a copy of permits issued under RSA 485-a:17 with the regulator. During construction, grading of pit floors will slope to the pit face, and stormwater will be directed to within the pit footprint, collected, retained, and infiltrated on-site. The surface water is collected, settled, and allowed for use in material processing, dust control, and rock cleaning. The proposed operation will be self-contained to retain all stormwater and prevent any potential erosion on site, within the limits of disturbance. Drainage shall be maintained so as to prevent the accumulation of free-standing water for prolonged periods. Excavation practices that result in continued siltation of surface waters or any degradation of water quality of any public or private

water supplies are prohibited. Construction shall proceed such that there is no runoff from the excavation area leaving the site at any time.

Large sediment retention areas have been designed within the floor of each pit area. The intent of these is to capture runoff, and sediment, associated with the excavation and contain it within the pit floor. As the pit expands, so too will the sediment retention areas. These retention areas hold back the stormwater and allow it to exit thru a small culvert, and slowly discharge to an existing infiltration area within the current material storage, processing, and equipment area at the southerly end of the project. This area will be enlarged during the initial phase to eventually capture and infiltrate construction periods 1-7. During the final phase of the project, period 8, a large infiltration area will be excavated. The floor of this pond will be set above the estimated seasonal high water table. Stormwater will collect in this pond and eventually infiltrate into the ground. The sediment areas and infiltration areas have been sized to capture, contain, and infiltrate the 50-year, 24 hour rain event.

A stormwater analysis has been provided to include these calculations, along with culvert and stone rip rap calculations.

11. Means to avoid and/or mitigate adverse impacts caused by dust, noise, and traffic

The site shall operate in a manner that prevents fugitive dust emissions pursuant to New Hampshire Code of Administrative rules env-a 1002, fugitive dust. Dust control practices are outlined in the stormwater pollution prevention plans (SWPPP). Dust control activities and devices shall be incorporated into the excavation operation, on the site, and on the access driveway, in a manner that minimizes the generation of airborne dust or transportation of dust or mud off the site onto the adjacent roadways. Visual monitoring of airborne dust shall be done on an ongoing basis. Dust control measures such as applying water to access driveways and other areas within the excavation perimeter, washing dirt from truck tires, or other measures as may be deemed necessary, shall be employed to minimize the generation of airborne dust, and/or the transportation of dirt/mud off the site onto adjacent roadways. Dust control will be accomplished using a truck-mounted water tank and spray system as needed. Inspection of access driveway stabilized construction entrances and other erosion control measures, designed to eliminate the deposit of dust or mud onto public streets, shall be conducted on a weekly basis to ensure proper functioning. The maintenance of these entrances shall be performed as necessary and any dirt or mud deposited on public streets shall be removed. The applicant shall maintain a log documenting dust control activities, inspection and maintenance of dust and dirt control structures and devices and cleanup of dirt deposited on roadways leading from the site. The construction SWPPP shall be used for instructions of how to inspect and maintain erosion and sediment control practices.

Traffic: This project, while expanding on the previously permitted gravel pit, does not anticipate an increase in trucks operating at the site. An onsite speed limit of 15 mph has been established via signage. A stop sign has been added at the exit from the site, onto Route 9. As noted in the previous permit application by TFMoran, Inc. we note the following: *As established in the TFMoran Traffic Memorandum submitted to the City of Keene on 2/18/2022, the proposed excavation is located on a State Highway, operations are not expected to negatively impact traffic conditions – 40 trucks per day represents less than a 1% increase compared to the 2019 AADT of 9,707 vehicles*.

12. **Precautions to be taken by the applicant to protect the safety and welfare of the persons on site**

The access is gated to secure the site during after business hours. Signage is posted to include speed limit reductions, hard hat requirements, and personal safety equipment requirements for specified areas. All equipment is inspected daily and forms completed regarding backup alarms, brakes, tires, mirrors, etc. The crushing equipment has safety cables and buttons for emergency stopping procedures, guards on all pulleys, belts, etc. The shed contains an emergency first aid kit, fire extinguishers, body board, eye wash station, and MSDS sheets.

Stock pile areas have berms for safety. Proposed ledge face will be inspected daily, material will be used to create berms at the bottom, this will deter people from entering or getting within close proximity to the pit face. The property boundary will have signage stating private property, active blasting, do not enter. All stumps and brush will be put on the boundary of each phase to keep people outside of work areas. Once the pit area has been completely excavated and reclaimed, fencing will be installed along the top of all slopes greater than 2:1.

The work will be conducted by trained personnel, in accordance with OSHA and MSHA worksite safety standards. All staff is MSHA and first-aid certified. MSHA inspects the site annually for compliance.

13. **The proposed methods for handling, transporting, and disposing of fuel and/or chemicals on site**

No fuels, lubricants, or other toxic or polluting materials shall be stored on-site unless in compliance with state laws or rules pertaining to such materials. Spill protection equipment will be stored on site for immediate response to any potential spills. Any spillage shall be immediately rectified and disposed of in accordance with all local, state, and federal standards. All spills of greater than five (5) gallons will be reported to the Keene Fire Department and to NHDES.

14. **The means by which earth materials are proposed to be transported from the excavation site, and the proposed load limits and number of vehicle trips per day**

Trucks utilized for transport of material will consist of tri-axles, 10-wheelers, and tractor-trailer dump trucks. The anticipated maximum number of vehicle trips per day based on the current pit operations is 40-60 trips per day.

15. Extent of blasting and the name and classification of any explosives

Based on the data from the 6 bedrock monitoring wells, blasting will be used for most of the excavation on the site. Blasting operations will be conducted by a well-versed contractor. The applicant shall identify drinking water wells located within 1/2 mile of the proposed blasting activities. Develop a groundwater quality sampling program to monitor for nitrate either in the drinking water supply wells or in other wells that are representative of the drinking water supply wells in the area. The plan must include pre and post-blast water quality monitoring and be approved by The City of Keene and NHDES prior to initiating blasting. The groundwater sample program must be implemented once approved by The City of Keene and NHDES. All activities related to blasting shall follow best management practices (bmps) to prevent contamination of groundwater including preparing, reviewing and following an approved blasting plan; proper drilling, explosive handling, and loading procedures; observing the entire blasting procedures; evaluating blasting performance; and handling and storage of blasted rock.

Waivers

The applicant requests the following waivers in accordance with Article 26.19.13:

1. **Which Requirement:**
   Article 25.3.1.D – Surface Water Resource Setback – The excavation perimeter shall be set back at least 250 feet, and the access driveway shall be set back at least 150 feet from any surface water resource.

   Please refer to the attached exhibit entitled "Surface Water Resources Setback Plan" for a graphic of this encroachment.

   Why the waiver is needed:
   There is an existing wetland 75' to the west of the excavation perimeter. To the east, there is another forested wetland 150' feet away. These two wetlands at their closest proximity area approximately 800' apart. The 250' setbacks from the two wetlands prohibits a significant amount of excavation material directly to the north of the gravel pit. The City of Keene Planning Board previously approved reduction in the surface water setback to 75' on August 22, 2022 in this area. The applicant is requesting further excavation to the north of the site, while maintaining the previously approved 75' setback. The surface water resource impacted would be around the small, isolated wetland to the west of the gravel operation. The existing wooded vegetation around the wetland will remain. This wetland is not connected to another surface water as it's an isolated wetland roughly 0.35 acres in size. This is considered a low value water resource due to its size and lack of connectivity to adjacent surface waters. This wetland forms a natural channel with steep slopes on both sides, captures runoff from adjacent areas and eventually dissipates. The runoff infiltrates into the soils, thus the wetland terminates prior to entering any drainage along NH Route 9. Due to the excess slopes and the entire eastern edge of this wetland currently being excavated as part of the permitted pit activity, this resource setback has limited, if any use, as a wildlife corridor. Please refer to the attached Wetland Functional Assessment report that was performed by EcoSystems Land Planning, which documents this wetland ranked low on most wetland functions and values criteria.

   Alternative Standard:
   The alternative to the proposed would result in significantly less excavation to the north. There is an naturally wooded earthen berm approximately 8 to 16 feet high between the wetland and the pit excavation. After the project has been reclaimed, this berm height would increase to over 35 feet high on its exaction height.

   Not in Violation:

The granting of this waiver will not be in violation with NH RSA 155:E because the state regulation does not establish buffers for forested wetlands under 5 acres in size. This wetland is 0.35 acres. Granting of this waiver/exemption shall not cause violations to the intent of the City of Keene's Article 25. This waiver was previously approved by the Planning Board during the previous project phase.

Adverse Impacts:
Reduction in the setback will not have adverse impacts because both wetlands have natural wooded buffers and forested berms between them and the gravel excavation. Most of the wetland associated with the setback reduction is higher in elevation than the pit excavation.

Purpose and Intent:
The purpose of this regulation is to protect the buffers associated with wetlands. The 250' buffer for this wetland has been altered in a previous approval by the Board. The berm associated with the wetland remains and acts as its true buffer. The further explanation of the 250' wetland buffer but not closer than 75' is consistent with the purpose and intent of Article 25. The waiver was previously approved in this location by the Planning Board. The buffer will be reclaimed upon the conclusion of the gravel operation.

Not Unduly Injurious:
Granting this waiver will not be unduly injurious to public or environmental welfare because 75-foot wooded buffers will remain along the excavation perimeter. Wetlands will be further protected as the earth excavation is happening below the existing grade eliminating surface runoff of the gravel excavation into the wetland.

Unique Site Characteristics :
This area is unique in having only 800 feet between existing wetlands located east and west of the excavation area. The remaining wetlands on the site are separated by enough distance that the 250 setback can be maintained. This is the only area on the property seeking a waiver from the setback.

2. **Which Requirement:**
Article 25.3.13 – (Maximum Excavation Area) – The total of any unclaimed, inactive and active excavation areas shall not exceed 5-acres at any time.

Why the waiver is needed:
For a gravel pit to function properly, a significant amount of area is needed for material storage processing, equipment, vehicle movement, temporary stockpiles of rock for processing, etc. The applicant was not able to fully excavate all the material that was proposed in the previous approval without having an additional material and processing area somewhere else off-site. The area that is currently open to allow for material storage and processing is 6.8 acres. A waiver was previously approved by

the Planning Board for this project for an area of 7 acres. The applicant is requesting that this 6.8-acre area remain open, while material is being excavated from each period moving forward. Once the material has been removed from each phase, those areas will be reclaimed before moving on to the next phase. Given the 8 periods proposed, with period 2 being 4.99 acres, this would require a maximum area open during a given period of 12 acres.

Alternative Standard:
The alternative to the proposal would prohibit any additional earth excavation on-site. It would require hauling material to another site that can store and process this material. Trucking costs to haul the material to be stored and processed would increase truck traffic on state roads. Hauling materials would drive the cost of the product up and would result in a net increase in cost to the consumer.

Not in Violation:
The granting of this waiver will not be in violation of NH RSA 155:E. Temporary erosion control measures are to be maintained on-site during the time this area is active. Stormwater has been detained within this area via a sediment retention area. Most of this area is gravel surface, including the pit access road of NH Route 9, as well as the material handling and processing area. New Hampshire Department of Environment Service (NHDES) defines stable areas to include compacted graveled areas. During the construction of each phase, temporary erosion control measures will be in place, and during pit excavation, stormwater flows will be contained within the pit area.

Adverse Impacts:
Approving this 12-acre open area would not have adverse impacts. The BMP's onsite are designed to handle the flows and the sediment retention areas will ensure stormwater remains on-site. The 7-acre landing area is considered "stabile" by NHDES definition which has minimal erosion potential.

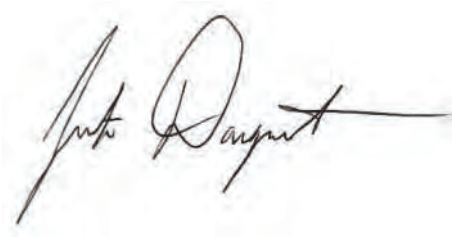
Purpose and Intent:
This proposal is consistent with the intent of Article 25 as it relates to stormwater and erosion control best management practices.

Not Unduly Injurious:
Granting this variance will not be unduly injurious to the public or environmental welfare. A majority of this area is considered stable by the state of NH, and the necessary erosion control measures and grading practices have been used to ensure stormwater management is maintained.

Unique Site Characteristics :
As previously mentioned, the area that was permitted during the previous planning board approval did not take into account an area on-site to store and process the material associated with the pit excavation. Given there are eight periods and over 31

acres of disturbance within the City of Keene and Town of Sullivan combined, the overall scale of this project makes it unique.

Sincerely,



Justin Daigneault
Project Manager

GRANITE ENGINEERING, LLC
civil engineering ● land planning ● municipal services

February 3, 2025

City of Keene
Community Development Department – Planning and Zoning
3 Washington Street
Keene, New Hampshire 03431

RE: **G2 Holdings, LLC**
Tax Map 215 Lots 7 & 8
21 & **57 Route 9, Keene, NH**
GE Project No. 2302011

Dear Ms. Fortson,

We are in receipt of a staff report dated January 3, 2025, relative to the review of the Earth Excavation Permit and Hillside Conditional Use Permit applications, PB-2024-20, for the G2 Holdings, LLC project located at 21 & 57 Route 9. In addition to responses to your comments, please find the following material in support of the referenced project:

- Response to consultant review letter dated January 9th, 2025
- 3 Copies of the revised Earth Excavation Application
- 3 Copies of the revised Project Narrative
- 3 Copies of the revised waiver request
- 3 copies of the Wetland Functional Assessment
- 3 Copies of the Stormwater Report
- 3 Copies of the Stormwater Pollution Prevention Plan (SWPPP)
- 3 Copies of the revised plans (22" x 34")

In response to the comments made by the City, we offer the following explanations and/or responses:

Planning Staff Comments:

1. Consultant Review of Application: Per Section 26.19.7.A of the Land Development Code (LDC), *"Upon receipt of a completed Earth Excavation Permit application, the Planning Board shall retain a consultant, at the expense of the applicant, for the purpose of reviewing the application for completeness and compliance with NH RSA 155-E and the Earth Excavation Regulations in Article 24 of this LDC. This consultant shall review all aspects of the submittal."*

a. The City has already hired a third party consultant, Chad Branon of Fieldstone Land Consultants, to perform a review of the submittal materials in accordance with the standard stated above.
b. Funds in the existing escrow account will be used to cover the cost of the consultant's review of the application and invoices will be forwarded to the property owner and their authorized agent as they are received by City Staff. Additional payment to cover the cost of the consultant's review of this application may be requested, if/when the funds in the existing escrow account are exhausted.
c. Please be aware that the Earth Excavation Permit application will not be forwarded to the Planning Board for a determination of completeness until the Consultant's recommendations have been shared with staff.

2. Conservation Commission: Please be aware that, upon a finding by the Planning Board on application completeness, the application will be forwarded to the City of Keene Conservation Commission for review and comment. The Conservation Commission generally meets the third Monday of each month at 4:30 pm.

3. Posted Notice Requirement: Please be aware that, per Section 26.14.6 of the LDC, "An applicant for any conditional use permit shall, not less than 10 calendar days prior to the date of the public hearing on the application, post a sign obtained from the Community Development Department providing notice of the use applied for and the date and time of the public hearing, in a location on the premises visible to the public. This sign shall be removed by the applicant no later than 10 calendar days after completion of the public hearing and returned to the Community Development Department."

    a. Please pick up a sign from the Community Development Department and post on the site a minimum of 10 calendar days prior to the scheduled public hearing. This sign will need to be returned to the Community Development Department after the public hearing.

4. Application Type: Please update the application to specify that the application submitted is for a Major Amendment and not a new Earth Excavation Permit application as is currently indicated.

    A revised application has been provided.

5. Waiver Request: Please update the waiver requested from Section 25.3.1.D of the LDC to include information about how the value of the delineated wetlands to the west of the existing excavation area was determined.

The waiver request has been revised to include the functions and values of a wetland report prepared by a certified wetland scientist.

6. Plan Set: Please make the following modifications to the submitted plan set:

    a. Update the Overview Plan on Sheet 1 of the plan set to include a note related to the property owner needing to return to the Planning Board for a Major Amendment 6-months prior to the commencement of work on the next permit period area.

    The following note has been added to the Overview Plan: "An Earth Excavation Permit Renewal application shall be submitted to the City of Keene Community Development Department at least 6-months prior to the expiration of the approved permit period in accordance with Sec. 26.19.12 of the Land Development Code."

    b. Update Sheet 1 of the plan set to include notes addressing the notice requirements for blasting, groundwater monitoring, and the annual noise monitoring protocol.

    The following note has been added to the Overview Plan:
    "Refer to the details sheet "best management practices for blasting". The groundwater monitoring procedures are found in the 2024 hydrogeological investigation report and the 2024 acid mine drainage potential report. Refer to "noise impact control and monitoring notes" found on the impact control and monitoring plans."

    c. Have the certified wetlands scientist stamp the Overview plan on Sheet 1 of the plan set.

    A certified wetland stamp has been added to the Overview plan on sheet 1 of the plan set.

7. Rock Crushing Plant: Please submit information about the "rock-crushing plant" referred to under Note #8 in the "Operation Notes" section on Sheet 1 of the plan set.

    More information regarding the rock-crushing plant has been added to Operation Note#8 on sheet 1.

8. Conditions of Approval: Please be aware that the following items may be included as conditions of approval in the recommended motion in the staff report for this application:

a. The submittal of an additional security for landscaping, sedimentation and erosion control, as-built plans, and restoration, if deemed necessary by the Community Development Director, or their designee, and the City Engineer.

If deemed necessary, additional security for the above mentioned items will be provided as part of final approval.

b. Blasting permits will need to be obtained by the Keene Fire Department throughout the life of the gravel pit's operation.

Blasting permits will be obtained by the Keene Fire Department prior to any blasting activities.

Engineering Staff Comments:

1. Plan sheet 1 of 19, General Note#20 specifies that 'no excavation will be performed within 75' of the wetlands or 300' from an abutting property. Vegetation shall be maintained or provided within the peripheral areas previously listed.' It is not clear what area(s) are being referenced and what (if any) plantings are proposed. A landscaping plan should be provided, reviewed and approved in conjunction with this note/requirement.

   This note has been revised for clarity. No plantings are proposed. All areas disturbed will be reclaimed with loam and seed.

2. Plan sheet 1 of 19, General Note#26 specifies that 'the estimated project time frame will exceed five years and is subject to change…' This project schedule is insufficiently detailed and should establish requirement deadlines for either completing and/or resubmitting and providing an update and request for extension for the completion of the project in conformance with the City of Keene Land Use Ordinances.

   General Note#26 on sheet 1 has been updated to provide more detail on the project schedule and requirement deadlines and is now referenced as note #25. Operation Note #25 has been added and includes the following: "An Earth Excavation Permit Renewal application shall be submitted to the City of Keene Community Development Department at least 6-months prior to the expiration of the approved permit period in accordance with Sec. 26.19.12 of the Land Development Code."

3. Plan sheet 1 of 19, General Note#23 specifies that 'plowed snow from the operations shall be maintained on site within the contained area' The snow stockpile areas and associated maintenance should be specified on the plans for clarity.

Snow Storage areas and Deicing Notes have been shown on the Impact Control & Monitoring Plan.

4. Plan sheet 1 of 19, Operation Note #9 specifies that 'No fuels, lubricants or other toxic or polluting materials shall be stored on site…' Specify on the plans the proposed fueling areas and allowances for fueling on site.

   Both the Excavation, Drainage, & Erosion Control, and the Impact Control & Monitoring Plan show areas where proposed fueling will be stored on site.

5. Plan sheet 3 of 19 shows wells within 1-mile of the proposed site. Is the intent to notify and monitor/test these wells in conjunction with a blasting permit for the proposed improvements? The intent is not clear.

   The intent is to monitor and test these wells in conjunction with future blasting permits for the proposed improvements. This plan was provided as per the Earth Excavation Application Requirements.

6. The plans specify 'provide dust control on an as needed basis'; please provide additional details and requirements for dust control that will be used/permittable as part of the site improvements.

   Refer to the Dust Control and Monitoring Notes found on the Impact Control & Monitoring Plan. The Stormwater Pollution Prevention Plans (SWPPP) have also been included.

7. Temporary turnarounds in conformance with City of Keene turnaround requirements should be provided for emergency vehicle response while the project is progressing prior to turnaround areas being constructed. We defer to the Keene Fire Department for their determination on the necessary spacing and frequency of turnarounds.

   Turnaround areas with the gravel operation have been shown on the Excavation, Drainage & Erosion Control Plans. The Phasing notes have included these areas to remain until the completion of Period 7.

8. The project proposes 10 acres of phasing but only 5 acres are allowed to be disturbed at a time prior to restoration and vegetation established as specified in NHDES AoT Land Use Regulations. This requirement should be clarified and specified on the plans.

   See General Note #19 on the Overview Plan regarding areas of disturbance.

9. The plans specify a 4' tall fence but the detail specifies a 3'-6" chain-link fence, this discrepancy should be corrected. Additionally, the fence is proposed at the up-hill side of slopes greater than 1:1 but is also recommended for downhill slopes of 2:1 or greater.

   The fence detail has been revised to show a 4' tall fence. The detail has been revised to include additional fencing to the downhill slopes of 2:1 or greater.

10. The ditched rip rap, culverts, flared end section and drain headwalls shown in the Excavation Drainage & Erosion Control Plans should also be shown on the Impact Control and Monitoring plans for consistency and clarity.

    The ditched rip rap, culverts, flared end section and drain headwalls have been shown on the Impact Control and Monitoring plans.

11. The headwall details show half of a mortar and rubble stone and half a precast concrete headwall detail. For clarity, a pre-cast concrete headwall is preferred and recommended in lieu of a mortar and rubble rock headwall.

    The detail has been revised to only reflect a precast concrete headwall.

12. It is recommended that a rip rap ditch inlet be provided for inlet HW#4 to minimize culvert clogging from silt accumulation.

    This culvert has been eliminated.

13. It is recommended that a minimum 15-inch open culverts be utilized (pending supporting sizing calculations) in lieu of 12-inch to minimize clogging during construction.

    All 12" diameter driveway culverts have been changed to 15" diameter.

14. Based on the proposed elevations, it appears that there is insufficient cover over the culvert from HW#5A, a depth of cover equal to or greater than the manufacturer depth of cover is recommended.

    Culvert elevations have been adjusted to provide adequate cover.

15. The proposed silt fence on plan sheet 5 of 19 should extend north into Sullivan to the north of the proposed limit of work in lieu of ending where the silt fence currently terminates on the plans, due north of the Keene/Sullivan municipal line.

The silt fence located on the right side of the proposed haul road has been extended approximately 50' to the extent of the fill. Beyond that, the haul road is in a cut section.

16. Hours of operation are specified on the plans that include loading times on Saturday from 8 AM to 1 PM and weekdays from 7 AM to 5 AM. These times should be reviewed by NHDOT for them to confirm that additional restrictions aren't required.

    There is not a proposed change to the current hours of operation that are currently in place for the approved pit excavation, which received an NHDOT Driveway Permit.

17. Plan sheets 14 and 15 of 19 provides a cost estimate for loam and seed. However, current NHDOT average unit prices for loam are closer to $85/CY installed in lieu of the submitted $50/CY. The cost estimates also fail to consider items like mobilization, escalation, contingency, record drawings, fencing, erosion controls, etc.

    The loam unit prices have been revised to show $85 /CY installed.

18. No drainage report was provided with the application. A drainage report and associated calculations are required to confirm the sizing of the proposed rip rap, ditches, culverts and rip rap outlets are sufficiently sized to convey and prevent erosion from the 25-year storm event.

    A drainage report and associated calculations have been provided to confirm the drainage features and structures are sufficiently sized to convey and prevent erosion from the 25-year storm event.

We trust the noted plan revisions and/or explanations will adequately address the conditions listed above. Should you have any further questions or comments, please do not hesitate to contact this office.

Best Regards,

Justin Daigneault
Project Manager

GRANITE ENGINEERING, LLC
civil engineering ● land planning ● municipal services

February 3, 2025

City of Keene
Community Development Department – Planning and Zoning
3 Washington Street
Keene, New Hampshire 03431

RE: G2 Holdings, LLC
Tax Map 215 Lots 7 & 8
21 & 57 Route 9, Keene, NH
GE Project No. 2302011

Dear Ms. Fortson,

We are in receipt of a consultant review report, dated January 9, 2025, relative to the completeness review of the Earth Excavation Permit application, PB-2024-20, for the G2 Holdings, LLC project located at 21 & 57 Route 9. In response to the comments made by Fieldstone Land Consultants, PLLC, we offer the following explanations and/or responses:

Section 26.19.4 Earth Excavation Submittal Requirements - Completeness Review:

1. Section 26.19.4.B.8: The elevation of the estimated highest annual average groundwater for overburden is not detailed within the narrative. The bedrock wells did not observe water but test pits and other soils information represents that there will be excavations below the seasonal highwater table.

   Note 8 of the narrative has been revised to include the overburden wells and test pits performed within the excavation area. Section 4.1 of the Hydrogeological Investigation Report outlines that groundwater was not found at these locations. Section 5 of the Hydrogeological Investigation Report details the 8 bedrock wells, and that of the 8 wells installed, only two encountered groundwater, and these wells are located outside the excavation footprint.

2. Section 26.19.4.B.10: The submission does not detail appropriately the proposed methods for controlling stormwater, drainage, erosion, and sedimentation during the excavation project. The submission did not include a stormwater management report, did not provide calculations for sizing of drainage or erosion. The narrative and the grading on the plans appear to create ponding in work zones and it is unclear how these areas will be dewatered or managed. A dewatering plan should be submitted for review. Surface water quality should also be considered.

Large sediment retention areas have been designed within the floor of each pit area. The intent of these is to capture runoff, and sediment, associated with the excavation and contain it within the pit floor. As the pit expands, so too will the sediment retention areas. These retention areas hold back the stormwater and allow it to exit through a small culvert, and slowly discharge to an existing infiltration area within the current material storage, processing, and equipment area at the southerly end of the project. This area will be enlarged during the initial phase to eventually capture and infiltrate construction periods 1-7. During the final phase of the project, period 8, a large infiltration area will be excavated. The floor of this pond will be set above the estimated seasonal high water table. Stormwater will collect in this pond and eventually infiltrate into the ground. The sediment areas and infiltration areas have been sized to capture, contain, and infiltrate the 50-year, 24-hour rain event. A stormwater analysis has been provided to include these calculations, along with culvert and stone rip rap calculations.

Refer to section 8.0 of the Hydrogeological Investigation Report for proposed groundwater quality monitoring procedures. Refer to section 6.0 of the 2024 Acid Mine Drainage Potential Report for proposed water quality monitoring procedures.

3. Section 26.19.4.B.11: The means by which the project will avoid and/or mitigate adverse impacts caused by dust and noise appear to be missing please clarify.

   A Stormwater Pollution Prevention Plan (SWPPP) has been included to outline procedures dealing with dust. See noise impact control notes and dust control and monitoring notes found on the Impact Control and Monitoring Plan.

4. Section 26.19.4.B.12: The narrative should touch on how the project will secure slopes to protect the safety and welfare of persons on the site.

   Narrative note 12 has been revised to address safety concerns on the site.

5. Section 26.19.4.B.13: The narrative does not adequately address fueling of construction equipment on-site. Typically, these types of projects have a Spill Prevention, Control and Countermeasure (SPCC) plan. We would recommend that this be prepared for this project. The narrative and plans reference that many of these details are addressed in the Stormwater Pollution Prevention Plans so please provide this document for review too.

Notes have been added to the Excavation, Drainage & Erosion Control Plan. Fueling will consist of two- 560 gallon fuel tanks, true north steel, STI F-941 fireguard double-wall above ground storage tank. This tank will comply with ENV-WQ 1510.08, and EPA Mine Safety and Health Administration (MSHA) regulations. This tank will comply with all UL 142 standards, including NFPA 30, NFPA 30A, NFPA 31, NFPA 37, NFPA 1, and the International Fire Code. This fueling tank will not need to meet EPA Requirements for a Spill Prevention, Control, and Countermeasure (SPCC) Regulations, however above ground fuel tank containment has been provided that meets EPA 40 CFR 264.175 requirements and a detail has been provided to the planset. An above ground fuel tank containment detail has been included. A Stormwater Pollution Prevention Plan (SWPPP) has also been included.

6. Section 26.19.4.D.2: The phasing plans need to meet the detail and note requirements outlined in this section. It is difficult to decipher what improvements are required for each phase. The phasing plans should detail what needs to be completed in each phase and it might be beneficial for the plans to show the how phases will transition by showing two phases in each view.

   Phasing notes have been included on the Excavation, Drainage & Erosion Control Plan, and a more detailed description of the phasing sequence has been included in the narrative. An additional sheet has been added to the site plans to more clearly depict the sequencing of work.

7. Section 26.19.4.D.3: The context map does not show the excavation perimeter or abutter names and parcel numbers. This information is detailed on other plans so we believe the intent of this regulation is met.

   The Contex map provided showed the excavation perimeter and the direct abutter names and addresses.

8. Section 26.19.4.D.4: The existing conditions plans provided with the submission package do not detail all of the items required in this section of the Land Development Code. The existing conditions of Phase 1 is not detailed. The plans show the proposed design details for Phase 1. For this project Phase 1 should be detailed with as-built conditions to ensure this phase was completed per plan and to verify that stormwater, erosion and sedimentation controls are in place, per plan and functioning appropriately. Existing condition details missing include but are not limited to the detailing of access into the site, barriers, drainage, grading, natural features, surface waters, rock outcroppings, vegetative cover, tree lines, utilities, edges of pavement, gravel limits, stonewalls, cellar holes, structures, etc.. The plan should detail how it was

created. Is this plan based on an on-site topographic survey or is it relying on available LIDAR data?

An updated existing conditions plan has been included to show the current conditions of the existing, previously permitted pit area, in which this project will start.

9. Section 26.19.4.D.5: The excavation site maps do not address all of the design criteria outlined in this section. The plans do not depict processing areas, details of processing to be done on-site (screening, washing, crushing, etc.) stockpile areas and types of materials, fuel storage or fueling areas, equipment storage and maintenance areas, traffic controls for the site entrance and exits and location of dust control structures, devices and processes.

   Fuel storing areas, processing areas and stockpile areas are shown on The Impact Control & Monitoring Plan, dust control notes and fueling notes are also shown on these plans. A Stormwater Pollution Prevention Plan (SWPPP) has been included. There is no traffic controls proposed for the site entrance other than what currently exist. This project proposes to use the existing NHDOT permitted entrance previously constructed.

10. Section 26.19.4.D.6: The submission package does not address all of the criteria outlined under this section. The submission package does not verify that stormwater volumes and velocities are being maintained. A stormwater management report should be provided to detail how stormwater management will be handled. The narrative states that the project will be self-contained but the materials on-site don't seem to support this. The site will require more management for dewatering to ensure work zones are not flooding. Surface water quality is also a concern with the current design and a stormwater management report will help address these concerns as well as ensuring that culverts and erosion control measures are sized appropriately.

    See response to item #2.

11. Section 26.19.4.D.8: The reclamation plans state that bedrock is excluded in one of the notes. The City would like to see all exposed bedrock areas reclaimed as this the intent of this section is to restore the site to pre-excavation conditions.

    Narrative note 9 and general note 12A on the overview plan has been revised to include that the only areas to remain unclaimed are the vertical ledge pit face. It should be noted that section 25.4.2 states the following: "At the time of reclamation, all lands that are no longer being used for excavation

activities, including excavation areas, processing areas, stockpiling areas, and stormwater management areas, except for exposed ledge, shall be reclaimed."

12. Section 26.19.4.E.5: The submission did not include an Analysis of Important Habitat as required. Since the Natural Heritage Database showed a wood turtle within the project boundaries part a. under this section requires an inventory for vegetation and wildlife by a forest ecologist, wildlife biologist or qualified professional.

    The NHB's database has been searched for records of rare species and exemplary natural communities. There were no records of endangered or threatened species. The Wood Turtle (Glyptemys insculpta) was a species to be of special concern. Although not a recommendation for species of special concern, incorporation of NHFG recommendations have been addressed. Based upon review by NH Fish and Game, Patrick Fitzgibbons recommended Wildlife Protection notes for Species of Special Concern to be included on the plan set. These notes have been added. This correspondence has been included along with the project narrative that was provided for their review.

We trust the noted plan revisions and/or explanations will adequately address the conditions listed above. Should you have any further questions or comments, please do not hesitate to contact this office.

Best Regards,

Justin Daigneault
Project Manager

Photo #1

Existing Site Entrance from NH Route 9, Looking East
December 12, 2024

Photo #2

Existing Access Road from NH Route 9, Looking North
December 12, 2024

150 Dow Street, Tower 2, Suite 421, Manchester, NH 03101
(603) 518-8030 ● www.GraniteEng.com

Photo #3

Existing Woodland Buffer from NH Route 9, Looking West
December 12, 2024

Photo #4

Existing Material and Processing Area, Looking North
December 12, 2024

Photo #5

Existing Material and Processing Area, Looking West
December 12, 2024

Photo #6

Looking at Current Gravel Operation
August 3, 2024

Photo #7

Looking Uphill at Period 1 from Current Landing Area Previously Permitted
August 3, 2024

Photo #8

Current Landing Area – 2023 (Area Since Stabilized)
August 3, 2024

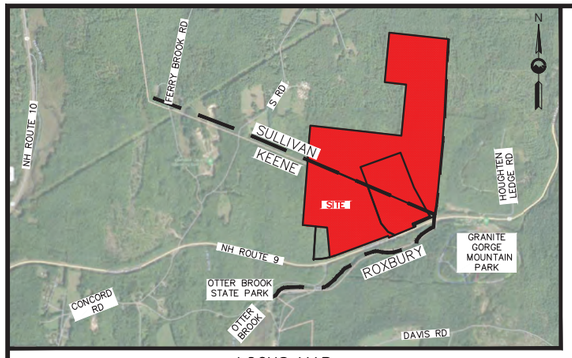
Photo #9

Looking at Existing Logging Road
August 3, 2024

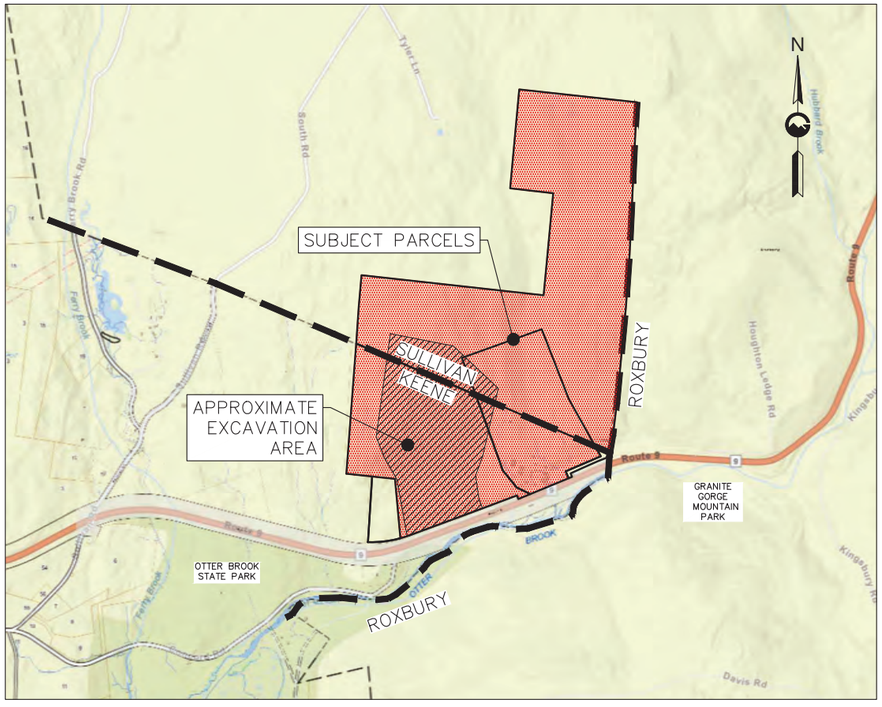
GRAVEL AND EARTH REMOVAL PLAN

G2 HOLDINGS, LLC

KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE, NEW HAMPSHIRE
CHESHIRE COUNTY



LOCUS MAP
SCALE: ±1"=2,000'



LOCATION PLAN
SCALE: 1"=1,000'

SHEET NO.	TABLE OF CONTENTS
1	OVERVIEW PLAN
2–3	EXISTING CONDITIONS PLAN WITH BOUNDARY LINES
4	CONTEXT PLAN
5–10	EXCAVATION, DRAINAGE & EROSION CONTROL PLAN
11–16	IMPACT CONTROL & MONITORING PLAN
17–18	RECLAMATION PLAN
19–22	DETAILS

OWNER & APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452
PHONE 603–325–8457

CIVIL ENGINEER:
GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, STE 421
MANCHESTER, NH 03101
(603) 518–8030

WETLAND SCIENTIST:
ECOSYSTEMS LAND PLANNING
36 DUNKLEE STREET
CONCORD, NH 03301
(603) 224–6244

SURVEYOR:
SMITH & POSPESIL LAND SURVEYING, PLLC
240 QUEBEC ROAD
LYMAN, NH 03585
(603) 838–6494

SOIL SCIENTIST:
HURLEY ENVIRONMENTAL AND LAND PLANNING, LLC.
P.O. BOX 356
EPSOM, NH 03234
(603) 583–1745

HYDROGEOLOGIST:
FRONTIER GEOSERVICES, LLC.
127 OLD WARNER ROAD
BRADFORD, NH 03221
(603) 748–37155

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON
GOLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

DIG SAFE

811

CALL TOLL FREE

DAMAGE PREVENTION SYSTEM

N

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE PROPOSED EXPANSION OF AN EXISTING GRAVEL AND EARTH REMOVAL OPERATION FOR G2 HOLDINGS, LLC ON CITY OF KEENE TAX MAP 215, LOTS 7 AND 8, AND INCLUDING TAX MAP 5, LOTS 46 AND 46–1 IN THE TOWN OF SULLIVAN.
2. CURRENT USE OF THE PROPERTY IS FOR GRAVEL AND EARTH REMOVALS.
3. AREA OF SUBJECT PARCEL (CITY OF KEENE) = 101.27 ACRES.
4. OWNERS OF RECORD:
   G2 HOLDINGS, LLC
   250 NORTH STREET
   JAFFREY, NH 03452
5. THE SUBJECT PARCEL IS LOCATED WITHIN THE CITY OF KEENE R (RURAL) ZONING DISTRICT AND SUBJECT TO THE FOLLOWING DIMENSIONAL REGULATIONS:

	REQUIRED	EXISTING LOT 7	EXISTING LOT 8
MIN. LOT AREA	2 AC	76.89 AC	24.38 AC
MIN. LOT FRONTAGE	50 FT	1,716.9 FT	545 FT
MIN. FRONT YARD	50 FT	N/A	70 FT
MIN. SIDE YARD	50 FT	N/A	132 FT
MIN. REAR YARD	50 FT	N/A	408 FT
EXCAVATION SETBACK	300 FT	322 FT	N/A

6. BASE SURVEY INFORMATION INCLUDING BOUNDARY, EXISTING FEATURES, AND TOPOGRAPHY SHOWN ON THIS PLAN ARE TAKEN FROM PLAN REFERENCES AND FIELD SURVEY BY SMITH & POSPESIL LAND SURVEYING COMPANY, PLLC IN OCTOBER 2022 AND MAY OF 2023.
7. TOPOGRAPHIC INFORMATION SHOWN WITHIN THE AREA OF DISTURBANCE IS TAKEN FROM FIELD SURVEY BY SMITH & POSPESIL LAND SURVEYING COMPANY, PLLC IN OCTOBER 2022 AND MAY OF 2023.
8. HORIZONTAL DATUM IS ON THE NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM NAD83 (2011).
9. VERTICAL DATUM IS NAVD 88.
10. EXCAVATION SITE, DESIGNED BY TFM WAIVERS APPROVED BY THE KEENE PLANNING BOARD OF ADJUSTMENTS ON AUGUST 22, 2022:
    - 24.3.1.A. (200' PUBLIC ROW SETBACK) – GRANTED
    - 24.3.1.C. (150' ACCESS DRIVEWAY SETBACK) – GRANTED
    - 24.3.1.E. (SURFACE WATER RESOURCE SETBACKS) – GRANTED
    - 24.3.4 (GROUNDWATER QUANTITY BASELINE MEASUREMENTS) – GRANTED
    - 24.3.5 (GROUNDWATER QUALITY BASELINE MEASUREMENTS – GRANTED
    - 24.3.13 (MAXIMUM EXCAVATION AREA) – GRANTED
11. EXCAVATION SITE, DESIGNED BY TFM CONDITIONAL USE PERMIT APPROVED BY THE KEENE PLANNING BOARD OF ADJUSTMENTS ON AUGUST 22, 2022 – KEENE HILLSIDE PROTECTION
12. ZBA SPECIAL EXCEPTION FOR GRAVEL PIT USE – GRANTED 8/22/2022
13. THE FOLLOWING ARE REQUESTED FROM THE CITY OF KEENE PLANNING BOARD:
    - 25.3.1.D. (SURFACE WATER RESOURCE SETBACKS) – WAIVER REQUIRED
    - 25.3.13 (MAXIMUM EXCAVATION AREA) – WAIVER REQUIRED
14. THE PROJECT REQUIRES THE FOLLOWING STATE, FEDERAL, AND LOCAL PERMITS:

PERMIT	STATUS	PERMIT NO.
NHDES AOT	PENDING	
KEENE HILLSIDE PROTECTION – CONDITIONAL USE PERMIT	PENDING	
KEENE EARTH EXCAVATION	PENDING	

15. WETLAND MAPPING PERFORMED BY JOHN ST. JOHN OF ECOSYSTEMS LAND PLANNING IN OCTOBER–NOVEMBER 2023.
16. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR CHESHIRE COUNTY, NEW HAMPSHIRE (ALL JURISDICTIONS), MAP NUMBER 33005C0165E, EFFECTIVE DATE 05/23/2006 INDICATES THAT NO PORTION OF THE SUBJECT PARCEL IS LOCATED WITHIN A SPECIAL FLOOD HAZARD AREA.
17. LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GRANITE ENGINEERING, LLC MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
18. THIS PROJECT DISTURBS IN EXCESS OF 1–ACRE OF LAND. THEREFORE, WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (APPLICANT) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.
19. AREAS OF DISTURBANCE SHALL NOT EXCEED 5 ACRES AT A TIME. IN ORDER FOR AREAS TO BE EXCLUDED OF THIS 5 ACRE MAXIMUM, THEY MUST BE STABILIZED. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS ARE INSTALLED;
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
20. THE APPROXIMATE AMOUNT OF MATERIAL PROPOSED TO BE EXCAVATED WITHIN THE CITY OF KEENE IS 1,771,972± CUBIC YARDS AND FOR THE TOTAL PROJECT IS 2,079,121± CUBIC YARDS.
21. NO EXCAVATION WILL BE PERFORMED WITHIN 75' OF MAPPED WETLANDS, 300' OF ABUTTING PROPERTIES.
22. IN ORDER TO OPERATE A GRAVEL OPERATION, GRAVEL EQUIPMENT WILL BE STORED ON SITE. THIS EQUIPMENT WILL CONSIST OF, BUT NOT LIMITED TO, BULLDOZERS, LOADERS, HAULER, EXCAVATORS, WATER TRUCKS, AND PROCESSORS. IN ORDER TO PROVIDE THE FURTHEST SEPARATION TO ABUTTING PROPERTIES, ALL PROCESSING EQUIPMENT WILL BE CENTRALLY LOCATED.
23. A COPY OF THE APPROVED GRAVEL AND EARTH REMOVAL PLAN SHALL BE ON SITE AT ALL TIMES.
24. PLOWED SNOW FROM THE OPERATION SHALL BE MAINTAINED AND ON SITE WITHIN THE CONTAINED AREA.
25. TRUCKS UTILIZED FOR TRANSPORT OF MATERIAL WILL CONSIST OF TRI–AXLES, 10–WHEELERS, AND TRACTOR TRAILER DUMP TRUCKS. THE ANTICIPATED MAXIMUM NUMBER OF VEHICLE TRIPS PER DAY BASED ON CURRENT PIT OPERATIONS IS 60 TRIPS PER DAY.
26. THE ESTIMATED PROJECT TIME FRAME WILL EXCEED FIVE YEARS. THE ANTICIPATED SCHEDULE IS EXPECTED TO START IN JANUARY 2025 AND LAST UNTIL APRIL 2038. THE APPLICANT MUST SUBMIT TO THE DEPARTMENT OF ENVIRONMENTAL SERVICES AND TO THE CITY OF KEENE A WRITTEN UPDATE OF THE PROJECT AND REVISED PLANS DOCUMENTING THE PROJECT STATUS EVERY FIVE YEARS FROM THE DATE OF THE ALTERATION OF TERRAIN PERMIT.

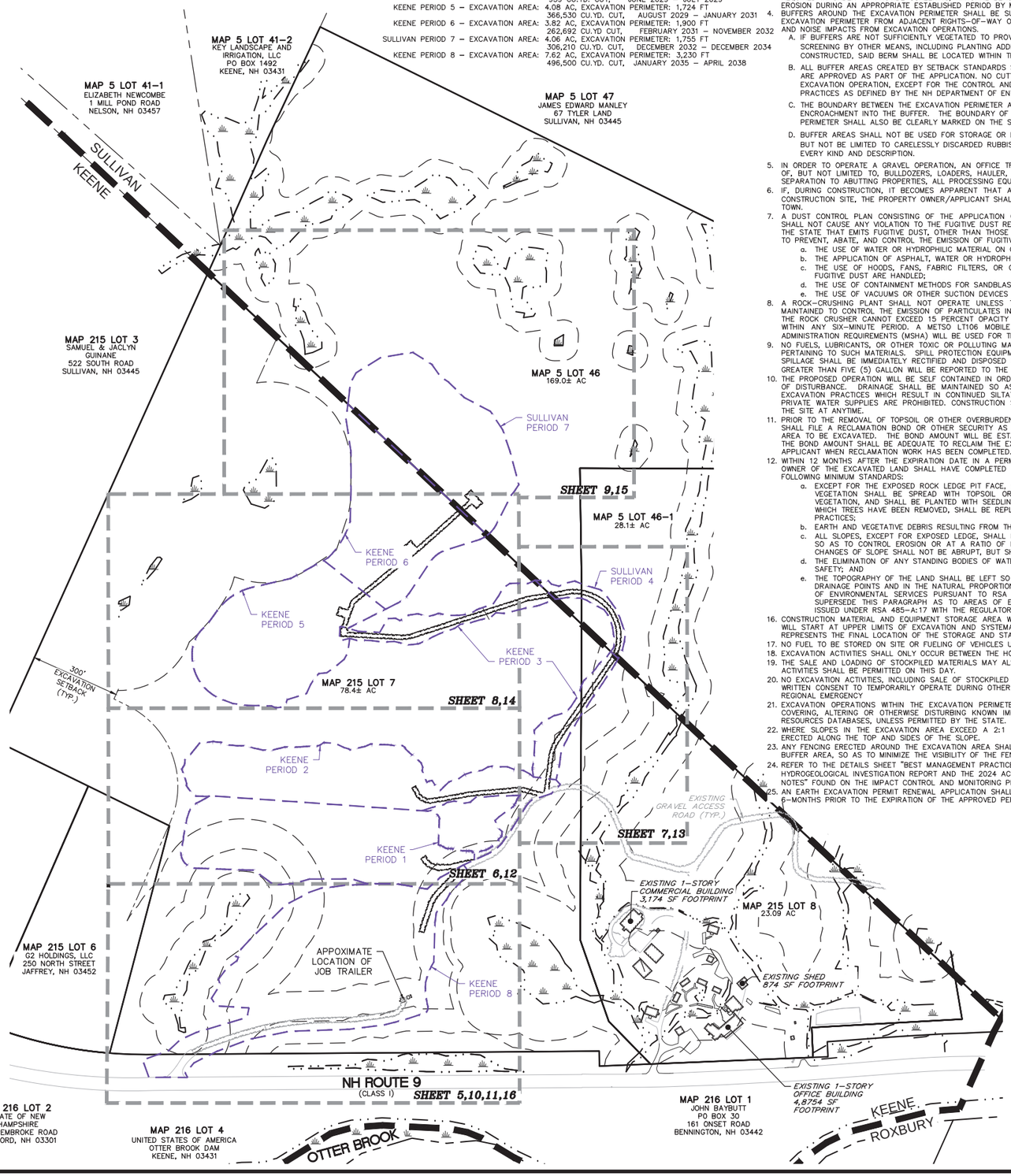
STATE OF NEW HAMPSHIRE
JOHN J. ST. JOHN
No. 221
CERTIFIED WETLAND SCIENTIST

EXCAVATION NOTES:

KEENE PERIOD 1 – EXCAVATION AREA:	4.99 AC, EXCAVATION PERIMETER: 2,324 FT 358,800 CU.YD. CUT, JANUARY 2025 – MAY 2027	
KEENE PERIOD 2 – EXCAVATION AREA:	4.10 AC, EXCAVATION PERIMETER: 2,674 FT 271,000 CU.YD. CUT, JUNE 2027 – MARCH 2029	
KEENE PERIOD 3 – EXCAVATION AREA:	2.14 AC, EXCAVATION PERIMETER: 3,780 FT 16,450 CU.YD. CUT, APRIL 2029 – MAY 2029	
SULLIVAN PERIOD 4 – EXCAVATION AREA:	0.39 AC, EXCAVATION PERIMETER: 947 FT 939 CU.YD. CUT, JUNE 2029 – JULY 2029	
KEENE PERIOD 5 – EXCAVATION AREA:	4.08 AC, EXCAVATION PERIMETER: 1,724 FT 366,530 CU.YD. CUT, AUGUST 2029 – JANUARY 2031	
KEENE PERIOD 6 – EXCAVATION AREA:	3.82 AC, EXCAVATION PERIMETER: 1,900 FT 262,692 CU.YD CUT, FEBRUARY 2031 – NOVEMBER 2032	
SULLIVAN PERIOD 7 – EXCAVATION AREA:	4.06 AC, EXCAVATION PERIMETER: 1,755 FT 306,210 CU.YD. CUT, DECEMBER 2032 – DECEMBER 2034	
KEENE PERIOD 8 – EXCAVATION AREA:	7.62 AC, EXCAVATION PERIMETER: 3,230 FT 496,500 CU.YD. CUT, JANUARY 2035 – APRIL 2038	

OPERATION NOTES:

1. THE PURPOSE OF THESE PLANS IS TO ILLUSTRATE THE PROPOSED GRADING, EROSION CONTROL, AND RECLAMATION ASSOCIATED WITH THE EXPANSION OF THE EXISTING GRAVEL AND EARTH REMOVAL OPERATION FOR G2 HOLDNGS, LLC.
2. LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GRANITE ENGINEERING, LLC MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
3. NO EXCAVATION WILL BE PERFORMED WITHIN 75' OF MAPPED WETLANDS, 300' OF ABUTTING PROPERTIES THAT DISAPPROVE, 300' FROM ABUTTING PROPERTIES THAT APPROVE OF THE GRAVEL OPERATION, OR 150' FROM ANY EXISTING DWELLINGS. VEGETATION SHALL BE MAINTAINED OR PROVIDED WITHIN THE PERIPHERAL AREAS PREVIOUSLY LISTED. IF DEEMED NECESSARY BY THE PLANNING BOARD, SUITABLE TREES AND/OR SHRUBS MAY BE REQUIRED IN ORDER TO PROVIDE SCREENING, NATURAL BEAUTY AND TO AID IN EROSION CONTROL. SUCH PLANTED AREAS SHALL BE PROTECTED FROM EROSION DURING AN APPROPRIATE ESTABLISHED PERIOD BY MULCH AND STRUCTURAL EROSION CONTROL DEVICES.
4. BUFFERS AROUND THE EXCAVATION PERIMETER SHALL BE SUFFICIENTLY VEGETATED TO PROVIDE FULL, OPAQUE, AND YEAR–ROUND SCREENING OF THE EXCAVATION PERIMETER FROM ADJACENT RIGHTS–OF–WAY OR ABUTTING PROPERTIES. THE INTENT OF THIS STANDARD IS TO AVOID ADVERSE VISUAL AND NOISE IMPACTS FROM EXCAVATION OPERATIONS.
   A. IF BUFFERS ARE NOT SUFFICIENTLY VEGETATED TO PROVIDE ADEQUATE VISUAL AND NOISE SCREENING, THE APPLICANT SHALL PROVIDE ADEQUATE SCREENING BY OTHER MEANS, INCLUDING PLANTING ADDITIONAL VEGETATION AND/OR CONSTRUCTING A BERM. TO THE EXTENT THAT A BERM IS CONSTRUCTED, SAID BERM SHALL BE LOCATED WITHIN THE EXCAVATION PERIMETER.
   B. ALL BUFFER AREAS CREATED BY SETBACK STANDARDS SHALL REMAIN IN A NATURAL VEGETATED CONDITION, EXCEPT WHEN ADDITIONAL PLANTINGS ARE APPROVED AS PART OF THE APPLICATION. NO CUTTING OR REMOVAL OF LIVING VEGETATION SHALL BE PERMITTED OVER THE LIFE OF THE EXCAVATION OPERATION, EXCEPT FOR THE CONTROL AND MANAGEMENT OF NON–NATIVE AND INVASIVE SPECIES FOLLOWING BEST MANAGEMENT PRACTICES AS DEFINED BY THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
   C. THE BOUNDARY BETWEEN THE EXCAVATION PERIMETER AND THE BUFFER AREAS SHALL BE CLEARLY MARKED ON THE SITE TO AVOID ENCROACHMENT INTO THE BUFFER. THE BOUNDARY OF APPROVED SETBACKS FROM SURFACE WATER RESOURCES WITHIN THE EXCAVATION PERIMETER SHALL ALSO BE CLEARLY MARKED ON THE SITE TO AVOID ENCROACHMENT.
   D. BUFFER AREAS SHALL NOT BE USED FOR STORAGE OR DISPOSAL OF STUMPS, BOULDERS, EARTH MATERIALS, AND/OR OTHER DEBRIS INCLUDING, BUT NOT BE LIMITED TO CARELESSLY DISCARDED RUBBISH, REFUSE, TRASH, GARBAGE, DEAD ANIMALS AND/OR OTHER DISCARDED MATERIALS OF EVERY KIND AND DESCRIPTION.
5. IN ORDER TO OPERATE A GRAVEL OPERATION, AN OFFICE TRAILER AND GRAVEL EQUIPMENT WILL BE STORED ON SITE. THIS EQUIPMENT WILL CONSIST OF, BUT NOT LIMITED TO, BULLDOZERS, LOADERS, HAULER, EXCAVATORS, WATER TRUCKS, AND PROCESSORS. IN ORDER TO PROVIDE THE FURTHEST SEPARATION TO ABUTTING PROPERTIES, ALL PROCESSING EQUIPMENT WILL BE CENTRALLY LOCATED.
6. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE, THE PROPERTY OWNER/APPLICANT SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.
7. A DUST CONTROL PLAN CONSISTING OF THE APPLICATION OF WATER ON AN AS NEEDED BASIS WILL BE EMPLOYED. SUCH EXCAVATION ACTIVITIES SHALL NOT CAUSE ANY VIOLATION TO THE FUGITIVE DUST REQUIREMENTS ESTABLISHED IN ENV–A 1002. ANY PERSON ENGAGED IN ANY ACTIVITY WITHIN THE STATE THAT EMITS FUGITIVE DUST, OTHER THAN THOSE LISTED SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF THE ACTIVITY IN ORDER TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST. PRECAUTIONS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   a. THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
   b. THE APPLICATION OF ASPHALT, WATER OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
   c. THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVICES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
   d. THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
   e. THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.
8. A ROCK–CRUSHING PLANT SHALL NOT OPERATE UNLESS THE PLANT IS EQUIPPED WITH AN EMISSION CONTROL SYSTEM THAT IS OPERATED AND MAINTAINED TO CONTROL THE EMISSION OF PARTICULATES IN COMPLIANCE WITH EPA 40 CFR 60, SUBPART OOO AND ENV–A 2800. VISIBLE DUST FROM THE ROCK CRUSHER CANNOT EXCEED 15 PERCENT OPACITY WHILE CERTAIN TRANSFER POINTS OF THE SYSTEM CANNOT EXCEED 10 PERCENT OPACITY WITHIN ANY SIX–MINUTE PERIOD. A METSO LT106 MOBILE CRUSHER MEETING CURRENT U.S. DEPARTMENT OF LABOR MINE SAFETY AND HEALTH ADMINISTRATION REQUIREMENTS (MSHA) WILL BE USED FOR THESE ACTIVITIES.
9. NO FUELS, LUBRICANTS, OR OTHER TOXIC OR POLLUTING MATERIALS SHALL BE STORED ON–SITE UNLESS IN COMPLIANCE WITH STATE LAWS OR RULES PERTAINING TO SUCH MATERIALS. SPILL PROTECTION EQUIPMENT WILL BE STORED ON SITE FOR IMMEDIATE RESPONSE TO ANY POTENTIAL SPILLS. ANY SPILLAGE SHALL BE IMMEDIATELY RECTIFIED AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL STANDARDS. ALL SPILLS OF GREATER THAN FIVE (5) GALLON WILL BE REPORTED TO THE KEENE FIRE DEPARTMENT AND TO NHDES.
10. THE PROPOSED OPERATION WILL BE SELF CONTAINED IN ORDER TO RETAIN ALL STORMWATER AND ANY POTENTIAL EROSION ON SITE, WITHIN THE LIMITS OF DISTURBANCE. DRAINAGE SHALL BE MAINTAINED SO AS TO PREVENT THE ACCUMULATION OF FREE–STANDING WATER FOR PROLONGED PERIODS. EXCAVATION PRACTICES WHICH RESULT IN CONTINUED SILTATION OF SURFACE WATERS OR ANY DEGRADATION OF WATER QUALITY OF ANY PUBLIC OR PRIVATE WATER SUPPLIES ARE PROHIBITED. CONSTRUCTION SHALL PROCEED SUCH THAT THERE IS NO RUNOFF FROM THE EXCAVATION AREA LEAVING THE SITE AT ANYTIME.
11. PRIOR TO THE REMOVAL OF TOPSOIL OR OTHER OVERBURDEN MATERIAL FROM ANY LAND AREA THAT HAS NOT YET BEEN EXCAVATED, THE EXCAVATOR SHALL FILE A RECLAMATION BOND OR OTHER SECURITY AS PRESCRIBED BY THE REGULATOR, SUFFICIENT TO SECURE THE RECLAMATION OF THE LAND AREA TO BE EXCAVATED. THE BOND AMOUNT WILL BE ESTABLISHED BY THE CITY OF KEENE PLANNING BOARD TO COVER RECLAMATION OF THE SITE. THE BOND AMOUNT SHALL BE ADEQUATE TO RECLAIM THE EXCAVATION SITE IN ACCORDANCE WITH RSA 155–E:5. THE BOND WILL BE RETURNED TO THE APPLICANT WHEN RECLAMATION WORK HAS BEEN COMPLETED.
12. WITHIN 12 MONTHS AFTER THE EXPIRATION DATE IN A PERMIT ISSUED OR OF THE COMPLETION OF ANY EXCAVATION, WHICHEVER OCCURS FIRST, THE OWNER OF THE EXCAVATED LAND SHALL HAVE COMPLETED THE RECLAMATION OF THE AREAS AFFECTED BY THE EXCAVATION TO MEET EACH OF THE FOLLOWING MINIMUM STANDARDS:
   a. EXCEPT FOR THE EXPOSED ROCK LEDGE PIT FACE, ALL AREAS WHICH HAVE BEEN AFFECTED BY THE EXCAVATION OR OTHERWISE STRIPPED OF VEGETATION SHALL BE SPREAD WITH TOPSOIL OR STRIPPINGS, IF ANY, BUT IN ANY CASE COVERED BY SOIL CAPABLE OF SUSTAINING VEGETATION, AND SHALL BE PLANTED WITH SEEDLINGS OR GRASS SUITABLE TO PREVENT EROSION. AREAS VISIBLE FROM A PUBLIC WAY, FROM WHICH TREES HAVE BEEN REMOVED, SHALL BE REPLANTED WITH TREE SEEDLINGS, SET OUT IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES;
   b. EARTH AND VEGETATIVE DEBRIS RESULTING FROM THE EXCAVATION SHALL BE REMOVED OR OTHERWISE LAWFULLY DISPOSED OF;
   c. ALL SLOPES, EXCEPT FOR EXPOSED LEDGE, SHALL BE GRADED TO NATURAL REPOSE FOR THE TYPE OF SOIL OF WHICH THEY ARE COMPOSED SO AS TO CONTROL EROSION OR AT A RATIO OF HORIZONTAL TO VERTICAL PROPOSED BY THE OWNER AND APPROVED BY THE REGULATOR. CHANGES OF SLOPE SHALL NOT BE ABRUPT, BUT SHALL BLEND WITH THE SURROUNDING TERRAIN;
   d. THE ELIMINATION OF ANY STANDING BODIES OF WATER CREATED IN THE EXCAVATION PROJECT AS MAY CONSTITUTE A HAZARD TO HEALTH AND SAFETY; AND
   e. THE TOPOGRAPHY OF THE LAND SHALL BE LEFT SO THAT WATER DRAINING FROM THE SITE LEAVES THE PROPERTY AT THE ORIGINAL, NATURAL DRAINAGE POINTS AND IN THE NATURAL PROPORTIONS OF FLOW. FOR EXCAVATION PROJECTS WHICH REQUIRE A PERMIT FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES PURSUANT TO RSA 485–A:17, THE PROVISIONS OF THAT STATUTE, AND RULES ADOPTED UNDER IT, SHALL SUPERSEDE THIS PARAGRAPH AS TO AREAS OF EXCAVATION SITES COVERED THEREBY. THE EXCAVATOR SHALL FILE A COPY OF PERMITS ISSUED UNDER RSA 485–A:17 WITH THE REGULATOR.
16. CONSTRUCTION MATERIAL AND EQUIPMENT STORAGE AREA WILL RELOCATE DEPENDING UPON THE PROGRESS OF THE GRAVEL OPERATION. SAID AREA WILL START AT UPPER LIMITS OF EXCAVATION AND SYSTEMATICALLY RELOCATE AS EXCAVATION PROGRESSES. THE AREA ILLUSTRATED ON THIS PLAN REPRESENTS THE FINAL LOCATION OF THE STORAGE AND STAGING AREA.
17. NO FUEL TO BE STORED ON SITE OR FUELING OF VEHICLES UNLESS A SOURCE CONTROL PLAN IS SUBMITTED TO NHDES AOT.
18. EXCAVATION ACTIVITIES SHALL ONLY OCCUR BETWEEN THE HOURS OF 7:00 AM AND 5:00 PM, MONDAY THROUGH FRIDAY.
19. THE SALE AND LOADING OF STOCKPILED MATERIALS MAY ALSO OCCUR FROM 8:00 AM TO 1:00 PM ON SATURDAYS; HOWEVER, NO OTHER EXCAVATION ACTIVITIES SHALL BE PERMITTED ON THIS DAY.
20. NO EXCAVATION ACTIVITIES, INCLUDING SALE OF STOCKPILED MATERIALS, SHALL BE PERMITTED ON SUNDAYS, OR LEGAL HOLIDAYS, EXCEPT WHEN PRIOR WRITTEN CONSENT TO TEMPORARILY OPERATE DURING OTHER HOURS IS PROVIDED BY THE COMMUNITY DEVELOPMENT DEPARTMENT DUE TO A LOCAL OR REGIONAL EMERGENCY
21. EXCAVATION OPERATIONS WITHIN THE EXCAVATION PERIMETER AND THE ACCESS DRIVEWAY SHALL BE LOCATED AND DESIGNED TO AVOID REMOVING, COVERING, ALTERING OR OTHERWISE DISTURBING KNOWN IMPORTANT ARCHEOLOGICAL SITES AS MAY BE LISTED IN THE NH DIVISION OF HISTORICAL RESOURCES DATABASES, UNLESS PERMITTED BY THE STATE.
22. WHERE SLOPES IN THE EXCAVATION AREA EXCEED A 2:1 SLOPE, A FENCE OR OTHER SUITABLE BARRICADE AT LEAST 4–FT IN HEIGHT SHALL BE ERECTED ALONG THE TOP AND SIDES OF THE SLOPE.
23. ANY FENCING ERECTED AROUND THE EXCAVATION AREA SHALL BE PLACED ALONG THE OUTSIDE EDGE OF THE ACTIVE WORK AREA BUT NOT WITHIN THE BUFFER AREA, SO AS TO MINIMIZE THE VISIBILITY OF THE FENCE FROM ABUTTING PROPERTIES AND PUBLIC RIGHTS–OF–WAYS.
24. REFER TO THE DETAILS SHEET "BEST MANAGEMENT PRACTICES FOR BLASTING". THE GROUNDWATER MONITORING PROCEDURES ARE FOUND IN THE 2024 HYDROGEOLOGICAL INVESTIGATION REPORT AND THE 2024 ACID MINE DRAINAGE POTENTIAL REPORT. REFER TO "NOISE IMPACT CONTROL AND MONITORING NOTES" FOUND ON THE IMPACT CONTROL AND MONITORING PLANS.
25. AN EARTH EXCAVATION PERMIT RENEWAL APPLICATION SHALL BE SUBMITTED TO THE CITY OF KEENE COMMUNITY DEVELOPMENT DEPARTMENT AT LEAST 6–MONTHS PRIOR TO THE EXPIRATION OF THE APPROVED PERMIT PERIOD IN ACCORDANCE WITH SEC. 26.19.12 OF THE LAND DEVELOPMENT CODE.



LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PERIOD LINE
- SHEETS
- TOWN LINE

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET) 1 inch = 200 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. COLE
No. 14744
2/2/25
LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
OVERVIEW PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRURARY 3, 2025	HORIZ. 1"=200'

SHEET 1 OF 22

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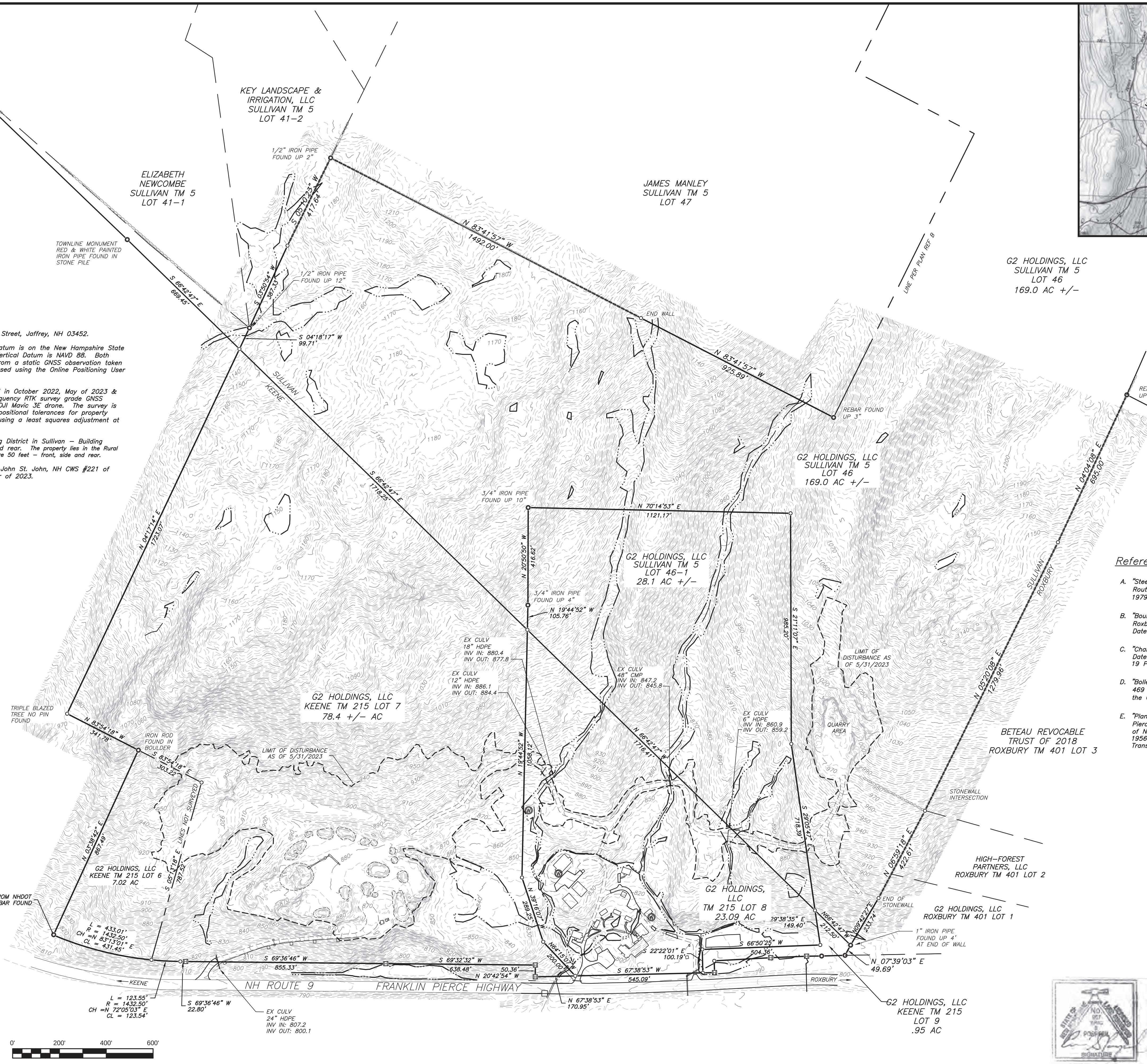
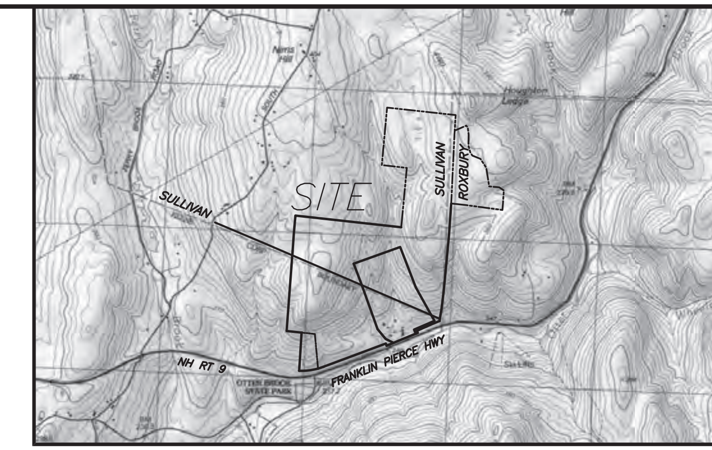




LOCATION MAP

1 inch = 2000 feet

NOTES:

1. Owner of Record: G2 Holdings, LLC 250 North Street, Jaffrey, NH 03452.
2. The Basis of Bearing is Grid. The Horizontal Datum is on the New Hampshire State Plane Coordinate System NAD83 (2011). The Vertical Datum is NAVD 88. Both horizontal and vertical datumes were derived from a static GNSS observation taken during the time of the field survey and processed using the Online Positioning User System (OPUS).
3. This plan is based on a field survey completed in October 2022, May of 2023 & January of 2025 using IGuage 8 & 9 dual frequency RTK survey grade GNSS receivers, a Topcon Robotic Total Station and DJI Mavic 3E drone. The survey is classified as Rural and exceeds the minimum positional tolerances for property corners (0.25') and control (0.13') computed using a least squares adjustment at the 95% confidence level.
4. The property lies in the Rural Residential Zoning District in Sullivan – Building Setbacks are 50 feet – front, 20 feet side and rear. The property lies in the Rural Zoning District in Keene – R. Building Setbacks are 50 feet – front, side and rear.
5. The wetlands shown hereon were delineated by John St. John, NH CWS #221 of Ecosystems Land Planning from August–October of 2023.

STATE OF NEW HAMPSHIRE JOHN J. ST. JOHN No. 221 CERTIFIED WETLAND SCIENTIST

Reference Plans:

A. "Steel Tape and Compass Survey of 3 Lot Subdivision for Wayne W. & Elaine Sargent, Route 9 Keene and Sullivan, NH", By Herbert E. Russell, RLS #21. Dated August, 1979. Recorded at Cheshire County Registry of Deeds Cabniet 2 Pg 94 Roll #305.

B. "Boundary Survey: Land of Seafield Pines Hospital Corporation, Keene, Sullivan & Roxbury, County of Cheshire, State of New Hampshire" By C.T. Male Associates, P. C. Dated June, 1989. Job No. 88–05837. Not Recorded.

C. "Charles S. and John W. Towns, "Nims" Woodlot, Keene, Nh" By William P. House, Dated May, 1965. Recorded at the Cheshire Country Registry of Deeds Plan Book 19 Pg 37.

D. "Bolles Subdivision, 3 Lot Subdivision & Boundary Line Adjustment Map 5 Lot 42, 469 South Road, Sullivan, NH" By Cardinal Surveying & Land Planning. Recorded at the Cheshire County Registry of Deeds Plans #21048, 21049 and 21087.

E. "Plan of Proposed T.L.R. Project No. 14201, NH Project No P–2962–C, Franklin Pierce Highway, City of Keene and Town of Roxbury, County of Cheshire.", By State of New Hampshire Department of Public Works and Highways. Dated November 16, 1956. On file and available on–line with the New Hampshire Department of Transportation, Right of Way Bureau.

LEGEND

- Monument Found
- Highway Bound
- Calculated Point
- Well
- Utility Pole
- Property Line
- Town Line
- Approx Abutters Line
- Limits of Disturbance
- Major Contour Line
- Minor Contour Line
- Edge of Wetland
- Stream

Scale: 1 inch = 200 feet

A SURVEY OF LAND FOR

G2 HOLDINGS, LLC

TAX MAP 5 LOTS 46 & 46–1
VOLUME 3079 PAGE 283
IN THE TOWN OF
SULLIVAN, NEW HAMPSHIRE
AND
TAX MAP 215 LOTS 6,7,8 & 9
VOLUME 3079 PAGE 283 &
VOLUME 3199 PAGE 1197
IN THE CITY OF
KEENE, NEW HAMPSHIRE

SMITH & POSPESIL
LAND SURVEYING COMPANY, PLLC
240 QUEBEC ROAD, LYMAN, N.H. 03585

JUNE 19, 2023
REVISED JULY 16, 2024
& JANUARY [illegible], 2025

NEW HAMPSHIRE STATE PLANE
COORDINATE SYSTEM NAD 83
MAGNETIC DECLINATION: 13° 53' W
CONVERGENCE ANGLE: -0°22'39"
OBSERVATION DATE: MAY, 2023
COMBINED SCALE FACTOR: 0.99995790.

LIMIT OF DISTURBANCE
AS OF 5/31/2023

G2 HOLDINGS, LLC
KEENE TM 215 LOT 7
78.4 +/- AC

LINES NOT SURVEYED

S 05°13'18" E
787.52'

G2 HOLDINGS, LLC
KEENE TM 215 LOT 6
7.02 AC

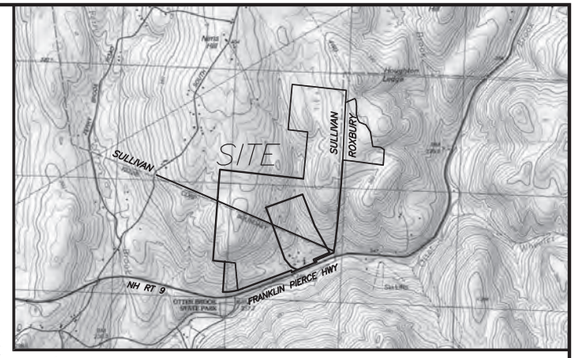
CHIPSTONE
1 1/2" STONE
3/4" STONE
STOCKPILES
RIP RAP
RIP RAP
SAND
PROCESSING EQUIPMENT
CRUSHING PILE
LOAM
LOAM
STOCKPILES
LOAM
NO TRESPASS
BERM
3/4" STONE
CONCRETE
ROUGH LOAM
1 1/2" GRAVEL
FUEL STORAGE
TEMP. OFFICE
GATE
GAURDRAIL
SIGN 10 MPH
S 69°36'46" W
22.80'
L = 123.55'
R = 1432.50'
CH =N 72°05'03" E
CL = 123.54'
BUSINESS SIGN
S 69°36'46" W
855.33'
S 69°32'32" W
638.48'
PAVED ENTRANCE
EX. CULV
24" HDPE
INV IN: 807.2
INV OUT: 800.1

NH ROUTE 9
FRANKLIN PIERCE HIGHWAY

LEGEND

- Monument Found
- Highway Bound
- Calculated Point
- Utility Pole
- Property Line
- Limits of Disturbance
- Stockpile
- Major Contour Line
- Minor Contour Line
- Edge of Wetland
- Stream

0' 50' 100' 150'
Scale: 1 inch = 50 feet



LOCATION MAP
1 inch = 2000 feet

Reference Plans:

A. "Steel Tape and Compass Survey of 3 Lot Subdivision for Wayne W. & Elaine Sargent, Route 9 Keene and Sullivan, NH", By Herbert E. Russell, RLS #21. Dated August, 1979. Recorded at Cheshire County Registry of Deeds Cabniet 2 Pg 94 Roll #305.

B. "Boundary Survey: Land of Seafield Pines Hospital Corporation, Keene, Sullivan & Roxbury, County of Cheshire, State of New Hampshire" By C.T. Male Associates, P. C. Dated June, 1989. Job No. 88-05837. Not Recorded.

C. "Charles S. and John W. Towns, "Nims" Woodlot, Keene, Nh" By William P. House, Dated May, 1965. Recorded at the Cheshire Country Registry of Deeds Plan Book 19 Pg 37.

D. "Bolles Subdivision, 3 Lot Subdivision & Boundary Line Adjustment Map 5 Lot 42, 469 South Road, Sullivan, NH" By Cardinal Surveying & Land Planning. Recorded at the Cheshire County Registry of Deeds Plans #21048, 21049 and 21087.

E. "Plan of Proposed T.L.R. Project No. 14201, NH Project No P-2962-C, Franklin Pierce Highway, City of Keene and Town of Roxbury, County of Cheshire." By State of New Hampshire Department of Public Works and Highways. Dated November 16, 1956. On file and available on-line with the New Hampshire Department of Transportation, Right of Way Bureau.

NOTES:

1. Owner of Record: G2 Holdings, LLC 250 North Street, Jaffrey, NH 03452.
2. The Basis of Bearing is Grid. The Horizontal Datum is on the New Hampshire State Plane Coordinate System NAD83 (2011). The Vertical Datum is NAVD 88. Both horizontal and vertical datumes were derived from a static GNSS observation taken during the time of the field survey and processed using the Online Positioning User System (OPUS).
3. This plan is based on an updated field survey completed in January of 2025 using 10uuage dual frequency RTK survey grade GNSS receivers, and a DJI Mavic 3E Drone. The survey is classified as Rural and exceeds the minimum positional tolerances for property corners (0.25') and control (0.13') computed using a least squares adjustment at the 95% confidence level.
4. The property lies in the Rural Residential Zoning District in Sullivan – Building Setbacks are 50 feet – front, 20 feet side and rear. The property lies in the Rural Zoning District in Keene – R. Building Setbacks are 50 feet – front, side and rear.
5. The wetlands shown hereon were delineated by John St. John, NH CWS #221 of Ecosystems Land Planning from August-October of 2023.
6. The purpose of this plan sheet is to show the current conditions of Phase I excavation as of January 22, 2025.

STATE OF NEW HAMPSHIRE
JOHN J. ST. JOHN
No. 221
CERTIFIED WETLAND SCIENTIST

STATE OF NEW HAMPSHIRE
No. 2617
ERIC D. POSPESIL
SIGNATURE

EXISTING CONDITIONS PHASE I PIT

G2 HOLDINGS, LLC

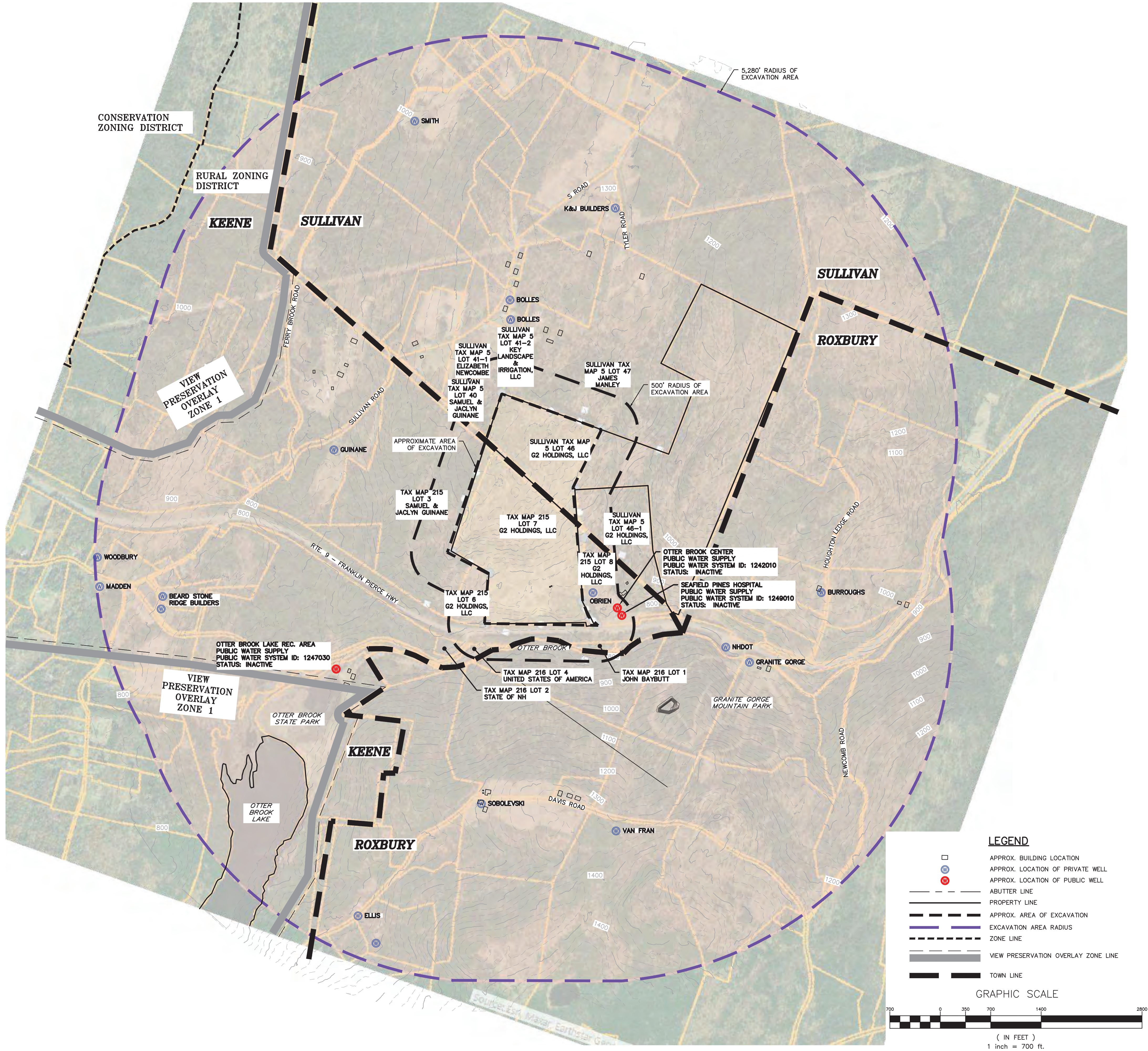
TAX MAP 215 LOTS 6&7
VOLUME 3079 PAGE 283 &
VOLUME 3199 PAGE 1197
IN THE CITY OF
KEENE, NEW HAMPSHIRE

SMITH & POSPESIL
LAND SURVEYING COMPANY, PLLC
240 QUEBEC ROAD, LYMAN, N.H. 03585

JUNE 19, 2023
REVISED JULY 16, 2024
& JANUARY 27, 2025

GENERAL NOTES:

1. 500' AND 5,280 (1 MILE) RADII OF THE EXCAVATION AREA ARE SHOWN.
2. THE APPROXIMATE LOCATION OF THE 25-FT CONTOURS ARE SHOWN WITHIN A 1 MILE RADIUS OF THE EXCAVATION SITE. THE TOPOGRAPHICAL INFORMATION SHOWN IS FROM NH GRANIT.
3. THE APPROXIMATE LOCATION OF ALL BUILDINGS ARE SHOWN. THIS INFORMATION IS FROM NH GRANIT AND KEENE TAX MAP INFORMATION.
4. THE APPROXIMATE LOCATION OF NH ROUTE 9 IS SHOWN. THIS INFORMATION IS FROM NH GRANIT.
5. THE APPROXIMATE LOCATION OF ALL PROPERTY LINES ARE SHOWN IN KEENE, ROXBURY AND SULLIVAN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM NH GRANIT.
6. THE ZONE LINE ALONG THE TOWN LINES ARE SHOWN. THE ENTIRETY OF THE 1-MILE RADIUS IS WITHIN THE RURAL ZONE.
7. THE LOCATION AND ASSOCIATED INFORMATION FOR ALL PUBLIC WATER SUPPLIES ARE SHOWN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION WAS OBTAINED THROUGH NHDES ONESTOP DATA RESEARCH.
8. THERE ARE NO WELLHEAD PROTECTION AREAS WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM A DATA CHECK USING NHDES ONESTOP DATA SEARCH.
9. THERE ARE NO KNOWN FUTURE MUNICIPAL WATER SUPPLY SITES WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE.
10. ALL SURFACE WATERS ARE SHOWN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM NH GRANIT AND NHDES ONESTOP DATA RESEARCH.
11. THE APPROXIMATE LOCATIONS OF ALL PUBLICLY RECORDED PRIVATE WELLS ARE SHOWN WITHIN A 1-MILE RADIUS OF THE EXCAVATION SITE. THIS INFORMATION COMES FROM KEENE GIS AND NHDES ONE-STOP DATA RESEARCH.
12. ALL OTHER PRIVATE WELL ESTIMATION IS AN APPROXIMATION.



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REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

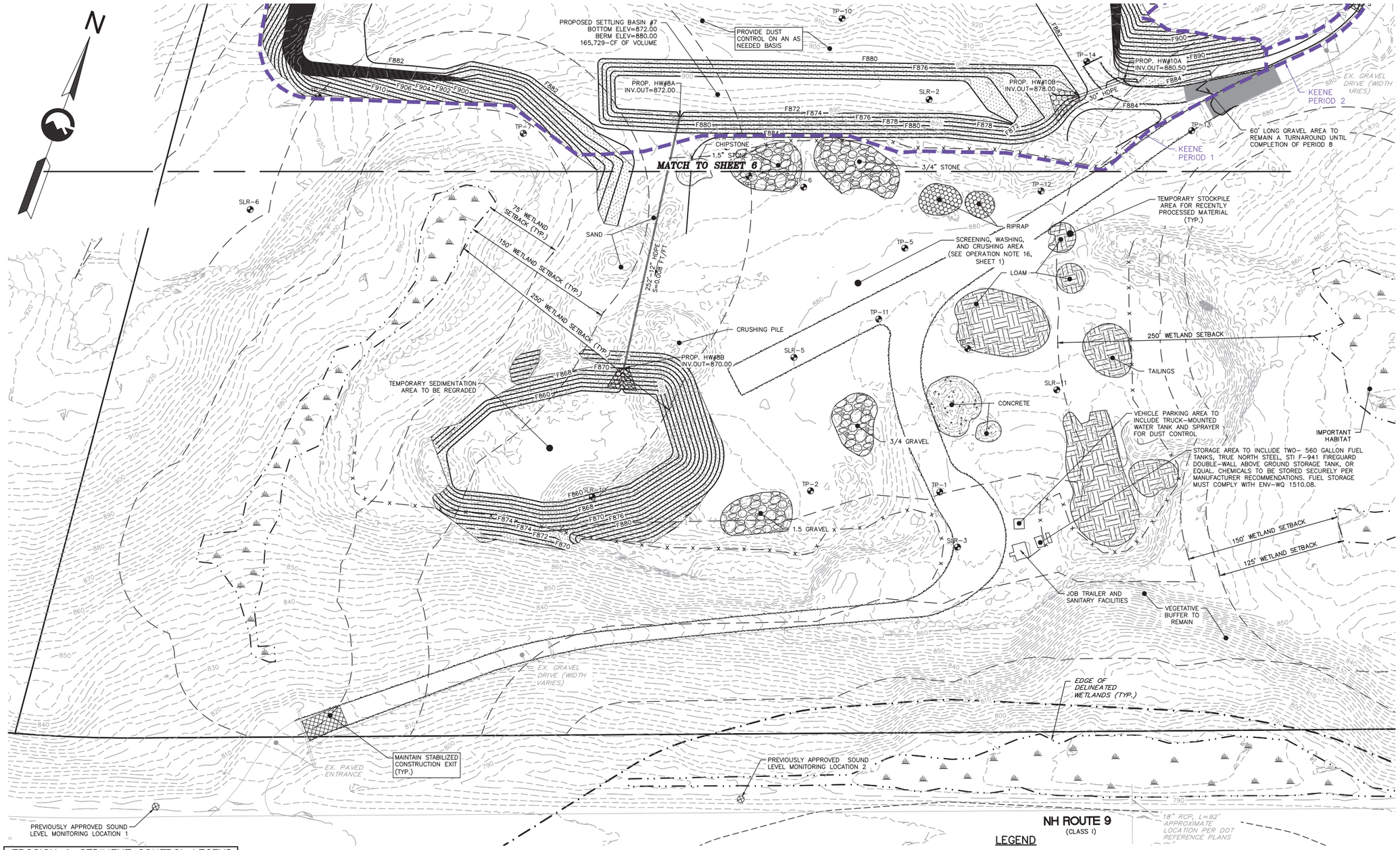
STAMP:
STATE OF NEW HAMPSHIRE BRENTON J. COLE No. 14744 2/3/25 LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
CONTEXT PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRURARY 3, 2025	HORIZ. 1"=700'



EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

PHASING NOTES:

1. INSTALL NECESSARY EROSION CONTROL MEASURES, I.E. SILT FENCE.
2. COMPLETE EXCAVATION OF TEMPORARY SEDIMENTATION AREA.
3. LOAM AND SEED TEMPORARY SEDIMENTATION AREA.
4. BEGIN EXCAVATION IN PERIOD 1. CONSTRUCT TEMPORARY SEDIMENT BASIN AS NEEDED AND DIRECT DISCHARGE TO TEMPORARY SEDIMENT AREA.
5. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

DIG SAFE
811
DIAL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- PERIOD LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE
- EX. DRAINAGE LINE

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

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BRENTON
COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

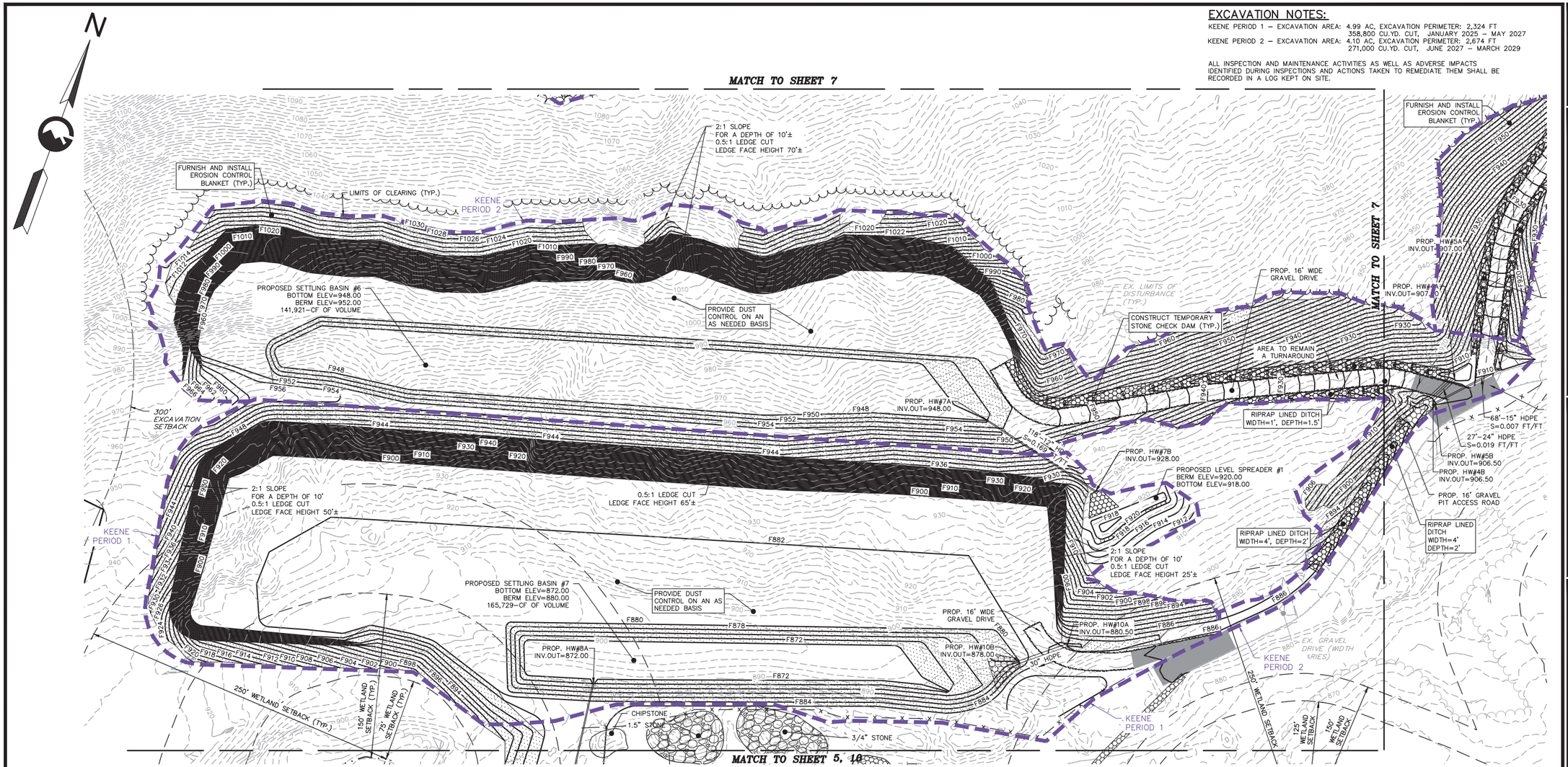
PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

P:\23\202011\dwg\Production Plans\23202011-SITE.dwg, 1/31/2025 10:43:27 AM, DWG To PDF.pc3, 1:1

EXCAVATION NOTES:

KEENE PERIOD 1 – EXCAVATION AREA: 4.99 AC, EXCAVATION PERIMETER: 2,324 FT
358,800 CU.YD. CUT, JANUARY 2025 – MAY 2027
KEENE PERIOD 2 – EXCAVATION AREA: 4.10 AC, EXCAVATION PERIMETER: 2,674 FT
271,000 CU.YD. CUT, JUNE 2027 – MARCH 2029

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.



PHASING NOTES:

1. CONTINUE EXCAVATION IN PERIOD 1. AS PIT FLOOR IS LOWERED, EXCAVATE SEDIMENT BASIN AS REQUIRED. INSTALL OUTLET CULVERT.
2. ONCE PERIOD 1 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. PRIOR TO LOAMING AND SEEDING THE SEDIMENT AREA, REMOVE ALL SILTED MATERIALS. LOAM AND SEED, ENSURE OUTLET CULVERT IS INSTALLED.RECLAIM ACCESS TO THE PIT.
3. BEGIN CONSTRUCTION OF PERIOD 2, STARTING WITH THE ACCESS. INSTALL ALL EROSION CONTROL DEVICES.CONSTRUCT DITCH ALONG WEST SIDE OF EXISTING ACCESS ROAD. INSTALL CULVERTS AT THE INTERSECTION WITH THE NEW ACCESS ROAD RUNNING TO THE NORTH.
4. AS PIT AREA IN PERIOD IS EXCAVATED, PITCH SLOPE TO THE SOUTH OF THE AREA AND BEGIN EXCAVATION OF THE SEDIMENT RETENTION AREA. DIRECT DISHARGE FROM THE SEDIMENT DOWN THE EASTERN SIDE OF RECLAIMED PHASE 1. AS THE SEDIMENT AREA IS LOWERED, INSTALL OUTLET CULVERT, AND DIRECT TO THE EXISTING SLOPE TO THE EAST OF PERIOD 1.
5. ONCE PERIOD 2 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. PRIOR TO LOAMING AND SEEDING THE SEDIMENT AREA, REMOVE ALL SILTED MATERIALS. LOAM AND SEED, ENSURE OUTLET CULVERT IS INSTALLED. RECLAIM ACCESS TO THE PIT TO INTERSECTION OF NEW ACCESS RUNNING TO THE NORTH.
6. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
RI-SAFE-NH-VT-MA
UTILITIES UNDERGROUND

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

EROSION CONTROL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE CITY OF KEENE SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
10. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
11. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
12. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
13. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
15. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
16. GRADED AREAS SHALL BE VEGETATED TO INSURE EROSION CONTROL BY SEEDING, MULCHING, AND FERTILIZING. DISTURBED AREAS SHALL BE PLANTED WITH SUITABLE PLANT MATERIALS.
17. GRADING SHALL NOT EXCEED A RATIO OF 3 HORIZONTAL TO 1 VERTICAL WITHOUT SPECIAL EROSION CONTROL MEASURES. NETTING OR SIMILAR MATERIAL SHALL BE PROVIDED ON SLOPES WITH A RATIO GREATER THAN 3:1 WHILE GROUND COVER IS BEING ESTABLISHED.

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- PERIOD LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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REVISIONS

No.	DATE	COMMENTS	BY
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JAFFREY, NH 03452

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STATE OF NEW HAMPSHIRE
BRENTON
ROLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

SHEET NO.
6 OF 22

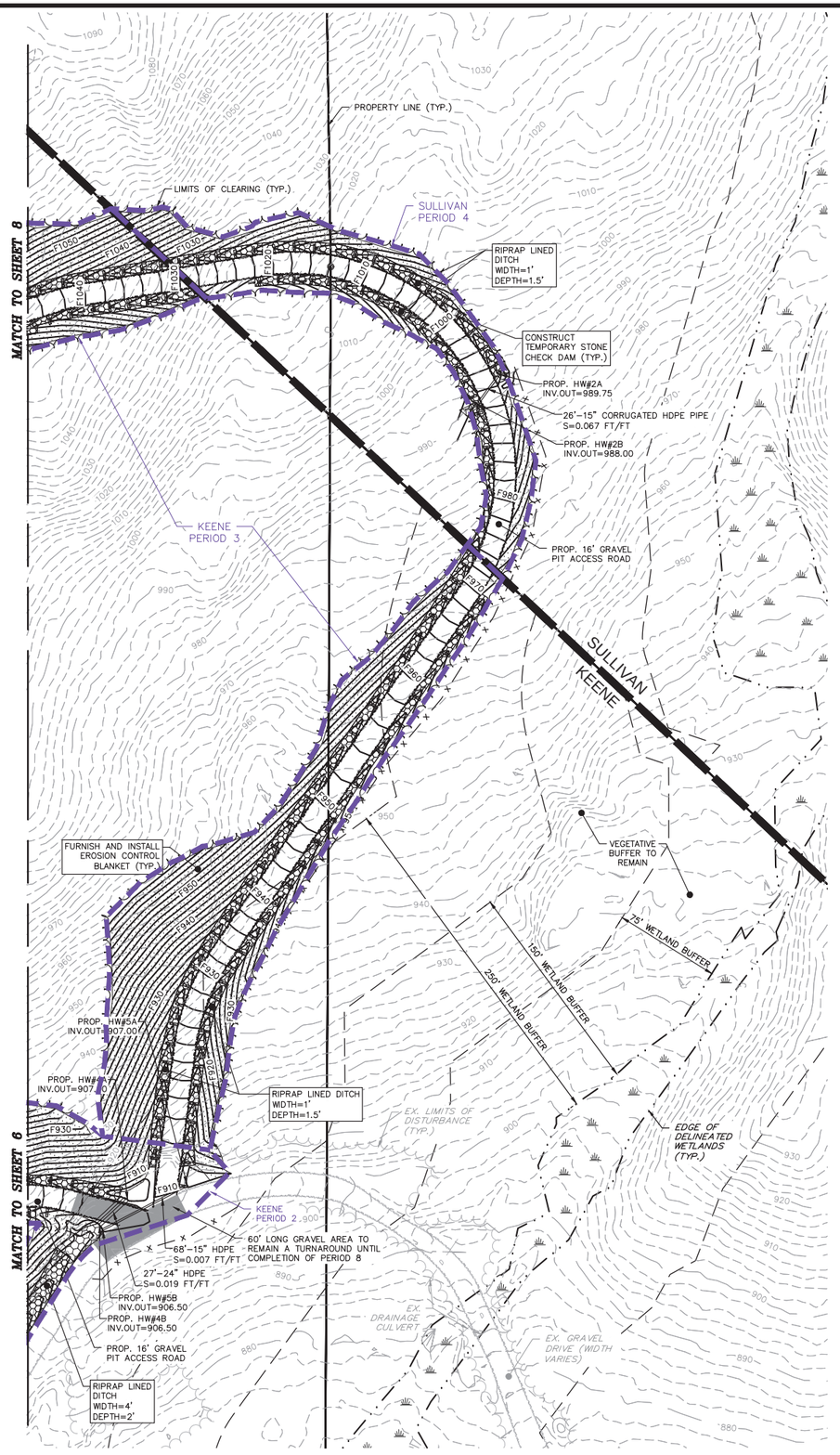
PHASING NOTES:

1. INSTALL ALL NECESSARY EROSION CONTROL ITEMS, I.E. SILT FENCE, STONE CHECK DAMS.
2. CONSTRUCT PIT ACCESS IN ITS ENTIRETY TO THE START OF PERIOD 5.
3. INSTALL ALL CULVERTS, RIP RAP CULVERT OUTLETS, AND DITCH PROTECTION.
4. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)



EXCAVATION NOTES:

KEENE PERIOD 3 – EXCAVATION AREA: 2.14 AC, EXCAVATION PERIMETER: 3,780 FT
16,450 CU.YD. CUT, APRIL 2029 – MAY 2029
SULLIVAN PERIOD 4 – EXCAVATION AREA: 0.39 AC, EXCAVATION PERIMETER: 947 FT
939 CU.YD. CUT, JUNE 2029 – JULY 2029

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.

N

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- PERIOD LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE
- EX. DRAINAGE LINE

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

DIG SAFE
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UTILITIES UNDERGROUND

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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CHESHIRE COUNTY

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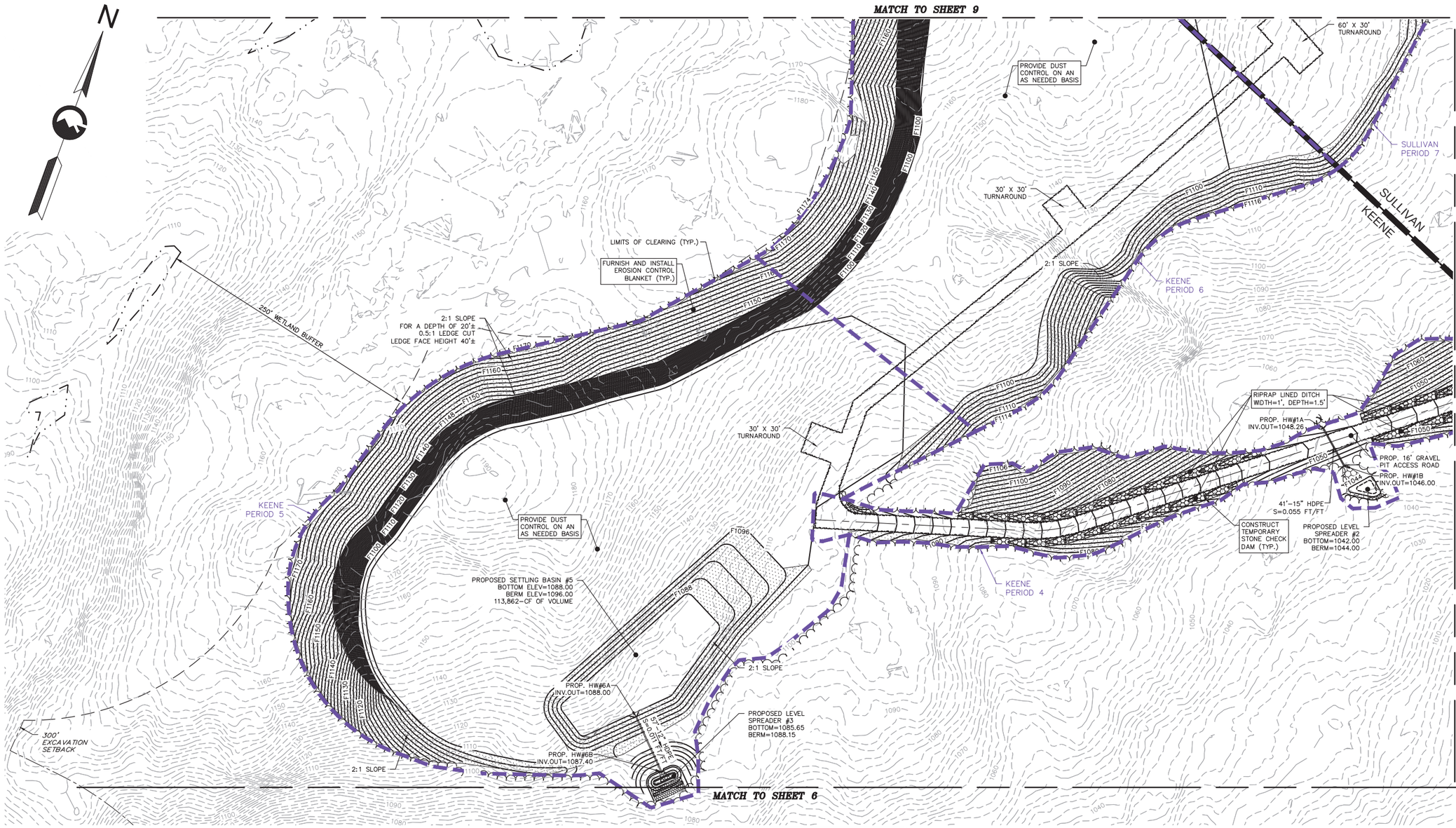
PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

SHEET 7 OF 22



PHASING NOTES:

1. INSTALL NECESSARY EROSION CONTROL MEASURES, I.E. SILT FENCE.
2. BEGIN EXCAVATION IN PERIOD 5. CONSTRUCT TEMPORARY SEDIMENT BASIN AS NEEDED AND DIRECT DISCHARGE TO TEMPORARY SEDIMENT AREA.
3. SLOPE PIT TO RUN TO THE SOUTH TO THE SEDIMENT AREA. AS EXCAVATION PROCEDES, LOWER SEDIMENT AREA AS NEEDED.
4. ONCE PERIOD 5 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA, LEAVING TRUCK AND EQUIPMENT ACCESS TO PERIOD 6. PRIOR TO LOAMING AND SEEDING THE SEDIMENT AREA, REMOVE ALL SILTED MATERIALS. LOAM AND SEED, ENSURE OUTLET CULVERT IS INSTALLED.
5. INSTALL EROSION CONTROL MEASURES FOR PERIOD 6.
6. BEGIN EXCAVATION IN PERIOD 6. SLOPE PIT FLOOR TO THE SOUTH. INSTALL TEMPORARY SEDIMENT BASINS AS NEEDED. DO NOT DISCHARGE SEDIMENT TO RECLAIMED AREA PERIOD 5.
7. ONCE PERIOD 6 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA, LEAVING TRUCK AND EQUIPMENT ACCESS TO PERIOD 7.
8. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

EXCAVATION NOTES:

KEENE PERIOD 5 – EXCAVATION AREA: 4.08 AC, EXCAVATION PERIMETER: 1,724 FT
366,530 CU.YD. CUT, AUGUST 2029 – JANUARY 2031

KEENE PERIOD 6 – EXCAVATION AREA: 3.82 AC, EXCAVATION PERIMETER: 1,900 FT
262,692 CU.YD CUT, FEBRUARY 2031 – NOVEMBER 2032

SULLIVAN PERIOD 7 – EXCAVATION AREA: 4.06 AC, EXCAVATION PERIMETER: 1,755 FT
306,210 CU.YD. CUT, DECEMBER 2032 – DECEMBER 2034

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.

LEGEND

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- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
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- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

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STAMP:
STATE OF NEW HAMPSHIRE
BRENTON
COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
EXCAVATION, DRAINAGE & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

8 OF 22

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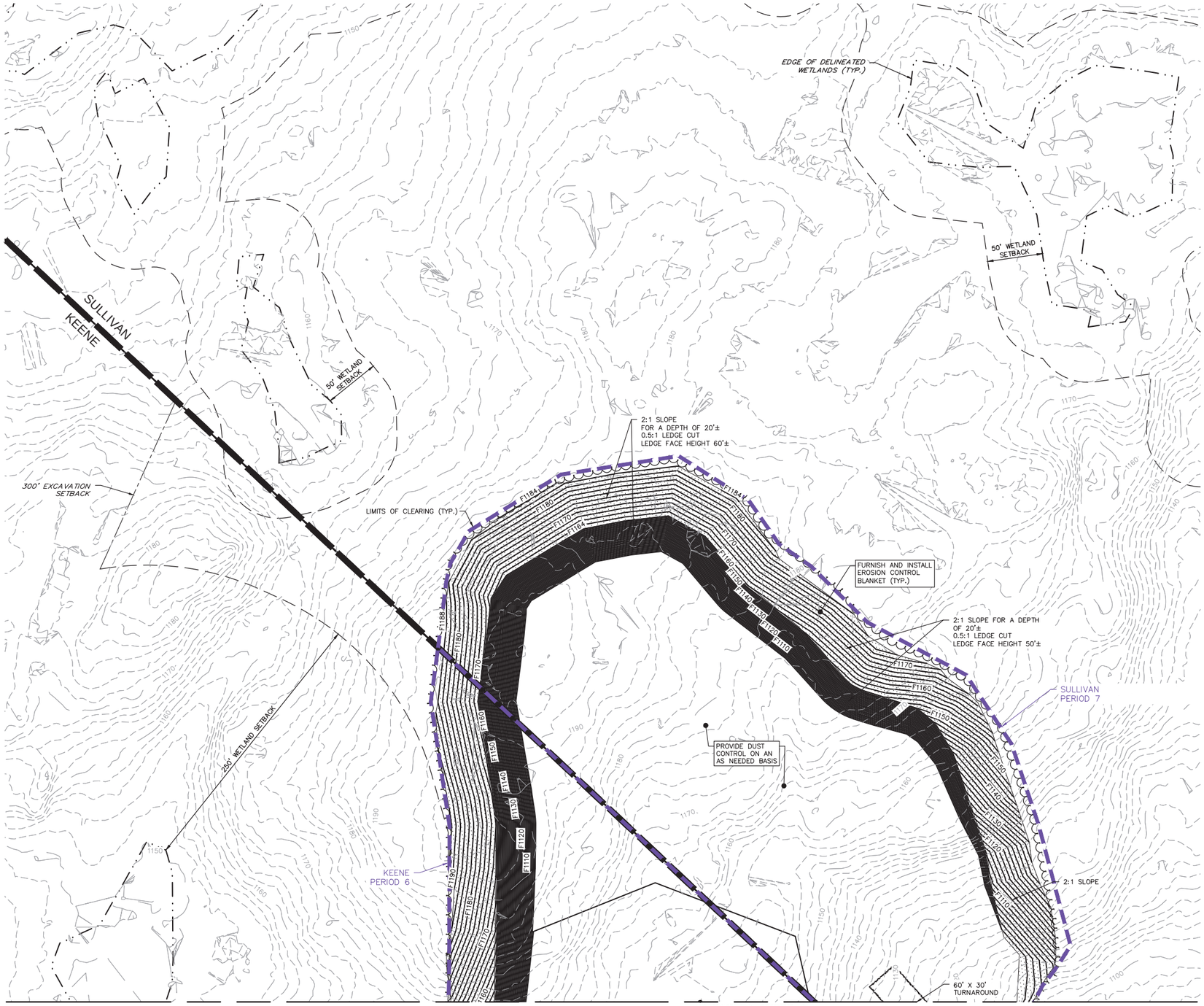

PHASING NOTES:

1. INSTALL EROSION CONTROL MEASURES FOR PERIOD 7.
2. BEGIN EXCAVATION IN PERIOD 7. SLOPE PIT FLOOR TO THE SOUTH. INSTALL TEMPORARY SEDIMENT BASINS AS NEEDED. DO NOT DISCHARGE SEDIMENT TO RECLAIMED AREA PERIOD 6.
3. ONCE PERIOD 7 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. RECLAIM GRAVEL SURFACE OF ENTIRE HAUL ROAD.
4. ALL TRUCK TURNAROUND AREAS TO BE MAINTAINED UNTIL THE COMPLETION OF PERIOD 7, THEN THOSE AREAS ARE TO BE RECLAIMED.

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

EXCAVATION NOTES:

KEENE PERIOD 6 – EXCAVATION AREA: 3.82 AC, EXCAVATION PERIMETER: 1,900 FT
262,692 CU.YD CUT, FEBRUARY 2031 – NOVEMBER 2032

SULLIVAN PERIOD 7 – EXCAVATION AREA: 4.06 AC, EXCAVATION PERIMETER: 1,755 FT
306,210 CU.YD CUT, DECEMBER 2032 – DECEMBER 2034

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.

N

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- PERIOD LINE
- TOWN LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- RIP RAP
- EX./PROP. HEADWALL
- PROP. DRAINAGE LINE

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
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GRAPHIC SCALE
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PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

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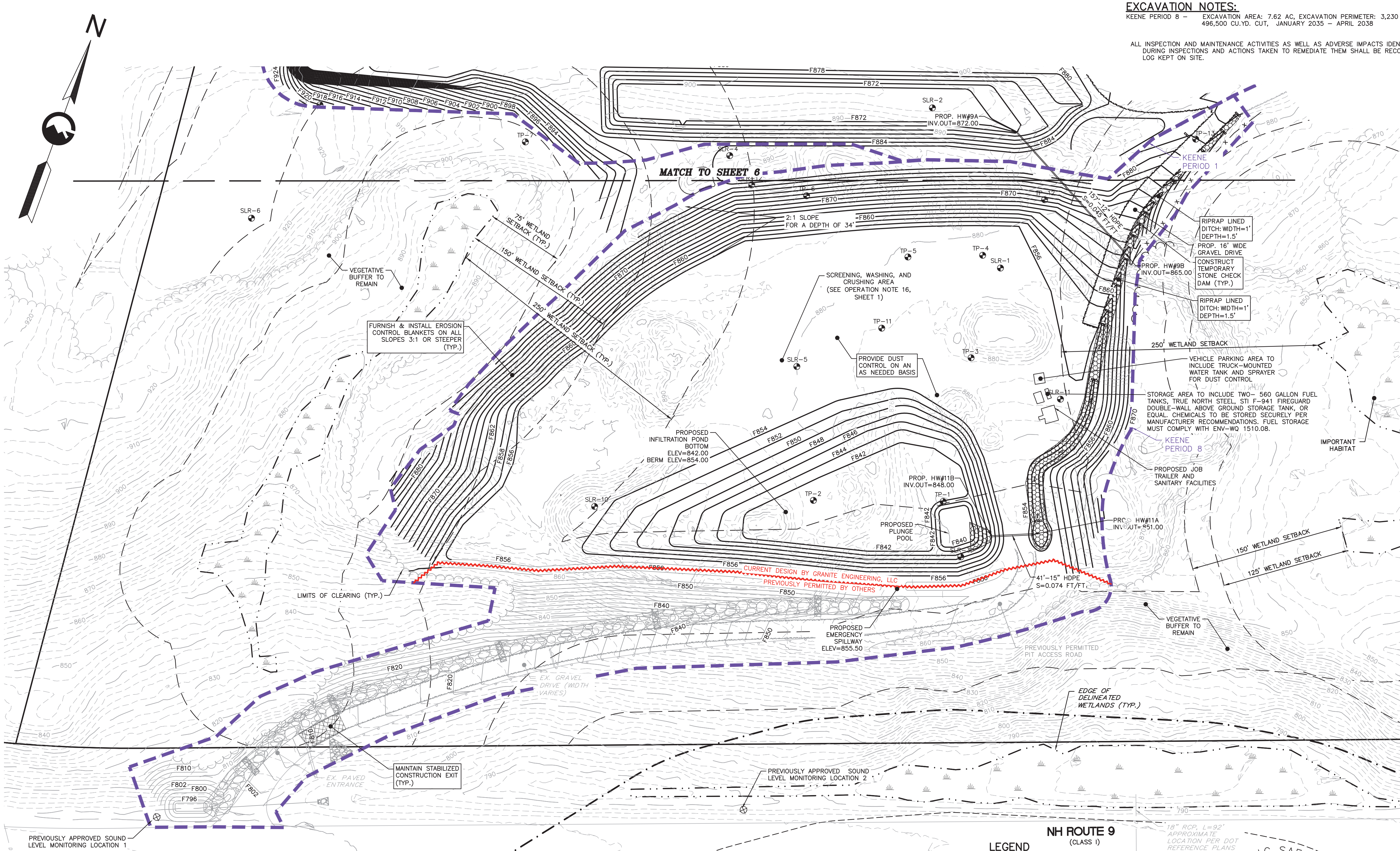
EXCAVATION NOTES:

KEENE PERIOD 8 – EXCAVATION AREA: 7.62 AC, EXCAVATION PERIMETER: 3,230 FT
496,500 CU.YD. CUT, JANUARY 2035 – APRIL 2038

ALL INSPECTION AND MAINTENANCE ACTIVITIES AS WELL AS ADVERSE IMPACTS IDENTIFIED DURING INSPECTIONS AND ACTIONS TAKEN TO REMEDIATE THEM SHALL BE RECORDED IN A LOG KEPT ON SITE.



PHASING NOTES:

1. INSTALL EROSION CONTROL MEASURES FOR PERIOD 8.
2. BEGIN EXCAVATION IN PERIOD 8. SLOPE PIT FLOOR TO THE SOUTH. INSTALL TEMPORARY SEDIMENT BASINS AS NEEDED.
3. AS PIT FLOOR IS LOWERED, EXCAVATE AND DIRECT STORMWATER TO THE FINAL SEDIMENT RETENTION AREA.
4. AS THE PIT FLOOR IS LOWERED, THE GRADE OF THE MAIN ACCESS ROAD OFF ROUTE 9 WILL NEED TO BE AJUSTYED TO CURRENT PIT FLOOR ELEVATIONS.
5. PLUG EXISTING 12" OUTLET PIPE THAT WAS INSTALLED IN THE SEDIMENT RETENTION AREA CONSTRUCTED IN PHASE 1. PLUG INLET WITH FLOWABLE FILL.
6. CONSTRUCT 12" OUTLET CULVERT AND HW#9A AND HW#9B AS SHOWN ON THIS SHEET.
7. CONSTRUCT ACCESS WITH STONE LINED DITCHES. DIRECT RUNOFF TO PROPOSED SEDIMENT AREA AS SHOWN ON THIS PLAN. TO KEEP ACCESS TO THE PIT OPEN, INSTALL A CULVERT TO DIRECT STORMWATER RUNOFF TO THE SEDIMENT RETENTION AREA.
8. ONCE PERIOD 8 HAS REACHED FINAL GRADING, RECLAIM ENTIRE AREA. RECLAIM GRAVEL SURFACE OF ACCESS ROAD. REMOVE TEMPORARY EROSION CONTROL MEASURES.

EROSION & SEDIMENT CONTROL LEGEND

- STONE CHECK DAM
- LIMITS OF CLEARING
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT
- STAGING AND STOCKPILE AREA
- EROSION CONTROL BLANKET

SEE SHEET 6 FOR EROSION CONTROL NOTES (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
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- WETLAND BUFFER
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- PROP. DRAINAGE LINE
- EX. DRAINAGE LINE

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GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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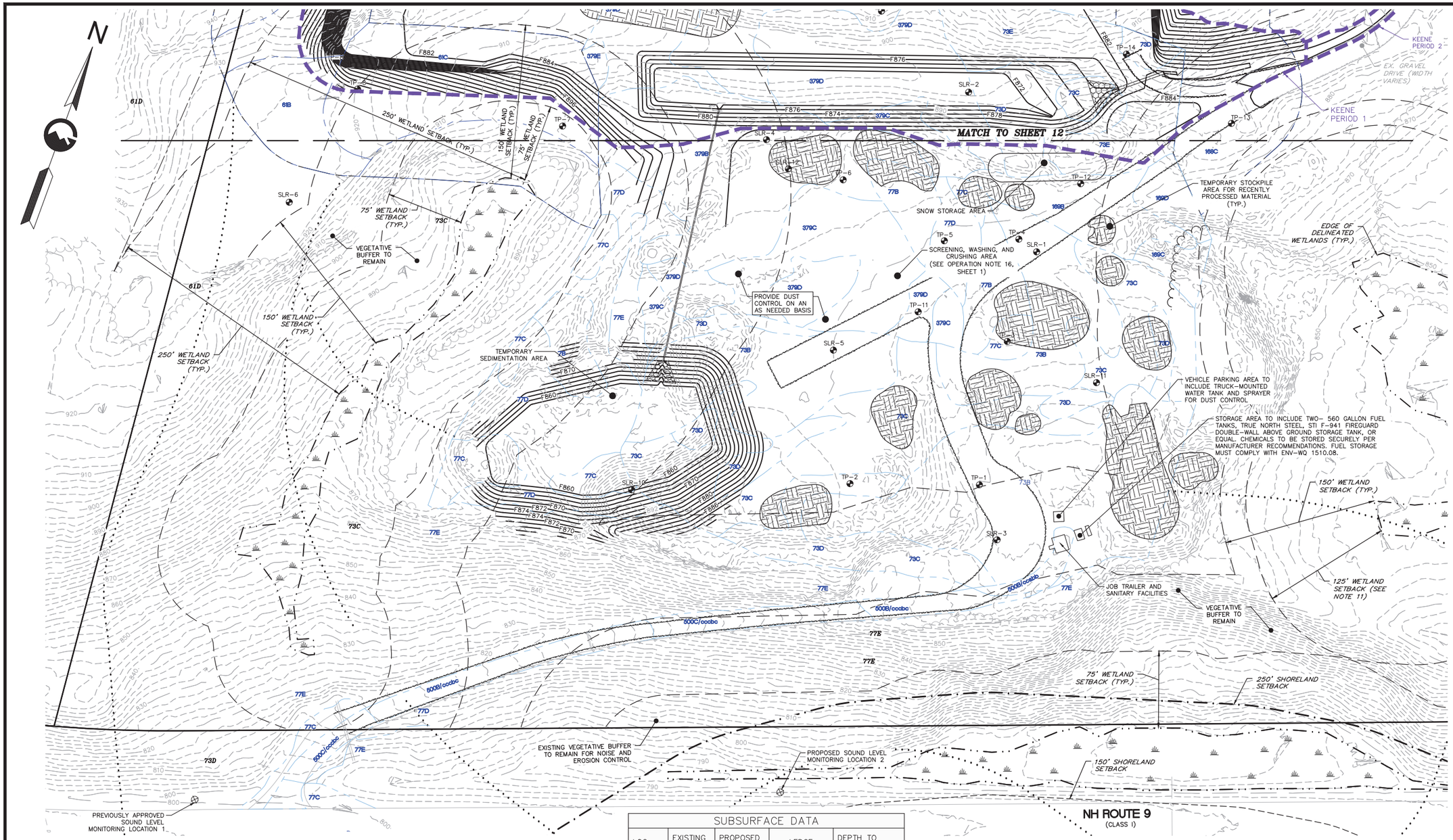

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSKI)

		HYDROLOGIC SOIL GROUP
73B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
73E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES , VERY STONY	B
77B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
77C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
77D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
77E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES, VERY STONY	C
169B	SUNAPEE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
169C	SUNAPEE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
169D	SUNAPEE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
379B	DIXFIELD FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
379C	DIXFIELD FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
379D	DIXFIELD FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	URBAN LAND, 8–15% SLOPES	B

SUBSURFACE DATA

LOG	EXISTING GROUND	PROPOSED GRADE	LEDGE	DEPTH TO GROUNDWATER
T-1	881	854.5	NONE TO 867.0	---
T-2	878	854.5	NONE TO 863.0	---
TP-3	872	855.5	NONE TO 858.0	---
TP-4	874.5	870	NONE TO 859.5	---
TP-5	882	876	NONE TO 869.0	---
TP-6	887	887	NONE to 873.0	---
TP-7	893	893	881'	---
TP-8	916	916	913	---
TP-9	927	927	918	---
TP-10	910	910	904.5	---
TP-11	881	865	867	---
TP-12	875	875	867	---
TP-13	882	882	876	---
TP-14	903	903	897	---
TP-15	942	942	936	---
TP-16	980	980	975	---
SLR-1	874	865	NONE TO 853.5	---
SLR-2	894	894	889	---
SLR-3	867	852	NONE TO 842	---
SLR-4	888	888	873	---
SLR-5	890	886	862	---
SLR-6	920	920	910	---
SLR-10	884	854	NONE TO 829.0	42.9
SLR-11	871.5	855	NONE TO 795.5	NONE TO 45.2
SLR-12	888.5	888.5	877.5	1.5

SUBSURFACE DATA FROM TEST PIT, BORING, AND WELL INSTALLATION LOGS CONTAINED IN THE LIMITED GEOHYDROLOGIC INVESTIGATION BY SLR INTERNATIONAL CORPORATION, DATED MARCH 25, 2022.

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- SOILS SURVEYED BY THOMAS SOKOLOSKI
- SOILS SURVEYED BY LUKE HURLEY
- NRCS SOILS
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- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- PERIOD LINE
- TOWN LINE

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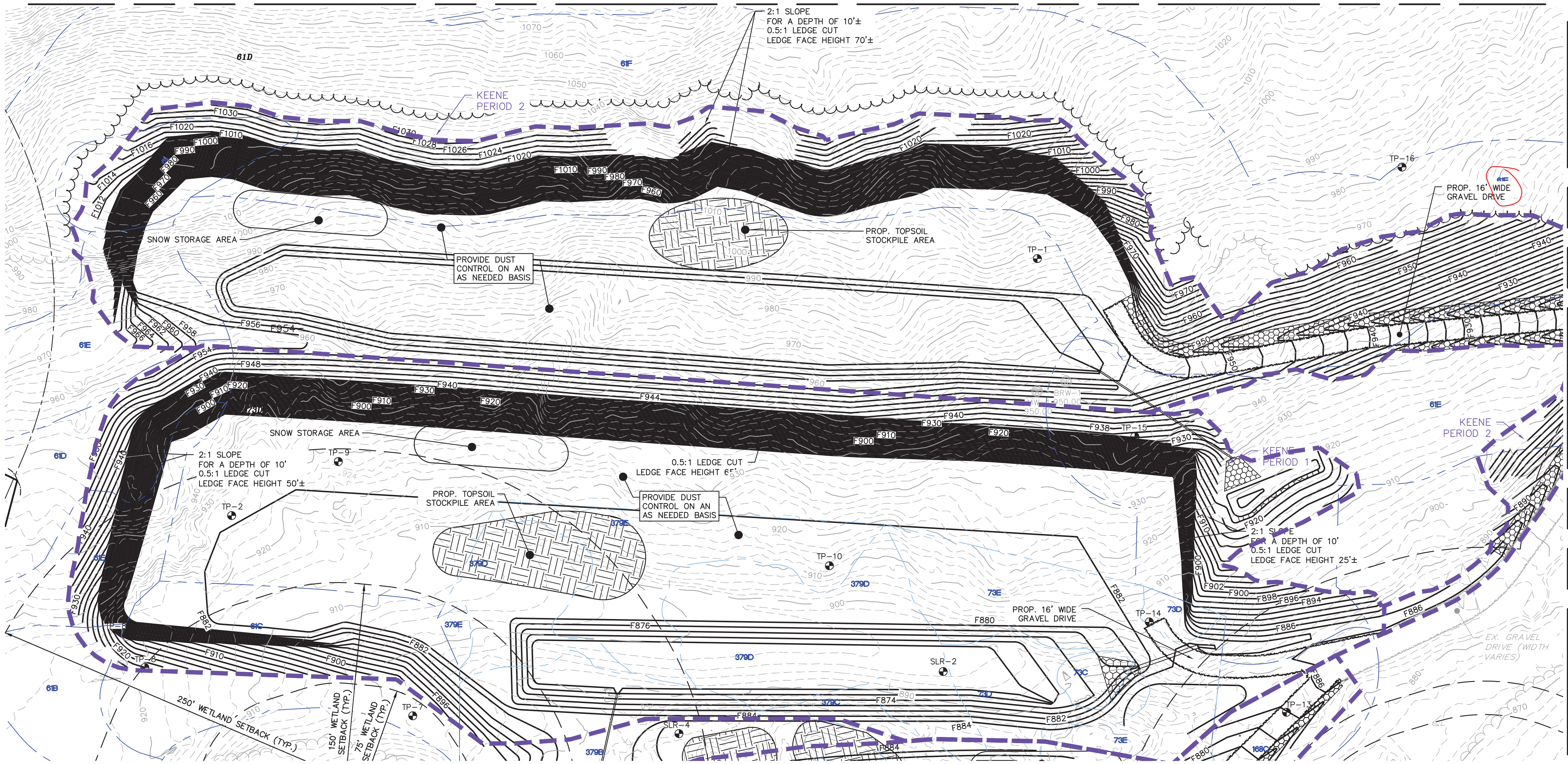
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES
KEENE

TITLE:
IMPACT CONTROL & MONITORING PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

SHEET 11 OF 22



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- PERIOD LINE
- TOWN LINE

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NOISE IMPACT CONTROL AND MONITORING NOTES:

1. NOISE LEVELS GENERATED FROM EXCAVATION ACTIVITIES SHALL NOT EXCEED THE BACKGROUND AMBIENT "A" WEIGHTED SOUND PRESSURE LEVEL EXCEEDED 90% OF THE TIME DURING THE SOUND LEVEL SAMPLING PERIOD, (HEREINAFTER 'DB(A) L(90)') BY MORE THAN 10 DB(A) AND IN ANY EVENT SHALL NOT EXCEED 55 DB(A) HEREINAFTER 'L(MAX)').
2. MONITORING DEVICES. ALL SOUND LEVEL MONITORING DEVICES SHALL MEET AMERICAN NATIONAL STANDARDS INSTITUTE S 1.4 TYPE 1 OR 2 STANDARDS, WITH THE DEVICE SET TO "FAST" RESPONSE. MONITORING DEVICES SHALL BE PROPERLY CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER. MONITORING DEVICES SHALL INCLUDE DATA RECORDING CAPABILITIES THAT ENABLE CONTINUOUS DOCUMENTATION OF SOUND LEVELS DURING THE OPERATING DAY.
3. MONITORING LOCATIONS. SOUND LEVELS SHALL BE MONITORED FROM AT LEAST 2 LOCATIONS AS DETERMINED BY THE COMMUNITY DEVELOPMENT DIRECTOR, OR THEIR DESIGNEE, WITH THE ADVICE OF OTHER CITY STAFF AND THE PLANNING BOARD'S CONSULTANT.
   A. IF A MONITORING LOCATION IS SELECTED AT A POINT BEYOND THE PROPERTY BOUNDARY, WRITTEN PERMISSION TO USE THAT LOCATION FOR MONITORING SHALL BE OBTAINED FROM THE PROPERTY OWNER OF THE MONITORING SITE.
   B. AS NOISE-GENERATING EQUIPMENT IS RELOCATED WITHIN THE APPROVED EXCAVATION PERIMETER, NEW MONITORING LOCATIONS MAY BE SELECTED TO HELP ENSURE CONTINUED COMPLIANCE WITH THE NOISE STANDARD.
   C. THE EXCAVATION OPERATOR SHALL MAINTAIN A LOG OF ALL MONITORING ACTIVITIES INDICATING THE DATE, TIME PERIOD AND LOCATION OF THE RECORDED MEASUREMENTS; THE OPERATIONS BEING PERFORMED ON THE SITE AT THE TIME OF MONITORING; THE WEATHER CONDITIONS AT THE TIME OF THE MEASUREMENT, INCLUDING TEMPERATURE, WIND DIRECTION, WIND SPEED, CLOUD COVER AND PRECIPITATION; AND THE RESULTS OF THE MONITORING, INCLUDING A GRAPH OF THE CONTINUOUS MONITORING RECORD, THE CALCULATED A WEIGHTED SOUND PRESSURE LEVEL EXCEEDED 90% OF THE MEASUREMENT TIME (HEREINAFTER 'DB(A) L(90)') AND THE CALCULATED MAXIMUM DB(A) SOUND LEVEL (HEREINAFTER 'L(MAX)').
4. AMBIENT SOUND LEVELS: THE BACKGROUND AMBIENT SOUND LEVELS SHALL BE MEASURED PRIOR TO THE COMMENCEMENT OF THE INITIAL OPERATION.
   A. THE BACKGROUND SOUND LEVELS SHALL BE MEASURED ON THE DB(A) SCALE, BY RECORDING CONTINUOUS MEASUREMENTS DURING PROPOSED OPERATING HOURS OVER 5 CONSECUTIVE BUSINESS DAYS PRIOR TO THE COMMENCEMENT OF SITE PREPARATION ACTIVITIES, AND CALCULATING THE DB(A) L(90) FOR THE ENTIRE MONITORING PERIOD. SUCH MEASUREMENTS SHALL BE PERFORMED BY A CONSULTANT HIRED BY THE PLANNING BOARD AT THE APPLICANT'S EXPENSE.
   B. THE APPLICANT/OPERATOR MAY REQUEST THAT THE BACKGROUND SOUND LEVEL BE RE-MEASURED. SUCH RE-MEASUREMENT SHALL BE DONE AT A TIME SELECTED BY THE COMMUNITY DEVELOPMENT DIRECTOR IN CONSULTATION WITH THE APPLICANT AND A CONSULTANT HIRED BY THE PLANNING BOARD TO PERFORM THE MEASUREMENT AT THE APPLICANT'S EXPENSE.
5. ONGOING MONITORING: THE APPLICANT SHALL MONITOR AT THE SELECTED MONITORING LOCATIONS THE SOUND LEVELS GENERATED BY THE OPERATION, AS FOLLOWS.
   A. ON AN ANNUAL BASIS, AT A TIME SELECTED BY THE COMMUNITY DEVELOPMENT DIRECTOR, IN CONSULTATION WITH THE APPLICANT, SOUND LEVELS SHALL BE MONITORED AND RECORDED CONTINUOUSLY DURING OPERATING HOURS FOR A PERIOD OF NOT LESS THAN 20 CONSECUTIVE OPERATING DAYS. MONITORING SHALL BE MADE USING THE DB(A) SCALE AND THE DB(A) L(90) DURING THE OPERATING HOURS FOR EACH DAY AND THE L(MAX) SOUND LEVEL THROUGHOUT EACH DAY SHALL BE CALCULATED AND ENTERED INTO A NOISE MONITORING LOG MAINTAINED BY THE APPLICANT.
   B. AT ANY TIME WHEN NEW OR ADDITIONAL NOISE GENERATING EQUIPMENT IS PLACED INTO OPERATION FOLLOWING THE INITIAL 20-DAY MONITORING PERIOD, OR WHEN NOISE GENERATING EQUIPMENT IS RELOCATED WITHIN THE APPROVED EXCAVATION PERIMETER, SOUND LEVELS SHALL ALSO BE MONITORED CONTINUOUSLY AND RECORDED DURING OPERATING HOURS FOR A PERIOD OF NOT LESS THAN 5 CONSECUTIVE OPERATING DAYS. THE DB(A) L(90) DURING THE OPERATING HOURS FOR EACH DAY AND THE L(MAX) SOUND LEVEL THROUGHOUT EACH DAY SHALL BE CALCULATED AND ENTERED INTO A NOISE MONITORING LOG MAINTAINED BY THE APPLICANT.
   C. WHEN NEW OR ADDITIONAL NOISE GENERATING EQUIPMENT OR ACTIVITIES INCLUDING BUT NOT LIMITED TO DRILLING OR BLASTING ACTIVITIES WERE NOT MEASURED DURING THE INITIAL 20-DAY MONITORING PERIOD AND ARE TO BE USED ONLY FOR SHORT DURATIONS RANGING FROM A PERIOD OF HOURS TO SEVERAL DAYS, NOT EXCEEDING 5 OPERATING DAYS, SOUND LEVELS SHALL BE MONITORED AND RECORDED CONTINUOUSLY FOR THE DURATION OF THE ACTIVITIES.
   D. IN THE EVENT THAT THE MEASUREMENTS EXCEED THE NOISE STANDARDS IN THIS ARTICLE, THE APPLICANT SHALL BRING THE OPERATION INTO COMPLIANCE BY REDUCING THE NUMBER OF SOUND SOURCES CONTRIBUTING TO THE SOUND LEVEL, BY RELOCATING EQUIPMENT ON THE SITE, BY ADDING NOISE ATTENUATING STRUCTURES AROUND OR ATTACHMENTS TO THE EQUIPMENT, OR BY TAKING WHATEVER OTHER ACTIONS MAY BE NECESSARY TO BRING THE OPERATION INTO COMPLIANCE.
      a) ANY CORRECTIVE ACTION TAKEN SHALL BE CLEARLY DESCRIBED IN THE NOISE MONITORING LOG ALONG WITH A RECORD OF THE NOISE LEVEL MEASUREMENTS BEFORE AND AFTER SAID CORRECTION.
      b) ADDITIONAL NOISE LEVELS SHALL BE MONITORED FOR NO LESS THAN 5 CONSECUTIVE DAYS AFTER THE CORRECTIVE ACTION IS TAKEN.
6. COMPLAINTS REGARDING THE LEVEL OF NOISE GENERATED FROM EXCAVATION OPERATIONS SHALL BE RESOLVED PER THE PROCEDURES OUTLINED IN 24.3.15.E OF THE CITY OF KEENE LAND DEVELOPMENT CODE.

HAZARDOUS AND TOXIC SPILL RESPONSE NOTES:

1. SPILL CONTROL PRACTICES ARE OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLANS (SWPPP).
2. THE CHEMICALS EMPLOYED ON-SITE WILL VARY THROUGHOUT THE EXCAVATION PROCESS, PRIMARILY CONSISTING OF PETROLEUM-BASED OILS, LUBRICANTS, AND GASOLINE-BASED FUELS. THESE SUBSTANCES MUST BE STORED SECURELY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND MUST BE ACCOMPANIED BY MATERIAL SAFETY DATA SHEETS AND SPILL RESPONSE MATERIALS.
3. STRICT PRECAUTIONS MUST BE TAKEN DURING ON-SITE FUELING OPERATIONS TO PREVENT SPILLS AND OVERFILLING.

LOAM & SEED ALL DISTURBED AREAS (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 4 FOR EROSION CONTROL NOTES (TYP.)

DUST CONTROL & MONITORING NOTES:

1. THE SITE SHALL OPERATE IN A MANNER THAT PREVENTS FUGITIVE DUST EMISSIONS PUSUANT TO NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES ENV-A 1002, FUGITIVE DUST.
2. DUST CONTROL PRACTICES ARE OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLANS (SWPPP).
3. DUST CONTROL ACTIVITIES AND DEVICES SHALL BE INCORPORATED INTO THE EXCAVATION OPERATION, ON THE SITE AND ON THE ACCESS DRIVEWAY, IN A MANNER THAT MINIMIZES GENERATION OF AIRBORNE DUST OR TRANSPORTATION OF DUST OR MUD OFF THE SITE ONTO THE ADJACENT ROADWAYS.
   A. VISUAL MONITORING OF AIRBORNE DUST SHALL BE DONE ON AN ONGOING BASIS.
   B. DUST CONTROL MEASURES SUCH AS APPLYING WATER TO ACCESS DRIVEWAYS AND OTHER AREAS WITHIN THE EXCAVATION PERIMETER, WASHING DIRT FROM TRUCK TIRES, OR OTHER MEASURES AS MAY BE DEEMED NECESSARY, SHALL BE EMPLOYED TO MINIMIZE THE GENERATION OF AIRBORNE DUST, AND/OR THE TRANSPORTATION OF DIRT/MUD OFF THE SITE ONTO ADJACENT ROADWAYS.
   C. DUST CONTROL WILL BE ACCOMPLSHED USING A TRUCK-MOUNTED WATER TANK AND SPRAY SYSTEM AS NEEDED.
   D. INSPECTION OF ACCESS DRIVEWAY STABILIZED CONSTRUCTION ENTRANCES AND OTHER EROSION CONTROL MEASURES, DESIGNED TO ELIMINATE THE DEPOSIT OF DUST OR MUD ONTO PUBLIC STREETS, SHALL BE CONDUCTED ON A WEEKLY BASIS TO ENSURE PROPER FUNCTIONING. MAINTENANCE OF THESE ENTRANCES SHALL BE PERFORMED AS NECESSARY AND ANY DIRT OR MUD DEPOSITED ON PUBLIC STREETS SHALL BE REMOVED.
   E. THE APPLICANT SHALL MAINTAIN A LOG DOCUMENTING DUST CONTROL ACTIVITIES, INSPECTION AND MAINTENANCE OF DUST AND DIRT CONTROL STRUCTURES AND DEVICES, AND CLEAN UP OF DIRT DEPOSITED ON ROADWAYS LEADING FROM THE SITE. THE OPERATION AND MAINTENANCE MANUAL, LOCATED WITHIN THE STORMWATER MANAGEMENT REPORT, SHALL BE USED FOR INSTURCTIONS OF HOW TO INSPECT AND MAINTAIN EROSION AND SEDIMENT CONTROL PRACTICES.

FUELING NOTES:

1. FUELING AND MAINTENANCE OF EQUIPMENT OR VEHICLE PRACTICES ARE OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLANS (SWPPP).
2. FUELS AND REGULATED SUBSTANCES WILL BE STORED IN A SEALED AND CLEARED LABELED CONTAINER WITHIN THE ENCLOSED CHEMICAL STORAGE AREA.
3. THE ENCLOSED CHEMICAL STORAGE AREA WILL BE STABLE, LEVEL AND IMPERVIOUS.
4. SECONDARY CONTAINMENT WILL BE PROVIDED FOR FUELING ACTIVITIES ON SITE.
5. MOBILE FUELING WILL BE USED DURING EXCAVATION ACTIVITIES.
6. ALL FUELING AND STORAGE OF FUELS ON SITE WILL COMPLY WITH STATE AND FEDERAL REQUIREMENTS.
7. EMPLOYEES WHO PARTAKE IN FUELING ACTIVITIES SHALL BE TRAINED ON SPILL PREVENTION AND CONTROL.
8. ANY SPILL THAT IS: 25 GALLONS OR MORE, NOT IMMEDIATELY CONTAINED, REMOVED WITHIN 24-HRS, A POTENTIAL SURFACE WATER OR GROUNDWATER IMPACT, SHALL BE REPORTED TO NHDES AT (603) 271-3899 OR STATE POLICE AT (603) 223-4381.
9. CONTAMINATED SOILS OR MATERIALS SHALL BE STORED AND DISPOSED OF IN ACCORDANCE WITH ALL STATE AND FEDERAL REQUIREMENTS. CONTACT NHDES HAZARDOUS WASTE MANAGEMENT BUREAU'S COMPLIANCE SECTION AT (603) 271-2942 FOR INFORMATION REGARDING HAZARDOUS MATERIALS.
10. THE CHEMICAL STORAGE AREA SHALL BE KEPT LOCKED WHEN NOT IN USE.
11. ALL FUELING RELATED ACTIVITIES SHALL BE AT LEAST 50' AWAY FROM ANY CATCH BASIN OR SURFACE WATER.

SUBSURFACE DATA

LOG	EXISTING GROUND	PROPOSED GRADE	LEDGE	DEPTH TO GROUNDWATER
T-1	881	854.5	NONE TO 867.0	---
T-2	878	854.5	NONE TO 863.0	---
TP-3	872	855.5	NONE TO 858.0	---
TP-4	874.5	870	NONE TO 859.5	---
TP-5	882	876	NONE TO 869.0	---
TP-6	887	887	NONE to 873.0	---
TP-7	893	893	881'	---
TP-8	916	916	913	---
TP-9	927	927	918	---
TP-10	910	910	904.5	---
TP-11	881	865	867	---
TP-12	875	875	867	---
TP-13	882	882	876	---
TP-14	903	903	897	---
TP-15	942	942	936	---
TP-16	980	980	975	---
SLR-1	874	865	NONE TO 853.5	---
SLR-2	894	894	889	---
SLR-3	867	852	NONE TO 842	---
SLR-4	888	888	873	---
SLR-5	890	886	862	---
SLR-6	920	920	910	---
SLR-10	884	854	NONE TO 829.0	42.9
SLR-11	871.5	855	NONE TO 795.5	NONE TO 45.2
SLR-12	888.5	888.5	877.5	1.5

SUBSURFACE DATA FROM TEST PIT, BORING, AND WELL INSTALLATION LOGS CONTAINED IN THE LIMITED GEOHYDROLOGIC INVESTIGATION BY SLR INTERNATIONAL CORPORATION, DATED MARCH 25, 2022.

DEICING NOTES:

A. RECORDS FOR TRACKING THE USE OF SALT AND OTHER DEICERS FOR EACH STORM EVENT SHALL BE MAINTAINED UNTIL ALL AREAS HAVE BEEN RECLAIMED. THE DEICING APPLICATION RATE GUIDELINES SHALL FOLLOW THE RECOMMENDATIONS IN THE NH STORMWATER MANUAL: VOLUME 2, LATEST EDITION.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NRCS SOILS LEGEND

22	COLTON GRAVELLY SANDY LOAM, RATED A
60	TUNBRIDGE-BERKSHIRE COMPLEX, RATED C
61	TUNBRIDGE-LYMAN-ROCK OUTCROP COMPLEX, RATED C
73	BERKSHIRE FINE SANDY LOAM, RATED B
77	MARLOW FINE SANDY LOAM, VERY STONY, RATED C
161	LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX, RATED D
169	SUNAPEE FINE SANDY LOAM, RATED C

STATE OF NEW HAMPSHIRE LUKE D. HURLEY NO. 095 CERTIFIED SOIL SCIENTIST 7/15/24

SITE SPECIFIC SOIL SURVEY NOTES:

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HYDROLOGIC SSSM SYM.	SSS MAP NAME	HISS SYM.	SOIL GRP.
168	SUNAPEE	321	B
61	TURNBRIDGE LYMAN ROCK OUTCROP	224/227	C
92	LYMAN	224	D

SLOPE PERIOD:
0-8% B 8-15% C 15-25% D 25%+ E

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REVISIONS

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JAFFREY, NH 03452

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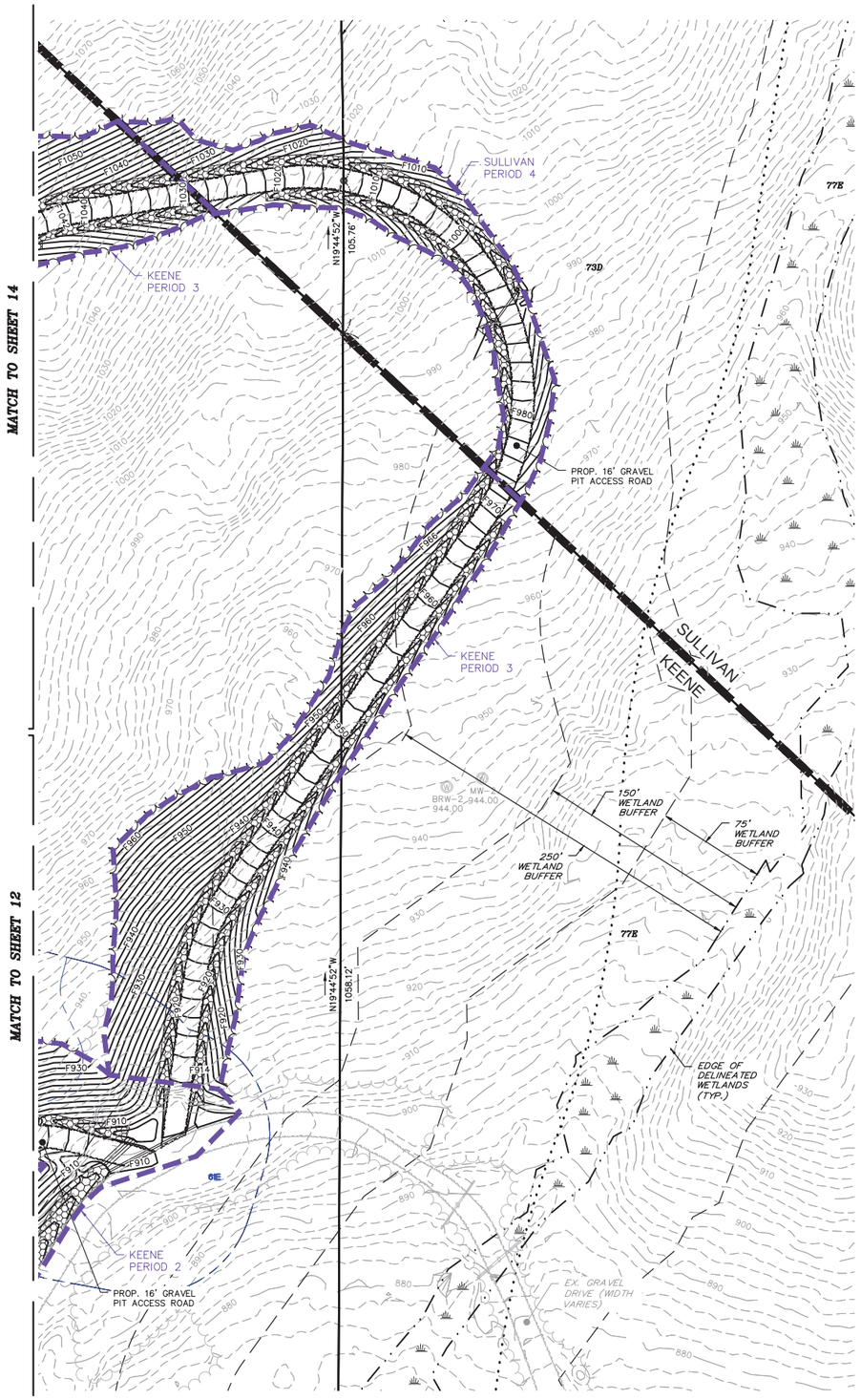
STAMP:
STATE OF NEW HAMPSHIRE BRENTON J. COLE No. 14744 2/3/25 LICENSED PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
IMPACT CONTROL & MONITORING PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRURARY 3, 2025	HORIZ. 1"=50'
SHEET: 12 OF 22		



SEE SHEET 1 FOR OPERATION NOTES (TYP.)

SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

N

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
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- WETLAND BUFFER
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- SOILS SURVEYED BY LUKE HURLEY
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STATE OF NEW HAMPSHIRE – LUKE E. HURLEY – No. 095M – 7/15/24 – LICENSED PROFESSIONAL SOIL SCIENTIST

DIG SAFE – DIAL 811 – CALL TOLL FREE – DAMAGE PREVENTION SYSTEM – UTILITIES UNDERGROUND

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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SULLIVAN TAX MAP 5 LOTS 46 & 46-1
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TITLE:
IMPACT CONTROL & MONITORING PLAN

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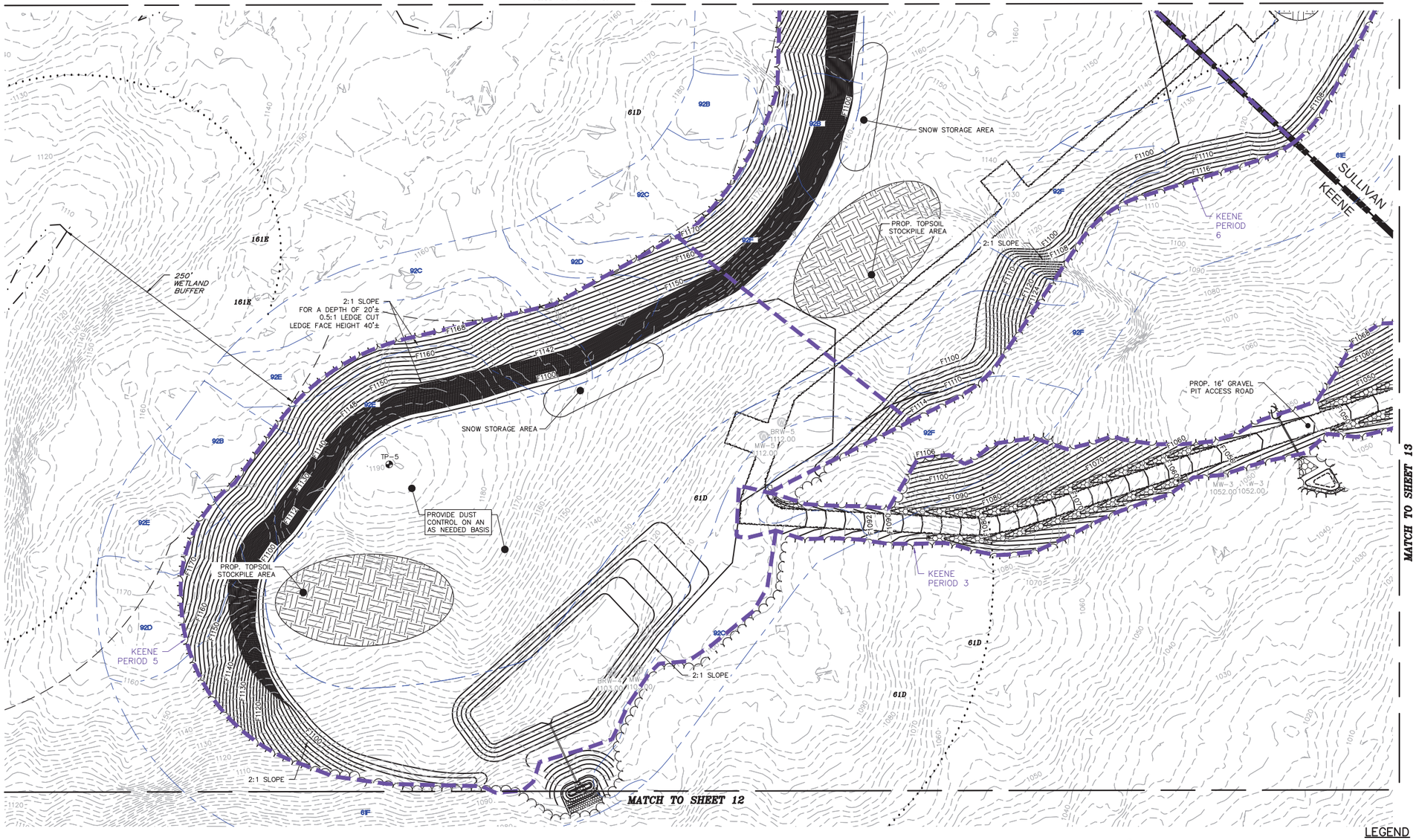
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'



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SLOPE PERIOD:
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SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

SEE SHEET 1 FOR OPERATION NOTES (TYP.)

LOAM & SEED ALL DISTURBED AREAS (TYP.)

DIG SAFE — CALL TOLL FREE 811 — DAMAGE PREVENTION SYSTEM — RESPECT — PROTECT — UTILITIES UNDERGROUND

GRAPHIC SCALE

50 0 25 50 100 200

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SULLIVAN TAX MAP 5 LOTS 46 & 46-1
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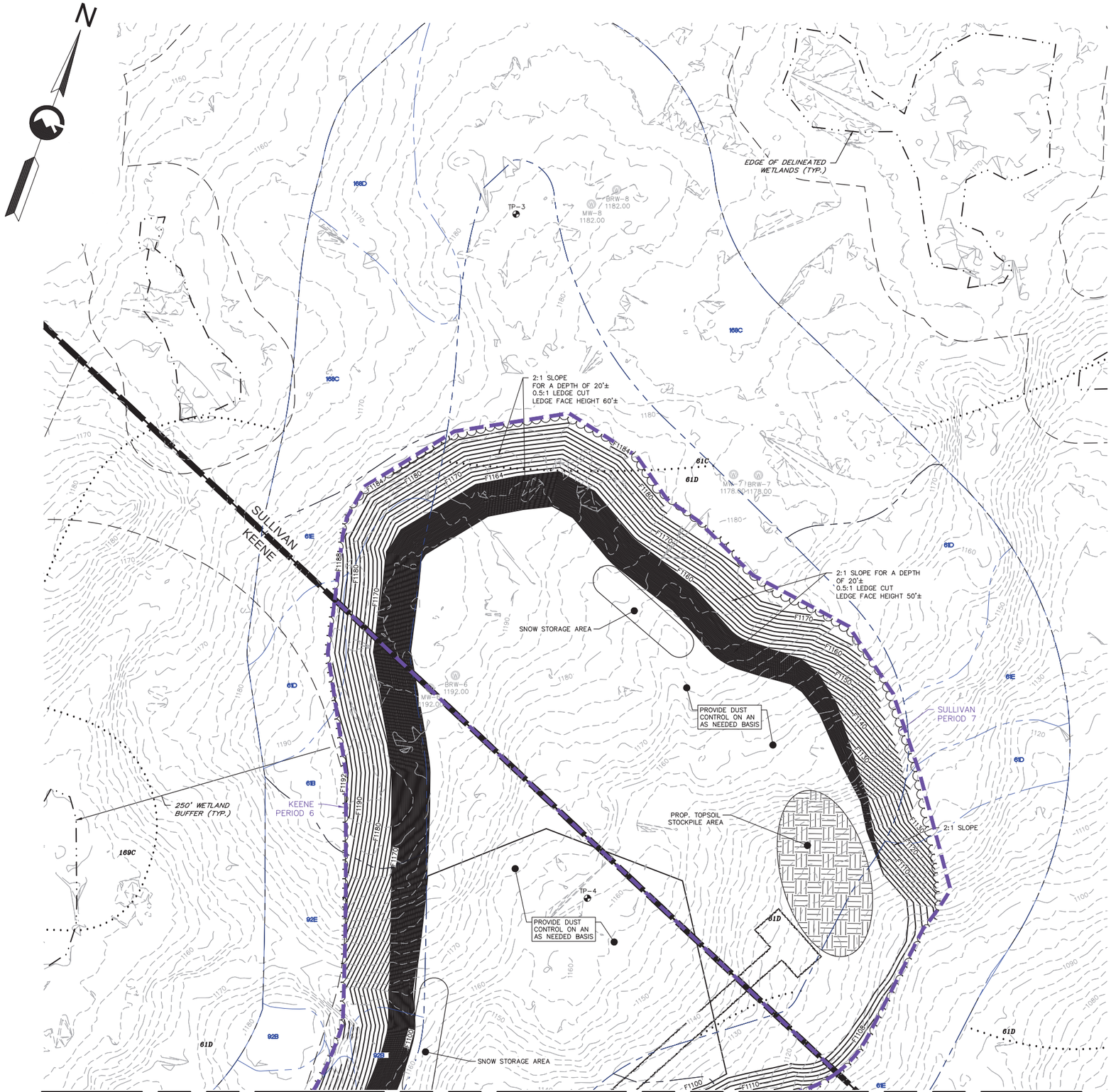
23-0201-1	FEBRURARY 3, 2025	HORIZ. 1"=50'

SHEET 14 OF 22



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SLOPE PERIOD:
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STATE OF NEW HAMPSHIRE
LUKE D. HURLEY
No. 095
CERTIFIED SOIL SCIENTIST

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DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
RI-MA-NH-VT-MA
UTILITIES UNDERGROUND

SEE SHEET 12 FOR IMPACT CONTROL & MONITORING PLAN NOTES (TYP.)

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LOAM & SEED ALL DISTURBED AREAS (TYP.)

LEGEND

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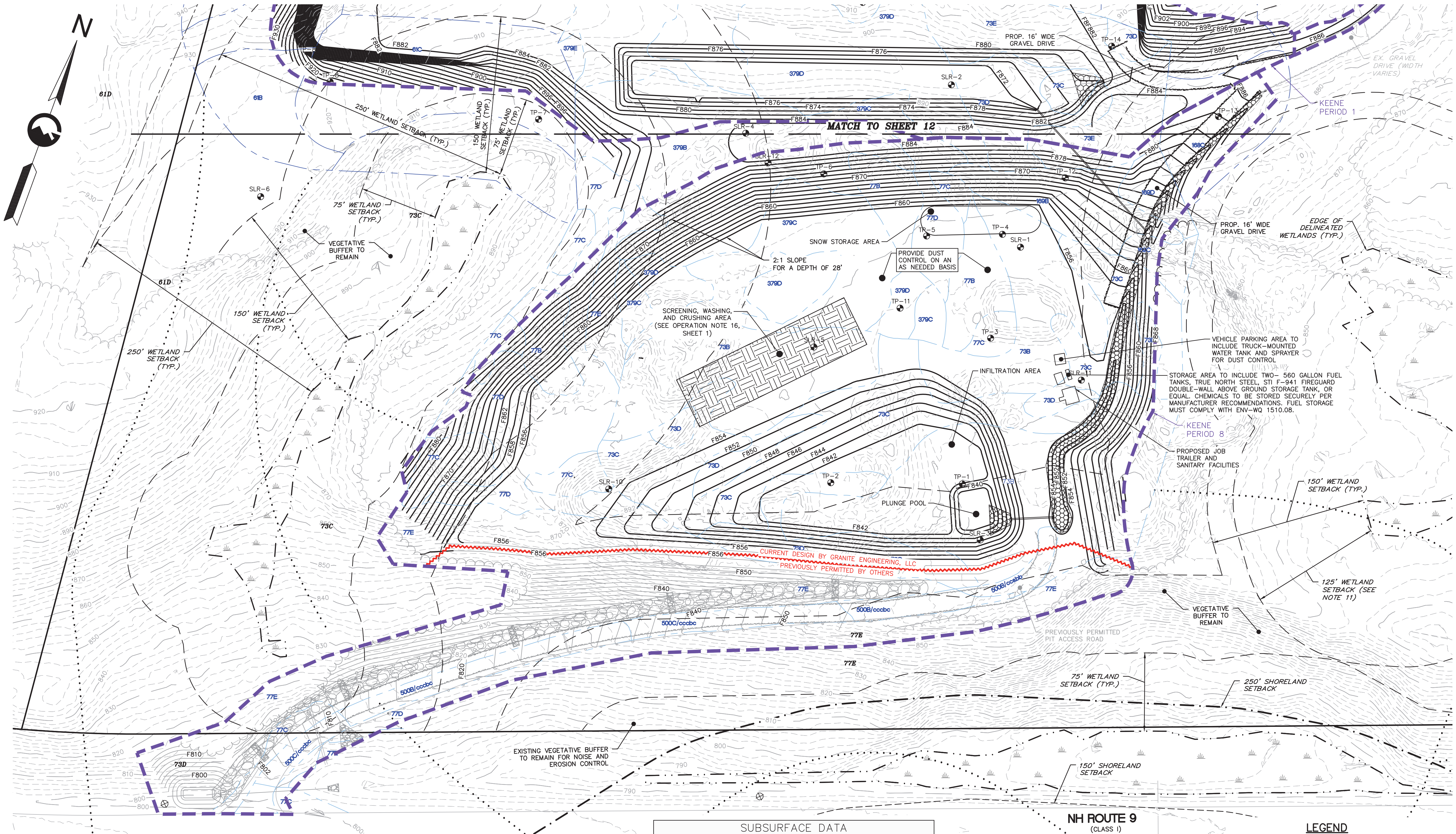

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LOAM & SEED ALL DISTURBED AREAS (TYP.)

500B/ccbc B

SSSS LEGEND (SURVEYED BY THOMAS SOKOLOSK)I

		HYDROLOGIC SOIL GROUP
73B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	B
73C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
73D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
73E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES , VERY STONY	B
77B	BERKSHIRE FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
77C	BERKSHIRE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
77D	BERKSHIRE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
77E	BERKSHIRE FINE SANDY LOAM, 25%+ SLOPES, VERY STONY	C
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169C	SUNAPEE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	B
169D	SUNAPEE FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	B
379B	DIXFIELD FINE SANDY LOAM, 0–8% SLOPES, VERY STONY	C
379C	DIXFIELD FINE SANDY LOAM, 8–15% SLOPES, VERY STONY	C
379D	DIXFIELD FINE SANDY LOAM, 15–25% SLOPES, VERY STONY	C
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	UDORTHENTS, LOAMY, 0–8% SLOPES	B
500B/ccabb	URBAN LAND, 8–15% SLOPES	B

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LICENSED PROFESSIONAL ENGINEER

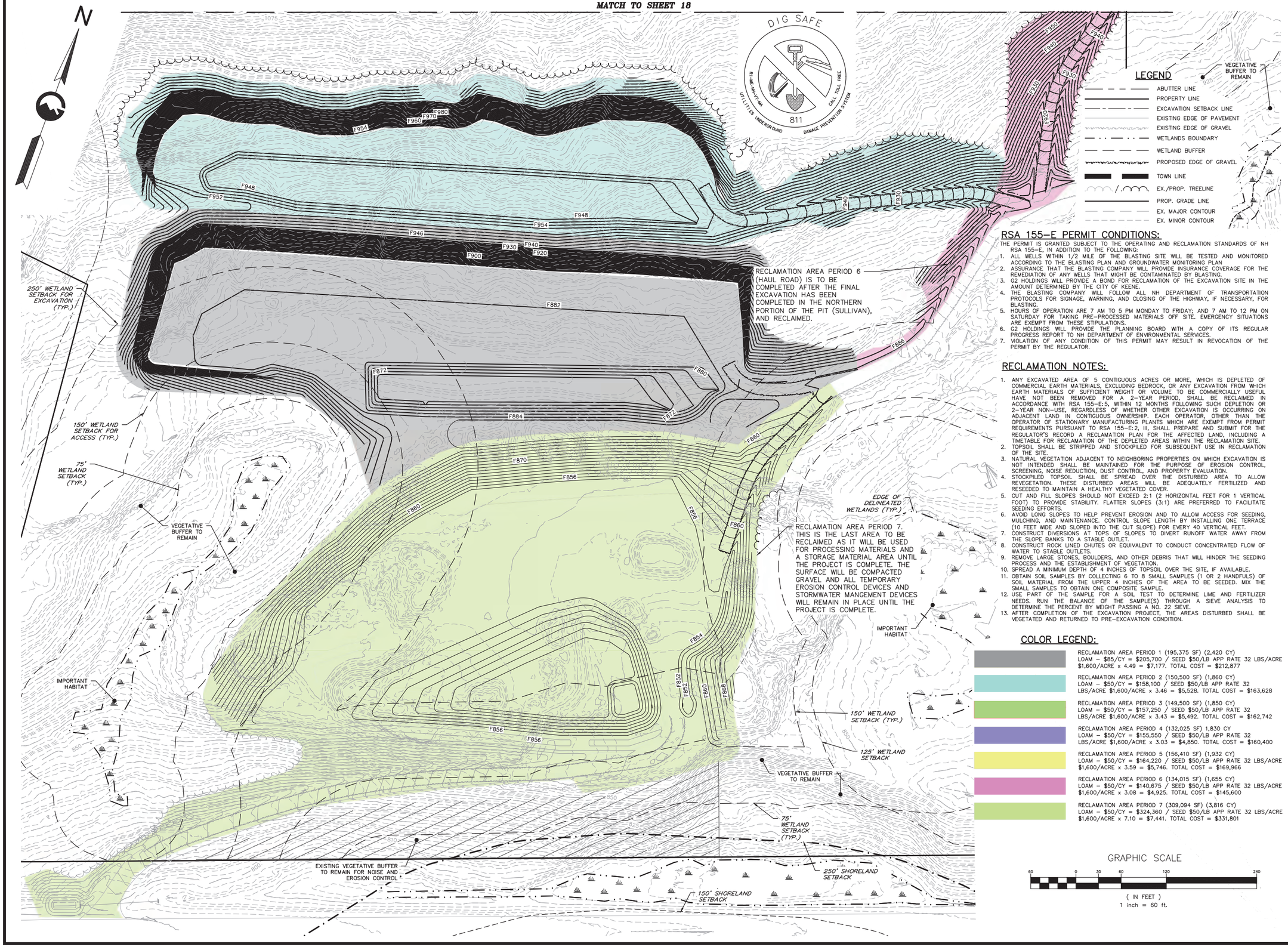
LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
IMPACT CONTROL & MONITORING PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=50'

MATCH TO SHEET 18



RSA 155-E PERMIT CONDITIONS:

THE PERMIT IS GRANTED SUBJECT TO THE OPERATING AND RECLAMATION STANDARDS OF NH RSA 155-E, IN ADDITION TO THE FOLLOWING:

1. ALL WELLS WITHIN 1/2 MILE OF THE BLASTING SITE WILL BE TESTED AND MONITORED ACCORDING TO THE BLASTING PLAN AND GROUNDWATER MONITORING PLAN
2. ASSURANCE THAT THE BLASTING COMPANY WILL PROVIDE INSURANCE COVERAGE FOR THE REMEDIATION OF ANY WELLS THAT MIGHT BE CONTAMINATED BY BLASTING.
3. G2 HOLDINGS WILL PROVIDE A BOND FOR RECLAMATION OF THE EXCAVATION SITE IN THE AMOUNT DETERMINED BY THE CITY OF KEENE.
4. THE BLASTING COMPANY WILL FOLLOW ALL NH DEPARTMENT OF TRANSPORTATION PROTOCOLS FOR SIGNAGE, WARNING, AND CLOSING OF THE HIGHWAY, IF NECESSARY, FOR BLASTING.
5. HOURS OF OPERATION ARE 7 AM TO 5 PM MONDAY TO FRIDAY; AND 7 AM TO 12 PM ON SATURDAY FOR TAKING PRE-PROCESSED MATERIALS OFF SITE. EMERGENCY SITUATIONS ARE EXEMPT FROM THESE STIPULATIONS.
6. G2 HOLDINGS WILL PROVIDE THE PLANNING BOARD WITH A COPY OF ITS REGULAR PROGRESS REPORT TO NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
7. VIOLATION OF ANY CONDITION OF THIS PERMIT MAY RESULT IN REVOCATION OF THE PERMIT BY THE REGULATOR.

RECLAMATION NOTES:

1. ANY EXCAVATED AREA OF 5 CONTIGUOUS ACRES OR MORE, WHICH IS DEPLETED OF COMMERCIAL EARTH MATERIALS, EXCLUDING BEDROCK, OR ANY EXCAVATION FROM WHICH EARTH MATERIALS OF SUFFICIENT WEIGHT OR VOLUME TO BE COMMERCIALLY USEFUL HAVE NOT BEEN REMOVED FOR A 2-YEAR PERIOD, SHALL BE RECLAIMED IN ACCORDANCE WITH RSA 155-E:5, WITHIN 12 MONTHS FOLLOWING SUCH DEPLETION OR 2-YEAR NON-USE, REGARDLESS OF WHETHER OTHER EXCAVATION IS OCCURRING ON ADJACENT LAND IN CONTIGUOUS OWNERSHIP. EACH OPERATOR, OTHER THAN THE OPERATOR OF STATIONARY MANUFACTURING PLANTS WHICH ARE EXEMPT FROM PERMIT REQUIREMENTS PURSUANT TO RSA 155-E:2, III, SHALL PREPARE AND SUBMIT FOR THE REGULATOR'S RECORD A RECLAMATION PLAN FOR THE AFFECTED LAND, INCLUDING A TIMETABLE FOR RECLAMATION OF THE DEPLETED AREAS WITHIN THE RECLAMATION SITE.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR SUBSEQUENT USE IN RECLAMATION OF THE SITE.
3. NATURAL VEGETATION ADJACENT TO NEIGHBORING PROPERTIES ON WHICH EXCAVATION IS NOT INTENDED SHALL BE MAINTAINED FOR THE PURPOSE OF EROSION CONTROL, SCREENING, NOISE REDUCTION, DUST CONTROL, AND PROPERTY EVALUATION.
4. STOCKPILED TOPSOIL SHALL BE SPREAD OVER THE DISTURBED AREA TO ALLOW REVEGETATION. THESE DISTURBED AREAS WILL BE ADEQUATELY FERTILIZED AND RESEEDED TO MAINTAIN A HEALTHY VEGETATED COVER.
5. CUT AND FILL SLOPES SHOULD NOT EXCEED 2:1 (2 HORIZONTAL FEET FOR 1 VERTICAL FOOT) TO PROVIDE STABILITY. FLATTER SLOPES (3:1) ARE PREFERRED TO FACILITATE SEEDING EFFORTS.
6. AVOID LONG SLOPES TO HELP PREVENT EROSION AND TO ALLOW ACCESS FOR SEEDING, MULCHING, AND MAINTENANCE. CONTROL SLOPE LENGTH BY INSTALLING ONE TERRACE (10 FEET WIDE AND SLOPED INTO THE CUT SLOPE) FOR EVERY 40 VERTICAL FEET.
7. CONSTRUCT DIVERSIONS AT TOPS OF SLOPES TO DIVERT RUNOFF WATER AWAY FROM THE SLOPE BANKS TO A STABLE OUTLET.
8. CONSTRUCT ROCK LINED CHUTES OR EQUIVALENT TO CONDUCT CONCENTRATED FLOW OF WATER TO STABLE OUTLETS.
9. REMOVE LARGE STONES, BOULDERS, AND OTHER DEBRIS THAT WILL HINDER THE SEEDING PROCESS AND THE ESTABLISHMENT OF VEGETATION.
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11. OBTAIN SOIL SAMPLES BY COLLECTING 6 TO 8 SMALL SAMPLES (1 OR 2 HANDFULS) OF SOIL MATERIAL FROM THE UPPER 4 INCHES OF THE AREA TO BE SEEDED. MIX THE SMALL SAMPLES TO OBTAIN ONE COMPOSITE SAMPLE.
12. USE PART OF THE SAMPLE FOR A SOIL TEST TO DETERMINE LIME AND FERTILIZER NEEDS. RUN THE BALANCE OF THE SAMPLE(S) THROUGH A SIEVE ANALYSIS TO DETERMINE THE PERCENT BY WEIGHT PASSING A NO. 22 SIEVE.
13. AFTER COMPLETION OF THE EXCAVATION PROJECT, THE AREAS DISTURBED SHALL BE VEGETATED AND RETURNED TO PRE-EXCAVATION CONDITION.

COLOR LEGEND:

RECLAMATION AREA PERIOD 1 (195,375 SF) (2,420 CY)
LOAM - $85/CY = $205,700 / SEED $50/LB APP RATE 32 LBS/ACRE
$1,600/ACRE x 4.49 = $7,177. TOTAL COST = $212,877

RECLAMATION AREA PERIOD 2 (150,500 SF) (1,860 CY)
LOAM - $50/CY = $158,100 / SEED $50/LB APP RATE 32
LBS/ACRE $1,600/ACRE x 3.46 = $5,528. TOTAL COST = $163,628

RECLAMATION AREA PERIOD 3 (149,500 SF) (1,850 CY)
LOAM - $50/CY = $157,250 / SEED $50/LB APP RATE 32
LBS/ACRE $1,600/ACRE x 3.43 = $5,492. TOTAL COST = $162,742

RECLAMATION AREA PERIOD 4 (132,025 SF) 1,830 CY
LOAM - $50/CY = $155,550 / SEED $50/LB APP RATE 32
LBS/ACRE $1,600/ACRE x 3.03 = $4,850. TOTAL COST = $160,400

RECLAMATION AREA PERIOD 5 (156,410 SF) (1,932 CY)
LOAM - $50/CY = $164,220 / SEED $50/LB APP RATE 32 LBS/ACRE
$1,600/ACRE x 3.59 = $5,746. TOTAL COST = $169,966

RECLAMATION AREA PERIOD 6 (134,015 SF) (1,655 CY)
LOAM - $50/CY = $140,675 / SEED $50/LB APP RATE 32 LBS/ACRE
$1,600/ACRE x 3.08 = $4,925. TOTAL COST = $145,600

RECLAMATION AREA PERIOD 7 (309,094 SF) (3,816 CY)
LOAM - $50/CY = $324,360 / SEED $50/LB APP RATE 32 LBS/ACRE
$1,600/ACRE x 7.10 = $7,441. TOTAL COST = $331,801

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
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PROJECT:
GORDON SERVICES
KEENE

TITLE:
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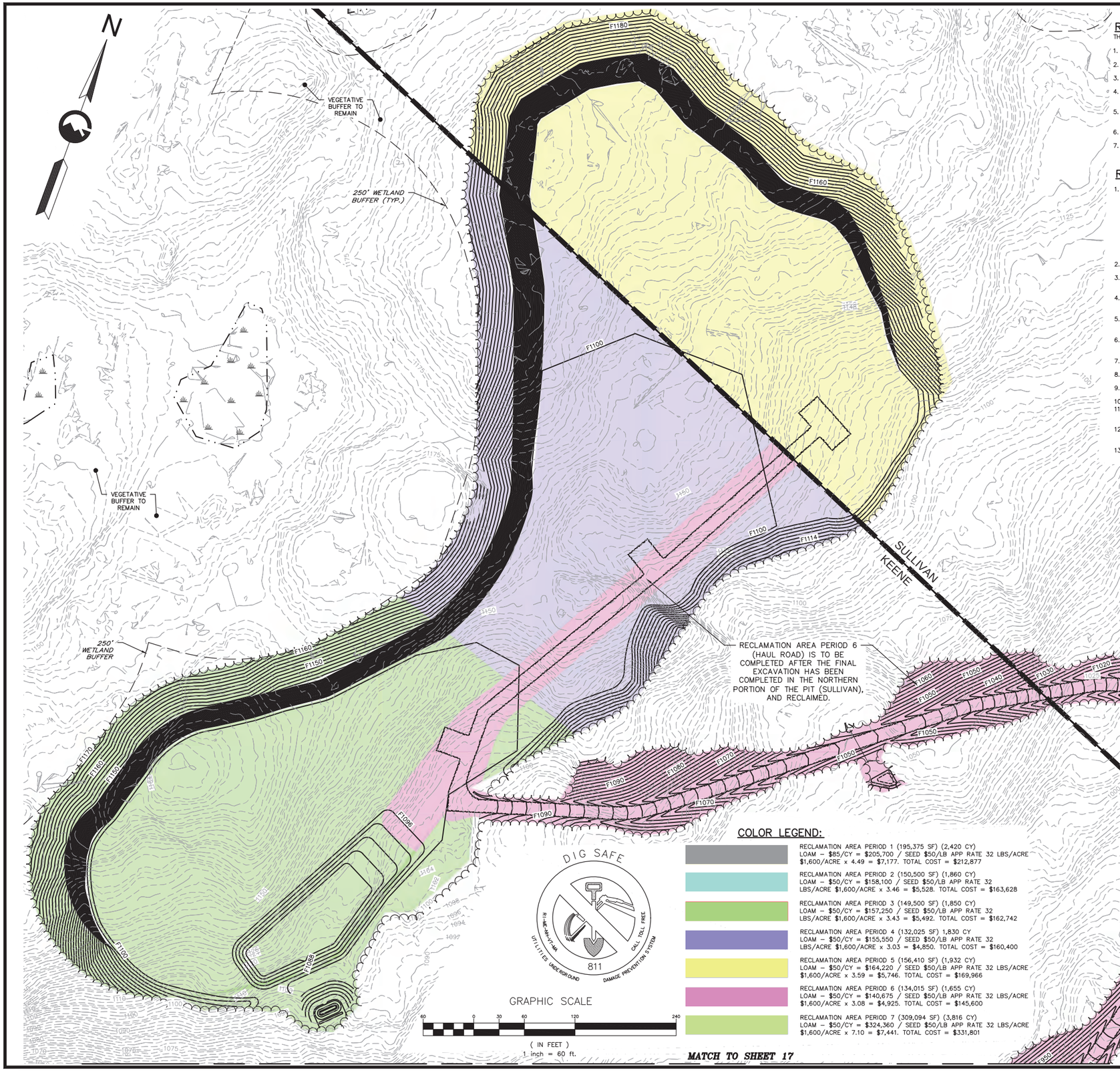
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=60'

SHEET 17 OF 22



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LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EXCAVATION SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- WETLANDS BOUNDARY
- WETLAND BUFFER
- PROPOSED EDGE OF GRAVEL
- TOWN LINE
- EX./PROP. TREELINE
- PROP. GRADE LINE
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR

COLOR LEGEND:

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municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
BRENTON
SCOTT
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
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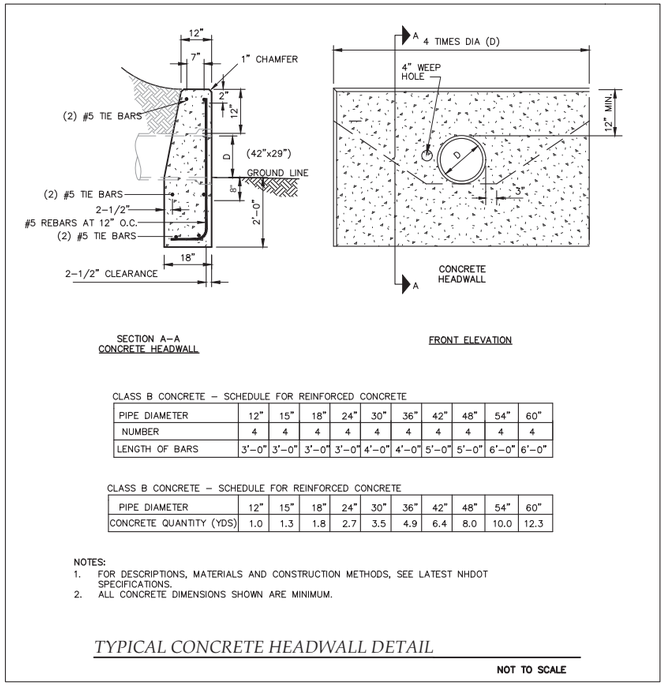
PROJECT:
GORDON SERVICES KEENE

TITLE:
RECLAMATION PLAN

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	HORIZ. 1"=60'

P:\23\2302011\Eng\Production Plans\2302011-RECLAMATION PLAN.dwg, RECLAMATION PLAN (2), 1/30/2025 5:44:25 PM, justind, DWG To PDF.pc3, ANSI full bleed D (34.00 x 22.00 Inches), 1:1



CLASS B CONCRETE – SCHEDULE FOR REINFORCED CONCRETE

PIPE DIAMETER	12"	15"	18"	24"	30"	36"	42"	48"	54"	60"
NUMBER	4	4	4	4	4	4	4	4	4	4
LENGTH OF BARS	3'-0"	3'-0"	3'-0"	3'-0"	4'-0"	4'-0"	5'-0"	5'-0"	6'-0"	6'-0"

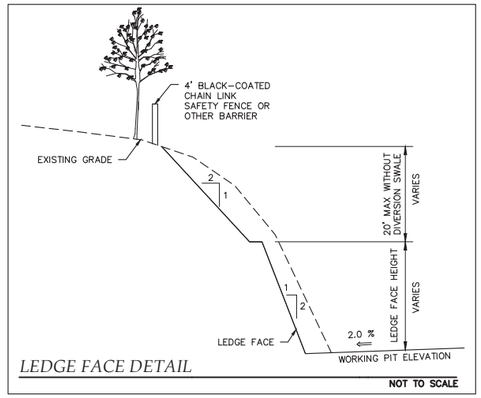
CLASS B CONCRETE – SCHEDULE FOR REINFORCED CONCRETE

PIPE DIAMETER	12"	15"	18"	24"	30"	36"	42"	48"	54"	60"
CONCRETE QUANTITY (YDS)	1.0	1.3	1.8	2.7	3.5	4.9	6.4	8.0	10.0	12.3

NOTES:
1. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE LATEST NHDOT SPECIFICATIONS.
2. ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM.

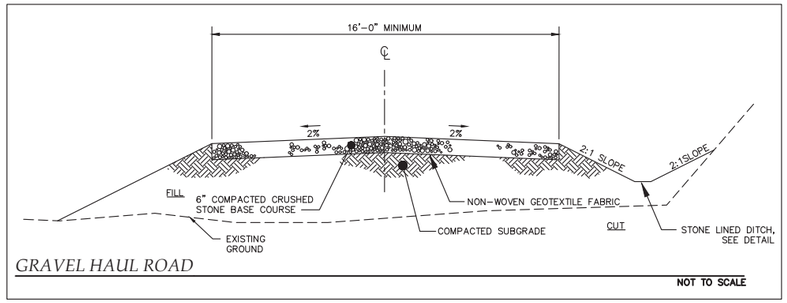
TYPICAL CONCRETE HEADWALL DETAIL

NOT TO SCALE



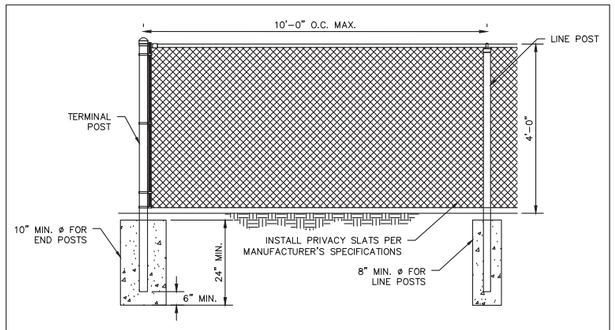
LEDGE FACE DETAIL

NOT TO SCALE



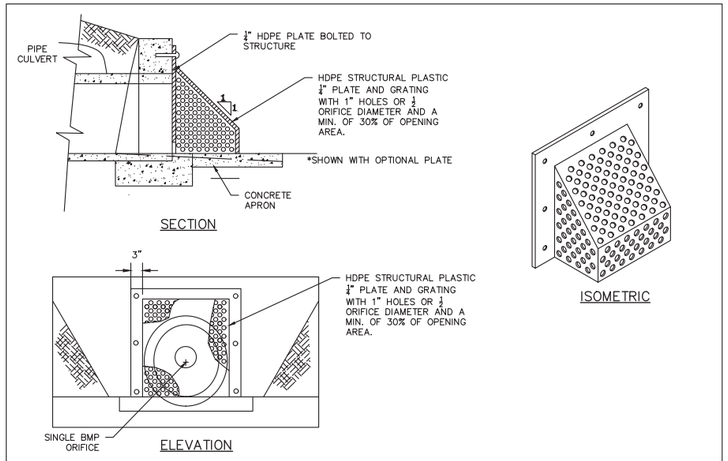
GRAVEL HAUL ROAD

NOT TO SCALE



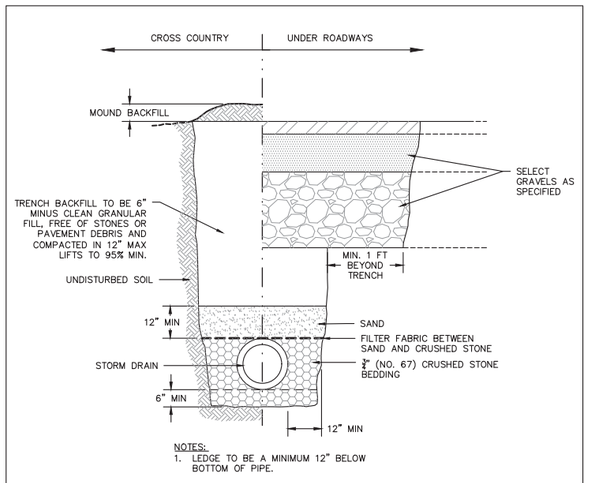
CHAIN LINK FENCE DETAIL

NOT TO SCALE



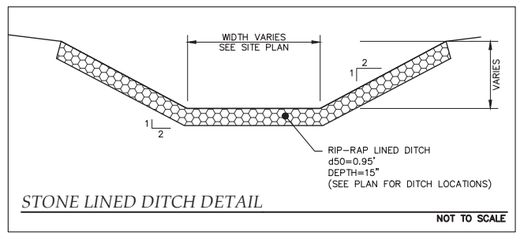
TRASH RACK DETAIL

NOT TO SCALE



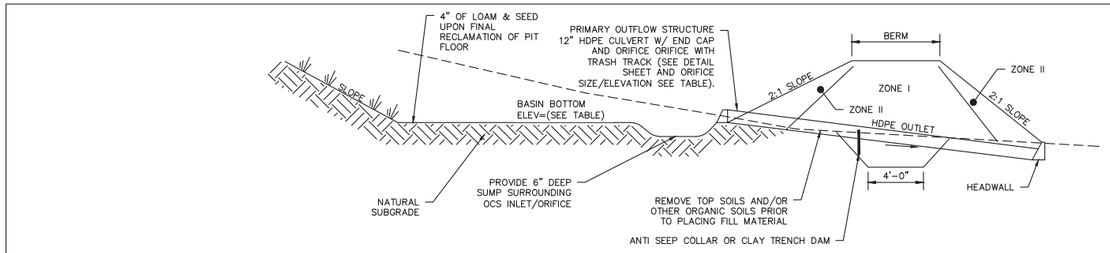
STORM DRAIN TRENCH DETAIL

NOT TO SCALE



STONE LINED DITCH DETAIL

NOT TO SCALE



NOTES:
1. CONTRACTOR TO NOTIFY DIG-SAFE 72 HOURS PRIOR TO START OF CONSTRUCTION
2. CLEAR AND CUT THE AREA TO THE NECESSARY EXTENT. CONTRACTOR TO PROPERLY DISPOSE OF ALL DEBRIS.
3. ALL SILTATION AND TEMPORARY EROSION CONTROLS MEASURES SHALL BE INSTALLED AS CALLED FOR ON PROJECT PLANS PRIOR TO GRUBBING OF CLEARED AREAS.
4. CONTRACTOR TO COMPLETE GRUBBING AND PROPERLY DISPOSE OF ALL DEBRIS. STOCKPILE ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL IN UPLAND AREAS. ALL STOCKPILES TO BE SEEDED AND, IF NECESSARY, SURROUNDED WITH HAY BALES TO PREVENT LOSSES DUE TO EROSION.
5. CONSTRUCT TEMPORARY CULVERTS AS NECESSARY FOR CONSTRUCTION ACTIVITIES. ALL CROSSINGS TO BE PROTECTED BY HAY BALE BARRIERS TO PREVENT EROSION.
6. CONSTRUCT CUT-OFF TRENCH (PART OF ZONE I).
7. CONSTRUCT OUTLET AND OVERFLOW STRUCTURE, CULVERT, ANTI SEEP COLLARS, HEADWALL, AND RIP RAP OUTLET PROTECTION AS SHOWN ON PLANS AND DETAILS.
8. CONSTRUCT ZONE I PORTION OF EARTH EMBANKMENT.
9. CONSTRUCT ZONE II PORTION OF EARTH EMBANKMENT.
10. APPLY TOPSOIL TO SLOPES AND OTHER AREAS OF DISTURBANCE BY CONSTRUCTION. TOPSOIL MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ALL DELETERIOUS MATERIAL. TOPSOIL SHALL BE A MINIMUM OF 4-INCHES OF COMPACTED THICKNESS. UPON PLACEMENT ON TOPSOIL, FINISHED AREAS ARE TO BE LIMED, SEEDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ALL PROBLEM AREAS UNTIL GRASS HAS BECOME ESTABLISHED.
11. MAINTAIN, REPAIR AND REPLACE TEMPORARY EROSION CONTROL MEASURES AS NECESSARY UNTIL THE WHOLE CONSTRUCTION ARE HAS BEEN STABILIZED (MINIMUM ONE WINTER).
12. REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES AFTER STABILIZATION.
13. MONITOR CONSTRUCTION ACTIVITIES TO INSURE THEY ARE PERFORMED IN SUCH WAYS AS TO NOT ENDANGER THE INTEGRITY OF EARTH EMBANKMENTS, STORMWATER CONTROL, STRUCTURE, CULVERT AND RIP RAP OUTLET PROTECTION.

MATERIAL TYPE/SPECIFICATIONS

ZONE I:
WELL GRADED MIXTURE OF GRAVEL, SAND, SILT OR CLAY WITH MAX. 6-INCH SIZE STONES AND GRADATION AS INDICATED BELOW. PLACE IN MAX. 12-INCH THICK LIFTS TO 95% OF MAX. DRY DENSITY IN ACCORDANCE WITH ASTM D1557. SCARIFY SURFACE PRIOR TO PLACING SUBSEQUENT LIFT. IN ADDITION REMOVE ORGANIC SOILS.

SIEVE SIZE	% BY WEIGHT PASSING
6-INCH	100
NO. 4	50-100
NO. 40	30-70
NO. 200	20-40

ZONE II:
DRAINAGE LAYER: PLACE IN MAX. 12-INCH THICK LIFTS TO 95% OF MAX DRY DENSITY IN ACCORDANCE WITH ASTM D1557

SIEVE SIZE	% BY WEIGHT PASSING
1-INCH	100
NO. 4	70-100
NO. 200	0-12 (IN SAND PORTION ONLY)

OUTLET CONTROL STRUCTURE ELEVATIONS

POND ID	BASIN BOTTOM	ORIFICE SIZE	ORIFICE ELEVATION	OUTLET PIPE SIZE	OUTLET PIPE ELEVATION
SF5	1088.00	6"	1088.00	12"	1088.00
SF6	948.00	6"	948.00	12"	948.00
SF7	872.00	10"	872.00	12"	872.00
SF1	866.00	N/A	N/A	N/A	N/A
SF8	842.00	N/A	N/A	N/A	N/A

SEDIMENT RETENTION POND DETAIL

NOT TO SCALE

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STATE OF NEW HAMPSHIRE - BRENTON COLE - No. 14744 - 2/3/25 - LICENSED PROFESSIONAL ENGINEER

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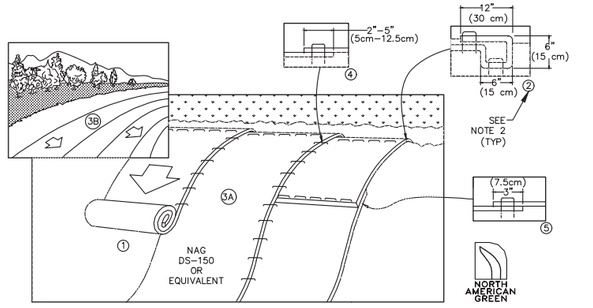
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	AS SHOWN

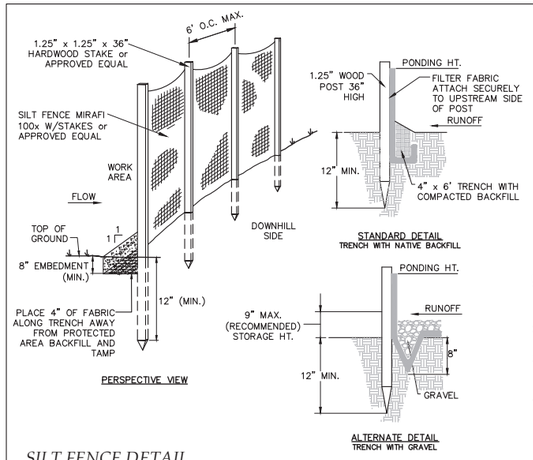


NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN or (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/ STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"–5" (5cm–12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH. NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
6. THERE SHALL BE NO PLASTIC, OR MULTIFILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES MATERIAL UTILIZED.

EROSION CONTROL BLANKET DETAIL

NOT TO SCALE



NOTES:

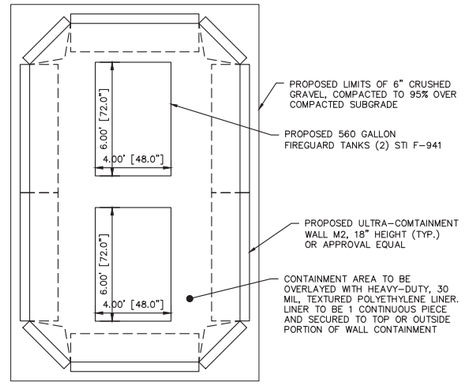
1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIE OR STAPLES WHERE NOTED OR AS DIRECTED BY DESIGN ENGINEER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MIDSECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE DETAIL

NOT TO SCALE

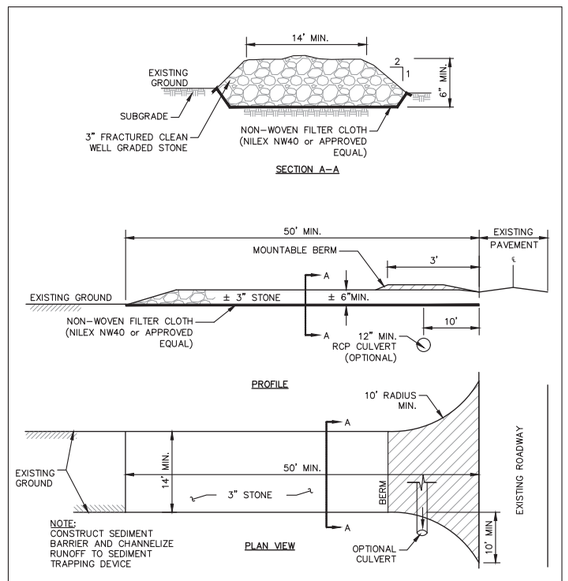


NOTES:

1. PROPOSED 1,000 GALLON DIESEL FUEL TANK REQUIRES MINIMUM 1,232 GALLON CONTAINMENT VOLUME.
2. CONFIGURATION SHOWN IN DETAIL PROVIDES 2,116 GALLONS, NOT EXCLUDING FUEL TANK AND SUPPORTS.
3. CONTAINMENT WALL SYSTEM MAY CHANGE WITH THE APPROVAL OF THE DESIGN ENGINEER.

ABOVE GROUND FUEL TANK CONTAINMENT DETAIL

NOT TO SCALE



% FINER BY WEIGHT	
STONE SIZE	D_{50} = 2"
0.5"	0–15%
1"	15–30%
1.5"	30–50%
2"	50–90%
3"	100%

GRADATION:

NOTES:

1. PLACE TEMPORARY STONE CHECK DAM (D_{50} = 2" MIN) TO THE LINES, GRADES AND LOCATIONS AS SHOWN ON THE APPROVED PLAN OR AS FIELD DIRECTED BY THE ENGINEER.
2. STONE SIZE TO BE INCREASED TO D_{50} = 4" WHEN GRADES EXCEED 8% OR VELOCITIES EXCEED 6.0 FPS.
3. SET SPACING OF STONE CHECK DAMS SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH EROSION STONE (D_{50} = 4" MIN) OR LINER (NAG DS–150) AS NEEDED OR DIRECTED BY THE ENGINEER.
5. REMOVE STONE CHECK DAM WHEN NO LONGER NEEDED. AFTER BARRIER IS REMOVED, STABILIZE WITH VEGETATION.
6. REMOVE ALL SEDIMENT, REGRADE/VEGETATE AS NECESSARY OR AS FIELD DIRECTED BY THE ENGINEER.

STONE CHECK DAM DETAIL

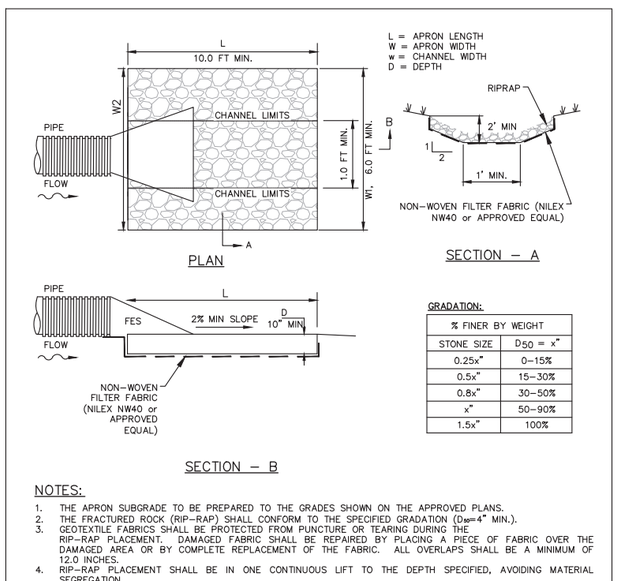
NOT TO SCALE

NOTES:

1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 3 INCH STONE, RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE AREA WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT–OF–WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY . WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION EXIT DETAIL

NOT TO SCALE



% FINER BY WEIGHT	
STONE SIZE	D_{50} = x"
0.25x"	0–15%
0.5x"	15–30%
0.8x"	30–50%
x"	50–90%
1.5x"	100%

GRADATION:

NOTES:

1. THE APRON SUBGRADE TO BE PREPARED TO THE GRADES SHOWN ON THE APPROVED PLANS.
2. THE FRACTURED ROCK (RIP–RAP) SHALL CONFORM TO THE SPECIFIED GRADATION (D_{50}=4" MIN.).
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE RIP–RAP PLACEMENT. DAMAGED FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS SHALL BE A MINIMUM OF 12.0 INCHES.
4. RIP–RAP PLACEMENT SHALL BE IN ONE CONTINUOUS LIFT TO THE DEPTH SPECIFIED, AVOIDING MATERIAL SEGREGATION.

MAINTENANCE

THE APRON SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT (≥ 3"). IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE VEGETATED CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE PERIODICALLY INSPECTED FOR DEGRADATION. IF DEGRADATION HAS OCCURRED, REPAIR IMMEDIATELY. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS AND SEDIMENT THAT COULD IMPAIR UPSTREAM CHANNEL CHARACTERISTICS. ALL DEBRIS OR SEDIMENT SHOULD BE REMOVED OFF SITE and DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LAWS.

STRUCTURE	LENGTH	W1	W2	D50	DEPTH
HW#1B	13'	17'	4'	4"	10"
HW#2B	16'	20'	4'	6"	15"
HW#3B & HW#4B	30'	36'	6'	12"	30"
HW#5B	9'	13'	4'	4"	10"
HW#6B	12'	6'	2'	4"	10"
HW#7B	7'	9'	2'	4"	10"
HW#8B	10'	13'	3'	4"	10"
HW#10B	27'	35'	8'	12"	30"
HW#11B (FINAL)	11'	15'	4'	4"	10"

OUTLET PROTECTION DETAIL

NOT TO SCALE

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
62 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23–0201–1	FEBRURARY 3, 2025	AS SHOWN

IF MORE THAN 5000 CUBIC YARDS ARE BLASTED:
IDENTIFY DRINKING WATER WELLS LOCATED WITHIN 1/2 MILE OF THE PROPOSED BLASTING ACTIVITIES. DEVELOP A GROUNDWATER QUALITY SAMPLING PROGRAM TO MONITOR FOR NITRATE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA. THE PLAN MUST INCLUDE PRE AND POST BLAST WATER QUALITY MONITORING AND BE APPROVED BY NHDES PRIOR TO INITIATING BLASTING. THE GROUNDWATER SAMPLE PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY NHDES.

ALL ACTIVITIES RELATED TO BLASTING SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.

(1) LOADING PRACTICES. THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
- (a) DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
- (b) EXPLOSIVE PRODUCTS SHALL BE MANAGED ON SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF SITE DISPOSAL.
- (c) SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL.
- (d) LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
- (e) LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
- (f) EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.

(2) EXPLOSIVE SELECTION. THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
- (a) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
- (b) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.

(3) PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.

(4) MUCK PILE MANAGEMENT. MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
- (a) REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.
- (b) MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.

(5) SPILL PREVENTION MEASURES AND SPILL MITIGATION. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:
- (a) THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE
  1. STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE.
  2. SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY.
  3. LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY.
  4. INSPECT STORAGE AREAS WEEKLY.
  5. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS.
  6. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS.
  7. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED
- (a) THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
  1. EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED.
  2. PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS.
  3. HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS.
  4. USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES.
  5. PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
- (a) THE TRAINING OF ON SITE EMPLOYEES AND THE ON SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
- (b) FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT WILL COMPLY WITH THE REGULATIONS OF NHDES [NOTE THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6: "BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT" OR ITS SUCCESSOR DOCUMENT.]

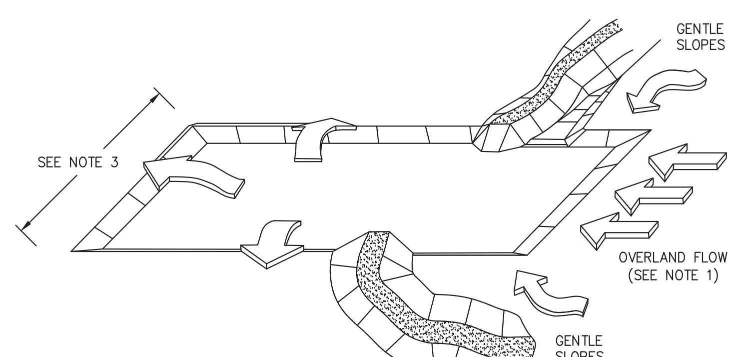
BEST MANAGEMENT PRACTICES FOR BLASTING

1. CONTACT DIG SAFE AT LEAST 72 HOURS BEFORE ANY EXCAVATION WORK.
2. CUT AND CLEAR TREES AND BRUSH WITHIN LIMITS OF CLEARING SHOWN ON PLAN.
3. INSTALL ALL APPLICABLE TEMPORARY EROSION CONTROL MEASURES PRIOR PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OPERATIONS. THE STABILIZED CONSTRUCTION EXIT SHALL BE IN PLACE AS SHOWN ON THE PROJECT PLANS.
4. REMOVE STUMPS FROM THE SITE FOR SITE GRADING TO COMMENCE. ALL STUMPS AND SIMILAR ORGANIC DEBRIS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR UNLESS A STUMP DUMP IS NOTED ON THE PLAN. NATIVE ORGANIC SOIL MATERIALS SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED WITHIN AREAS OUT OF THE WAY OF OTHER CONSTRUCTION ACTIVITIES AND DRAINAGE FLOW. STOCKPILES SHALL BE TEMPORARILY SEEDED WITH WINTER RYE AND BE SURROUNDED BY PERIMETER CONTROLS TO PREVENT EROSION.
5. THIS PROJECT IS TO BE MANAGED IN A MANOR THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
6. ALL PERMANENT EROSION CONTROL MEASURES AND DETENTION FACILITIES SHOULD BE INSTALLED PRIOR TO GRADING FOR PROJECT.
7. COMMENCE EARTHWORK OPERATIONS.
8. ALL DRAINAGE SYSTEMS AND OTHER UTILITIES SHOULD BE CONSTRUCTED FROM LOW GRADE TO HIGH GRADE. INCOMPLETE WORK SHALL BE PROTECTED FROM SILTATION BY THE USE OF PERIMETER CONTROLS UNTIL THE SITE HAS BECOME FULLY STABILIZED.
9. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
9. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES ARE REQUIRED, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY DEVICES OR CONSULT WITH THE ENGINEER.
10. ALL STORMWATER FLOWS SHALL NOT BE DIRECTED TO THE STORMWATER MEASURES UNTIL ALL CONTRIBUTING AREAS HAVE BEEN DEEMED STABLE. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
11. COMPLETE GRADING ACTIVITIES AND WHEN COMPLETE, BEGIN TOPSOILING PROPOSED TURF AREAS USING STOCKPILED LOAM SUPPLEMENTED WITH BORROW LOAM, IF NECESSARY, TO LEAVE THE SPECIFIED THICKNESS.
12. FINE GRADE ALL TURF AREAS AND COMPLETE PERMANENT SEEDING AND LANDSCAPING BY HYDROSEEDING WITH THE SPECIFIED SEED MIXTURE IMMEDIATELY AFTER FINE GRADING IS COMPLETED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
13. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE ESTABLISHED THEMSELVES.

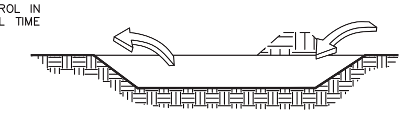
CONSTRUCTION SEQUENCE

1. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
2. THIS PROJECT IS TO BE MANAGED IN A MANOR THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE TOWN OF MILFORD SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
10. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
11. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
12. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
13. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
15. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
16. EARTHWORK SHALL BE LIMITED TO THE AREAS WITHIN THE LIMITS OF CLEARING AS SHOWN ON THE PLAN. AT NO TIME SHALL MORE THAN FIVE (5) ACRES OF SITE AREA BE IN AN UNSTABLE CONDITION. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING THIRTY (30) CALENDAR DAYS.
17. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
18. PERIMETER CONTROLS MUST BE INSTALLED PRIOR TO EARTHWORK.
19. EROSION CONTROL MEASURES USED SHALL BE INSPECTED AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OF RAINFALL OR MORE. ALL DEFICIENCIES SHALL BE FIXED IN ORDER TO KEEP OPERATION EFFECTIVE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
20. ALL STORMWATER PRACTICES AND DRAINAGE SWALES ARE TO BE INSTALLED PRIOR TO ROUGH GRADING OF THE SITE. THEY SHOULD BE FULLY STABILIZED PRIOR TO RECEIVING STORMWATER. PERIODIC INSPECTION AND MAINTENANCE TO MAINTAIN DESIGN INTENT IS REQUIRED.
21. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE THE REQUIRED AMOUNT OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
22. IF DURING CONSTRUCTION A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
23. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    - A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
    - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
    - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
23. ALL DUST SHALL BE CONTROLLED BY THE USE OF WATER IN ACCORDANCE WITH ENV-A 1000.
24. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES ARE REQUIRED, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY DEVICES OR CONSULT WITH THE ENGINEER.
25. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" ON ALL 3:1 SLOPES OR GREATER.
26. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS.
27. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS.

EROSION CONTROL NOTES



NOTES:
1. MAXIMUM AREA FOR OVERFLOW SEDIMENT TRAP IS USUALLY 1 ACRE. MUST HAVE GENTLE SLOPES (LESS THAN 2% GRADUALLY) AND PREDOMINATELY OVERLAND SHEET FLOW.
2. MAXIMUM PERMANENT WET DEPTH IS 2 FEET. OVERFLOW SEDIMENT TRAPS MAY NOT BE EFFECTIVE FOR HIGH GROUNDWATER TABLE AND INFLOWS.
3. USE THE MOST PERMEABLE SEDIMENT CONTROL IN LABELED AREA SO AS TO MAXIMIZE TRAVEL TIME AND SETTLING OF SEDIMENT.



SEDIMENT TRAP DETAIL

NOT TO SCALE

1. ALL PROPOSED POST-DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT BE DONE OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT 304.3).

WINTER CONSTRUCTION NOTES

1. ALL AREAS TO BE SEEDED SHALL BE PREPARED TO PROVIDE A REASONABLY FIRM BUT FRIABLE SEED BED.
2. SLOPED AREAS SHALL NOT BE LEFT TOO SMOOTH; THE SURFACE SHALL BE LEFT IN A RUFFLED CONDITION SUCH AS MAY BE PRODUCED BY THE USE OF TRACKED VEHICLES RUN UP AND DOWN THE SLOPES. SMOOTH, COMPACTED SLOPES, SUCH AS FROM BLADING, WHICH MIGHT ALLOW THE FREE FLOW OF WATER DOWN THEM SHALL BE DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO GIVE THE EFFECT OF MINIATURE TERRACES, PARTICULARLY IN SILTY OR CLAYEY SOILS. THE SLOPES SHALL BE LEFT SMOOTH ENOUGH TO ENABLE MOWING.
3. LAWN AREAS, SUCH AS WHERE LOAM HAS BEEN SPREAD, SHALL BE PREPARED FOR SEEDING. THE LOAM SHALL BE SPREAD UPON THE PREVIOUSLY PREPARED SUBGRADE SURFACE TO THE DEPTH OF 4" ± 1/2" UNLESS OTHERWISE SPECIFIED AND SHALL BE RAKED CAREFULLY TO REMOVE ALL OBJECTIONABLE MATERIALS. LOAM SHALL BE SPREAD IN SUCH A MANNER AS TO ESTABLISH A LOOSE, FRIABLE SEEDBED. IN ORDER TO MAINTAIN A CONSISTENT GRADE, LOAM PLACED ADJACENT TO LAWNS OR WHERE DIRECTED SHALL BE COMPACTED WITH A ROLLER WEIGHING APPROXIMATELY 100 POUNDS PER FOOT OF ROLLER WIDTH. ALL DEPRESSIONS EXPOSED DURING THE ROLLING PROCEDURE SHALL BE FILLED WITH ADDITIONAL LOAM, AND ROLLED.
4. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE OF VIABLE PARTS OF PROHIBITED INVASIVE PLANTS LISTED IN TABLE 3800.1 OF PART AGR 3800. LOAM SHALL BE GENERALLY FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN 2" IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.6. LOAM SHALL CONTAIN A MINIMUM OF 3 PERCENT AND A MAXIMUM OF 10 PERCENT OF ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. NOT MORE THAN 65 PERCENT SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D 1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE NO. 4 SIEVE CONSIST OF CLAY SIZE PARTICLES.
5. ALL AREAS TO BE SEEDED SHALL MEET THE SPECIFIED GRADES AND SHALL BE FREE OF GROWTH AND DEBRIS.
6. CARE SHALL BE TAKEN TO PREVENT THE FORMATION OF LOW PLACES AND POCKETS WHERE WATER WILL STAND.
7. WHERE RYEGRASS HAS BEEN PLANTED FOR TEMPORARY EROSION CONTROL AND HAS NOT BEEN ELIMINATED PRIOR TO THE COMPLETION OF THE WORK, SUCH AREAS SHALL BE DISC-HARROWED AT LEAST 3" DEEP AND SEEDED WITH PERMANENT GRASSES TO PREVENT THE RYEGRASS FROM RESEEDING AND BECOMING COMPETITIVE WITH AND RETARDING DEVELOPMENT OF THE PERMANENT COVER.
8. FERTILIZER SHALL BE UNIFORMLY APPLIED. THE RATE OF APPLICATION SHALL BE A RATE OF 2.0 POUNDS OF NITROGEN PER 1,000 SQUARE FEET. NOT LESS THAN THREE MONTHS SHALL ELAPSE BETWEEN THE INITIAL FERTILIZATION AND THE REFERTILIZATION. NO REFERTILIZATION WILL BE ALLOWED BETWEEN NOVEMBER 1, OR WHEN THE GROUND HAS FROZEN, AND THE FOLLOWING APRIL 1, OR BETWEEN JUNE 1 AND THE FOLLOWING SEPTEMBER 1. REFERTILIZATION WILL BE ALLOWED BETWEEN AUGUST 15 AND 31 ONLY WHEN IT IS DETERMINED THAT THE PERMANENT GRASSES HAVE DEVELOPED WELL AND FEW WEEDS HAVE APPEARED, AND SUCH REFERTILIZATION WILL NOT TEND TO PROMOTE THE GROWTH OF NOXIOUS WEEDS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING AND CARING FOR SEEDED AREAS UNTIL ACCEPTANCE OF THE WORK. CONTRACTOR SHALL REPAIR AT HIS OWN EXPENSE ANY DAMAGE TO SEEDED AREAS CAUSED BY PEDESTRIAN OR VEHICULAR TRAFFIC OR OTHER CAUSES.
10. THE SEEDED AREAS SHALL BE CAREFULLY AND SUITABLY WATERED AS NECESSARY TO PRODUCE A SATISFACTORY GROWTH.
11. AREAS SEEDED WITH PARK SEED SHALL BE MOWED WHENEVER NECESSARY TO KEEP THE GROWTH BETWEEN 3 AND 6" IN ORDER TO ALLOW LIGHT TO PENETRATE TO THE SHORTER, SLOWER GROWING SPECIES IN THE MIXTURE.
12. AREAS SEEDED WITH SLOPE SEED MAY BE ORDERED MOWED WHENEVER THE CONTRACT EXTENDS INTO A SECOND GROWING SEASON. WEEDS GROWING IN AREAS SEEDED WITH THE SLOPE SEED SHALL BE CUT BACK TO PREVENT THEM FROM DOMINATING THE DESIRED GRASS PLANTS
13. SELECT ONE OF THE GRASS/LEGUME MIXES BASED ON THE PERCENT WEIGHT PASSING A NO. 200 SIEVE AS OUTLINED ABOVE. MIX 2 IS RECOMMENDED IF SUPPRESSION OF WOODY GROWTH IS DESIRED AND THERE ARE MORE THAN 15 PERCENT FINES. THE STANDARD CONSERVATION MIXES AVAILABLE FROM LOCAL SEED SUPPLIERS ARE NOT RECOMMENDED ON DROUGHTY SITES. THESE MIXES USUALLY PROVIDE A GREEN COVER VERY QUICKLY, BUT THE PLANT SPECIES BEGIN TO DIE IN 2-4 YEARS ON STERILE AND DROUGHTY SITES.
14. FOR MIX 1, IN LIEU OF A SOIL TEST, LIME AT THE RATE OF 1 TON/ACRE (50 LBS/1,000 SQ FT). FERTILIZE WITH 500 LBS/ACRE (11 LBS/1,000 SQ FT) OF 10-20-20 OR EQUIVALENT. INCORPORATE LIME, FERTILIZER, AND SEED USING RAKES IF SEEDING IS DONE BY HAND. IT IS STRONGLY RECOMMENDED TO USE A BULLDOZER TO "TRACK" THE SITE AFTER SEEDING. TRACKING WILL INCORPORATE THE LIME, FERTILIZER, AND SEED TO PROMOTE SEED GERMINATION. FOR MIXES 2 & 3, IN LIEU OF A SOIL TEST, LIME AT THE RATE OF 2 TONS/ACRE (90 LBS/1,000 SQ FT). FERTILIZE WITH 500 LBS/ACRE (11 LBS/1,000 SQ FT) OF 10-20-20 OR EQUIVALENT. THE SEED NEEDS TO BE INCORPORATED TO ENSURE SUCCESS AND TO SHORTEN ESTABLISHMENT TIME. THIS IS ESPECIALLY TRUE OF MIXES 1 AND 2, AND IS MOST CRITICAL FOR THE LARGE SEEDED LEGUMES IN MIX 2. ON THE FLATTER SLOPES, USE A BULLDOZER TO "TRACK IN" THE SEED.
15. WHEN MULCHING FOR MIX 1, WEED FREE MULCH, CLEAN STRAW IS RECOMMENDED. MULCH AT THE MAXIMUM RATE OF 500-700 LBS/ACRE. HIGHER MULCHING RATES AND MULCH WITH WEED SEED CONTENT WILL INHIBIT SEEDING SUCCESS SIGNIFICANTLY. IF THE EROSION HAZARD IS LOW AND THE SEED IS INCORPORATED, MULCHING IS NOT NECESSARY FOR SEEDING SUCCESS. DO NOT APPLY MULCH PRIOR TO TRACKING WITH A BULLDOZER. WHEN MULCHING FOR MIXES 2 & 3, MULCH WITH WEED FREE HAY OR STRAW AND MULCH AT THE RATE OF 2-3 TONS/ACRE FOR MIX 2 AND 12 TONS/ACRE FOR MIX 3. THE HIGHER MULCHING RATE IS RECOMMENDED WHERE SEED INCORPORATION IS DIFFICULT. THIS IS ESPECIALLY CRITICAL FOR MIX 2.
16. WHEN SEEDING LARGE AREAS AND/OR STEEP SLOPES APPLY LIME, SEED, AND FERTILIZER WITH A HYDROSEEDER AND, DEPENDING ON THE CONSISTENCY OF THE SOIL MATERIAL, STEEPNESS OF SLOPE, AND SEED MIXTURE USED: (A) PRESS THE SEED INTO THE SOIL BY TRACKING WITH A BULLDOZER, OR (B) COVER THE SEED BY WALKING BACK AND FORTH OVER STEEP LOOSE SANDY SLOPES, OR (C) APPLY MULCH AND A TACKIFIER TO HOLD THE MULCH IN PLACE. WHEN SEEDING FLAT TO GENTLY SLOPING AREAS (2:1 SLOPES MAXIMUM) APPLY LIME, SEED AND FERTILIZER USING FARM TYPE SPREADERS AND TRACK THE SITE WITH A BULLDOZER OR APPLY MULCH.
17. PRIMARY SEEDING DATES BEGIN AS SOON AS THE SNOW MELTS IN THE SPRING AND ENDS MAY 15. THE IMPORTANCE OF EARLY SEEDING CANNOT BE OVEREMPHASIZED. THIS IS ESPECIALLY TRUE FOR MIX 1. DEPENDING ON WEATHER CONDITIONS, SUBSTANTIAL FAILURE CAN BE EXPECTED IF SEEDING IS DONE LATER. LATE SUMMER AND EARLY FALL SEEDLINGS ARE NOT RECOMMENDED FOR MIZES 1 AND 2. IF LATE SEEDINGS OF MIXES 1 AND 2 ARE NECESSARY, THEY SHOULD BE DONE AFTER OCTOBER 20 TO PREVENT FALL GERMINATION AND SUBSEQUENT WINTERKILL. MIX 3 CAN ALSO BE SEEDED FROM AUGUST 15 TO SEPTEMBER 1 WITH CONVENTIONAL SEEDING.
18. THE PLANT SPECIES IN MIXES 1 AND 2 GERMINATE AND GROW SLOWLY. COMPLETE COVER MAY NOT OCCUR FOR 2-4 YEARS. HOWEVER, A WELL-ESTABLISHED STAND WILL ENDURE FOR YEARS. FOLLOW-UP SEEDING MAY BE NEEDED TO ESTABLISH VEGETATION ON THE MORE DIFFICULT PARTS OF SOME SITES. THE NEED TO DO FOLLOW-UP SEEDING CAN BE DETERMINED THE YEAR AFTER THE INITIAL PLANTING.

MIX 1 (WARM SEASON GRASSES)	
KIND OF SEED	POUNDS/ACRE
SWITCHGRASS TRAILBLAZER	6
BIG BLUESTEM NIAGARA	4
LITTLE BLUESTEM	2
SAND LOVEGRASS	4

MIX 2 (LEGUMES AND COOL SEASON GRASSES)	
KIND OF SEED	POUNDS/ACRE
FLATPEA	10
PERENNIAL PEA	2
CROWN VETCH	10
TALL FESCUE	10

MIX 3 (COOL SEASON GRASSES AND LEGUMES)	
KIND OF SEED	POUNDS/ACRE
TALL FESCUE	20
REDTOP	2
BIRDSFOOT TREFOIL	8

TURF ESTABLISHMENT SPECIFICATIONS

1. SECONDARY CONTAINMENT EQUIPMENT USED DURING MOBILE FUELING SHOULD BE SIZED TO CONTAIN THE MOST LIKELY VOLUME OF FUEL TO BE SPILLED DURING A FUEL TRANSFER.
2. PORTABLE CONTAINMENT EQUIPMENT SHOULD BE POSITIONED TO CATCH ANY FUEL SPILLS DUE TO OVERFILLING THE EQUIPMENT AND ANY OTHER SPILLS THAT MAY OCCUR AT OR NEAR THE FUEL FILLER PORT TO THAT EQUIPMENT. THE SELECTION OF CONTAINMENT EQUIPMENT AND ITS POSITIONING AND USE SHOULD TAKE INTO ACCOUNT ALL OF THE DRIP POINTS ASSOCIATED WITH THE FUEL FILLING PORT AND THE HOSE FROM THE FUEL DELIVERY TRUCK.
3. PERSONNEL MUST ATTEND TO THE FUELING PROCESS TO ENSURE THAT ANY SPILLS WILL BE OF LIMITED VOLUME.
4. SECONDARY CONTAINMENT FOR OUTDOOR STORAGE AREAS (FOR FUEL OR OTHER REGULATED SUBSTANCES) MUST BE COVERED WITH A ROOF, PLASTIC SHEETING, OR WATERPROOF TARPAULINS TO KEEP CONTAINERS DRY, EXCEPT WHEN MATERIALS ARE BEING ADDED OR REMOVED. THE AREA MUST BE KEPT FREE OF RAIN, SNOW, AND ICE TO ENSURE SUFFICIENT CONTAINMENT VOLUME REMAINS TO CONTAIN A RELEASE FROM THE LARGEST STORAGE TANK. FOR RELATIVELY SMALL STORAGE AREAS, SPILL CONTAINMENT PALLETS AND COVERS ARE COMMERCIALLY AVAILABLE.
5. IF ANY OF THE FOLLOWING OCCURS, THE SPILL MUST BE IMMEDIATELY REPORTED TO THE NHDES AT (603) 271-3899 OR STATE POLICE AT (603) 223-4381 AFTER 4 P.M. ON WEEKDAYS OR ON WEEKENDS:
   - A. THE SPILL IS 25 GALLONS OR MORE.
   - B. THE SPILL IS NOT CONTAINED IMMEDIATELY.
   - C. THE SPILL AND CONTAMINATION ARE NOT COMPLETELY REMOVED WITHIN 24 HOURS.
   - D. THERE IS IMPACT OR POTENTIAL IMPACT TO GROUNDWATER OR SURFACE WATER.

MOBILE FUELING NOTES

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

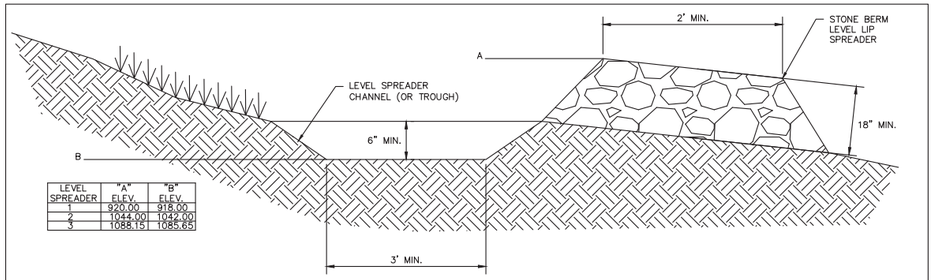
STAMP:
STATE OF NEW HAMPSHIRE
BRENTON J. COLE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRURARY 3, 2025	AS SHOWN
SHEET: 21 OF 22		



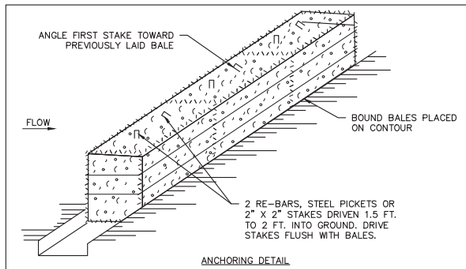
LEVEL SPREADER	"A" ELEV.	"B" ELEV.
1	920.00	918.00
2	1044.00	1042.00
3	1088.15	1085.65

CONSTRUCTION NOTES:
1. IT IS CRITICAL TO INSTALL LEVEL SPREADERS AT A ZERO PERCENT GRADE ALONG THE LENGTH OF THE DISCHARGE LIP. FLOW MUST DISCHARGE UNIFORMLY ALONG THE LENGTH OF THE SPREADER.
2. CARE MUST BE EXERCISED IN SITING THE SPREADER, SO THAT IT DISCHARGES ONTO A GENTLY SLOPING GRADE, WHERE RUNOFF EXITING THE SPREADER WILL NOT RE-CONCENTRATE AND CAUSE EROSION. A SLOPE THAT IS CONCAVE IN SHAPE (SUCH AS A SHALLOW SWALE) IS NOT SUITABLE FOR RECEIVING DISCHARGE FROM A LEVEL SPREADER. SUITABLE SLOPES ARE PLANAR OR CONVEX IN SHAPE, SO THAT FLOW WILL CONTINUE AS DISPERSED SHEET FLOW ACROSS THE SITE.
3. IT IS ESSENTIAL TO STABILIZE THE OUTLET LIP OF THE SPREADER, AND TO DISCHARGE ONTO A WELL STABILIZED RECEIVING AREA (PREFERABLY UNDISTURBED VEGETATION) TO PREVENT EROSION.

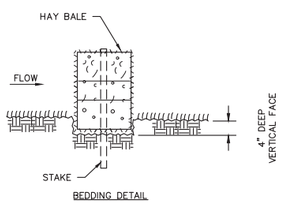
MAINTENANCE NOTES:
1. INSPECT AT LEAST ONCE ANNUALLY FOR ACCUMULATION OF SEDIMENT AND DEBRIS AND FOR SIGNS OF EROSION WITHIN APPROACH CHANNEL, SPREADER CHANNEL OR DOWN-SLOPE OF THE SPREADER.
2. REMOVE DEBRIS WHENEVER OBSERVED DURING INSPECTION.
3. REMOVE SEDIMENT WHEN ACCUMULATION EXCEEDS 25% OF SPREADER CHANNEL DEPTH.
4. MOW AS REQUIRED BY LANDSCAPING DESIGN. AT A MINIMUM, MOW ANNUALLY TO CONTROL WOODY VEGETATION WITHIN THE SPREADER.
5. SNOW SHOULD NOT BE STORED WITHIN OR DOWN-SLOPE OF THE LEVEL SPREADER OR ITS APPROACH CHANNEL.
6. REPAIR ANY EROSION AND RE-GRADE OR REPLACE STONE BERM MATERIAL, AS WARRANTED BY INSPECTION.
7. RECONSTRUCT THE SPREADER IF DOWN-SLOPE CHANNELIZATION INDICATES THAT THE SPREADER IS NOT LEVEL OR THAT DISCHARGE HAS BECOME CONCENTRATED AND CORRECTIONS CANNOT BE MADE THROUGH MINOR RE-GRADING.

LEVEL SPREADER DETAIL

NOT TO SCALE



ANCHORING DETAIL



BEDDING DETAIL

NOTES:
1. BALES SHALL BE PLACED AT THE TOP OF SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4", AND PLACED SO THAT BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

HAY BALE BARRIER DETAIL

NOT TO SCALE

Wood Turtle

(New Hampshire Species of Special Concern)

Turtles may be attracted to disturbed ground during nesting season (**May 15th – June 30th**) Turtles are most active from **April 15th - October 15th** - maintain silt fences during this time.

Identifying traits
- Neck and forelimbs are orange.
- Characterized by its highly sculpted shell with each large scute taking on an irregular pyramidal shape.
- Adults can be 5-8 inches long.

Habitat Use
- wooded areas near streams
- uplands surrounding streams

NOTE: It is illegal to remove a wood turtle from the wild

Please report sightings to NH Fish & Game at RAARP@wildlife.nh.gov or at 603-271-2461
Photo documentation, location and date/time of observation is helpful.

State laws pertaining to this species

RSA 207:1, FIS 804.02, Fis 1401.03 (a)

RARE TURTLE FLYERS

NOT TO SCALE

PROTECTED SPECIES INFORMATION:

WOOD TURTLE (GLYPTEMYS INSCULPTA)

NH CONSERVATION STATUS: SPECIES OF SPECIAL CONCERN, WILDLIFE ACTION PLAN SPECIES IN GREATEST NEED OF CONSERVATION. LEGALLY PROTECTED IN NEW HAMPSHIRE: POSSESSION, SALE, IMPORT, AND TAKE (HARM, HARASS, INJURING, KILLING) IS ILLEGAL.

STATE RANK STATUS: VULNERABLE TO EXTIRPATION AND EXTINCTION.

DISTRIBUTION: THROUGHOUT NH EXCEPT REGIONS OF HIGH ELEVATION.

DESCRIPTION: A 5-8 INCH TURTLE CHARACTERIZED BY ITS HIGHLY SCULPTED SHELL WHERE EACH LARGE SCUTE TAKES AN IRREGULAR PYRAMIDAL SHAPE. THE NECK AND FORELIMBS ARE ORANGE.

COMMONLY CONFUSED SPECIES: JUVENILE SNAPPING TURTLES.

HABITAT: FOUND IN SLOW-MOVING STREAMS AND CHANNELS WITH SANDY BOTTOMS. EXTENSIVE USE OF TERRESTRIAL HABITATS DURING SUMMER, INCLUDING FLOODPLAINS, MEADOWS, WOODLANDS, FIELDS, AS WELL AS WETLANDS.

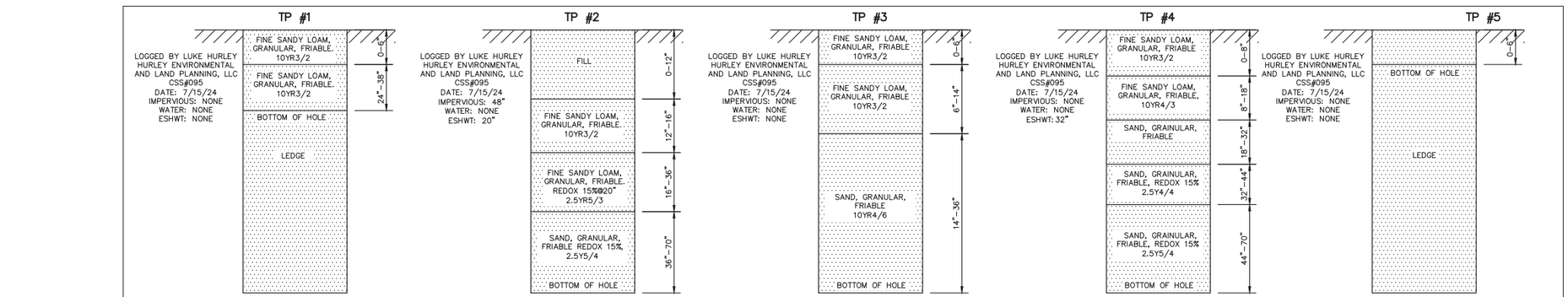
LIFE HISTORY: LAY 4-12 EGGS IN SHALLOW DEPRESSIONS IN SANDY, WELL-DRAINED SOILS. NEST SITES ARE USUALLY NEAR STREAMS BUT MAY ALSO BE IN CLEARINGS, AGRICULTURAL FIELDS, OR OTHER DISTURBED AREAS. HIBERNATE IN SLOW-MOVING STREAMS AND RIVERS UNDER RIVERBANKS, ROOT MASSES, OR WOODY DEBRIS.

CONSERVATION THREATS: ROAD MORTALITY, HABITAT LOSS AND FRAGMENTATION, STREAM ALTERATION, HUMAN COLLECTION, AND INCREASED ABUNDANCE OF SUBSIDIZED PREDATORS.

SOURCE: NEW HAMPSHIRE FISH AND GAME DEPARTMENT © HTTPS://WILDLIFE.STATE.NH.US/WILDLIFE/PROFILES/WOOD-TURTLE.HTML

WILDLIFE PROTECTION NOTES:

- ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV. EMAIL SUBJECT LINE: NHB22-1680, NHB21-0316, KEENE SAND AND GRAVEL, WILDLIFE SPECIES OBSERVATION.
- PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
- IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04.
- THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.



NOTES:
TEST PITS PERFORMED BY LUKE HURLEY ON 7/15/24

TEST PIT LOGS

NOT TO SCALE

REVISIONS

No.	DATE	COMMENTS	BY
1	12/20/24	PROJECT SUBMITTAL	JD
2	2/3/25	REVISED PER CITY COMMENTS	JD

GRANITE ENGINEERING
civil engineering
land planning
municipal services

OWNER/APPLICANT:
G2 HOLDINGS, LLC
250 NORTH STREET
JAFFREY, NH 03452

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
JOHN R. BRENTON
SCALE
No. 14744
2/3/25
LICENSED
PROFESSIONAL ENGINEER

LOCATION:
KEENE TAX MAP 215 LOTS 7 & 8
SULLIVAN TAX MAP 5 LOTS 46 & 46-1
57 ROUTE 9
KEENE & SULLIVAN, NEW HAMPSHIRE
CHESHIRE COUNTY

PROJECT:
GORDON SERVICES KEENE

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23-0201-1	FEBRUARY 3, 2025	AS SHOWN

SHEET: 22 OF 22

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NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

To: Jeffrey Merritt, Granite Engineering, LLC
150 Dow Street Suite 421
Manchester, NH 03101
jmerritt@graniteeng.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc: NHFG Review

Date: 02/06/2024 (valid until 02/06/2025)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: MUNICIPAL POR - Keene, Sullivan, NHDES - Alteration of Terrain Permit, NHDES - Wetland Standard Dredge & Fill - Minor, USEPA - Stormwater Pollution Prevention

NHB ID: NHB24-0314

Town: Keene and Sullivan
Location: Route 9

Project Description: This project proposes the expansion of the existing gravel operations taking place on Keene Tax Map 215 Lot 7 along Route 9. The gravel operations will expand into Sullivan Tax Map 5 Lot 46 and consist of 8 phases. Existing stream crossings along the access road that connects Keene lots 7 and 8, and Sullivan lots 46 and 46-1 will be repaired and permitted. Stream crossing work will only take place on the northern portion of Keene Map 215 Lot 8.
This project is associated with 2 previously submitted NHBs, NHB#23-2849 and NHB#22-3432.

Next Steps for Applicant:

NHB's database has been searched for records of rare species and exemplary natural communities. Please carefully read the comments and consultation requirements below.

NHB Comments: No comments at this time.

NHFG Comments: Please refer to NHFG consultation requirements below.

NHB Consultation
If this NHB DataCheck letter includes records of rare plants and/or natural communities/systems, please contact NHB and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this NHB DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with NHB is required.

NH Fish and Game Department Consultation

If this NHB DataCheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB DataCheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://www.wildlife.nh.gov/wildlife-and-habitat/nongame-and-endangered-species/environmental-review. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB DataCheck results letter number and "Fis 1004 consultation request" in the subject line**.

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email NHFGreview@wildlife.nh.gov, and include the NHB DataCheck results letter number and "review request" in the email subject line.
Contact NH Fish & Game at (603) 271-0467 with questions.

NHB Database Records:
The following record(s) have been documented in the vicinity of the proposed project.
Please see the map and detailed information about the record(s) on the following pages.

Vertebrate species	State[1]	Federal	Notes
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list.
An asterisk (*) indicates that the most recent report for that occurrence was 20 or more years ago.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section above.

Disclaimer: NHB's database can only tell you of known occurrences that have been reported to NHFG/NHB. Known occurrences are based on information gathered by qualified biologists or members of the public, reported to our offices, and verified by NHB/NHFG.
However, many areas have never been surveyed, or have only been surveyed for certain species.
NHB recommends surveys to determine what species/natural communities are present onsite.

GORDON SERVICES – KEENE PIT
2024 ACID MINE DRAINAGE POTENTIAL REPORT

57 Route 9, Keene, New Hampshire
City of Keene Tax Map 215 Block 7
Town of Sullivan Tax Map 583 Lot 46 & 46-1

Prepared For:

Gordon Services
250 North Street
Jaffrey, New Hampshire 03452

Prepared By:

FRONTIER GEOSERVICES
127 OLD WARNER ROAD
BRADFORD, NEW HAMPSHIRE 03221

Joel Banaszak, P.G.
(603) 748-3715
Jbanaszak@frontiergeoservices.com

December 18, 2024
Frontier Project No. 2024012

1.0 INTRODUCTION

Frontier Geoservices, LLC. (Frontier) has completed a acid mine drainage potential investigation at the property located at 57 Route 9, in the City of Keene, Cheshire County, New Hampshire The parcels comprising the Site are identified by the City of Keene's Assessor's office on Tax Map 215 as Block 7 (102.7-acres) and the Town of Sullivan, New Hampshire, Assessor's office on Tax Map 5 Lot 46 (172-acres) and 46-1 (25.82-acres.) The Site is currently owned by G2 Holdings, LLC. of 250 North Street, Jaffrey, New Hampshire. Please refer to **Figure 1** for a **Site Location Map**.

Currently, the Site operates as a gravel and earth removal operation for Gordon Services. The current operations are permitted to only encompass one area, Phase 1, of the Site. Gordon Services wishes to expand their current operations to include additional excavation in Period 8 and new excavations in Periods 1 – 7. Please refer to **Figure 2** for a **Site Plan**.

Applicants proposing Earth Excavation are required to provide the information requested in The City of Keene's Article 25 Earth Excavation Regulation. This report provides the information requested in the City of Keene's Article 25.3.6 Toxic or Acid Forming Materials. Investigation activities included the sampling of materials from eight (8) bedrock monitoring wells.

2.0 SITE GEOLOGICAL SETTING

Based on review of the *Bedrock Geologic Map of New Hampshire*, 1997, bedrock in the vicinity of the target property is classified as the Silurian-aged Rangeley Formation which is rusty weathering schist, and gray quartz-biotite, muscovite-plagioclase schist that contain local calc-silicate layers. It also has rare quartz-rich layers that appear sandy. A **Bedrock Geologic Map** is included in **Appendix A**.

3.0 OCTOBER 2024 BEDROCK MONITORING WELL INSTALLATION AND SAMPLING

Bedrock groundwater monitoring wells were installed at eight (8) locations on October 17 and 18, 2024. Monitoring wells were installed using a 3-inch diameter air hammer to a depth that was greater than or equal to 50-feet below the proposed pit elevation at the respective location. Lithology, water content and fracture occurrence were logged for each bedrock well while drilling. Samples were collected from the drill cuttings at each location for laboratory analysis of acid mine drainage potential which included acid base accounting and shake-flask extraction. Laboratory analysis was performed by SGS Canada, Inc. of Lakefield, Ontario.

Pleaser refer to **Figure 2** for a **Monitoring Well Location Map**.

3.1 Bedrock Well Installation

BRW-1

Monitoring well BRW-1 was installed in the on the boundary between proposed Period 1 and 2 adjacent to MW-1. Bedrock was encountered at a depth of 3.3-feet bgs. The bedrock well was installed as an open borehole to a depth of 54-feet bgs. The ground elevation at this location is 950-feet AMSL. The bottom of the borehole is at an elevation of 896-feet AMSL. The proposed pit floor elevation at this location is 950-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-2
Monitoring well BRW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Bedrock was encountered at a depth of 12.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 62-feet bgs. The ground elevation at this location is 944-feet AMSL. The bottom of the borehole is at an elevation of 882-feet AMSL. The proposed pit floor elevation at this location is 940-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-3
Monitoring well BRW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Bedrock was encountered at a depth of 14.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 51-feet bgs. The ground elevation at this location is 1,052-feet AMSL. The bottom of the borehole is at an elevation of 1,001-feet AMSL. The proposed pit floor elevation at this location is 1050-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-4
Monitoring well BRW-4 was installed in the southeastern portion of Period 5. Bedrock was encountered at a depth of 5.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,103-feet AMSL. The bottom of the borehole is at an elevation of 962-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-5
Monitoring well BRW-5 was installed in the northeastern portion of Period 5. Bedrock was encountered at a depth of 3.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,112-feet AMSL. The bottom of the borehole is at an elevation of 971-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-6
Monitoring well BRW-6 was installed in the northwestern portion of Period 6. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 142-feet bgs. The ground elevation at this location is 1,192-feet AMSL. The bottom of the borehole is at an elevation of 1,050-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-7
Monitoring well BRW-7 was installed upgradient of the central portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.9-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,178-feet AMSL. The bottom of the borehole is at an elevation of 1,037-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 70-feet to the south of BRW-7 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 5.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.96-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 5.0-feet bgs.

BRW-8

Monitoring well BRW-8 was installed upgradient of the northern portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,182-feet AMSL. The bottom of the borehole is at an elevation of 1,041-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 125-feet to the southwest of BRW-8 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 9.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.84-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 9.0-feet bgs.

Below is a table summarizing the bedrock elevations, depths, and proposed pit floor elevations.

Well	Ground Elevation (ft AMSL)	Bedrock Depth (feet)	Depth/Bottom Elevation (feet/ ft AMSL)	Proposed Pit Floor Elevation (ft AMSL)
BRW-1	950	3	54/896	950
BRW-2	944	12	62/882	940
BRW-3	1052	14	51/1,001	1,050
BRW-4	1,103	3	81/1,022	1,098
BRW-5	1,164	3	141/1,023	1,098
BRW-6	1,162	1	122/1,040	1,098
BRW-7	1,178	1.9	141/1,037	1,098*
BRW-8	1,180	1	1,039	1,098*

*Well is located outside of the project area. The pit floor elevation that is noted is the proposed elevation of the nearest excavation.

Please refer to **Appendix B** for **Bedrock Boring and Monitoring Well Construction Logs.**

3.0 ACID MINE DRAINAGE POTENTIAL OVEVIEW

Acid Mine Drainage (AMD) occurs when water reacts with sulfur bearing minerals creating sulfuric acid. The acidic water can contain high concentrations of metals dissolved from the rock including arsenic, copper, iron, manganese, nickel and lead depending upon the parent-bedrock.

A variety of chemical reactions can contribute to AMD, however oxidation of pyrite (FeS_2) is the common driver for contributing to acid mine drainage. The chemical equation for this process is:

$$2\ FeS_2 + 7\ O_2 + 2\ H_2O \rightarrow 2\ Fe^{2+} + 4\ SO_4^{2-} + 4\ H^+$$

Oxidation of the pyrite solubilizes ferrous iron which then oxidizes to ferric iron. The chemical equation for this process is:

$$4\ Fe^{2+} + O_2 + 4\ H^+ \rightarrow 4\ Fe^{3+} + 2\ H_2O$$

Ferric cations produced in the above reaction have the potential to oxidize additional pyrite which is reduced into ferrous ions. The chemical equation for this process is:

$$FeS_2 + 14\ Fe^{3+} + 8\ H_2O \rightarrow 15\ Fe^{2+} + 2\ SO_4^{2-} + 16\ H^+$$

The overall result of the chemical reactions is the release of H^+. This lowers the pH of the water and retains the solubility of ferric ion.

Additionally, low pH waters at mining sites can contain high levels of toxic metals specifically arsenic, copper, iron, manganese, nickel and lead. The potential for the existence of these metals is dependent upon the consistency of the parent-bedrock.

To predict the potential for acid mine drainage at a Site, bedrock samples are laboratory analyzed for their acid producing potential and metals content.

4.0 ACID PRODUCING POTENTIAL ANALYSIS

Acid based accounting (ABA) is a widely used method in predicting the potential for acid mine drainage. ABA analysis measures the reactive sulfur in a sample to determine the Maximum Potential Acidity (MPA) and the content of reactive carbonate to determine the Neutralizing Potential (NP). The MPA of a sample is calculated by multiplying the percent mass of SO_4 in a sample by a constant of 31.25. This constant is derived from the understanding that it requires 31.25 metric tons of $CaCO_3$ to neutralize 1,000 metric tons of rock containing 1% sulfur. The NP of a sample is calculated by multiplying the percent mass of $CaCO_3$ by a constant of 83.34 to convert the $CaCO_3$ percent mass into units of kg CaCO3/ton. The ratio of the NP/MPA predicts the potential for the sample to produce acid mine drainage. Research conducted by diPretoro and Rauch (1988) demonstrated that NP/MPA ratios of <2.4 typically resulted in acid mine drainage and ratios of >2.4 resulted in alkaline discharge.

4.1 ACID BASED ACCOUNTING RESULTS

BRW-1

The percent mass of SO_4 in the sample collected from BRW-1 was calculated to be 27.3% and the percent mass of $CaCO_3$ was calculated to be 11.99%. The calculated MPA of the sample was 8.53 kg SO_4/ton. The calculated NP of the sample was 9.95 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 1.17. Based on these results this location has the potential to produce acid mine drainage.

BRW-2

The percent mass of SO_4 in the sample collected from BRW-2 was calculated to be 29.1% and the percent mass of $CaCO_3$ was calculated to be 9.11%. The calculated MPA of the sample was 9.11 kg SO_4/ton. The calculated NP of the sample was 2.56 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.28. Based on these results this location has the potential to produce acid mine drainage.

BRW-3

The percent mass of SO_4 in the sample collected from BRW-3 was calculated to be 31.4% and the percent mass of $CaCO_3$ was calculated to be 3.0%. The calculated MPA of the sample was 9.81 kg SO_4/ton. The calculated NP of the sample was 2.49 kg $CaCO_3$/ton. The ratio of NP/MPA was

calculated to be 0.25. Based on these results this location has the potential to produce acid mine drainage.

BRW-4

The percent mass of SO_4 in the sample collected from BRW-4 was calculated to be 36.1% and the percent mass of $CaCO_3$ was calculated to be 8.7%. The calculated MPA of the sample was 11.27 kg SO_4/ton. The calculated NP of the sample was 7.25 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.64. Based on these results this location has the potential to produce acid mine drainage.

BRW-5

The percent mass of SO_4 in the sample collected from BRW-5 was calculated to be 9.1% and the percent mass of $CaCO_3$ was calculated to be 48.0%. The calculated MPA of the sample was 2.83 kg SO_4/ton. The calculated NP of the sample was 40.02 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 14.12. Based on these results this location does not have the potential to produce acid mine drainage.

BRW-6

The percent mass of SO_4 in the sample collected from BRW-6 was calculated to be 39.0% and the percent mass of $CaCO_3$ was calculated to be 10.0%. The calculated MPA of the sample was 12.18 kg SO_4/ton. The calculated NP of the sample was 8.33 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.68. Based on these results this location has the potential to produce acid mine drainage.

BRW-7

The percent mass of SO_4 in the sample collected from BRW-7 was calculated to be 56.4% and the percent mass of $CaCO_3$ was calculated to be 0.08%. The calculated MPA of the sample was 17.63 kg SO_4/ton. The calculated NP of the sample was 0.67 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.04. Based on these results this location has the potential to produce acid mine drainage.

It should be noted that this location is outside of the proposed project area.

BRW-8

The percent mass of SO_4 in the sample collected from BRW-8 was calculated to be 66.1% and the percent mass of $CaCO_3$ was calculated to be 1.1%. The calculated MPA of the sample was 20.67 kg SO_4/ton. The calculated NP of the sample was 0.92 kg $CaCO_3$/ton. The ratio of NP/MPA was calculated to be 0.04. Based on these results this location has the potential to produce acid mine drainage.

It should be noted that this location is outside of the proposed project area.

Please refer to **Appendix C** for **Tabulated Summary of Acid Based Accounting Results**.

5.0 BEDROCK METALS CONCENTRATION ANALYSIS

The shake flask extraction laboratory method is a commonly used analysis to determine the potential for metals to leach from a bedrock sample. In this method the sample is saturated in water or a weak acid and shook to dissolve the metals into solution. The solution is then analyzed to determine the

concentrations of dissolved metals. This method is used to predict the potential how much of a particular metal may be released under acid mine drainage conditions. For this report metals including; arsenic, copper, iron, manganese, nickel and lead were found to be the primary potential contaminants associated with AMD.

5.1 Shake Flask Extraction Results

BRW-1
The sample collected from BRW-1 had reported concentrations of arsenic at 1.4 µg/g, copper at 69 µg/g, iron at 61,000 µg/g, manganese at 510 µg/g, nickel at 54 µg/g and lead at 20 µg/g.

BRW-2
The sample collected from BRW-2 had reported concentrations of arsenic at 1.0 µg/g, copper at 67 µg/g, iron at 62,000 µg/g, manganese at 850 µg/g, nickel at 57 µg/g and lead at 18 µg/g.

BRW-3
The sample collected from BRW-3 had reported concentrations of arsenic at 1.2 µg/g, copper at 77 µg/g, iron at 65,000 µg/g, manganese at 730 µg/g, nickel at 56 µg/g and lead at 17 µg/g.

BRW-4
The sample collected from BRW-4 had reported concentrations of arsenic at 1.4 µg/g, copper at 63 µg/g, iron at 62,000 µg/g, manganese at 710 µg/g, nickel at 56 µg/g and lead at 19 µg/g.

BRW-5
The sample collected from BRW-5 had reported concentrations of arsenic at 0.6 µg/g, copper at 6.6 µg/g, iron at 7,700 µg/g, manganese at 210 µg/g, nickel at 8.9 µg/g and lead at 45 µg/g.

BRW-6
The sample collected from BRW-6 had reported concentrations of arsenic at 1.2 µg/g, copper at 59 µg/g, iron at 59,000 µg/g, manganese at 560 µg/g, nickel at 53 µg/g and lead at 24 µg/g.

BRW-7
The sample collected from BRW-7 had reported concentrations of arsenic at 1.3 µg/g, copper at 64 µg/g, iron at 60,000 µg/g, manganese at 570 µg/g, nickel at 63 µg/g and lead at 22 µg/g.

It should be noted that this location is outside of the proposed project area.

BRW-8
The sample collected from BRW-8 had reported concentrations of arsenic at 1.5 µg/g, copper at 40 µg/g, iron at 33,000 µg/g, manganese at 330 µg/g, nickel at 19 µg/g and lead at 26 µg/g.

It should be noted that this location is outside of the proposed project area.

Please refer to **Appendix D** for **Tabulated Summary of Shake Flask Extraction Results.**

6.0 PROPOSED WATER QUALITY MONITORING

Due to the potential for water at the Site to be affected by acid mine drainage it is proposed that wells SRL-10, SRL-12, BRW-7 and BRW-8 be monitored on a bi-annual basis in the months of April and October. Additionally, samples will be collected from surface water infiltration features constructed throughout the project. All surface water being conveyed from the proposed excavation is to be directed into a surface water infiltration basin. The construction and placement of surface water infiltration features will be iterative based on project progression. Currently there is one surface water infiltration feature located in the western area of Period 8. As new infiltration features are constructed at the Site they will be added to the sampling program. Field parameters including pH, specific conductance, oxidation reduction potential, dissolved oxygen and turbidity and laboratory analysis of dissolved and total metals including; arsenic, copper, iron, manganese, nickel and lead will be performed at each sampling location. Baseline, pre-excavation monitoring will consist of the collection of two (2) rounds of samples collected a minimum of 14 calendar days apart. Results will be reviewed in comparison to the New Hampshire Department of Environmental Services (NHDES) Ambient Groundwater Quality Standards (AGQS). All results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

Please refer to **Figure 3** for a **Proposed Water Quality Monitoring Location Map**.

7.0 REFERENCES

1. [Acid Mine Drainage https://www.westech-inc.com/solutions/mining-and-minerals/acid-mine-drainage]

2. diPretoro, R.S., and H.W. Rauch. 1988. Use of acid-base accounts in premining prediction of acid drainage potential: a new approach from Northern West Virginia. p. 1-10. In: Proceedings: Mine Drainage and Surface Mine Reclamation, Vol. 1, U.S. Bureau of Mines IC 9183, Pittsburgh, PA.

3. *Johnson, D. Barrie; Hallberg, Kevin B. (1 February 2005). "Acid mine drainage remediation options: a review". Science of the Total Environment. Bioremediation of Acid Mine Drainage: The Wheal Jane Mine Wetlands Project. 338 (1): 3–14. Bibcode:205ScTEn.338….3J. doi:10.1016/j.scitotenv.2004.09.002. ISSN 0048-9697. PMID 15680622. S2CID 24245069*

GORDON SERVICES – KEENE PIT
2024 HYDROGEOLOGIC INVESTIGATION REPORT

57 Route 9, Keene, New Hampshire
City of Keene Tax Map 215 Block 7
Town of Sullivan Tax Map 583 Lot 46 & 46-1

Prepared For:

Gordon Services
250 North Street
Jaffrey, New Hampshire 03452

Prepared By:

FRONTIER GEOSERVICES
127 OLD WARNER ROAD
BRADFORD, NEW HAMPSHIRE 03221

Joel Banaszak, P.G.
(603) 748-3715
Jbanaszak@frontiergeoservices.com

December 18, 2024
Frontier Project No. 2024012

1.0 INTRODUCTION

Frontier Geoservices, LLC. (Frontier) has completed a hydrogeological investigation at the property located at 57 Route 9, in the City of Keene, Cheshire County, New Hampshire The parcels comprising the Site are identified by the City of Keene's Assessor's office on Tax Map 215 as Block 7 (102.7-acres) and the Town of Sullivan, New Hampshire, Assessor's office on Tax Map 5 Lot 46 (172-acres) and 46-1 (25.82-acres. The Site is currently owned by G2 Holdings, LLC. of 250 North Street, Jaffrey, New Hampshire. Please refer to **Figure 1** for a **Site Location Map**.

Currently, the Site operates as a gravel and earth removal operation for Gordon Services. The current operations are permitted to only encompass one area, Period 8, of the Site. Gordon Services wishes to expand their current operations to include additional excavation in Period 8 and new excavations in Periods 1 – 7. Please refer to **Figure 2** for a **Site Plan/Monitoring Well Location Map**.

Applicants proposing Earth Excavation are required to provide the information requested in The City of Keene's Article 25 Earth Excavation Regulation. This report provides the information required to fulfill The City of Keene's Article 25.3.4 Groundwater Quantity. Site activities included the installation of eight (8) overburden monitoring wells and eight (8) bedrock monitoring wells. Monitoring groundwater elevations in the wells was conducted over a minimum of a 2-week period. Additional information was provided through a Limited Hydrogeologic Investigation Report completed by SLR International Corporation of Bedford, New Hampshire, dated March 25, 2022.

It should be noted that based on the results of this investigation and the previous, dewatering of the proposed excavation is not required.

2.0 SITE SETTING

The Site consists of a total of 300.52 acres of undeveloped land. The Site has a central latitude of 42°58'27.03" north and longitude of 72°13'34.66" west. The Site currently operates as a gravel and earth removal operation for Gordon Services. As previously mentioned, the Site currently only operates within the limits of Period 8 as shown on the Site Plan.

2.1 Description of Structures, Roads and other Improvements

The Site is accessed from the northern side of Route 9 in Keene, New Hampshire via a gravel driveway. The gravel driveway directs traffic to the east and west when entering the pit area. Prior to entering the pit area there is a fueling area, storage shed, and porta-potty located to the east. The current pit area has an elevation of 880-ft above mean sea level (AMSL). Earth removal and processing equipment is staged on the pit floor. Surface water drainage is currently directed to an infiltration basin located on the western side of the current Period 8 excavation. The proposed project area is accessed via former logging roads which were recently cleared.

2.2 Current Use of Adjoining Properties

South of the Site is New Hampshire State Route 9. To the east of the Site is a property which consists of various buildings which are occasionally used by the Habitat for Humanity. This property is also owned by G2 Holdings, LLC. There are no other developed properties located to the east of the Site. Several residential properties exist approximately 1,000-feet northwest of the northern property boundary. There are no developed parcels abutting to the east of the Site.

2.3 Site Physical Setting

The target property is depicted on the Marlborough, New Hampshire United States Geological Survey (USGS) 7.5 Minute Topographic Map dated 2018 at approximately 42°58'27.03" north and 72°13'34.66" west with a current pit floor elevations of 880-feet above the North American Datum (NAD) of 1983.

Based on review of the *Bedrock Geologic Map of New Hampshire*, 1997, bedrock in the vicinity of the target property is classified as the Silurian-aged Rangeley Formation which is a rusty weathering schist, gray quartz-biotite and muscovite-plagioclase schist that contain local calc-silicate layers. It also has rare quartz-rich layers that appear sandy. A **Bedrock Geologic Map** is included in **Appendix A**.

According to the United States Department of Agriculture's Natural Resource Conservation Service (NRCS) Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx), soil beneath the target property consists of eight (8) soil types; the Colton gravelly sandy loam, 8 to 15 percent slopes, the Turnbridge-Berkshire complex, 15 to 25 percent slopes, very stony, the Turnbridge-Lyman-rock outcrop complex 8 to 15 percent slopes, the Turnbridge-Lyman-rock outcrop complex 15 to 25 percent slopes, the Turnbridge-Lyman-rock outcrop complex 25 to 60 percent slopes, the Berkshire fine sandy loam 15 to 25 percent slopes, the Marlow fine sandy loam 25 to 50 percent slopes, the Sunapee fine sandy loam 8 to 15 percent slopes. The soils identified at the Site are described as being excessively drained to well drained and having a depth to water of greater than 80-inches. Soil types at the Site are depicted in the **NRCS Soil Map** included in **Appendix A** which includes the **NRCS Soil Descriptions.**

The target property is located on the National Flood Insurance Program Flood Insurance Rate Map (FIRM) – Map Number 33005C0280E, effective May 23, 2006. The **FIRM Image** was available in the Federal Emergency Management Agency (FEMA) online database and was reviewed as part of this assessment and is included in **Appendix A**. The map depicts the Site in an area of Minimal Flood Hazard.

3.0 PREVIOUS HYDROGEOLOGIC INVESTIGATIONS

As previously mentioned, SLR International of Bedford, New Hampshire completed a Limited Hydrogeologic Investigation Report dated March 25, 2022. The investigation documented the completion of sixteen (16) test pits (TP-1 through TP-16), six (6) soil borings (SRL-1 through SLR-6) and the installation of three (3) groundwater monitoring wells (SRL-10 through SRL-12).

The test pits were excavated to depths ranging from a maximum of 15.5-feet below ground surface (bgs) at TP-4 to a minimum of 3-feet bgs at TP-8. Probable bedrock was encountered in test pits TP-7, TP-8, TP-9 and TP-10. The primary purpose of the test pits was to collect samples for gradation analyses performed in accordance with ASTM D442/D1140. Materials encountered in test pits TP-1, TP-2, TP-3, TP-5, TP-6, TP-7, TP9, TP-10, TP-13 and TP-14 were classified as glacial till. Materials encountered in test pits TP-4 and TP-12 were classified as glacial outwash. Samples were not collected from test pits TP-8, TP-11, TP-15 and TP-16. None of the test pits encountered saturated groundwater conditions.

Soil borings SRL-1 through SRL-6 were advanced to depths ranging from a maximum of 28-feet bgs at SRL-5 to a minimum of 2-feet bgs at SRL-2. Probable bedrock was encountered in soil borings

SRL-1, SRL-2, SRL-4, SRL-5 and SRL-6. The primary purpose of the soil borings was to collect samples for gradation analyses performed in accordance with ASTM D6913. Materials encountered in soil boring SRL-1 were classified as glacial till. Materials encountered in soil borings in soil borings SRL-4 and SRL-6 were classified as glacial outwash. SRL-5 materials had a combined consistency of glacial till and glacial outwash. Samples were not collected from SRL-2 and SRL-3. None of the soil borings encountered saturated groundwater conditions. SRL-6 did have "wet" materials at the bottom of the soil boring at 10-feet bgs. However, it should be noted that this boring was completed outside of the proposed project area.

Monitoring well SRL-10 was installed in the southwest corner of Period 8 to a depth of 55-feet bgs in overburden materials. Bedrock was not encountered at this location. The screened interval of the well was from 5-feet to 55-feet bgs. A water level of 42.9-feet bgs was recorded on March 22, 2022. This is interpreted to be the seasonal high for well SRL-10. More recently, a water level of 52.85-feet bgs was recorded on December 12, 2024.

Monitoring well SRL-11 was installed in the eastern section of the Period 8 area to a depth of 45.2-feet bgs in overburden materials. The advanced prior to the installation of the monitoring well was advanced to a depth of 76-feet bgs. Bedrock was not encountered at this location. The screened interval of the well was from 5-feet to 45.2-feet bgs. Groundwater was not encountered in the soil boring or observed during the March 22, 2022 gauging event. This well has since been destroyed.

Monitoring well SRL-12 was installed in bedrock in the north-central section of the Period 8 to a depth of 39.5-feet bgs. Bedrock was encountered at a depth of 11-feet bgs. The screened interval of the well was from 4.5-feet to 39.5-feet bgs. It should be noted that this well is cross-screened between the overburden and bedrock materials. A water bearing fracture was reportedly encountered at 28-feet bgs. A water level of 1.5-feet bgs was recorded on March 22, 2022. This is interpreted to be the seasonal high for well SRL-12. More recently, a water level of 7.5-feet bgs was recorded on December 12, 2024.

Please refer to **Appendix B** for a copy of the **SLR International Limited Hydrogeologic Investigation Report**.

4.0 JULY 2024 OVERBURDEN MONITORING WELL INSTALLATION

A total of eight (8) overburden locations were investigated for the potential of installation of a groundwater monitoring well on July 22 and 23, 2024. Prior to installation of a monitoring well a soil boring was conducted to refusal depth. Soils retrieved from the boring were logged for their lithologic and water content and also screened for volatile organic compounds (VOCs) using a MiniRae 3000 photo-ionization detector (PID). Monitoring wells were installed by advancing 4-inch diameter steel casing at the boring location. The casing was then "washed" using clean water. 2-inch diameter poly-vinyl chloride (PVC) screen and riser of varying lengths were used in construction of the wells. The annulus surrounding the screen portion of the monitoring wells was filled using clean silica sand to a level of 1-foot above the screen/riser interface. Bentonite chips were emplaced around the riser to a depth of 1-foot bgs and the remaining portion of the borehole was filled with native materials.

Please refer to **Figure 2** for a **Monitoring Well Location Map**.

4.1 Overburden Monitoring Well Installations

MW-1

Monitoring well MW-1 was installed in the on the boundary between proposed Period 1 and 2. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 3.3-feet bgs. A monitoring well was installed to a depth of 3.3-feet bgs and constructed using approximately 2-feet of PVC screen and 1.5-feet of solid riser. Groundwater was not encountered at this location.

MW-2

Monitoring well MW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 12.0-feet bgs. A monitoring well was installed to a depth of 12.0' bgs and constructed using approximately 10-feet of PVC screen and 2-feet of solid riser. Groundwater was not encountered at this location.

MW-3

Monitoring well MW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Overburden materials consisted of dry, brown, sandy gravel with occasional cobbles. Bedrock was encountered at a depth of 14.2-feet bgs. A monitoring well was installed to a depth of 14.2-feet bgs and constructed using approximately 10-feet of PVC screen and 5-feet of solid riser. Groundwater was not encountered at this location.

MW-4

Monitoring well MW-4 was installed in the southeastern portion of Period 5. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 3-feet bgs. A monitoring well was installed to a depth of 3-feet bgs and constructed using approximately 2-feet of PVC screen and 1-foot of solid riser. Groundwater was not encountered at this location.

MW-5

Monitoring well MW-5 was installed in the northeastern portion of Period 5. Overburden materials consisted of dry, brown, sandy gravel. Bedrock was encountered at a depth of 5-feet bgs. A monitoring well was installed to a depth of 5-feet bgs and constructed using approximately 4-feet of PVC screen and 1-foot of solid riser. Groundwater was not encountered at this location.

MW-6

Monitoring well MW-6 was installed in the northwestern portion of Period 6. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 0.9-feet bgs. A monitoring well was not installed at this location.

MW-7

Monitoring well MW-7 was installed upgradient of the central portion of Period 7. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 1.9-feet bgs. A monitoring well was not installed at this location.

MW-8

Monitoring well MW-8 was installed upgradient of the northern portion of Period 7. Overburden materials consisted of dry, brown, silty sand, sand, gravel and fragmented bedrock. Bedrock was encountered at a depth of 1.0-feet bgs. A monitoring well was not installed at this location.

Please refer to **Appendix C** for **Overburden Boring and Monitoring Well Construction Logs**.

4.1 Overburden Monitoring Well Groundwater Levels

Groundwater levels were measured on July 23, 2024, August 5, 2024 and October 17, 2024. Groundwater was not observed in any of the overburden groundwater monitoring wells.

5.0 OCTOBER 2024 BEDROCK MONITORING WELL INSTALLATION

Bedrock groundwater monitoring wells were installed at eight (8) locations on October 17 and 18, 2024. Monitoring wells were installed using a 3-inch diameter air hammer to a depth that was greater than or equal to 50-feet below the proposed pit elevation at the respective location. Lithology, water content and fracture occurrence were logged for each bedrock well. Samples were collected from the drill cuttings at each location for laboratory analysis of acid mine drainage potential which included acid base accounting and shake flask extraction. The results from the acid mine drainage potential analyses are included in a separate report titled "Gordon Services – Keene – Acid Mine Drainage Potential Report", dated December 18, 2024.

Please refer to **Figure 2** for a **Monitoring Well Location Map**.

5.1 Bedrock Well Installation

BRW-1
Monitoring well BRW-1 was installed in the on the boundary between proposed Period 1 and 2 adjacent to MW-1. Bedrock was encountered at a depth of 3.3-feet bgs. The bedrock well was installed as an open borehole to a depth of 54-feet bgs. The ground elevation at this location is 950-feet AMSL. The bottom of the borehole is at an elevation of 896-feet AMSL. The proposed pit floor elevation at this location is 950-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-2
Monitoring well BRW-2 was installed east of the central portion of Period 3 adjacent to the proposed quarry access road. Bedrock was encountered at a depth of 12.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 62-feet bgs. The ground elevation at this location is 944-feet AMSL. The bottom of the borehole is at an elevation of 882-feet AMSL. The proposed pit floor elevation at this location is 940-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-3
Monitoring well BRW-3 was installed in the western portion of Period 3 along the proposed quarry access road. Bedrock was encountered at a depth of 14.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 51-feet bgs. The ground elevation at this location is 1,052-feet AMSL. The bottom of the borehole is at an elevation of 1,001-feet AMSL. The proposed pit floor elevation at this location is 1050-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-4
Monitoring well BRW-4 was installed in the southeastern portion of Period 5. Bedrock was encountered at a depth of 5.0-feet bgs. The bedrock well was installed as an open borehole to a depth

of 141-feet bgs. The ground elevation at this location is 1,103-feet AMSL. The bottom of the borehole is at an elevation of 962-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-5

Monitoring well BRW-5 was installed in the northeastern portion of Period 5. Bedrock was encountered at a depth of 3.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,112-feet AMSL. The bottom of the borehole is at an elevation of 971-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-6

Monitoring well BRW-6 was installed in the northwestern portion of Period 6. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 142-feet bgs. The ground elevation at this location is 1,192-feet AMSL. The bottom of the borehole is at an elevation of 1,050-feet AMSL. The proposed pit floor elevation at this location is 1,098-feet AMSL. No fractures or water bearing zones were encountered at this location.

BRW-7

Monitoring well BRW-7 was installed upgradient of the central portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.9-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,178-feet AMSL. The bottom of the borehole is at an elevation of 1,037-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 70-feet to the south of BRW-7 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 5.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.96-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 5.0-feet bgs.

BRW-8

Monitoring well BRW-8 was installed upgradient of the northern portion of Period 7. This well is located outside of the proposed project area. Bedrock was encountered at a depth of 1.0-feet bgs. The bedrock well was installed as an open borehole to a depth of 141-feet bgs. The ground elevation at this location is 1,182-feet AMSL. The bottom of the borehole is at an elevation of 1,041-feet AMSL. The proposed pit floor elevation in Period 7, located approximately 125-feet to the southwest of BRW-8 is 1,098-feet AMSL. A water bearing fracture was encountered at a depth of 9.0' bgs. The fracture produced less than 5-gpm based on airlift testing conducted during drilling. A water level of 0.84-feet bgs was recorded on the day of drilling. No other fractures or water bearing zones were encountered below a depth of 9.0-feet bgs.

Below is a table summarizing the bedrock elevations, depths, groundwater levels and proposed pit floor elevations.

Well	Ground Elevation (ft AMSL)	Bedrock Depth (feet)	Depth/Bottom Elevation (feet/ ft AMSL)	Proposed Pit Floor Elevation (ft AMSL)	Groundwater Elevation (ft AMSL)
BRW-1	950	3	54/896	950	DRY
BRW-2	944	12	62/882	940	DRY
BRW-3	1052	14	51/1,001	1,050	DRY
BRW-4	1,103	3	81/1,022	1,098	DRY
BRW-5	1,112	3	141/971	1,098	DRY
BRW-6	1,192	1	142/1,050	1,098	DRY
BRW-7	1,178	1.9	141/1,037	1,098*	1,177.04
BRW-8	1,182	1	141/1,041	1,098*	1,179.16

*Well is located outside of project area. The pit floor elevation that is noted is the proposed elevation of the nearest excavation.

Please refer to **Appendix D** for **Bedrock Boring and Monitoring Well Construction Logs.**

5.1 Bedrock Monitoring Well Groundwater Levels

Groundwater levels were measured on October 18, 2024, November 1, 2024 and November 8, 2024. All bedrock wells were found to be dry with the exception of wells BRW-7 and BRW-8. Water levels recorded at those locations during each sampling event were all less than 1-foot below ground surface.

6.0 HYDROGEOLOGICAL CONCEPTUAL MODEL

A hydrogeologic conceptual model has been developed based on the previous hydrogeologic investigation report and results from the installation and monitoring of the eight (8) overburden monitoring wells and eight (8) bedrock wells installed for the proposed project.

None of the overburden monitoring wells installed for this project had any observable groundwater. Previously installed overburden monitoring well SRL-10, located in Period 8 of the project area most recently had a groundwater elevation of 831.85 ft AMSL. An elevation of 841.8 ft AMSL.

It is interpreted that recharge to the overburden aquifer is limited at the Site due to the relatively steep topography. Much of the atmospheric water which falls on the Site either runs off as surface water drainage or taken up through plant water uptake (transpiration). Furthermore, the materials encountered in the soil borings advanced prior to the installation of the overburden monitoring wells consisted primarily of a sand and gravel assortment. These materials are generally of very high hydraulic conductivity, suggesting that they have a high capacity to transmit water. Water which does infiltrate into the subsurface has a low residence time due to the steep topography and sloping bedrock interface. Water which may infiltrate into the overburden materials is transported relatively quickly to a base elevation for overburden groundwater which is interpreted to be demonstrated by the water levels observed in SRL-10.

Bedrock groundwater at the Site is controlled by fracture flow due to the crystalline nature of the bedrock which does not have any pore space. Fractures or groundwater bearing zones were not encountered at monitoring wells BRW-1 through BRW-6. A water bearing fracture was encountered during the previous hydrogeologic investigation at SRL-12 at a depth of 28-feet bgs, elevation 862-feet AMSL. The proposed grading in Period 1 does not encounter this elevation. The proposed grading from Period 1 to Period 8 located to the south maintains a separation of approximately 150-feet from the fracture. Water levels observed in SRL-12 are suspect to interference between overburden groundwater and bedrock groundwater due to the cross-screening of the overburden/bedrock interface. However, the proposed grading of the project does not call for excavation into the area of SRL-12 and therefore groundwater is unlikely to be encountered in Period 1.

Bedrock monitoring wells BRW-7 and BRW-8 encountered fractures at shallow depth of 5-feet and 9-feet respectively. These fractures yielded less than 5 gallons per minute. These wells are in an area where the topography slopes to the north, as opposed to the rest of the Site which slopes to the south. It is interpreted that groundwater flow from these wells is to the north, towards the adjacent wetlands.

7.0 PROPOSED WATER LEVEL MONITORING

Based on the results of the previous hydrogeologic investigation and the most recent it is proposed that groundwater level monitoring be conducted monthly at the Site in accordance with the City of Keene's Article 25.3.4C, although no groundwater dewatering is proposed at the Site. Overburden groundwater level monitoring is to be conducted at Site wells including; SRL-10, SRL-12, MW-2 and MW-4. Bedrock groundwater level monitoring is proposed to be conducted SRL-12, BRW-7 and BRW-8. Surface water levels are proposed to be collected from the six (6) wetland areas located adjacent to the project area. Additionally, precipitation data will be collected from a central location at the Site.

Please refer to **Figure 3** for a **Proposed Water Level Monitoring Location Map**.

Water levels will be reviewed in comparison to the precipitation data and noted for anomalous readings which do not align with the conceptual hydrogeologic model of the Site. Results from water level monitoring will be forwarded to the City of Keene on an annual basis in January of each calendar year. If anomalous groundwater levels are encountered the City of Keene will be notified with 24-hours and groundwater level monitoring of all domestic wells within ½-mile of the Site will be initiated. If water quantity disruptions have been observed in a domestic water supply well with 1/2-mile of the Site as a result of excavation activities, a licensed New Hampshire Well Contractor will be immediately retained for installation of a new water supply well in an unaffected area.

8.0 PROPOSED SITE GROUNDWATER QUALITY MONITORING

Due to the potential for groundwater at the Site to be affected by blasting activities, it is proposed that wells SRL-10, SRL-12, BRW-7 and BRW-8 be monitored on a bi-annual basis in the months of April and October for field parameters including; pH, specific conductance, oxidation reduction potential, dissolved oxygen and turbidity and laboratory analysis of volatile organic compounds and nitrate. Baseline, pre-excavation monitoring will consist of the collection of two (2) rounds of samples collected a minimum of 14 calendar days apart. Results will be reviewed in comparison to the New Hampshire Department of Environmental Services (NHDES) Ambient Groundwater Quality

Standards (AGQS). All results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

9.0 PROPOSED OFF-SITE GROUNDWATER QUALITY MONITORING

In accordance with Article 25.3.5 all landowners with ½ -mile of the Site will be offered groundwater quality monitoring. Notification will be made to all landowners via United States Postal Service Certified Mail. The notification will include a description of the requirement to offer sampling and analysis of the landowner's domestic drinking water supply well and an option to decline the offer. It should be noted that landowners may opt in or opt out for sampling at any time during the term of the permit.

Baseline, pre-excavation monitoring of participating landowner wells will consist of the collection of two (2) rounds of drinking water samples collected a minimum of 14 calendar days apart. The samples will be analyzed for volatile organic compounds and nitrate. Sample results will be provided to the landowner via standard United State Postal Service mailing. Additionally, baseline results will be forwarded to the City of Keene Community Development Department within 45 days of sample collection.

On-going, post-excavation monitoring of participating landowner wells will consist of the collection of drinking water samples on a bi-annual basis during the term of the permit and 2 years following the cease of operations at the Site and reclamation. Results will be forwarded to landowners and the City of Keene Community Development Department similarly as noted above.

Drinking water results will be compared to the NHDES AGQS. If adverse impacts are noted, the applicant will immediately be notified to cease bedrock excavation. Additionally, NHDES and the City of Keene will be notified. If monitoring indicates that the excavation activities caused the identified contamination, a licensed New Hampshire Well Contractor will be immediately retained for installation of a new water supply well in an area that has not been impacted by contamination.

10.0 PROPOSED GROUNDWATER OCCURRENCE MONITORING

As previously mentioned, bedrock groundwater at the Site is controlled by fracture flow due to the crystalline nature of the bedrock. The blast hole driller shall maintain a log of all boreholes at the Site and note the location of the borehole, depth of the borehole and any fractures or water bearing zones encountered. If a fracture or water bearing zone is encountered in a borehole no blasting shall occur at that location.

STORMWATER MANAGEMENT REPORT

GRANITE ENGINEERING

civil engineering ● land planning ● municipal services

GORDON SERVICES - KEENE

Keene: Map 215; Lots 7 & 8
Sullivan: Map 5; Lots 46 & 46-1
57 Route 9
Keene & Sullivan, New Hampshire
January 22, 2025

PREPARED FOR:
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GE Project No. 23-0201-1

I. INTRODUCTION

A. Project Description

The subject properties propose the expansion of an existing gravel and earth removal operation for G2 Holdings, LLC. The properties are located at 57 Route 9 in Keene and Sullivan, New Hampshire. The majority of the site is located within the Keene R (Rural) Zoning District. A proposed gravel road will be constructed to access various points on the site. Stormwater runoff will be managed through a series of sediment basins that connect to an existing infiltration pond.

B. Existing Site Conditions

Keene Tax Map 215 Lot 7 is approximately 78.4 acres in area. Keene Tax Map 215 Lot 8 is approximately 23.1 acres in area. Sullivan Tax Map 5 Lot 46 is approximately 169.0 acres in area. Tax map 5 Lot 46-1 is approximately 28.1 acres in area. The total area of all four subject properties is therefore 298.6 acres in area. The property is currently developed with a gravel removal operation. There are wetlands on the properties to the north and east. There is an existing, previously permitted, stormwater basin located to the south of the property, closest to Route 9.

According to the Site Specific Soil Survey, the predominant onsite soil types are Sunapee, Tunbridge Lyman Rock Outcrop, and Lyman.

Please refer to sections three (3) and eight (8) of this stormwater report for project specific NRCS soils and SSSS report information.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

The purpose of this analysis was to determine if the proposed sediment ponds could capture, detail, and release the stormwater flows through small, controlled, outlet pipes to both the existing infiltration area located currently on-site, as well as the proposed infiltration area to be completed during the final phase of the project (Period 8).

In accordance with generally accepted engineering practice, the 50-year frequency storm has been used in the various aspects of analysis and design of stormwater management considerations for the subject site. Stormwater–treatment provisions and all drainage facilities have been designed to be fully functional during a 50-year return frequency storm.

In appreciation of the benefits and limitations related to each of the various methods available to design professionals for estimating peak stormwater discharge rates for use in analysis and design, the TR-20 computer model was used. Values for Time of Concentration used in the analysis were estimated using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All proposed stormwater inlet structures were designed to remain under inlet control throughout a design storm of the return frequency noted. Outlet protection for each discharging culvert was designed in accordance with the methodology for the “best management practice”, in accordance with a publication entitled New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design. In addition, this publication served as the primary reference for the numerous temporary and permanent erosion control methods incorporated into the design of this project.

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning’s “n” value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the “Post Development Drainage Area Plans” graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Post-Development Drainage Conditions

In order to evaluate the impact of the proposed development, one (1) Point of Analysis (POA) was analyzed to demonstrate that the peak rates of runoff would not increase from the site improvements.

The primary POA, Link A, is located at the outlet of the existing stormwater basin, toward the southern end of the property, closest to Route 9.

Stormwater from these areas is managed by multiple sediment basins/detention ponds around each work area. These detention ponds are represented in the HydroCAD model and are denoted as SF 5, SF6, SF7, and SF8. The intent of the grading of the pit areas, as well as the haul roads, was to keep the stormwater self contained, with no runoff during a 50-year, 24-hour storm event. The proposed infiltration area was designed to use exfiltration though the native soils as its only means of outlet. Infiltration rates for the infiltration ponds were calculated by the default method as set forth in Env-Wq 1054.14. The practice is located in an area identified in the

Soil Series Survey as Berkshire, Fine Sandy Loam Soils. Using Ksat values for New Hampshire Soils, Soil Scientists of Northern New England, Special Publications No. 5, September 2009, the lowest value associated with Berkshire soils is 0.6 inches per hour. Using a safety factor of 2, the infiltration rate utilized in the drainage analysis is 0.3 inches per hour.

Test pit data performed by TF Moran was used to determine the floor elevation of the pond, keeping it above the estimated seasonal high water table.

The results of the drainage analysis determined that the stormwater was infiltrated in its entirety during a 50-year, 24-hour storm event. This was done through capturing stormwater in large sediment basins with small, controlled outlet devices to release stormwater in a controlled manner and by directing stormwater to the infiltration area.

For a more visual description of the information presented in this section, please refer to the attached "Post-Development Drainage Areas Plan" attached in the appendix of this report.

All of these ponds provide adequate storage to offset the peak rates of runoff for the design storms. The detailed hydrologic and hydraulic relationship of each sub-catchment is described within the HydroCAD stormwater modeling, also contained in the appendix of this report.

The peak stormwater runoff rate for the specific storm frequency is presented and analyzed in the subsequent summary section of this report, for the point of analysis (Table 1).

C. Summary:

TABLE 1: PEAK RUNOFF (ENV-WQ 1507.06)

Site Post Development (Peak Discharge Rate in cfs)		
Description	**50-Year**	
24-hr Rainfall	5.86"	
	Post - Interim	Post - Final
A	0.00	0.00

TABLE 2: PEAK STORMWATER POND ELEVATION

Site Post Development (Peak Pond Elevation)		
Description	**50-Year**	
	Post - Interim	Final
Stormwater Basin Berm Elevation	874.00	854.00
Peak 50-Year Storm Elevation	873.69	852.63

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

Temporary erosion and sediment control measures are indicated on the design plans, construction details, general notes and within the drainage report. Although not integral with this stormwater report, due to the size of the proposed development both temporary and permanent erosion control measures will also be specified within the project's Stormwater Pollution Prevention Plan (SWPPP). All erosion control measures specified are designed to reduce or eliminate potential soil migration and water quality degradation, both during and after the construction period.

The following temporary erosion control measures will be implemented;

- Silt Fence and/or Silt Logs
- Erosion Control Blankets on slopes 3:1 and steeper
- Riprap Aprons & Spillway Stabilization
- Turf Establishment - Hydroseeding with mulch and tackifiers
- Stone Check Dams
- Temporary Sediment Basins

These temporary erosion control measures are also discussed in the projects. Operation and Maintenance plan contained in the appendices of this report.

In addition to the above-listed erosion control measures, references are made throughout the project documents to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction for additional measures, as necessary.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Furthermore, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment, additional protection is warranted.

C. Permanent Erosion Control Measures

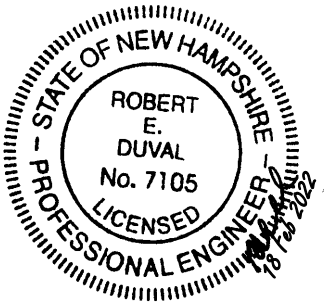
Similar to temporary erosion control measures, all permanent erosion control measures are indicated on the design plans, construction details, general notes, drainage report, SWPPP and O & M project documents.

The following permanent erosion control measures will be implemented;

- Stone-lined ditches
- Inlet & Outlet Protection - Riprap Stabilization
- Stormwater Basins with multi-stage outlets
- Turf Establishment - Hydroseeding with mulch and tackifiers

Each of the above-mentioned permanent erosion control measures are designed in a project-specific manner within both state and local regulatory compliance standards.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists



TRAFFIC MEMORANDUM

Date: February 18, 2022

To: City of Keene
3 Washington Street
Keene, NH 03431

From: Robert Duval, PE

Re: Proposed Gravel Pit
Route 9, Keene, NH
TFM Project No. 82549-00

INTRODUCTION

TFMoran has prepared this traffic memo on behalf of G2 Holdings, LLC to describe trip generation and the existing roadway network associated with a proposed gravel pit in Keene, NH. The site (Map 215 Lot 7) is located within the Rural Zoning District on the north side of Franklin Pierce Highway (NH 9).

The parcel currently has a gravel access drive into a small clearing. G2 Holdings, LLC is currently using the clearing as a laydown area for their landscape and sitework business. The remaining site consists of woods, steep slopes, and wetlands.

PROPOSAL

G2 Holdings, LLC is proposing to construct and operate a 10 +/- acre gravel pit located on The initial phase of the operation will be approximately 5 acres. The gravel driveway will be widened and brush trimmed as necessary to accommodate two-way traffic with adequate sight distance in both directions to support the operation.

DESCRIPTION OF ROADWAYS AND INTERSECTIONS

Franklin Pierce Highway (NH 9)

- Classification. Franklin Pierce Highway is a State-maintained principal arterial that provides east-west travel across the state from Vermont to Maine.
- Lane widths and usage. In the project vicinity, the roadway provides one 12' travel lane in each direction, with 7-8' paved shoulders.
- Pedestrian facilities. There are no sidewalks in the study area.
- Signage and markings. The posted speed limit is 55 mph. Adjacent to the existing driveway is an intersection warning sign. The road has white shoulder markings on both sides. An

eastbound passing zone begins about 300' to the west and extends about 600' east of the driveway, followed by a two-way passing zone.

- Lighting. No roadway lighting is provided in the study area.
- Sight Distance: The existing driveway is located on a straight segment of Franklin Pierce Highway with a gentle curve right approximately 250' west of the site and remains straight approximately 2,000' to the east. The alignment is relatively flat and provides sufficient sight distance in both directions.
- Road conditions. The roadway has moderate grade change, open drainage, and normal crown. The pavement is in good condition with minimal to no cracking, little or no ruts, soft spots, potholes, or other structural defects evident.
- There are minimal other developments in the area. Adjacent uses and driveways consist of:
    - Approximately 350' to the west on the opposite side of the road is the entrance to Otter Brook Beach State Park. No other driveways are present until Sullivan Road, approximately 4,350' from the existing site driveway.
    - Approximately 2100' to the east is a driveway to small commercial home/office development. Another 1500' east of the office development is the entrance to Granite Gorge Ski Area.
- There are no other intersections in the study area.

TRIP GENERATION

Trip generation was calculated based on the applicant's anticipated pit operation schedule. Site operations will be 7am-5pm Monday through Friday, with Saturday operations 7am-12pm. The site will be occupied by 3 employees. All employees will arrive prior to AM peak hours (7-9am) and leave during PM peak hours (4-6pm).

Trucking operations are expected at 40 trucks per day or less, with arrivals on average at fifteen minute intervals. While one truck is arriving, the previous will be leaving. The last load out will typically leave around 330pm (1130am on Saturday). Employees will leave after site cleanup and equipment shutdown.

Employee & Truck Schedule

Time	Employee In	Employee Out	Truck In	Truck Out	Total Trips
Before 7 AM	3				3
7 AM – 8 AM			4	3	7
8 AM – 9:AM			4	4	8
9 AM – 10 AM			4	4	8
10 AM – 11 AM			4	4	8
11 AM – 12 PM			4	4	8
12 PM – 1 PM			4	4	8
1 PM – 2 PM			4	4	8
2 PM – 3 PM			4	4	8
3 PM – 4 PM			2	3	5
After 4 PM		3			3

Total Peak Hour Trips (Adjacent Street)	Trips In	Trips Out	Total Trips
Weekday AM (7-9am)	4	4	8
Weekday PM (4-6pm)	0	3	3
SAT (11am-1pm)	2	3	5

CONCLUSION

Based on the minimal scale of operations described above, traffic impacts associated with the project will be negligible. The traffic from this development will add 8 trips or less during all peak hours. Total weekday trips are expected to be on the order of 80 to 90 trips per day (40 - 50 on a Saturday). Most of these trips occur outside peak travel times.

The AADT of NH 9 in 2019 was 9,707 vehicles. Thus the percentage increase is less than 1%, with typically 15 minutes between successive arrivals and departures. The roadway alignment and wide shoulders will facilitate safe access and egress from the site.

We therefore find the traffic associated with this proposal can be safely accommodated by the adjacent roadway without need for improvements. Please let me know if you have any questions in regard to these items.

TFMORAN, INC.

Robert Duval, PE
Chief Engineer

EcoSystems
LAND PLANNING

Wetland Functional Assessment

WETLAND AREA 1

G2 HOLDINGS, LLC

Map 215, Lot 7

KEENE, NH

John St. John, CWS

Prepared for: Granite Engineering, LLC

1.0 INTRODUCTION

1.1 ROLES AND RESPONSIBILITIES

Ecosystems Land Planning was commissioned by Granite Engineering to provide this Functions and Values Assessment of Wetland Area 1, to support a request of a waiver to Article 25.3.1.D – Surface Water Resource Setback. Wetland boundaries were originally delineated by Chris Danforth, CWS # 077, in August of 2022, and confirmed on-site by John St. John CWS #222 in July of 2024. This work is based upon information gathered in August of 2024 and in January of 2025.

1.2 TERMS

Wetland functions and values refer to the roles and importance of a wetland, determined by its characteristics and surrounding watershed. Functions are inherent to the wetland ecosystem, while values are based on its significance to society.

2.0 ASSESSMENT PROCEDURES

The "The Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach" by the US Army Corps of Engineers New England District in September 1999, referred to here as "The Highway Method," was used to assess wetland functions and values of Wetland Area 1, on the above referenced parcel. This method uses qualitative characteristics to determine if a wetland is suitable for specific functions and values. A set list of considerations from The Highway Methodology guided the evaluation process.

Functions and values are designated as "Suitable" if they exhibit some of the qualifying characteristics listed in the method. However, a wetland may be deemed "Not Suitable" the if wetland shows only a few or weak qualifiers of the function or value.

Functions and values are designated as "Principal" if they are crucial to a wetland ecosystem or hold special societal value. The decision on principal functions or values was made using professional judgment without numerical weightings, rankings, or averaging to avoid bias. The Highway Method evaluates 13 of the 14 functions and values required to be assessed by New Hampshire State Law RSA 482A:2. The considerations for assessing each potential function or value are detailed in an excerpt from the "The Highway Methodology Workbook Supplement".

For determinations regarding "Ecological Integrity", as required by RSA 482-A:2, XI:, the "Method for Inventorying and Evaluating Freshwater Wetlands In New Hampshire" (NH Method) was used. See www.nhmethod.org. for additional details.

Please note: the NH Method establishes numerical values only. And, does not ascribe terms such as "Suitable" or "Principle" to wetland functions and values.

2.1 GENERAL SITE DESCRIPTION

Soils and Hydrology

Most of the surrounding area consists of upland soils such as Berkshire and Dixfield Fine Sand Loams. These soils are well-drained, with slopes between 0-25%.

Wetland Area 1 has shallow, poorly drained soils which range from 0-15% slopes. Wetland Hydrology is derived from hillslope seepage at the northern end of the valley. Soils are generally saturated due to a restrictive layer near the surface. Surface water and saturation generally decreases from north to south, infiltrating deep underground, causing conditions to revert to upland before reaching the access road to the south.

Plant Community

The primary tree species in the wetland area consist of eastern Hemlock, Red Maple, and Beech. The shrub/sapling layer includes Red Maple, Eastern Hemlock, and Beech. The dominant herbaceous vegetation consists of Sensitive Fern in most areas, with a small patch of Cattail in the northernmost area.

2.2 FUNCTIONS AND VALUES ASSESSMENT

Overall, this wetland got low scores in most of the wetland functions and values criteria. As a small, isolated hill side seepage wetland, that is located at the bottom of a steep ravine, that is partially surrounded by a berm, that is to be expected. The surrounding land use and altered topology further reduces the value of this wetland to wildlife as habitat and restricts human access.

The highest scores for this wetland were associated with Groundwater Recharge and Ecological Integrity. These scores are due primarily due to the lack of encroachment and despoliation within the wetland boundary.

This wetland also exhibits weak characteristics normally attributed for the function of “Sediment Trapping”. However, the existing contours of the land greatly (intentionally) restricts surface water flow into this wetland. And the high permeability of surrounding area all but eliminates the possibility this wetland would receive sediment laden surface water necessary for this function to occur.

Detailed characteristics and analysis of this wetland relative to the 14 functions and values listed in RSA 482:A are detailed in the Functions and Values Assessment Form, below.

From:	Terri Hood
To:	Minutes Staff Liaisons
Subject:	Notification of Council Action - Reports to the Council by Boards and Commissions
Date:	Wednesday, March 5, 2025 9:00:14 AM
Attachments:	Communication - Councilor Haas.pdf Council Action - Annual Reports Boards and Commissions.pdf

SENDING ON BEHALF OF THE CITY MANAGER:

A communication was submitted to the City Council by Councilor Haas requesting that City boards and commissions provide an annual report of their activities to the City Council. At their meeting on January 16th, the City Council voted to recommend that this be voluntary for boards. If a board chooses to provide an annual report, it would be on a fiscal year basis and would be submitted on or around July 1. If a board determines they would like to provide a report to the City Council, this may be done in writing and distributed in Council mailboxes by the Staff Liaison, or a board may ask to be on the agenda of one of the Council Standing Committees to provide an oral update to the City Council.

Please add this to an upcoming agenda for each of the boards and commissions you provide staff support to, so they can determine whether they would like to participate by providing an annual report out to the City Council, and decide the content and format they would prefer for providing such a report. Again, this is voluntary. The communication from Councilor Haas is attached to provide context as to his request, and the Council action is included so it can be shared with your membership.