



GRANITE ENGINEERING, LLC

civil engineering • land planning • municipal services

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 June 2029 – July 2029
(Sullivan)
- 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 Dec. 2032 – December 2034
(Sullivan)
- 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.



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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 a 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 "stable" 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,

A handwritten signature in black ink, appearing to read "Justin Daigneault", with a long horizontal flourish extending to the right.

Justin Daigneault
Project Manager