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Re: Woodland Hills Summary of Outstanding Engineering Issues

Dear Mrs. Sutphen,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **April 28th, 2020** and received on **April 28th, 2020.** Below is our response to each comment received**.** Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

1) Constructability

1. Applicant is asking for a "5 acre disturbance waiver" from the NYSDEC stormwater regulations.

   Response: Agreed. The typical process is covered by the SWPPP for the project. KFA/ RZ have provided a draft Notice of Intent and letter within the SWPPP regarding a 5 acre disturbance waiver to Town of Manlius with this submission.

2. Soil movement and embankment compaction is extensive on this site and will change the grades of the entire developed area. The substantial amount of earthwork is not typical for a residential subdivision. Road profiles typically follow existing contours to limit both the cost and exposure for earth moving operations and minimize utility excavations.

   Response: Other Manlius projects such as Mallards Landing, Spruce Ridge had at least similar but likely, more extensive site work. The "Earthwork Material Evaluation" (referenced as EME) report, dated on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for road fill within the right of way. The road profiles and proposed grades generally follow existing grades within guidelines set forth by the Town of Manlius code. Earthwork is limited and the grading plan generally keeps earthwork within 4 feet of the current grades. One small area on site soil material was identified by Kenney Geotechnical as unsuitable and will not be utilized as fill within the proposed right of way, basin embankment or fill below basement slabs.

3. Some of the houses will be constructed on deep fills which causes concerns about stability of the foundations.

   Response: The term deep fill is confusing and could lead to public confusion regarding this project. 18 of the 20 proposed building foundations walls (footers) will be constructed at

an approximate 4 foot depth and will reside either below or on existing grade. Lots 12 and 13 will require deeper footings for a portion of the foundation wall. Lot #12 will require a four foot extension to the footer in the west corner of the home and Lot # 13 will also require a four foot extension to the footer in the southwest corner of the proposed home to meet existing grade. Refer to the text block Footer Depth Review on drawing L-202 entitled Right of way, Basement Slab and Footer Summary. A Cut/Fill Basement Slab Review text block along with basement slab elevations for each lot are provided on drawing L-202. There is a limited amount of basement slab area requiring more than 6 feet of cut or fill. The suggestion that major filling is required for more than just a house or two is misleading and does not reflect the vast majority of the lots. In addition, the report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use under residential structures as backfill. 12 of the 18 basement slabs will be constructed on existing soils. The remaining 8 basement slabs will be constructed utilizing the on site material which meets the project specifications.

4. Some road fills exceed 10 feet, and we have concerns about differential settlement related to utilities and road surfaces.

   Response: The average cut or fill for the entire 1,924 linear foot road and right of way (with the exception of stations 4+25 through 5+50 and Station 15+30 through Station 16-30) averages approximately 4'-6" depth. A 75' long section (Station 4+25 to 5+50) will require an approximate 8' to 10' fill depth and a 100' section (Station 15+30 to 16+30) will require a 6' to 8' fill depth as shown on drawing L-202 (175' linear feet total for road fill 6 ' or greater. No road areas require more than 10 feet, only right of way areas require up to 10 feet. The EME report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use within rights of way as backfill which meets the on-site testing process during construction. In addition, Tobin Construction representatives stated that the on site materials encountered during field testing are very suitable for placement in fill areas and the project can be constructed with standard construction practices.

5. The Impoundment/Dam proposed is significant in size and scope and is intended to hold back one million gallons of water, which is an unusual feature of this development.

   Response: The proposed stormwater management facility should be referred to as such. The facility is not a Dam and referring to it as one could be misleading to the board and the public. Drawing L-900 compares the proposed SWMF to other SWMF, impoundments and actual dams within the Town of Manlius. The suggestion that detaining this volume of water is unusual is misleading and incorrect. Several other facilities in the Town of Manlius contain more water at greater depths and with less safety features than the facility proposed.

6. This is a "Cluster Development" which requests/requires waivers from certain aspects of usual zoning. A goal of clustering is to preserve land and also to keep much in a natural state, which this development does not appear to accomplish.

Response: The 30.04 acre cluster development project includes 9.35 acres of HOA and homeowner owned designated 'Forever Wild Area'. The cluster project Forever Wild Area preserves 31% of the project site area including the preservation of an existing groundwater seep wetland, preservation of an existing intermittent stream channel and perimeter existing vegetative areas which are depicted on drawing L-400 entitled Layout Plan. The proposed cluster plan preserves the natural and scenic qualities of open lands through the creation of a significantly sized forever wild area, perimeter buffer and lot count reduction from the original conventional grading plan.

A. Critical to this site, is the manner and method of compacting of earth under what will eventually become the town's infrastructure (roads, pipes, etc).

   Response: The Kenney Geotechnical report dated May 18, 2020 provides a methodology for placement, compaction and testing of fill materials. The recommendations have been incorporated into drawing L-503 and include project specifications, a field testing summary table, typical local road sections for cut/fill conditions and a typical home foundation wall section. A significant portion of the right of way is to be graded within 4 to 5 feet of existing grades. According to the contractor this site can be constructed with standard construction practices, is almost ideal for a development of this size and does not foresee any significant concerns regarding construction of the town dedicated infrastructure.

   a. The waiver adds an element not present in many projects, and with the extent of soil movement/cuts and fills, drainage and grading will be very complex. (As a regulated MS4, the Town of Manlius has oversight of this NYSDEC regulation and must verify the work meets the NYSDEC SPDES Phase 2 permit requirements).

      Response: The draft waiver and NYSDEC Notice of Intent has been provided as noted on to Page 1, 1 Constructability, items 1 and 2.

   b. Certification of all fills are recommended to be coordinated with all anticipated utilities including but not limited to OCWA & National Grid. Geotechnical reports will be required of houses built in fill areas along with the proposed impoundment area.

      Response: As previously noted under other items within this letter, only 2 houses will be subject to this condition and deeper foundations will be extended to reside on natural grade will be provided. The owner has no authority over construction of utilities built by OCWA or National Grid.

B. Also, with the impoundment/dam holding back significant water that will seriously affect downstream property owners in the event of failure, its design and construction must be done properly. In light of these issues, the Town will require a person of Town's choosing, at developer's expense, to be on-site at all times to ensure the soil movement and compacting is done properly. This is especially critical due to the houses that will be built on the fill ensuring a safe foundation.

Response: Please refer to DEC email dated3/25/20 from DEC representative Jennifer Ross regarding the Dam ruling located in SWPPP appendix V. Several other facilities in the Town of Manlius contain more water at greater depths and steeper slopes with fewer safety features than the facility proposed as shown on drawing L-900 entitled Wet Pond Comparisons. In addition, the Kenney Geotechnical reports provided on 5/18/20 and 5/27/20 do not indicate any issues with on site soils, soil conditions or use of on-site materials to construct the proposed facility. The project sitework contractor has also performed several earthwork studies of the project site, reviewed the geotechnical studies for the project, performed many additional on site test pits, has reviewed the current set of construction drawings and has stated that the project is ready for construction. KFA and RZE have worked with Tobin development on the successful completion of the 37 unit Town of Clay Hamlet cluster housing project and the 163 unit Town of Van Buren planned unit housing development, Harbor Heights project which was constructed in many phases. Our design and construction team worked very closely with the municipal engineers and testing agencies and is prepared to do so on this 20 unit construction project.

C. Project cost/securities will need to be further discussed.

Response: Agreed.

2) Technical Issues

1. The stripping and grading plan has to be more detailed, including the phasing of same. There have not been sufficient details presented so far. The extent of the land stripping as thus far presented is of concern as the whole theory behind cluster development is to preserve the land in its natural state. The stripping of the entire parcel and the extensive cuts and fills seems to be contrary to the theory behind cluster development.

Response: The proposed project is to be constructed as one project, in one phase, within 7 distinct construction stages to minimize the site disturbance throughout construction. The staged approach to construction will limit the site disturbance areas as shown within the construction staging drawings and schedule shown on drawings L-102 through L-108. The entire site will not be stripped as noted in Page 2, 1 Constructability, item 6.

A. Phased work areas must have 80% coverage/density to be considered stabilized before proceeding the next work phase.

- **Response: Agreed. This is a NYSDEC requirement which our office field SWPPP inspectors are very familiar with. Drawings L-102 through L-108 depict a staged construction approach with each phase being stabilized before moving onto the next. Page 20 of the SWPPP states that all stages will be completely stabilized before advancing to the next stage.**

B. Indicate on the plans storage volumes equaling required storage for each sediment/erosion control feature in cubic feet for the tributary area.

Response: This data appears on drawing L-103 and L-104 and within the SWPPP under Appendix T of the December submission. These drawings and the SWPPP have been updated to reflect the current submission.

C. SWPPP inspections are required twice a week.

Response: Agreed during stages where disturbance is in excess of 5 acres, in accordance with the NYSDEC stormwater general permit provided in Appendix J. We anticipate the twice weekly inspections to occur during approximately 5 months of construction. A 5-acre disturbance letter has also been provided in Appendix W of the SWPPP included with this submission.

D. Site soils are type "C" soils. Per Table 4.6, soil restoration requirements must meet the NYSDEC deep ripping and decompaction manual dated April 2008.

Response: All soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 3/11/2020. See revised SWPPP provided with this submission, Appendix I and drawing L-101.

E. Both the wet pond and for the temporary sediment basin have deep cuts (Approx. 15 feet). Due to the limited number and depth of borings, we anticipate rock may be encountered and additional soil testing should be undertaken.

Response: The previous grading plan of the main basin only proposed cuts in the 15 foot range for a small 1000 sf area. The grading plan has been revised to limit all cuts to less than ± 13 feet. In addition, additional testing reflected in the Kenney Geotechnical report dated 5/27/20 supports all other testing on site (L-100) that no rock is encountered in any of the testing locations and a generous soil profile existing all over the site in excess of 15 feet. It has also been hypothesized, opined and theorized that Karst Topography may be a condition in the area. However, evidence such as available mapping, field testing and professional geotechnical analysis does not suggest such geologic conditions on the subject site. In addition, available mapping shows no evidence of rock outcroppings, land features or restrictive soil layers. Actually, it depicts a minimum soil profile of 18 inches for lands downstream of the subject site, with most downstream areas containing more than a 3-4 foot soil profile. Soil mapping does identify rock outcroppings and restrictive layers that could be considered Karst topography upstream of the site over ½ mile away to the south. It is a small area and is not on the subject site or within it's discharge flow path. Areas on site and surrounding the subject site are proven to contain a generous soil profile of over 15 feet (on site based on actual testing and geotechnical investigation) and soil mapping indicates a minimum of more than 6 feet in areas adjacent to the site. Therefore, we have not encountered any evidence of Karst Topography on the site, adjacent to the site or downstream of the site.

2. The existing SWPPP, which is part of the plans, presented is from last summer. It needs to be updated.

Response: Agree

3. Water quality volume calculations and RRv have to be re-done. On Page 12 of the of the permit it is stated WQv is only for site. NYSDEC requires all impervious upstream areas tributary to the wet pond be included within WQv. This is outlined on page 4-5 of the Stormwater Design Manual. The new permit should be refenced as GP-0-20-001. On Page 12 of the NOI question 38 should read "Homeowner's Association". It appears the runoff rate issues have generally been resolved and the calculations appear to be reasonable with the exception of revisiting time of concentration for the project site itself.

   Response: Agree. Both the pond and the water quality volume treatment capacity within it are both oversized and will accommodate all of the required Water Quality Volume. Also, the NOI and permit numbers have been updated.

4. SWPPP time to concentration calculations have to be updated and/or corrected for the project site to separate the disturbed area from the undisturbed area. We would anticipate a higher peak runoff rate from the disturbed area due to a reduced time of concentration and this could impact the calculated stage/storage/discharge rates from the wet pond.

   Response: Page 15 of the December 2019 SWPPP submission outlines the proposed sediment ponds and their design. As noted in the SWPPP on pages 15 thru 17, this design which will be employed for approximately 3 +/- months will accommodate for the interim open soil conditions, higher runoff coefficients and adjusted time of concentration associated with open soils. Included in Appendix T of the December 2019 submission are calculations and routing of the sediment ponds for stages 2 and 3 which verify that the sediment pond and SWMF adequately decrease runoff to downstream areas during open soil conditions during those stages of construction. Language has been added to sections on pages 15-17 on stage 2 and 3 sediment basins to outline the short duration we anticipate these conditions to be present and Appendix T has been updated for new shallower sediment pond contours.

5. In the area of Lots 11, 12 & 20 there is a stormwater pipe that is 13 ft. beneath the road with additional catch basins over 10 feet in depth. This is not a typical nor acceptable depth. A normal depth is 3-7 ft. and a deeper pipe could cause unnecessary expense to the Town in the future in the event repair is required.

   Response: Storm Pipe depths have been modified to depths less than 7'-0".

6. Individual grinder pumps for 7 lots remain a concern as, even though they are private systems, the Town is always called upon and spends time and resources on assisting residents in solving issues. Possibly combining the 7 grinder pumps into one pump station for all 7 would be a reasonable solution.

Response: A review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station in such a case. In addition, email correspondence from Christopher Deitman, dated 6/2/20 and provided with this submission, also indicates the lack of economic feasibility of using a municipally owned pumping station. These documents and correspondence support our proposal and contention that the low pressure sewer would be beneficial for the town, other members of the sewer district, the developer and the residents, providing the best solution for all parties with regards to construction, operation and maintenance.

7. Impoundment/Dam

   A. While it may not technically qualify as a "NYSDEC regulated dam", Guidelines for the Design of Dams (NYSDEC) need to be followed according to not only the Town, but also per NYSDEC recommendations.

      Response: We agree the SWMF does not qualify as a NYSDEC regulated dam and does not require permitting with NYSDEC. We also agree that the Guidelines for Design of Dams is to be followed since ALL stormwater management facilities designed in NYS are to follow those guidelines as outlined in the NYS Stormwater Design manual.

   B. Technical information provided by the applicant appears to indicate that the Impoundment/dam will need to be lined with impervious materials to prevent seepage and leaking.

      Response: Information submitted by the applicant both in the previous submission and as part of this submission within the Kenney Geotechnical Report dated 5/27/20 and soil testing results presented on drawing L-100 both indicate no infiltration capacity to the soils being proposed for the basin embankment or side walls and that no liner is recommended or required as a result of all of the completed field testing and geotechnical reports.

   C. An appropriately sized key-way for embankment construction purposes is necessary.

      Response: The Kenney Geotech report dated May 27, 2020, pages 1 and 2 of the report state that a keyway is not required.

   D. A toe drain may be required to address seepage.

      Response: Anti seep collar details have been added to the plans (detail 16/L-500). No other measures are required since the soils do not display any infiltrative properties and therefore no seepage is anticipated. See page 7, number 7, item C.

E. More test borings should be taken along the embankment to confirm basis of design. Please provide a detailed geotechnical report supporting the basis of the design for the impoundment area proposed.

Response: As mentioned within this response letter, Kenney Geotechincal has provided updated reports dated 5/18/20 and 5/27/20 verifying compliance with all DEC requirements. Reports are located in Appendix A within the SWPPP and all testing information is presented on Drawing L-100.

F. More cross sections should be done on the impoundment/dam and should include the existing and proposed ground elevations.

Response: Additional profiles and cross sections have been provided on Drawings L-202, L-502 and L-504.

G. The embankment top width should be shown.

Response: A dimension of 12 foot minimum embankment top is shown on Drawing L-400, verifying compliance with the Stormwater Design Manual. It is important to note that most areas exceed the 12 foot minimum.

H. If the developer follows the dam regulations, yearly inspections and testing will be required.

Response: Agreed, all SWMF designed in NYS require compliance with the NYS Dam Guidelines and all SWMF must be inspected per the NYS Stormwater design manual, General Permit and the SWPPP for the project.

I. Boring B-9 Dated 12/13/19 does not have proper elevation nor specific tie or longitude latitude information associated. The boring log also indicates the existence of glacial till at an approximate depth of 9.5 feet below the existing ground surface with apparent missing information from a depth of 9.5 feet below existing grade to 14 feet below existing grade. This provides a potential problem for the proposed design of the impoundment. Please provide further detail for drilling information through depths 9.5 – 14 for boring B-9 below surface along with actual elevations and location of the work.

Response: Kenney Geotechnical has provided two additional reports on soil investigation dated 5/18/20 and 5/27/20. All soil testing information to date, locations and elevations are provided on drawing L-100.

J. There does not appear to be any energy dissipation basin at the outlet of the pond which could lead to severe erosion and embankment failure.

Response: Rip rap aprons, appropriately sized have always been part of our design and submissions. Details and locations are provided on drawing L-200, and design sizing of rip rap outlet aprons are provided in appendix F of the SWPPP. Appendix F also provides calculations showing drainage facilities with non erosive velocities.

K. The impoundment spillway is used during the 100 year storm. We would typically see designs using pipes/weirs for the full range of storm discharges, but the dam regulations would allow it. However the spillway should be cut out of native soil, not embankment with limited velocities to prevent erosion. The SWPPP says the 100 year elevation of the pond is 676.06 and the plans (sheet 4) says is 676.22. This needs to be clarified. The pond should have a minimum of 1 foot of freeboard above the 100 year storm. It currently does not.

Response: The outlet structure has been modified to all passage of the 100 year event without use of the emergency spillway. The emergency spillway has been fitted with rip rap to manage and mitigate any flow thru it to non erosive velocities. Peak water elevation in the 100 year event is 675.42 per appendix E of the swppp and the plans (drawings L-200, L-202, L-502 and L-504 also reflect this elevation). Calculations proving non erosive velocity and rip rap sizing have been provided in appendix F.

8. Dust monitoring reporting requires verification for reporting and oversite procedures to the Town of Manlius.

Response: Section 12.1 of the previous (December 2019) SWPPP submission on page 22 outlines reporting techniques and requirements. Daily reports are required to be recorded within the SWPPP and kept in the SWPPP binder within the mailbox on site. We have added that reports should be transmitted to the Town of Manlius weekly to the SWPPP page 23 and drawings L-101 & L-501.

9. Relative to lot grading, grading is not shown correctly on lot 3 adjacent to the existing house. A retaining wall may be necessary. Road grade at driveways for lots 11, 12, 15, 16, 17 and 18 are higher that the house finished floor. There may be issues with garage/house flooding.

Response: Lot 3 has been regraded without the construction of a retaining wall. The slope will be planted with plant material to stabilize the slope as note 29 states on drawing L-200.

10. The calculated amount of increased runoff volume from the site: 2-yr is 25,000 c.f, and 100-yr is 67,000 c.f. This may impact the long- term viability of the infiltration basin on Muirfield. Mitigation of increased total volume run off should be addressed.

Response: It is important to note that in any development runoff is increased in volume and in flow when impervious surfaces are created. Typically, volume is not the driving factor since runoff volume is mostly affected by the infiltrative capacity of the onsite soils and not necessarily indicative of how downstream areas will be affected by runoff. The flow rate is typically considered higher in importance due to its effects on downstream conveyance and

drainageways. Volume is not always a contributor to flooding if the rate at which it is conveyed is well managed. The DEC's Jennifer Ross in her email has specifically stated "that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event". We concur with the DEC that, a more broad analysis by the town with respect to downstream impacts and the long term viability of the infiltration basin on Muirfield, would be necessary to evaluate its operation. We fail to see the validity of how the subject site would impact this facility. The location of this facility is not hydraulically connected to the subject site discharge flows. Several local low points exist between the subject site discharge point and this facility including points on Churchill Road and Hoag Lane. The intersection of Hoag Lane and Muirfield is lower than other points on Muirfield by several feet between the intersection and the Muirfield infiltration facility. It is unlikely that runoff from the subject site would be able to travel uphill to reach the Muirfield facility from points along the discharge route. We have provided figures capturing available topography profiles of these areas as evidence of these conditions. These figures are readily available off of google earth and are presented in Appendix O.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering

Scott L. Freeman, R.L.A. ASLA

Rudy Zona, P.E.