



November 9, 2022

Town of Deerfield Conservation Commission
8 Conway Street
South Deerfield, MA 01373

RE: **Notice of Intent, Peer Review-Supplemental Review Response**
All States Materials Group Haul Road Improvements
901 River Road, Deerfield, MA 01342

Dear Commission Members:

On behalf of the applicant, All States Materials Group (ASMG), Kleinfelder is submitting the enclosed response to comments for the revised Notice of Intent (NOI) at 901 River Road, Deerfield, Massachusetts. In May 2022 the applicant submitted an NOI and subsequently received comments from the Deerfield Conservation Commission and a peer review letter from Stockman Associates, LLC. as ordered by the Conservation Commission. On October 26, 2022 Kleinfelder submitted revised NOI materials to the Commission, which were discussed at the Conservation Commission meeting held on October 27. Stockman Associates was asked by the Conservation Commission to perform a supplemental review the revised NOI materials and provide commentary as necessary.

On November 2, 2022, Stockman Associates submitted a peer review letter with commentary for the revised NOI materials. Below is a response to the individual comments preceded by narratives related to the test pits and the culvert crossing stream design.

Additionally, revised plans have been included with this response. For ease of the Commission's review, *revision clouds* have been added to plans to call attention to the portions of the design which have been modified since the October 26 submission.

Test Pits

Test pits at the site were conducted on Tuesday, November 1, 2022. The test pits were completed by ASMG staff and overseen by Kleinfelder staff. The location of the test pits have been noted on the revised plans. Test pit logs are attached to this letter and findings summarized below:

- Test Pit #1 was completed within the limits of the Stormwater Treatment Area #1 (Bioretention Pond). No groundwater or bedrock conditions were observed within 2-feet of the bottom of the proposed soil filter layer of the proposed bioretention pond. The observed conditions were consistent with the original design assumptions, no changes were made to the design based on test pit.
- Test Pit #2 was completed within the limits of Stormwater Treatment Area #2 (Bioretention pond). A silt loam layer was observed at approximately 6-feet below ground surface and clay layer at 10-feet below ground surface. While groundwater was not observed, there was some redox where it appeared infiltration was being perched on the silt/clay layer for

an extended time as it infiltrated to the actual water table. Due to this, the design team determined that the bioretention basin detail for this location would be lined to eliminate the potential of creating an escape or conduit for this water. The details for the bioretention basin (included on Sheet C-503) have been updated to show the liner.

- Test Pit #3 was completed within the limits of the Stormwater Treatment Area #3 (Pretreatment). The test pits did show seasonal high groundwater (SHGW) and bedrock at approximately 6-feet below grade, which would be approximately 3.5-feet below the proposed bottom of basin elevation. No changes were required with the design based on test pit.

Stream S1 Road Culvert Design

The project as designed will include the removal and replacement of two 18-inch corrugated plastic culverts with a single 84-inch corrugated metal culvert and includes the following design considerations:

- The proposed 84-inch culvert has been sized to improve the hydraulic connectivity of delineated stream S1 by providing greater cross-sectional surface area and using a 2-foot deep embedded design which will mimic a more natural stream bottom within the culvert.
- A Hydrologic and Hydraulic (H&H) analysis of the proposed culvert confirms that the proposed sizing will be capable of passing the 100-year storm event. (Calculations previously submitted).
- The detail of the culvert embedment has been included on the revised plan (Sheet C-130) to clarify the comments and discussions from the previous Conservation Commission Meeting.

Based on the recent letter by Stockman Associates, further clarification was requested related to the culvert length and design. In general, the proposed project intends to upgrade an existing gravel road to meet the requirements, standards and recommended best practices of MSHA for a "Haul Road". These include provisions for maximum roadway grades, cross-slopes, berm and guardrail needs, side slope construction, etc. The proposed roadway modifications as shown in the design (including profile and cross-sections) are in accordance with industry standards including the Mine Safety and Health Administration Haul Road Design Manual and Inspection Handbooks including the "*Design of Surface Mine Haulage Road – A Manual*" by Walter Kaufman and James A. Ault issued by the United States Department of the Interior via information circular 8758 and the MSHA Handbook Series "Haul Road Inspection Handbook" as provided by the US Department of Labor Mine Safety and Health Administration handbook number PH99-I-4 dated June 1999.

Drawing C-130 of the design package shows the cross-section at the stream crossing location including both existing and proposed roadway conditions. As noted on this cross-section, the proposed roadway will be much wider to meet the MSHA requirements for the vehicles intended to use this haul road. In addition, the elevation of the roadway is raised to meet the MSHA requirements for maximum roadway grades (which needed to be balanced for the entire length of the roadway). This elevation change will require the construction of stabilized side slopes, designed with a 2:1 grade in accordance with MSHA standard practices. The side slopes will be stabilized with a 7-inch processed gravel (please refer to the *Typical Section – Haul Road* as



denoted on Sheet C-300). The additional length of the proposed culvert replacement is therefore driven by the additional width and height of the proposed road modifications, coupled with side slope requirements. Sheet C-130 has been updated to show the proposed grading for better visualization of the limits of the slope. This limit of slope was previously represented on the plans as a line denoting "*Limit of earthwork grading*".

As discussed previously, the proposed culvert has been designed to provide adequate capacity for flow during the 100-year design storm. The requirement for a larger span (18-feet to meet the 1.2 times the bankfull width) would be prohibitive. Haul roads (under MSHA requirements) are designed to withstand a 40,000 lb (40 kip) wheel load (which is approximately 2.5 times the wheel load used in typical highway design). An 18-foot wide span would be considered a bridge span and due to the load requirements would require an overly robust design for the in-situ conditions and application. This includes significantly increased steel thickness to support the opening size and wheel loads (likely requiring the addition of stiffeners). Ultimately, this would lead to an increase cost, specialized design, and additional fabrication time (exacerbated by long-lead time on materials).

As provided in our response on October 26, 2022 (response to comment #11) "A crossing that meets these bankfull width and openness requirements would be constrained by the footprint of the existing road and culverted crossing. Installation of a span of that size would require extensive additional tree clearing and grading in the riverfront area surrounding Stream S1 over the proposed crossing. Stormwater calculations reported in the Stormwater Report indicate that an 18-foot span is not required and that the proposed 60-inch culvert is capable of passing more than the 100-year storm volume. A larger span would greatly exceed the required storm capacity while the proposed culvert is more appropriate in meeting design flow capacities and avoiding adverse impacts to upstream or downstream flows and stages. For those reasons, meeting the 1.2 bankfull width and 0.82 openness ratio was not deemed practical or appropriate for this project and a 60-inch CMP was proposed." We will note, we have upgraded the culvert under this latest round of edits to an 84-inch culvert. This will allow for the full 2-foot embedment and provide additional span width to the extent practical while avoiding significant clearing limits.

Design Plan Updates

Updates and modifications to the design package have been made and the revised plan set is attached. As noted above, these edits have been highlighted with "revision cloud" for ease of reference in the Commission's review.

Responses to Stockman Associates' additional comments are addressed below. Comments provided in the peer review letter are shown in italics, with Kleinfelder's response directly below.

Resource Area Boundary Delineation Flagging Review

- 1) *The revised site plans have been updated to depict the location and labels of delineation flags for Bordering Vegetated Wetlands (BVW), Inland Bank and MAHWL.*



- a) *Due to the previous lack of flagging in the field, Bank associated with Stream 7A was not completely reviewed in the field during the August 2022 site visit.*
 - b) *The upgradient BVW associated with Stream S5 is depicted on the revised site plans. Flagging has not been reviewed in the field.*
- 2) *BVWs W3 and W6 have been delineated and are depicted on the site plans with approximately the same geographical area previously described in the August 18, 2022 peer review comments. A field review has not been performed.*
 - 3) *BVW W4 has been delineated and is depicted on the site plans within approximately the same geographical area previously described in the August 18, 2022 peer review comments. A field review has not been performed.*

The project has been designed to avoid impacts to resources to the extent practical. Stream 7A, Stream S5, Wetland W5, Wetland W3, Wetland W6, and Wetland W4 are all outside of the Limit of Disturbance and will not be impacted.

Performance Standards Review

Inland Bank & Land Under Waterways (LUWW)

- 1) *Exhibit A and Exhibit B have been revisited and revised to quantify the loss of Bank and LUW attributed to Stream S1 and S6. The applicant is encouraged to review the LUW impacts associated with Stream S6. Land Under Waterways for intermittent streams is considered an infinitely small line as the boundary is defined as "the mean annual low water level."*

Land Under Water impacts for Stream S6 have been removed from the Exhibit B and WPA Form 3 has been updated.

Based on the proposed grading associated with the upstream replication/replacement of Stream S1, the westerly meander of the existing stream will be isolated by the proposed Stream S1 realignment/replacement. Revised Exhibit B omits a portion of this stream reach as an area of permanent loss. The applicant should clarify the omission.

Exhibit B and WPA Form 3 have been updated to indicate the portion of Stream S1 to the west of the LOD as an area of permanent loss to LUW and Bank. For clarity, this area is not anticipated to be disturbed under this project, but we recognize the stream replication/replacement in close proximity will impact the functions and values of this small area and therefore have accounted for this in the updated calculations.

BVW W3 currently borders on Stream S1. The applicant should address how the connection between BVW W3 and Stream S1 will be maintained with the proposed stream realignment/replacement.



The previous grading design created a small berm on the west side of the replacement reach of Stream S1. The design has been modified to remove the berm, allowing the existing contours to maintain connectivity between Wetland W3 and Stream S1. Please refer to Sheet C-130 which shows the updated grading and the connectivity between the wetland and replicated stream. This design will maintain the current hydrology of the wetland, which is primarily from surface water collecting at the toe-of-slope and eventually draining to S1.

- 2) *The “Notice of Intent, Peer Review Response” letter states that the new portions of Stream S6 and S1 will be replicated as closely as possible to the existing conditions using natural substrate. A single Typical Channel Restoration Section has been provided on Sheet C-502. However, there are substantial differences in the described characteristics of intermittent Stream S6 and perennial Stream S1 provided in the narrative by Kleinfelder.*
 - a) *The Commission should consider requiring additional information regarding the detailed construction of the two replacement stream reaches including, but not limited to, proposed contours for both streams, clear depiction of proposed boundaries of Inland Bank and Land Under Waterways, location of proposed cascades and pool and other features as needed to address elevation changes and stream stability, and a clear depiction of proposed bankfull width. As stated in the August 18, 2022 peer review letter, the Commission and the applicant are encouraged to review the MassDEP guideline “Data Required for Proposed Bank (Inland) and Land Under Water Bodies and Waterways/Land Under Water Restoration Areas”*

As stated in the October 26, 2022 response and the NOI narrative, the replacement portion of Stream S6 will be replicated as closely as possible to the existing conditions using existing substrate. S6 is a heavily disturbed intermittent stream that receives most of its flow from stormwater. The portion of S6 to be replaced is at the toe-of-slope of the S1 stream valley. The replacement reach of S6 is a heavily impacted by stormwater flow, with poor bed and bank definition and gravel substrate from stormwater deposition. The Stream S1 replacement section will be replicated as closely as possible to the existing conditions using existing substrate. Within the LOD, S1 is heavily disturbed as well, though maintains some natural cobble substrate. S1 flow enters the existing culvert at a perpendicular angle. The replacement reach will realign the stream to improve the approach to the proposed culvert. The S1 stream characteristics upstream of the LOD (including stream width) will be used to determine the replicated stream characteristics. Refer to the Profile on Sheet C-130 for proposed elevations.

Channel restoration details (as shown on Sheet C-502) have been updated to better detail the stream replication details. As noted, the intent of this project will be to salvage existing stream channel materials, to the extent feasible, and reuse those in the proposed stream replication. As discussed above, Sheet C-130 has been updated to better reflect the grading for this stream replication and channel restoration and provide clarity as it pertains to the width of the restoration. These channel widths as depicted now represent the limits of top of bank (matching the stream delineation).



For clarification, the proposed elevation changes to stream S-1 and S-6 do not warrant the need for cascades and pools in the replacement reaches. The existing stream reaches are not characterized by cascades and pools and therefore we are not proposing them for the replacement/replicated reaches.

- 3) *The Typical Channel Restoration Section states a stream bottom width varying between 5-FT to 8-FT and 3-FT maximum width of streambank. A clearly defined bankfull width for each replacement stream has not been provided. Based on the shaded areas indicated on Sheet C-130 the proposed width of Stream S1 is approximately 6-FT and the proposed width of Stream S6 is approximately 4-FT. Both proposed widths are narrower than unaltered depicted reaches and the bankfull width calculations provided by Kleinfelder.*

The revised NOI narrative (page 6) does not address the potential impact to stream stability and water carrying capacity associated with the proposed widths of the replacement stream portions. A clear demonstration of compliance with 310 CMR 10.54 (4) and 10.56 (4) should be provided. The revised narrative focuses on regulatory compliance associated with the proposed culvert replacement but should also include an assessment of compliance for the proposed replacement stream reaches.

The replacement stream reaches will replicate the existing stream conditions as closely as possible, and meet the general performance standards for Bank and Land Under Water Bodies (310 CMR 10.54 (4) and 10.56 (4), respectively). As depicted in the individual channel restoration details for S1 and S6 (Sheet C-504), stream banks will be stabilized with existing salvaged stream bed material and a native erosion control seed mix. Impacts to ground water and surface water quality would be minimized through the use of construction BMPs including erosion and sediment control measures shown in the Project Plans. Stream S6 currently provides no breeding habitat, escape cover, or food for fisheries, and provides no wildlife habitat functions, as it is a highly disturbed stream with poorly defined bed and banks. The replacement reach for Stream S6 will be an improvement from current conditions. Stream S1 currently provides limited breeding habitat, escape cover, and food for fisheries, and limited wildlife habitat, as the stream is bordered by upland forest habitat with limited herbaceous vegetation. The replacement stream reach will replicate the existing conditions upstream of the replacement reach as closely as possible.

With regards to the stream bottom width, we have updated the plans and details, as noted above, to better denote the limits of the stream bottom and top of bank (matching the delineation as shown on the plans). Impacts to stream stability and water carrying capacity for the S1 and S6 replacement reaches are not expected to be impacted, as the proposed stream bottom and top of bank widths will match the delineated stream characteristics within the study area.



- 4) *The “Notice of Intent, Peer Review Response” letter states that the new portions of Stream S6 and S1 will be replicated as closely as possible to the existing conditions using natural substrate. However, the Typical Channel Restoration Section calls out the use of riprap and natural stream bed materials, The applicant should clarify whether riprap is being proposed. If so, please discuss why riprap was proposed rather than natural boulders and stones.*

Please see the revised details noted on C-130 and C-502. This project is proposing the use of existing materials, specifically salvaged materials to the extent feasible, including salvaged boulders and stones.

- 5) *The “Notice of Intent, Peer Review Response” letter prepared by Kleinfelder dated October 26, 2022 states that shortening the proposed culvert is not feasible due to the requirements for the haul road to comply with MSHA requirements.*

The existing culverts extend approximately 22-LF downstream beyond the existing road. The proposed culvert has a total length of approximately 133-LF. The proposed culvert extends approximately 50-LF downstream beyond the proposed road, impacting open stream channel. Please provide additional information regarding the requirements under MSHA as it related to the proposed downstream length of the proposed culvert.

Please refer to the discussion on the Stream S-1 Culvert Design included at the start of this letter. We would also refer you to the Plans and Profile details on C-130 showing the design of the haul road and limits of grading in support of this discussion.

- 6) *The “Notice of Intent, Peer Review Response” letter prepared by Kleinfelder dated October 26, 2022 states that the energy dissipator proposed at the replacement culvert outlet has been removed from the project design and natural substrate will be used. An Energy Dissipator detail is still provided on Sheet C-502. A detail illustrating the proposed natural substrate (substrate type, size, placement) has not been provided.*

The Energy Dissipator detail has been removed from the plans and will not be used during the proposed project construction.

- 7) *Per the requirements of 310 10.53(8), the applicant should provide information on the potential for erosion and head cutting.*

As stated in the NOI narrative, the replacement culvert will increase hydraulic capacity of the stream crossing and will reduce potential for erosion and head cutting.

- 8) *The narrative states that the proposed 60-inch replacement culvert will be embedded. A cross-section detailing the embedment of the culvert has not been stated in the revised NOI narrative.*



The project plans and NOI narrative have been updated to note a 2-foot culvert embedment. Please refer to the detail on Sheet C-130.

Bordering Vegetated Wetland

- 9) *As previously stated, BVW W3 currently borders on Stream S1. The applicant should address how the connect between BVW W3 and Stream S1 will be maintained with the proposed stream realignment/replacement.*

See above response to Performance Standards Review Question 1.

Riverfront Area

- 10) *If approving work within the Riverfront Area under limited project status, the Conservation Commission should vote on said finding and include the finding with the final Order of Conditions. The Commission should be aware that under 310 CMR 10.53(3)(e) "In the Certificate of Compliance, the issuing authority may continue a condition imposed in the Order of Conditions to prohibit further activities under 310 CMR 10.53(3)(e)."*

We take no exception to including the reference to the Riverfront Area under the limited project status in the final Order of Conditions. With regards to including specific Order of Condition prohibiting further activities under 310 CMR 10.53(3)(e), we would recommend the Commission consider this, as the precedent it sets would limit the ability of the Commission to make decisions in the case of an emergency condition. We will also state, this project and haul road have been designed to limit the potential for future site modifications and impacts. Changes or additional impacts would go through proper permitting.

- 11) *The revised narratives state that temporarily impacted Riverfront Area will be allowed to revegetate. Seeding was discussed by Kleinfelder during the October 27, 2022 public hearing. Details should be provided regarding the application of native seed mix and measures to control the introduction and spread of invasive plant species.*

The application of native seed mix and measures to control the introduction and spread of invasive plant species will be conducted as described in the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas.

Additional Comments/Recommendations

- 1) *The Commission should consider further conditioning the stream bypass and culvert installation based on the information provided by Kleinfelder on page 10 of the response letter.*
 - a. *No work with forecasted rain with 48 hours.*



- b. No work during high flows. Flow must be 34 CFS or less based on the bypass piping calculations provided by the applicant.*
- c. Onsite compliance monitor.*

Site specific stream bypass conditions are included on Sheet C-110 see "Stream Flow Bypass Notes". We will specifically note ASMG will be self-performing the proposed construction. They fully understand the requirements of the stream bypass conditions and requirements and will be responsible for the design, installation, operation, maintenance and removal of the bypass equipment, along with compliance monitoring.

- 2) There is a LOD line shown on sheets C-105 and C-110 extending south along an existing drive. A site plan detailing the LOD and proximal upstream reach of Stream S1 has not been submitted. Sheets C-106 omit the area to the south. This area was not reviewed in the field.*

This work and the associated LOD has been removed from this project and the revised plans.

- 3) The revised site plans should be re-visited to ensure that erosion controls are depicted between all work areas and protected resource areas. For example, compost filter socks are not depicted between portions of the work area and Stream S6, Wetland W1, Stream S5, and Wetland W5.*

The plans have been updated to depict erosion controls between all work areas and protected resource areas.

We will note that the areas flagged in these comments do not include erosion controls as the limit of work and areas of disturbance are downstream of the referenced wetland and/or stream. As noted on Sheet C-105, these measures are minimum erosion and sedimentation control requirements, and additional measures may be installed if found necessary.

- 4) A final NOI plan set must be stamped and signed prior to the issuance of an Order of Conditions.*

The revised plan set included in this submission will be stamped, signed, and submitted to the Commission once all aspects of the design are agreed upon.

- 5) The final Checklist for Stormwater Report must be stamped and signed prior to the issuance of an Order of Conditions.*

The revised Checklist will be stamped, signed, and submitted to the Commission once all aspects of the design are agreed upon.

- 6) The Commission should consider a requirement that the final site plans of record include a prominent note that the project is subject to the MA WPA and an Order of Conditions issued by the Deerfield Conservation Commission.*



This note has been added to the Plan Set Cover Sheet.

- 7) *The revised WPA Form 3 does not list the square footage of proposed replacement of Land Under Waterways. Land Under Waterways replacement is being proposed for Stream 1.*

WPA Form 3 has been updated to include the proposed replacement of Land Under Waterways for Stream S1.

- 8) *The linear feet of proposed replacement of Bank provided on the revised WPA Form 3 appears inaccurate and should be revisited. Bank replacement is being proposed for Stream 1 and Stream 6.*

WPA Form 3 has been updated to include the proposed replacement of Bank for Streams S1 and S6.

- 9) *Test pits for onsite soils assessment are reportedly scheduled for the week on 10/31. Results have not been submitted or reviewed at this time.*

Test pits have been completed. See attached Test Pit Reports

- 10) *The Commission is encouraged to provide this Stockman Associates peer review letter to the licensed professional engineer providing the separate peer review to evaluate the revised Stormwater Report and other engineering components.*

The applicant understands that the Commission has elected not to require peer review of the Stormwater and engineering components of the project.

Please contact ASMG or Samantha Pretzel (Project Manager) at 304-288-8978 or spretzel@kleinfelder.com if you have any questions regarding this response or require any additional information. Thank you for your consideration on this matter.

Respectfully yours,

Samantha Pretzel
Kleinfelder

cc: Daniel Hartman, All States Materials Group

Enclosure: Revised NOI documents, which includes updates to WPA Form 3, Figure 5, Attachment A NOI Narrative, and Attachment E Wildlife Habitat Evaluation

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Test Pit Reports
Revised plans with latest revision date of 11/9/2022.