

September 5, 2024

Jacki Byerley, Planner
Robert Douglas, Conservation Director
Town of Andover
36 Bartlet Street
Andover, MA 01810

RE: Nitsch Project #15363
Principio
Stormwater Peer Review
Andover, MA

Dear Jacki Byerley and Robert Douglas:

On behalf of P&G Andover Manufacturing Facility (the Applicant), Nitsch Engineering (Nitsch) is writing in response to the comments prepared in a letter dated September 3, 2024 by Horsley Witten Group, Inc.

Please find the series of comments in italics and responses by Nitsch Engineering in bold.

Stormwater Review

HW has reviewed the documents listed above and has the following comments concerning the stormwater management design in accordance with the Massachusetts Stormwater Handbook (MSH) dated February 2008, and the Town of Andover Stormwater Management and Erosion Control Bylaw and Regulations amended May 11, 2021 (Stormwater Bylaw).

In accordance with Section VI. B. of the Andover Stormwater Bylaw, the Stormwater Management Permit and Narrative provided by an Applicant shall contain sufficient information to verify compliance with the local Stormwater Bylaw and the MassDEP Stormwater Management Handbook (MSH). Below are comments relating to the standards as presented in the MSH. Where the more stringent requirements of the Andover Stormwater Regulations are applicable, those comments are included.

The manufacturing facility expansion is considered a mix of a new development and redevelopment and intends to fully comply with the MassDEP Stormwater Management Standards. The existing 30 Burt Road property is approximately 154.5 acres. The limit of work for the project site encompasses 15.17 acres. The project site includes 9.52 acres of impervious cover under existing conditions and 12.55 acres under proposed conditions for an increase of 3.03 acres (20%).

1. *Standard 1 states that no new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*
 - a. *The Applicant has evaluated two design points that will be associated with the proposed building expansion and site reconfiguration.*
 - 1) *Design Point 1 (DP-1) is defined as the western wetland, marked with flag series WF#12. The existing outfalls include two 30-inch corrugated metal pipes (CMP), one 48-inch reinforced concrete pipe (RCP), and several concrete swales. One 30-CMP will be replaced and a stone apron added to the outfall, rain guardians are proposed at the concrete swales to provide water quality and reduce erosion to the wetland, the other 30-inch CMP and 48-inch RCP will be maintained. The Applicant has proposed three subsurface infiltration systems (Ponds 1P, 2P, and 3P) to manage the additional roof runoff and most of the proposed parking areas within the*

watershed. HW recommends that the Applicant provide the riprap apron sizing calculations for the proposed 30-inch CMP. HW further recommends that the Applicant determine if the existing 48-inch RCP outfall is causing erosion in the wetland and consider providing a riprap apron if appropriate.

Nitsch Response: Regarding the existing 48-inch RCP, installing rip rap in front of the exiting outfall would require the placement of permanent fill (riprap) and temporary construction impacts to the adjacent wetland resource areas during installation. There is no space between the outfall and the wetland resource area boundary to place the riprap (it would have to be placed in the stream bed). For perspective, the 48-inch RCP is currently at a minimum slope. Several roof drains from the existing building discharge to the 48-inch RCP. The roof drains, located on the south elevation of the existing building, will remain. For these reasons, it is not recommended that the riprap be installed.

HW August 8, 2024: HW was not able to locate the sizing calculations for the riprap apron at the 30-inch CMP. The applicant has provided a reasonable explanation on why a riprap apron is not appropriate at the outfall of the 48-inch culvert. However, it did note whether there is existing erosion occurring at this outfall which if there is, may be worth a conversation with the Conservation Commission. HW recommends the Applicant provide additional information in response to comment 1.a.1).

Nitsch Response: Please see the attached sizing calculations for the riprap apron at the 30-inch CMP. Regarding the 48-inch diameter culvert that will not be modified as a result of the proposed project, we have confirmed that there is presently no evidence of erosion at that location that would in turn warrant the placement of a riprap apron in the wetland or adjacent stream bank (please see the attached photographs for additional detail). The banks are stable and well vegetated.

HW August 30, 2024: The Applicant has provided the riprap apron sizing calculations for the 30-inch CMP outfall. The Applicant has also provided a photo of the 48-inch outfall confirming that there is no erosion currently occurring at this outlet. No further action requested.

- 2) *Design Point 2 (DP-2) is defined as the northeast wetland, marked with flag series WF#11. The discharge is an existing 15-inch RCP proposed to be maintained. The Applicant has proposed a subsurface infiltration system (Pond 4P) to manage the increased impervious area. As modeled the subsurface system fully retains the 100-year storm event. However, the Applicant has divided the area into subcatchment areas PR-6 and PR-9. In the HydroCAD model PR-6 is directed through subsurface infiltration system #4. It appears that PR-9 should also be directed into Pond 4P. A small section of Gillette Way appears to flow towards the east but most of surface area within PR-6 and PR-9 is directed into catch basins which are piped into the subsurface infiltration system #4. HW recommends that the Applicant review the catchment areas and the HydroCAD model for DP-2.*

Nitsch Response: PR-9 is the area in the access road that does not directly enter into the catch basins located in the drop lot. A portion of the road bypasses the new catch basins and continues to the existing catch basins located to the south. Figure PR-DA has been updated to clarify the areas.

HW August 8, 2024: The applicant has clarified the direction that PR-9 flows to. HW has no further comment.

2. *Standard 2 requires that stormwater management systems shall be designed so that post- development peak discharge rates do not exceed pre-development peak discharge rates.*

- a. *The Applicant has provided a HydroCAD model for the existing and proposed stormwater management to determine the peak rate attenuation and runoff volume for the 2-year, 10-year, 25-year, and 100-year storm events. HW has confirmed the subcatchment areas, the curve numbers, time of concentration flow paths, and the precipitation depths. The values utilized by the Applicant appear reasonable.*

Nitsch Response: No further comments.

HW August 8, 2024: HW has no further comment.

- b. *The Applicant has included a detail for Outlet Control Structure (OCS) 211 for Subsurface System #2 on Sheet C-603. There is one 17-inch vertical orifice shown, the HydroCAD model lists three orifices. HW recommends that the Applicant review the details and the HydroCAD model for consistency.*

Nitsch Response: Based on updated Test Pits performed on site in July 2024, the design of System #2 and the Outlet Control Structure was revised and discrepancies were corrected. Please see updated plans and Stormwater Report.

August 8, 2024: The Applicant has adjusted the size of Subsurface System #2 following additional soil testing. The OCS 211 Detail on Sheet C-603 has been revised. However, the detail and the HydroCAD model differ slightly. The plan and detail list the weirs at elevations 94.25 and 94.75 while the HydroCAD model lists the weirs at elevations 93.75 and 94.25. HW recommends that the Applicant adjust the plans or the HydroCAD model for consistency.

Nitsch Response: The plans have been updated to match the HydroCAD model. Please see Sheet C-502 and C-603.

HW August 30, 2024: The Applicant has revised the weir elevations on Sheet C-502 and C-603 to match the HydroCAD model. No further action requested.

- c. *The Applicant has included a detail for Outlet Control Structure (OCS) 234 for Subsurface System #3 on Sheet C-604. There is one 36 inch wide by 10-inch-high vertical orifice shown, the HydroCAD model lists two orifices. HW recommends that the Applicant review the details and the HydroCAD model for consistency.*

Nitsch Response: Based on updated Test Pits performed on site in July 2024, the design of System #3 and the Outlet Control Structure was revised and discrepancies were corrected. Please see updated plans and Stormwater Report.

August 8, 2024: The Applicant has adjusted the size of Subsurface System #3 following additional soil testing. The OCS 234 Detail on Sheet C-604 has been revised. However, the detail and the HydroCAD model differ slightly. The plan and detail call for an 8.0-foot-long weir at elevation 95.25 while the HydroCAD model lists a 6.0-foot-long weir at elevation 95.25. HW recommends that the Applicant adjust the plans or the HydroCAD model for consistency.

Nitsch Response 8/19/2024: The plans have been updated to match the HydroCAD model. Please see sheets C-503 and C-604.

HW August 30, 2024: The Applicant has revised the weir length on Sheet C-503 and

C-604 to match the HydroCAD model. No further action requested.

- d. *The Applicant has included a detail for OCS 253 for Subsurface System #4 on Sheet C- 604. There is one 10-inch vertical orifice shown, the HydroCAD model lists three orifices. Furthermore, the top of the 8-foot weir is called out on the detail at elevation 96.00 and a 48-inch outlet pipe is shown while the HydroCAD model lists a 5-foot weir at elevation 94.25 and a 12-inch outlet pipe. HW recommends that the Applicant review the details and the HydroCAD model for consistency.*

Nitsch Response: Based on updated Test Pits performed on site in July 2024, the design of System #4 and the Outlet Control Structure was revised and discrepancies were corrected. Please see updated plans and Stormwater Report.

HW August 8, 2024: The Applicant has adjusted the size of Subsurface System #4 following additional soil testing. The OCS 253 Detail on Sheet C-604 has been revised. However, the detail appears to indicate a steel plate weir. A weir was not included in the HydroCAD model. HW recommends the Applicant the point of the steel plate on detail for OCS 253.

Nitsch Response 8/19/2024: The plans have been updated to match the HydroCAD model. Please see Sheet C-500 and C-604.

HW August 30, 2024: The Applicant has eliminated the weir on Sheet C-604 to match the HydroCAD model. No further action requested.

- e. *HW recommends that the installation of the infiltration systems be witnessed by a professional engineer. The Town may choose to make this a condition of approval.*

Nitsch Response: No additional comments.

HW August 8, 2024: Suggestion Condition of Approval.

- f. *The Applicant has provided a table within the Stormwater Report that compares the Peak Rates of Runoff under existing and proposed conditions for DP1 and DP2. Also, a second table that compares the Volumes of Runoff in accordance with Section VI. B. e. of the Andover Stormwater Bylaw. HW recommends that the Applicant update the tables as needed if any changes to the HydroCAD model are necessary.*

Nitsch Response: The Stormwater Report peak flows and volumes charts have been updated. Please see Section 4 of Stormwater Report.

HW August 8, 2024: HW recommends the Applicant update the tables as needed if any changes to the HydroCAD model are necessary.

Nitsch Response 8/19/2024: There were no additional revisions to the HydroCAD model. The plans were updated to match the HydroCAD.

HW August 30, 2024: The Applicant has revised the drawings to match the HydroCAD model. No further action requested.

- g. *HW August 8, 2024: The Applicant has adjusted the size of Subsurface System #1 following additional soil testing. The OCS 208 Detail on Sheet C-603 has been revised. The detail indicates elevation 93.0 as the bottom of the OCS and the 18-inch outlet pipe. The HydroCAD model matches the elevation of the primary outlet at 93.0. However, the plan view on Sheet C-502 indicates the 18-inch outlet at elevation 91.90. HW recommends that the Applicant adjust the plan, detail, and/or the HydroCAD model for consistency.*

August 30, 2024: The Applicant appears to have missed this minor error on the drawings. HW recommends that the Applicant raise the outlet elevation of OCS 208 on Sheet C-603 to 93.0.

Nitsch Response 9/5/2024: Please see the attached updated Sheets C-502 and C-603. The invert of the culvert on Sheet C-502 was revised to 93.00 to match the HydroCAD. The detail on Sheet C-603 was adjusted to denote elevation 92.00 (outlet from system to OCS-208).

3. *Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.*

- a. *The Applicant has conducted several test pits throughout the site. TP-105 and TP-106 are located within the footprint or adjacent to Subsurface System #3. The bottom of TP- 105 is elevation 91 and the bottom of Pond 3 is elevation 92. The Applicant has called out groundwater at elevation 90 on Sheet C-603. HW recommends that the Applicant confirm that the Estimated Seasonal High Ground Water (ESHGW) elevation is at least 2 feet below the bottom of the system.*

Nitsch Response: Additional test pits were performed onsite to confirm estimated seasonal high groundwater elevations. Please see Appendix G of the Stormwater Report for Test Pit logs.

HW August 8, 2024: The Applicant has modified the design of Subsurface System #3 from 156 Retain-It Conc Infiltration Chambers to 100 Retain Conc Detention Chambers that are lined. The Applicant has eliminated the exfiltration in Subsurface System #3. HW has no further comment.

- b. *Test pits TP-101 and TP-102 are located within the footprint of Subsurface System #4. The bottom of the test pits is approximately elevation 92. No water was observed and widely graded gravel with sand was noted in the C layer. HW concurs with the exfiltration rate used of 2.41 inches per hour (iph). However, the bottom of the system is proposed at 91.25, below the observed bottom of the test pit. HW recommends that the Applicant confirm that the ESHGW elevation is at least 2 feet below the bottom of the system.*

Nitch Response: Additional test pits were performed onsite to confirm groundwater elevations and soil classifications. Please see Appendix G for additional test pits (TP 201, TP 202 and TP 203). The test pits confirmed the soil classification and did not encounter estimated seasonal high groundwater.

HW August 8, 2024: The Applicant has conducted additional soil testing, which indicates that ESHGW in the footprint of Subsurface System #4 is below elevation 85.0 and the bottom of the system is set at elevation 90.25. The Applicant has provided greater than 4 feet of separation. HW has no further comment.

- c. *HW was not able to confirm the provided recharge and recommends that the Applicant include the HydroCAD stage storage calculation print out.*

Nitsch Response: Please see Appendix A of the Stormwater Report for the stage storage tables.

HW August 8, 2024: The Applicant has provided the requested stage storage print out from the HydroCAD model to confirm the recharge volume provided. HW has no further comment.

- d. *The Applicant provided a mounding analysis for Subsurface Infiltration System #3. HW recommends that the Applicant provide documentation for the various variables used in the equation.*

Nitsch Response: Based on the additional test pits, System #3 has been redesigned to a detention system.

HW August 8, 2024: The Applicant has modified Subsurface System #3 to be detention only and is proposed to line the bottom of the system. HW has no further comment.

- 4. *Standard 4 requires that the stormwater system be designed to remove 80° Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.*
 - a. *HW recommends that the Applicant include the closed drainage system calculations. Appendix D references the Closed Drainage System Design. However, the calculations have not been included in the document received by HW.*

Nitsch Response: Please see Appendix D of the Stormwater Report for the updated Closed Drainage System Design.

HW August 8, 2024: The Applicant has provided the requested calculations. HW finds the value to be reasonable and has no further comment.
 - b. *HW recommends that the Applicant provide the water quality volume calculations to confirm it has provided 1.0 inch of water quality volume over the impervious area.*

Nitsch Response: Please see Appendix A of the Stormwater Report for the water quality volume calculations.
 - c. *HW August 8, 2024: The Applicant has provided the requested calculations. HW finds the values to be reasonable and has no further comment*
 - d. *HW recommends that the Applicant clarify the water quality units proposed. There is a detail on Sheet C-604. However, the size is not listed.*

Nitsch Response: Please see updated detail on Sheet C-604 with model information.

HW August 8, 2024: The Applicant has revised the water quality units and has provided the sizing calculations. The details on Sheet C-604 do not include the model information as suggested by the Applicant in its response. HW recommends that the Applicant clarify the models chosen.

Nitsch Response: Please see updated Sheet C-604 with water quality unit model information.

HW August 30, 2024: The Applicant has included the model number on Sheet C-604. No further action requested.
 - e. *HW notes that the Applicant has provided documentation from a third-party reviewer in Appendix I of the Stormwater Report that supports the TSS removal rate credited to the proposed Rain Guardians.*

Nitsch Response: No additional comments.

HW August 8, 2024: HW has no further comment.

- 5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads*

(LUHPPL).

- a. *HW recommends that the Applicant confirm that the vehicle trips are less than 1,000 per day. In accordance with the MSH Volume 1, Chapter 1, page 12, parking lots with high-intensity-uses (1000 vehicle trips per day or more) are considered LUHPPLs.*

Nitsch Response: Based on the latest traffic study, it is estimated that there are less than 1,000 vehicle trips per day.

August 8, 2024: The Applicant has confirmed that it has estimated the vehicle trips to be less than 1,000 vehicle trips per day. HW has no further comment.

6. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.*

- a. *The site does not discharge to a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply. Therefore, Standard 6 is not applicable.*

Nitsch Response: No further comments.

HW August 8, 2024: HW has no further comment.

7. *Standard 7 is related for projects considered Redevelopment. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

- a. *The Applicant is proposing a mixture of a new development and redevelopment with an increase of 3.23 acres of impervious cover. The Applicant intends to meet all requirements of the Stormwater Management Standards and does not seek relief under this standard. HW notes that the Applicant has included Rain Guardians to provide TSS removal for runoff coming from a reconfigured parking area. The discharge from subcatchment PR-3 does not meet the required 80% TSS removal. However, it is an area being redeveloped within the site discharging to existing outfalls.*

Nitsch Response: A weighted calculation for the TSS removal within the limit of work has been included in Appendix A.

HW August 8, 2024: HW has no further comment.

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*

- a. *The Applicant has provided Erosion and Sedimentation Control Plans and Details within the plan set that includes 12-inch wattles, perimeter protection, stabilized construction entrance, inlet protection, seeding, dust control, mulching, and netting. The proposed details and notes appear reasonable.*

Nitsch Response: No further comments.

HW August 8, 2024: HW has no further comments.

- b. *The proposed project requires land disturbance of greater than 1 acre. Therefore, a Stormwater Pollution Prevention Plan (SWPPP) per the EPA NPDES Construction General Permit will be required. The Applicant has included a draft SWPPP in*

Appendix F of the Stormwater Report. HW recommends that the Applicant provide a final copy of the SWPPP signed by the contractor to the Town a minimum of 14 days prior to land disturbance. The Planning Board may choose to require receipt of the SWPPP as a condition of approval.

Nitsch Response: No further comments.

HW August 8, 2024: Suggested Condition of Approval.

9. *Standard 9 requires a Long-Term Operation and Maintenance (O & M) Plan to be provided.*
 - a. *The Applicant has provided a Long-Term Pollution Prevention Plan and Stormwater O&M Plan in Appendix E of the Stormwater Report. As presented it can be easily separated to be standalone document. HW recommends that the O&M Plan be signed by the property owner.*

Nitsch Response: We would request submitting a signed Operation and Maintenance Plan prior to the start of Construction.

HW August 8, 2024: Suggested Condition of Approval.

- b. *HW recommends that the Applicant include a maintenance log listing each of the stormwater practices individually within the O&M Plan.*

Nitsch Response: The maintenance log has been updated. Please see Appendix E of the Stormwater Report.

HW August 8, 2024: The Applicant has included the maintenance log as suggested. HW has no further comment.

- c. *HW recommends that the Applicant include a simple plan that is drawn to scale and shows the location of all stormwater practices to be inspected and maintained. The plan should also include locations for snow storage. HW further recommends that if feasible the O&M Plan encompass the entire P&G campus and not just the locations included in the Stormwater Report.*

Nitsch Response: The O&M has been updated to include a plan showing the snow storage and stormwater practices. Please see Appendix E of the Stormwater Report.
HW August 8, 2024: The Applicant has noted that a simple plan was included with the O&M Plan. HW was not able to locate it in the documentation received. HW request that the Applicant provide the plan as previously suggested.

Nitsch Response: Please see attached updated O&M with snow storage and stormwater plan.

HW August 30, 2024: The Applicant has provided the requested sketch in the O&M Plan. No further action requested.

10. *Standard 10 requires an Illicit Discharge Compliance Statement to be provided.*
 - a. *The Applicant has submitted an Illicit Discharge Compliance Statement signed by the Owner's Representative. HW recommends that the Planning Board request receipt of an Illicit Discharge statement signed by the property owner.*

Nitsch Response: We would request submitting a signed illicit discharge statement prior to the start of construction.

Jacki Byerley and Robert Douglas: Nitsch Project #15363
September 5, 2024
Page 9 of 9

HW August 8, 2024: Suggested Condition of Approval.

Please do not hesitate to contact me if you have any questions or comments.

Sincerely,

Nitsch Engineering, Inc.



Marissa Valentino, PE, CFM
Project Manager