Petition No. 1395A
Reconsideration Interrogatories

May 4, 2021
Petitioner Responses May 27th, 2021

The Petitioner has updated the construction documents to further address the inquiries from the Connecticut Siting Council and CT-DEEP relating to the issuance of Stormwater General Permit for the project. These updated civil construction documents are attached to these interrogatory responses as ***Exhibit A – Civil Construction Documents Revision #8***. The CSC should also be aware that this energy from this project is slated to be a virtual net metering project for the Town of Fairfield. Furthermore, as shown in Exhibit E (Vernal Pool Report), Interrogatory Response Set 1, the likely alternative development of this property would be single-family homes which would not be required to adhere to any CTH impact area criteria and would result in a far greater impact to the CTH, and create impassable areas of manicured lawn and impervious surfaces, and have far greater impacts. The project should not be subjected to a double-standard when alternative types of development of the property would not be constrained by the various criteria discussed with the Project.

1. The Petition indicates on-site rock processing would occur during construction. Please provide details of this activity including, but not limited to, duration, location, and required machinery/trucks/loaders.
   RE: The Petitioner has added the following notes to the plans to provide direction to the contractor relating to the rock and ledge removal on site. It should be noted that this is a typical construction practice for civil site construction for all types of site development, these methods of construction and rock processing would not be unique to a solar development on the parcel.

   ROCK / LEDGE MANAGEMENT PLAN

   ROCK WITHIN STORMWATER BASINS
   1. Boulders and loose rock, if encountered, within the stormwater basins shall be removed from the basin limits by excavator or mechanical means only. Any voids left by the boulders or loose rock shall be backfilled with gravel fill. Provide topsoil and seed mix as specified on the project plans.
   2. Ledge, if encountered, shall be removed by mechanical means only. Blasting shall not be permitted at the site. Ledge shall be removed to a minimum of 18" below the finished grade elevation. 12" of gravel fill and 6" of topsoil shall be installed over the ledge. Provide seed mix as specified on the project plans.

   ROCK THROUGHOUT THE SITE
   1. Ledge, boulders, or loose rock when encountered throughout the remaining portions of the site shall be removed as need to perform the work. Removal shall be by excavator, or by mechanical means only. Blasting shall not be permitted at the site.
   2. When boulders or loose rock is excavated as part of the work, any voids left behind shall be backfilled with gravel fill.
   3. When ledge is encountered at the ground surface within the work area a minimum of 6" of topsoil, seed, and stabilization measures shall be installed over the ledge as called for on the project plans.
   4. Excavated rock may be temporarily stored on site and the Contractor shall manage the material in either of the following manners, at their discretion:
      a. Rock may be removed from the site via trucks and/or trailers and legally disposed of or processed offsite.

b. Rock may be crushed onsite, processed, and used as trench backfill or as general fill onsite. Portable crushing equipment, processing equipment, and stockpiles shall be surrounded by silt fence or straw bale barriers.

5. Processed rock placed on the site as general fill shall maintain the stormwater drainage patterns as shown on the project plans.

The notes above describe what the contractor shall do when rock is encountered. The revised earthwork for the site, given the Revision #8 grading changes, will be 11,500 yards of cut and 6,000 yards of fill, with an overall net export of 5,500 yards. The quantity and volume of rock is assumed to be 30% (3,500± yards) of that overall earthwork cut. The civil sitework contractor will determine if crushing on site or hauling this rock off site is more cost effective once actual volume of rock is identified in the field. The civil contractor may revise grades associated with the current design, to reduce overall export by increasing fill locations, this will be based on the usability of the cut materials, amount of topsoil and subsurface conditions.

If rock crushing and processing were to occur on site, a central location for rock crusher would be set up. Depending on size of material, rocks may be broken by a pneumatic hammer mounted to an excavator, to get to the rock to the appropriate size prior to insertion into rock crushing machinery. An efficient rock crushing operation can handle 200+ yards of material per day, and it is assumed that the crushing operation would not last longer than 2 - 3 weeks for a project of this size.

Material hauled off site be it soil or rock would be simply picked and loaded into dump trucks, with material weights at or below applicable roadway load restrictions.

2. How would fugitive dust be controlled during rock processing? If water is used, how would waste water be controlled?
   RE: Dust is controlled by the use of water or tackifier products to minimize airborne particles. Prior to the rock crushing operation, temporary sediment basins would be excavated, to protect adjacent resources. Water or tackifiers used for dust control, is not considered "wastewater" and should construed similarly to stormwater runoff.

3. Would rock-crushing activities cause vibrations that could affect groundwater resources and the water quality of nearby wells?
   RE: No. Rock crushing machinery is designed to minimize ground vibrations. A full explanation of a mobile rock crushing operation that would be utilized on the site has been attached as ***Exhibit B – Mobil Crushing Operations.***

4. Would hauling the rock/boulders from excavation/grading activities off-site reduce the potential for dust control and water quality issues? What is the estimated cost of removing this material from the site compared to processing it on-site?
   RE: Dust control and water quality issues would not be increased due to a rock crushing operation if required on site. These are typical construction practices for civil sitework construction and should not be viewed as a detriment to the project development. It is significantly more costly to export material from a site, regardless of what the material is. However, if there are instances (as outlined in the construction notes) to remove material from the site, it will be performed in accordance with local and state permitting requirements. All methods of construction will follow the requirements of the Connecticut General Permit as well as local and state construction requirements.

5. Given the exposed boulders in the northern portion of the project footprint (as shown in the petition photographic documentation) how does the Petitioner intend on establishing suitable erosion and sedimentation controls before any ground disturbance activities occur?

RE: The construction sequencing associated with the updated project civil documents outlines how the Petitioner intends to establish perimeter erosion and sediment controls. Exposed boulders do not hinder the ability to secure the site's perimeter erosion control measures. Additional test pits have been performed for the northern stormwater basin and minor changes have been made to the grading design to ensure constructability.

6. To date has the Petitioner met with DEEP Stormwater Division to discuss the project? If so, what were their concerns and how were these concerns addressed? What is the status of the Stormwater Permit?
   RE: Yes, the Petitioner has been in contact with DEEP for several months relating to the review of the General Permit application for the project. The documents submitted with these interrogatory responses have also been submitted to DEEP to attain the project's General Stormwater Permit. A specific revision letter has been provided with Exhibit A – Civil Construction Documents Revision #8 outlining the revision made to the project design based on the Petitioners coordination with DEEP.

7. Could the Petitioner reduce the project footprint to ensure the Critical Terrestrial Habitat associated with the on-site vernal pool does not exceed 50 percent disturbance?
   RE:
   The technical paper, *Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States* (Calhoun and Klemens (2002)) is not a property rights mandate and was never intended nor envisioned to be used in such a manner.

   As proposed, no solar panels are within 100 feet of the Vernal Pool.

   The current CTH impact for the vernal pool without the solar facility currently exceeds the threshold of less than 25% of the CTH being developed, per the Calhoun and Klemens (2002) assessment methodology. The current CTH impact is 32.4% without the solar array. If the solar array footprint is treated as the equivalent of a parking lot (which it is not) then the CTH impact area would be 52%. It should be noted that the reduction of CTH is based on considering solar panel array areas as "developed" land unsuitable for amphibians. However, these areas will not be maintained as a typical lawn (which is excluded by the Best Development Practices as established by Klemens and Calhoun (2002) as suitable habitat.) The array area will be seeded to low, grasses suitable for grazing. Therefore, these areas will not prohibit movement of vernal pool amphibians as they move between habitats or disperse as would a manicured lawn. If the solar array footprint is recognized as an area that allows movement, then there would be no impact on the CTH. A further reduction in the project footprint would have a negligible actual impact to the Critical Terrestrial Habitat while significantly adversely affecting the size of the project and the savings that could be delivered to the Town of Fairfield.

   Furthermore, as shown in Exhibit E (Vernal Pool Report), Interrogatory Response Set 1, the likely alternative development of this property would be single-family homes which would not be required to adhere to any CTH impact area criteria and would result in a far greater impact to the CTH, and create impassable areas of manicured lawn and impervious surfaces.

   The project should not be subjected to a double-standard when alternative types of development of the property would not be constrained by the CTH and other criteria.

8. Are wetland and vernal pool species sensitive to water temperature variations? Would the grading and filling of the seep areas upgradient of the wetland/vernal pool alter site hydrology so that the seep areas are no longer contributing cold water to these water resources?
RE: The wetland and vernal pool are fed primarily by shallow groundwater breakout due to the presence of a naturally occurring low permeability layer that is 2-4 feet below the soil surface. The proposed storm water basin is designed to just intercept this layer and discharge to it so that the hydrology and cool water discharge will continue to feed the wetland.

9. Would the bottom of proposed Stormwater Basin #1 intercept the water table so that it would contain water for part of the year? If so, what water depth is anticipated during the spring season?
RE: Test pits were excavated in the areas of the basin to ensure constructability and address DEEP's hydrology requirements. The test pits illustrated groundwater at an approximate elevations between 392.8 and 393.8. The revised grading of stormwater basin #1 sets the bottom elevation to 392 at the micro-pools and 393 across the remainder of the basin. The basin has been designed as an extended detention shallow wetlands that will periodically have a wet bottom after storm events. Bottom drains have been included in accordance with the Water Quality Manual to allow the bottom to drain and not create a false vernal pool.

10. How does the wetland buffer design for the project comport with the recommendations of the *2004 Connecticut Stormwater Quality Manual* in regards to protecting water quality and temperature, and providing wildlife habitat. Was a Function and Values assessment of the wetland performed? If so, please provide.
RE: A function and values assessment of the wetland was not performed, nor has it been requested by the CSC during the extensive review of the project. The grading operations proposed within the wetland buffer area have been further minimized with the latest civil revision with no impacts or clearing occurring within 50' of the wetland edge. There are no proposed impacts to the wetland, so the Functions and Values of wetland remain unchanged.

11. Could landscaping or other type of vegetative plantings in the wetland buffer area enhance water infiltration and/or site hydrology? If so, how and what type?
RE: A wetland seed mix is proposed for both stormwater retention areas. This seed mix includes native species that provide a variety of vegetation that will tolerate intermittent flooding in the basins.

12. The site plans depict a 100-foot "regulated area" from wetlands. What does this value represent?
RE: The 2004 Connecticut Stormwater Quality Manual defines this term. The "regulated area" is the 100' setback from the wetland, and the language of setback and regulated are ultimately interchangeable.

13. Would the Petitioner be willing to reduce the size of the project footprint to provide for a larger buffer composed of undisturbed vegetation to the wetland and vernal pool?
RE: The revised civil documents provided for a larger buffer and no impacts or clearing will occur within 50' of the delineated wetland. The Petitioner has already reduced the project footprint to accommodate competing interests (none of which would apply to the most likely alternative development for the property—single family homes). Requiring a larger buffer of undisturbed vegetation would not have any beneficial impacts but yet would reduce the project size, the benefits to the Town of Fairfield, and be the application of another double-standard that seeks to treat solar projects more restrictively than alternative developments (all without any scientific basis).

14. Site Plan Sheet 7 depicts the limit of clearing north of Stormwater Basin #1 extending up to the wetland boundary. What is the purpose of tree clearing in this area? How would tree clearing as shown affect the wetland and vernal pool in regard to temperature and drying due to sun exposure?

RE: The revised plans show no clearing within 50 feet of the edge of wetland. This will maintain the current shade over both the wetland and vernal pool.

15. Can the Petitioner reduce the footprint of the project by using higher Watt solar modules at the site? Higher wattage panels were specified and approved in Petition 1222A - Windham Solar's approved project at 90 Hartford Turnpike, Hampton, Connecticut.
    RE: The current project footprint has already been reduced throughout the review and interrogatory process. The project footprint represented in the current plan utilizes a 475W module, which is one of the highest module wattages available on the market.

16. How would nutrients from livestock waste affect water quality in the nearby wetland and vernal pool? Are the proposed stormwater basins designed to filter out excessive nutrients/pollutants? If so, by what design/methodology?
    RE: Based on the rotation practices that limit the presence of sheep to the site 3 to 4 weeks, two times per year, the Petitioner and the Engineer of Record (CLA) believes that the vegetation being grown on the site in both the upland under the panels and the water quality basin will take up the nutrients from the sheep manure. There will be no additional nutrient loading to the wetland.

17. Is livestock grazing an integral component of the Project or can the Project proceed without it?
    RE: The project could proceed without it but using sheep for grazing is the most environmentally responsible way to mow the project site.

18. Please describe in detail how the project design complies with Section 2(a) of Appendix I – Stormwater Management at Solar Array Construction Projects - of the DEEP General Permit. Section 2(a) is as follows:

(2) (a) Prior to commencing construction activities, the Permittee shall ensure that the following setback and buffer shall be delineated and maintained on the site:

(i) No solar panel associated with a solar array shall be located within one-hundred (100) feet of any wetland or waters ("the 100-foot setback") that, prior to or after construction, is located downgradient of such construction activity or within fifty (50) feet of any property boundary ("the 50-foot setback") that, prior to or after construction, is located downgradient of such construction activity; and

(ii) Except as provided in section 2(a)(iii), there shall be an undisturbed buffer of at least fifty (50) feet between any construction activity at a site and any wetland or waters that, prior to or after construction, is located downgradient of such construction activity ("the 50-foot buffer"). Such buffer shall be comprised of existing dense herbaceous vegetative ground cover (e.g. not forested area). If the entirety of such buffer is not comprised of existing dense herbaceous vegetative ground cover, such buffer shall be at least one-hundred (100) feet ("the 100-foot buffer").

(iii) There shall be an undisturbed buffer of at least ten (10) feet between any construction activity at a site associated with an access road or the electrical interconnection necessary for the solar array and any wetland or waters that, prior to or after construction, is located downgradient of such construction activity ("10-foot buffer"), except if the access road or electrical interconnection passes between two wetland or waters and the undisturbed buffer cannot be achieved. Any crossing through a wetland or waters for an access road or electrical interconnection is exempt from such buffer requirement.

(b) Notwithstanding section 2(a)(ii), the 50-foot buffer or 100-foot buffer, as applicable, may be reduced, only where necessary, but by no more than fifty percent (50%), only if all of the following have been demonstrated to the satisfaction of the commissioner by approval of a Registration:

(i) Stormwater control measures for managing stormwater discharges that will enter or be received by a wetland or waters shall be designed and installed in accordance with the following conditions:

(A) a minimum sediment load reduction of ninety percent (90%) shall be achieved before such discharges enter or are received by a wetland or waters. The required sediment load reduction shall be calculated based solely on the stormwater controls used; no sediment load reduction from conditions on the site (i.e., from any remaining buffer) shall be considered when calculating the sediment load reduction from such stormwater controls. The sediment load reduction may be calculated using a range of available models that are available to facilitate this calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other equivalent independent third party model or method acceptable to the commissioner;

(B) those portions of a solar array from which stormwater discharges enter or will be received by a wetland or waters shall be deemed effective impervious cover for the purposes of calculating Stream Channel Protection in accordance with Section 7.6.1 of the Stormwater Quality Manual, even if those portions of such array are less than one (1) acre; and

(C) the buffer into which stormwater discharges shall have a slope of less than or equal to fifteen percent (15%)

RE: The letter attached with ***Exhibit A – Civil Construction Documents Revision #8*** outlines the revisions specifically associated with the "Appendix I" of the DEEP Construction General Permit.

DOUGLAS CONSTRUCTION

CONSTRUCTION SERVICES ▪ FACILITY MANAGEMENT ▪ COMMERCIAL DEVELOPMENT

Exhibit B - Mobile Rock Crushing Operations

BUILDING RELATIONSHIPS SINCE 1959

May 27th, 2021

To: Mr. Steve Broyer
Ecos Energy
222 South 9th Street, Suite 1600
Minneapolis, MN 55402

Re: Mobile Crushing Operations

Dear Mr. Broyer,

Thank You for your interest in mobile crushing operations. Pursuant to your request, this document will address the engineering of mobile crushing units, and specifically their design as it relates to ground impact and crushing force isolation.

Douglas Construction Company operates of large scale civil and site work division as part of our overall general contracting business. Over the course of an average year Douglas Construction processes approximately 100,000 tons of rock, ledge, bedrock, and recycle materials such as concrete and asphalt. To perform these tasks, we utilize mobile processing equipment, scalp screeners, box screeners, primary jaw crushers, secondary cone crushers, as well as a compliment of conveying and stacking equipment. All these pieces of equipment range in weight from 75,000lbs to 105,000lbs, and are track mounted for the purpose of mobilization to jobsites, as well as self-contained mobility once at the jobsite. They are almost always operated adjacent to buildings, walls, live utilities and other structural and civil improvements.

The most common misconception about crushing and processing equipment is that they utilize the ground as a resistance force to perform the task of sizing hard materials. In fact, the opposite is true. Focusing on crushing equipment, they are a compliment of a power plant, hydraulic motors, sensors, direct and belt drives, suspension systems, fly wheels, framework, and the crushing implement. All the crushing force is isolated to the crushing implement, most commonly a "jaw" or a "cone" and is held separate from the framework and balance of the machine. If the force of the crushing implement were to be absorbed through the framework of the machine, the many complicated systems that make up the balance of the equipment would fail in relatively short order.

Crushers are engineered to use rotary force to perform their task, and this force is engaged when the momentum moving on the lateral vector. Jaw crushers are the most violent and aggressive, as they reduce the raw material from about 2' x 2' to as small as 3" minus. These crushers have a vertical flywheel that spins at 290 RPM, which is attached to a toggle, similar to a piston in a combustion engine. This toggle transitions the swing of a 5' flywheel into a very forceful, but very limited back and forth motion to one side of an inverted wedge. The opposite side of the wedge is fixed. As the raw materials are fed into the wedge, they are forced against each other and fall downward, through the small end of the wedge, until finally dropping to the discharge belt and expelled from the machine. The impact force is side to side, not up and down, which eliminates any reverberating impact to the ground.

All crushers are designed to inject their force into the raw materials, not the machine or the ground, as this is required to size the material. If the force were being lost elsewhere, the energy may not be enough to break the raw material, creating an inefficient process. The absorption of the energy goes into the breaking of hard materials.

The crushing process and setup depends entirely on the finished product required. The attached photos demonstrate a full-scale screening and crushing operation with four pieces of equipment running simultaneously. These photos are included to illustrate the following:

1. Multi-Phase Screening and Crushing Operation
2. Raw Product and Finished Product
3. Proximity to Building Foundations
4. Proximity to Retaining Wall
5. Proximity to Multiple Roadways with Live Utilities
6. Proximity to Natural Gas and Propane Services to Buildings
7. Stability and Zero Vibration of Equipment
8. Crushing Operators Working on Equipment

Based on the description of work, the crushing operation for your solar project would likely generate zero seismic impact to any adjacent property or subsurface improvement, such as wells or utilities. While the equipment is fully operational and under load, a glass of water could be placed on the tracks, and it would be in the same spot at the end of the day.

Mobile processing plants and rock crushing is certainly a unique service, and these are very large, heavy, complicated and cumbersome pieces of equipment. To the untrained individual, they are often misunderstood. At the end of the day, with the proper training and experience, crushing equipment can often provide significant cost savings when applied to an adequate magnitude of raw material to be processed.

If you have any further questions, please do not hesitate to contact me.

Best Regards,

Nicholas H. Durgarian
Vice President
Douglas Construction Company

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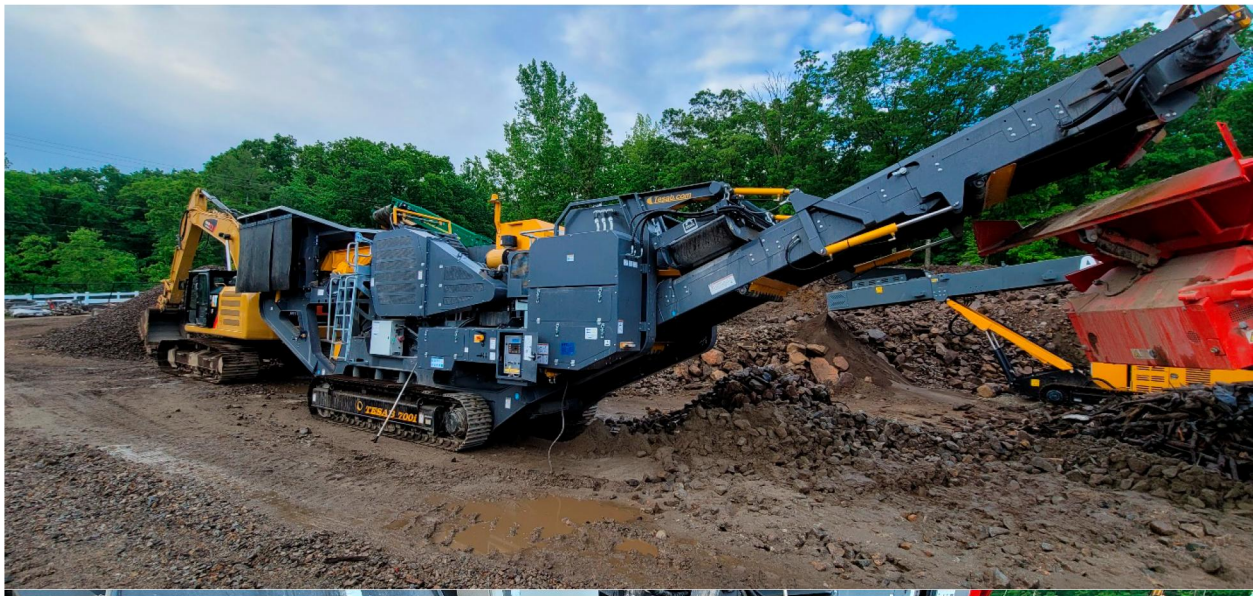

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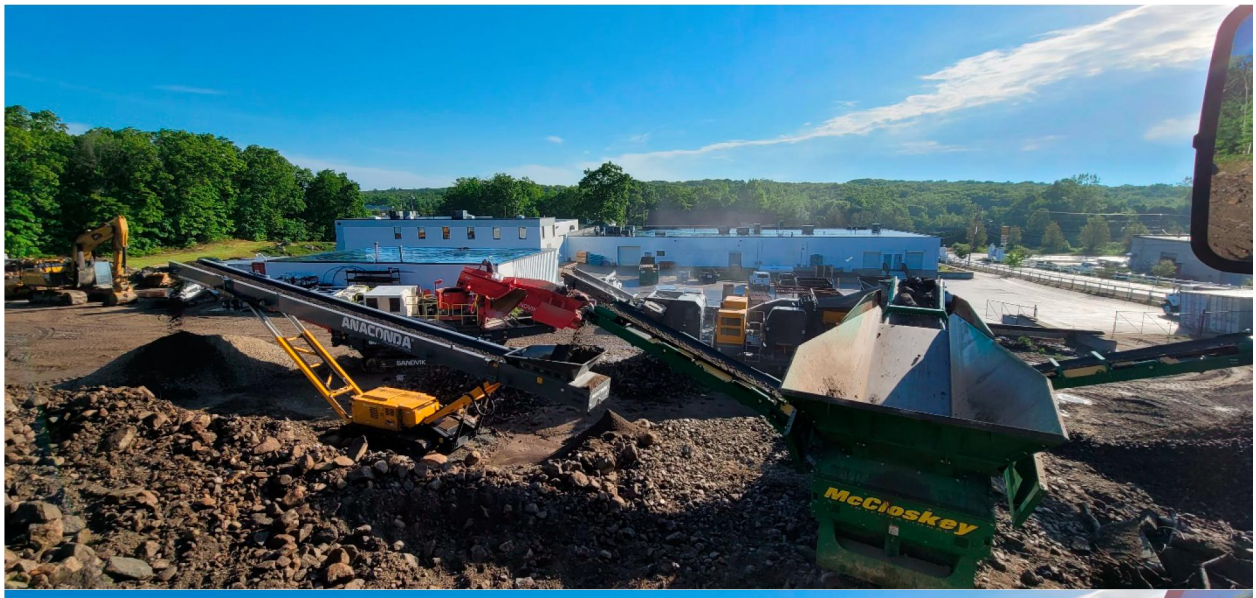

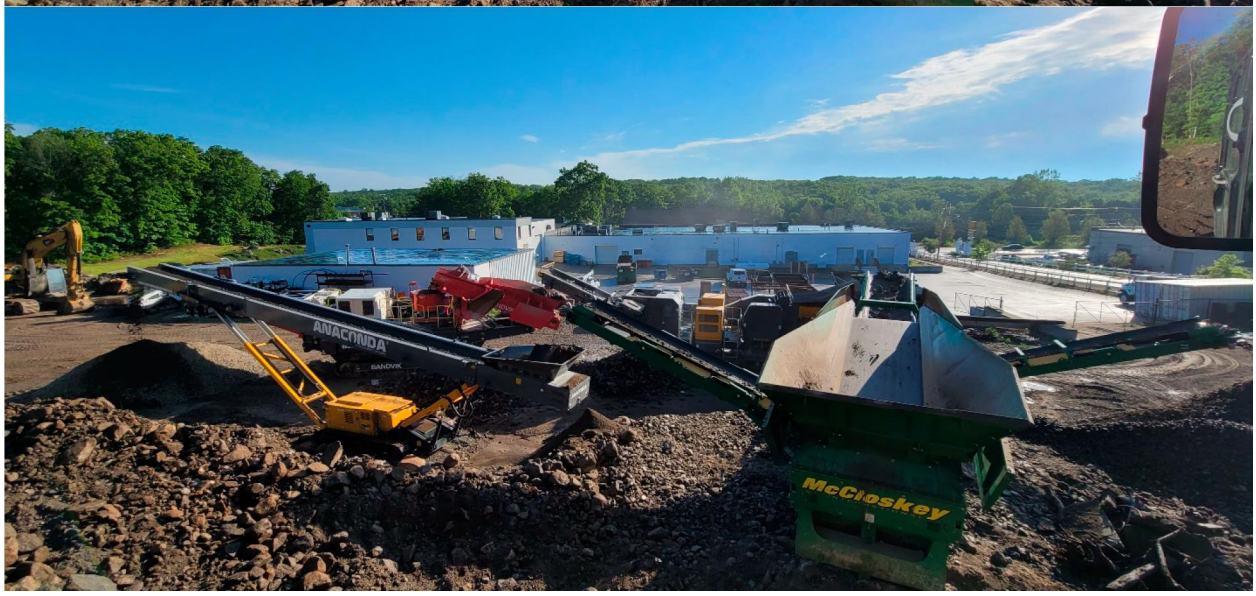

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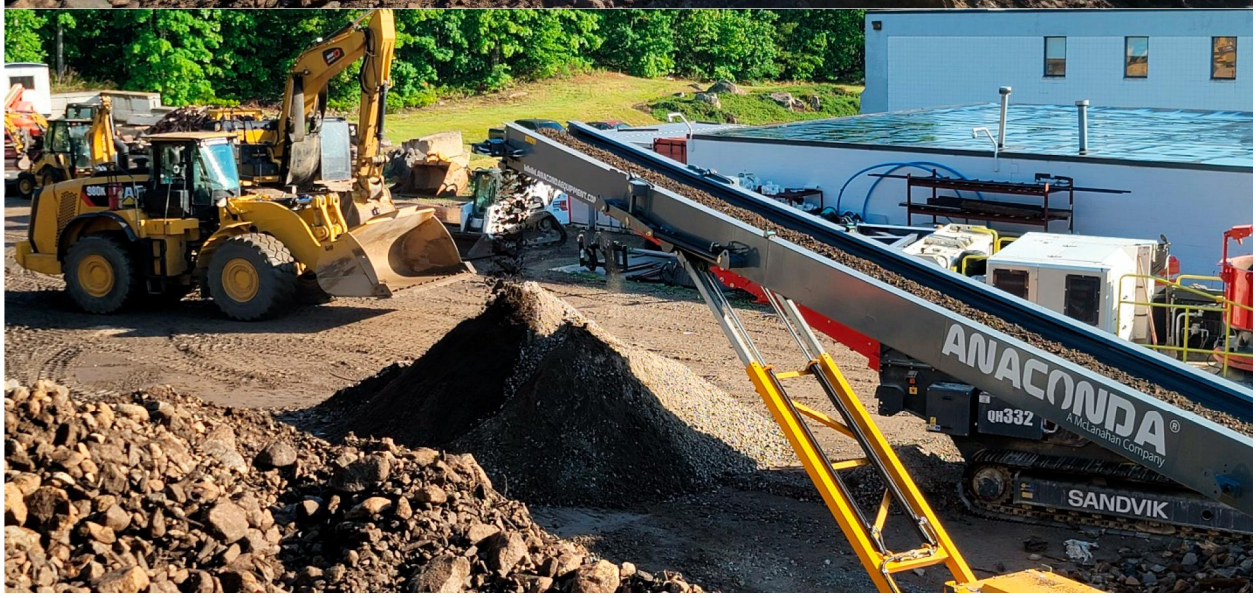

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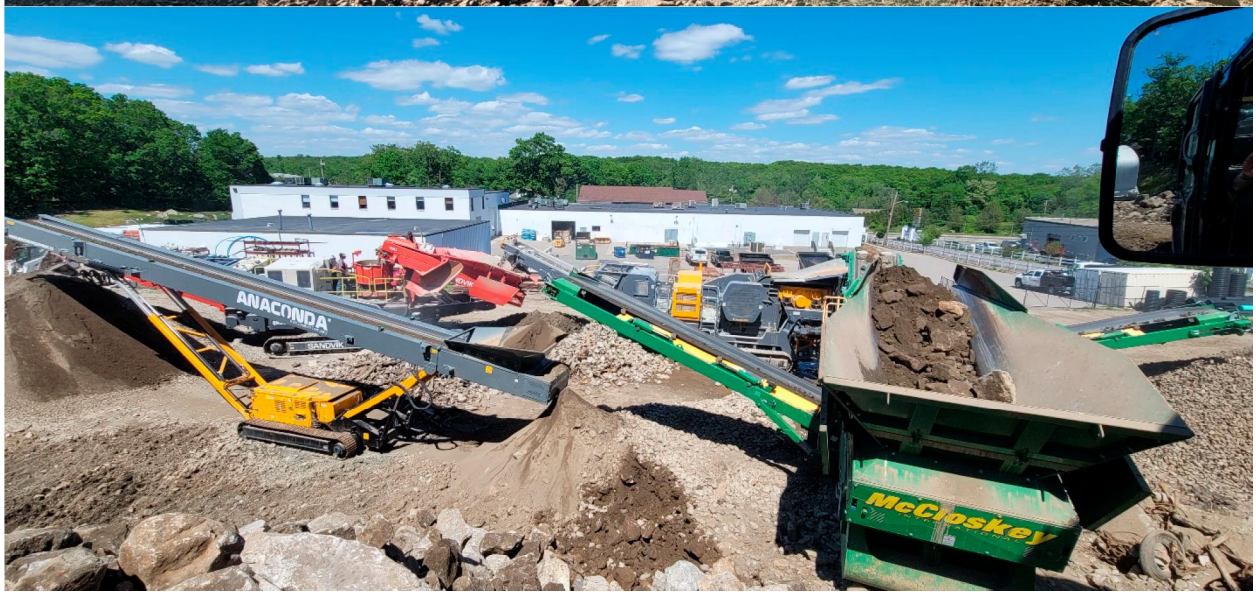

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