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Innovations

Greenbush Corridor

In Sediment Control

The Massachusetts Bay Transportation Authority approved the CBB Greenbush project to update and restore commuter rail service to the Greenbush corridor through the towns of Braintree, Weymouth, Hingham, Cohasset and Scituate, Massachusetts. The project extends from the connection with the existing MBTA Old Colony Main Line in East Braintree, along 18 miles of the former New Haven Railroad Greenbush Branch to the terminus in Scituate.

The Greenbush project involves the reconstruction of existing structures, such as road crossings, track for controlled passing, bridges, and stations, as well as the addition of new structures and safety measures. It includes extensive mitigation measures to address noise, vibration, historic, wetland, and other impacts.

Trains like this one will soon be running along the Greenbush Corridor once again.

The fractionation tanks acted like settling basins, allowing the heavy solids to settle out before treatment.

Jay Cashman Inc. / Balfour Beaty Construction Company is handling the construction on this ongoing project. When a turbidity problem threatened to delay the project, the superintendent, Scott Sartwell, contacted Mark Thrum of Hydrograss Technologies for help.

Sartwell reported that they were having trouble with meeting the water clarity requirements of the project while dewatering. They were attempting to remove the suspended sediments using four gravity-fed fractionation tanks in sequence. The NTU reading on the water as it entered the tanks was around 900 NTU and exiting the tanks was only reduced to around 800 NTU.

For Technical Information or questions please contact:

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After a site visit and some discussion, Thrum and Sartwell decided to install a 250 linear foot split pipe Floc Log® flocculation system at the outlet of the fractionation tank system. The split pipe system consists of a 36" diameter HDPE pipe cut in half and connected by male/female connections. Pitch could also be used to waterproof the pipe section seams, though it was not used here.

The entire length of split pipe was coated with three layers of coir-jute erosion control matting. The coir-jute matting is a very loose weave material that can easily be draped over the wooden stakes fitted into slots to hold the split pipe in place. Since the matting acts as a filter and surface area, allowing the flocculated material to adhere to it, care was taken to assure that the matting was hanging in the water flow.

To get the sediment to form into flocculant, Thrum proposed the use of Applied Polymer Systems' Floc Log® and Silt Stop® products. Since the polymers are site-specific, samples were sent to the APS lab to determine which polymers blends would be most effective on the soil lithology.

The Floc Logs were only placed in the first 50 feet of the split pipe system; rocks were placed in the system further down to assist with mixing and slow the velocity of the water.

Reaction of the turbid water with the Floc Logs® caused the sediment to bind together and collect on the jute matting.

The 703d and 706b Floc Log® duplex system and the 712 Silt Stop® powder were determined to be most effective on the soil. Twenty Floc Logs® (ten pairs) and fifteen pounds of powder were installed in the first 50 feet of the split pipe system. The placement at the beginning portion of the system ensured adequate mixing within the split pipe system.

The flow rate through the system was approximately 300 GPM. The turbidity reading at the end of the pipe system was 22 NTU, well below the projects requirement of 50 NTU. The absence of aquatic toxicity using the APS products allowed the operator to discharge the treated water to any riparian waterway.