From: David Rocque
To: Bolstridge, Karen
Subject: RE: DP 5050-B Application
Date: Sunday, June 13, 2021 8:52:47 AM
Attachments: image001.png

Hi Karen:

This is in regard to our site visit on June 10 to review the applicants proposed cell tower location and access road upgrade and new construction. After walking the access road and visiting the cell tower site I offer the following comments:

Access Road –

1. The first section of the access road, as it leaves the shale pit, is on high and hard ground and is proposed to remain as is. No reconstruction or upgrade is proposed. I concur that is appropriate for this section of access road.
2. The second section of access road is in need of significant upgrading. It was a skid trail and was not constructed of suitable roadbed material and was not properly ditched. The applicant proposes to excavate the poor road bed material, lay down filter fabric and then suitable roadbed material. Proper ditching will then be done with rip-rap stabilized ditches and appropriately spaced culverts. My only comment with the ditching and cross culverts is that I would prefer to see a few more cross drainages installed with my preference being rock burrito's for those drainages. They are not necessary but I think they would be useful and would reduce the volume and velocity of storm water in the ditches. Doing so might negate the need to rip-rap in the ditches. If additional cross drainages are not installed, the upgrade will work as proposed with rock lined ditches.
3. The third section of access road was a winter haul road and was constructed of much better roadbed material. It also has very good ditching that was well stabilized with vegetation the day of our site visit. The applicant only proposes to place road surface gravel over this section of road which I believe is appropriate.
4. The last section of access road, which ends up at the cell tower pad, is new construction. It will travel more or less parallel to the contour (as compared to the other sections of access road that are more or less perpendicular to the contour). This section of access road travels through a soil map unit identified by the applicants soil scientist as Telos soils. Telos soils are somewhat poorly drained and the map unit description indicates that there may be inclusions of poorly drained Monarda soils. It is my opinion that the inclusions of Monarda soili are a high enough percentage that the map unit would be better labeled as a Telos-Monarda complex. The soils that this section of access road will travel over (all except for the first few feet) are also what I refer to as Oxyaquic. That means the soils also have an oxygenated groundwater table in them that does not create redoximorphic features required to designate a soil drainage class but have a significant impact on use and management activities on those soils. I was able to observe where standing water is present during wet times of year and some areas where water flow occurs over the ground surface. This was visually observed during our site visit last December and is due to a large contributing watershed with soils that

have a very dense hardpan. It is my opinion that the best way to handle that hydrology is to build this section of road on the surface of the existing ground using a rock sandwich as the road base. Trees should be cut but not stumped (stumps and tree roots will provide additional support for the road). Culverts can be placed in the rock sandwich if the applicant's engineer wishes to do so with the culvert inverts being above the bottom of the rock sandwich. The culverts would therefore act as emergency flow ways if the rock sandwich was to be overwhelmed or the rock became plugged.

Cell Tower Pad –

The cell tower pad is to be constructed in the same soil type as the last section of access road (new section). My recommendation is to not attempt to intercept and divert the groundwater but to let it pass through to the downhill side by use of a rock sandwich type construction. The access pad is proposed to be constructed with a 24" excavation (which will likely be on top of or within the hardpan). I recommend laying down a layer of filter fabric then a layer (at least 12 inches thick) of coarse stone on which the cement pad would be poured. The stone beneath the cement pad should extend downhill until it daylights so groundwater can freely flow beneath the pad and continue its down gradient travel, eventually reentering to the groundwater table. I recommended this technique to be used by M & H Construction on a substation for the Kibby Wind Tower project and it worked very well. I believe this technique is superior to ditching and culverts, will last longer, will need far less maintenance and will better maintain the natural hydrology. It will also prevent the soil below the pad from becoming soft and unstable.

Let me know if you have any questions.