MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION
WATER SUPPLY PROGRAM
RESPONSE TO COMMENTS RECEIVED
IN THE MATTER OF:

Water Appropriation and Use Permit Application Nos: CE1988G083/08 & CE2018S002/01
For the Maryland Department of Natural Resources (Fair Hill)

HEARING DATE: November 12, 2019

The above referenced project is located at the Fair Hill Race Track, on the south side of Md Route 273, 0.1 mile east of Md Route 213, Fair Hill, Cecil County, Maryland. The Maryland Department of Environment, Water Supply Program (WSP) received applications from the Maryland Department of Natural Resources (DNR) for groundwater and surface water use associated with upgrades to the Fair Hill Race Track in October 2018. DNR requested to appropriate and use a total annual average allocation of 79,000 gallons of water per day (gpd) that will be split between two permits. Application CE2018S002/01 requests to withdrawal water from an intake in a new stormwater management pond. This application requests an annual average of 39,500 gpd and a maximum daily withdrawal of 160,000 gallons. Application CE1988G083/08 requests to modify an existing allocation from four existing wells for a potable supply and sanitary purposes from an annual average of 12,000 gpd and an average during the month of maximum use of 62,000 gpd, to add one new well, and to increase the annual average appropriation to 39,500 gpd and the maximum monthly appropriation to 69,000 gpd. New uses will include irrigation of a horse race track and maintaining soil moisture in the arenas. The annual average quantity of each permit will be considered supplemental and combined, which means an annual average greater than 39,500 gpd may be withdrawn from either source as long as the total annual average from both sources does not exceed 79,000 gpd. In November 2018, DNR received a package of instructions of the additional steps, including impact analysis and notification requirements needed to complete their application. In June 2019, DNR submitted all the information needed to complete their application. On October 23, 2019, the Administration mailed to all contiguous property owners and to all interested parties for this application a legal notice, which provided the opportunity for public comment and advertisement of the holding of a public informational hearing; and, on the same day, an identical legal notice was published in The Cecil Whig newspaper. The notice stated that a public informational hearing would be held at the Edward L. Walls Activity Hall at Fair Hill, 4640 Telegraph Road, Elkton, at 6:00 pm on November 12, 2019. The notice also indicated that interested parties would be provided an opportunity to offer comments on the project at this hearing. The informational hearing was held as scheduled. Over 70 member of the public signed in on the attendance sheet.

At the hearing, Mr. John Mayhut, P.G., of RK&K, made a presentation explaining the request for an increase to the existing permitted appropriation of groundwater, the new request for an appropriation and surface water, the reasons for the requested increase, the aquifer testing performed, the hydrogeolgic assessment, data used to develop the model, and the impact analysis.

During the presentation, participants asked questions, particularly regarding the public benefit of the proposed use, and how the use might affect their individual wells, and who would be financially responsible for addressing any adverse impact due to the proposed withdrawal. John Mayhut, RK&K, Chris Krupinski, RK&K, Emily Wilson, DNR, Sam Ray, DNR, Christopher Deremeik, Maryland Stadium Authority, a representative from Maryland Environmental Service, and the Hearing Officer addressed these questions. This document will summarize the responses to those questions and address the written comments received. The hearing was recorded to assist the Hearing Officer in addressing all the comments made at the hearing. No transcripts of the recording were made. The comment period was extended until March 23, 2020. A summary of the WSP's technical analysis is contained in the Impact Analysis Summary, which is enclosed with the Final Permit Decision letter, a separate document.

Summary of written and oral comments/questions and the Program's responses:

1. *Comment:* We are concerned about impacts to our wells from this increased withdrawal. It is not clear how this will be addressed. We request language in the permit conditions that specifically requires well replacement if our well is impacted.

   Response: In order to protect other users of the water resource from impacts due to groundwater withdrawals, permits issued for large groundwater withdrawals in fractured rock aquifers have special permit conditions added to protect these users. These special conditions for this permit are shown below:

   Notice of Complaint and Investigation – The Permittee shall follow the following procedures upon receipt of a complaint that a water supply has been adversely impacted, which may be a result of the withdrawal authorized by this permit. The procedures apply to any property with a portion of the parcel boundaries within 1,800 feet of well CE-18-0085. The Permittee shall advise the well owner to contact a licensed plumber or well-driller, hereafter called licensed professional, to investigate why their supply is no longer providing adequate water, or is pumping turbid water. If the licensed professional determines the problem is caused by lowered water levels, the Permittee shall immediately cease pumping. The Permittee may not reactivate the withdrawal unless authorized by the Administration. Also, the Permittee shall immediately commence a preliminary investigation to determine whether the Permittee's withdrawal could be responsible for the impacts to the affected water supply. The Permittee shall notify the Administration of any complaint (regardless of the distance) and the location of the impacted water supply within twenty four (24) hours of receiving the complaint.

   Within ten (10) days of receipt of the complaint that a water supply has been adversely impacted, the Permittee shall notify the Administration, in writing, of the findings of the investigation and, if necessary, all corrective actions taken or to be taken to address the impacts to the affected water supply. All corrective actions shall include a milestone date of when it was or will be completed. If the complaint involves an increase in turbidity in the water supply, the Permittee shall have a State

certified water sampler collect a water quality sample from the affected water supply and have the sample analyzed by a State certified laboratory.

Other information regarding the affected well(s) to be included in the investigative report is as follows: the property owner name and address and type of water supply (well, spring, pond, etc.), the well tag number (if on the well or available from the County Environmental Health Department), the total depth of the well, any notable well construction information, the depth of the pump setting, and a water level measurement with reference location for measurement (i.e. top of casing) and time and date of measurement(s). In addition, information regarding the dates, times, and rates that the well(s) authorized by this permit was used for the thirty days prior to and including the date of the complaint shall be included in the investigation report.

Impacts to Wells - If the Administration determines that other water user(s) are unreasonably impacted by the water appropriation authorized by this permit, the Permittee shall within twenty-four (24) hours provide bottled water for drinking and, if required by the Administration, a tanker for other uses. The Administration may require the Permittee to replace or retrofit the water supply well of an impacted user or take other corrective measures. In addition, the Administration may require the Permittee to reduce and/or cease its water withdrawals to eliminate an unreasonable impact on other users or to allow the Administration to conduct an investigation to determine if the Permittee's use is causing an unreasonable impact on a nearby water supply well.

An individual domestic water supply which has been determined by the Administration to be adversely impacted by the withdrawal authorized by this permit shall be considered adequately replaced when the Permittee provides a new or retrofitted well, or alternative water supply approved by the Administration and the County Environmental Health Department. A new or retrofitted well shall meet the minimum yield requirements established in COMAR 26.04.04.26 and approval of use requirements established in COMAR 26.04.04.30, and County Environmental Health Department approval.

Any non-domestic water supply which has been determined by the Administration to be adversely impacted by the withdrawal authorized by this permit shall be considered adequately replaced when the Permittee provides a new or retrofitted well or other alternative water supply approved by the Administration and County Environmental Health Department. A new or retrofitted well shall be capable of yielding water at the same quantity and quality of water used or needed by the property owner/entity in the five years prior to the water supply disruption. A new or retrofitted non-domestic water supply for potable uses, must also meet the approval of use requirements in COMAR 26.04.04.30. If the water supply interruption is not of a temporary nature, the Permittee shall provide a permanent retrofitted/replacement water supply of a sufficient quantity and quality for the required use within a reasonable time, not to exceed 60 days.

Expenses - The Permittee shall be responsible for all expenses associated with investigating a complaint, providing bottled water, water tankers, and/or the satisfactory retrofit/replacement of any

water supply(ies) determined by the Administration to be adversely impacted by this withdrawal. The Permittee shall reimburse the well owner of an impacted water supply for all costs associated with having a licensed professional investigate why their supply is no longer providing adequate water, or turbid water, if the problem is due to a decrease in water levels as a result of this allocation, as determined by the Administration.

Notifications – All required written notifications shall be submitted by the Permittee or their designee to the Administration. Written notification may include notification by email, mail, or fax. Notification shall be made to the address shown below: water.supply@maryland.gov OR Division Chief Source Protection & Appropriation Division Water Supply Program 1800 Washington Blvd Baltimore, MD 21230

2. *Comment:* How many wells will be used for irrigation? How can it be ensured that none of the other existing wells on site will also be used for irrigation in the future?

   Response: Only one well will be used for irrigation. The permit contains a condition limiting the withdraw of water for the use of irrigation to one well.

3. *Comment:* Not all the affected property owners received a letter from the Water Supply Program (WSP) regarding the project.

Response: The notice and hearing procedures for large water appropriation permits are governed by Environmental Article § 5-204, Annotated Code of Maryland. The applicant is required to submit to the WSP a certified document that all contiguous property owners to the Fair Hill Natural Resource Management Area were notified about the project. The WSP sends all large water appropriation permit applicants a package of requirements to complete their application. One of these is the certification of notification of contiguous property owners. The WSP provides the applicant a tax map of the site property highlighting the boundary of the property with a pink line. Any property touched by the pink line is considered a contiguous property. In addition, the county executive is also required to be notified. The applicant is required to return the certification of notification along with the list of names and addresses of the people notified. The WSP verified that DNR had notified all the contiguous property owners as required. As per the law, the WSP created an Interested Parties List (IPL) from the certification of notification for future notification about this application. Once the WSP determined that DNR had completed the application, a legal notice was submitted to the local newspaper, The Cecil Whig, for publication on October 23, 2019. Simultaneously, a copy of the legal notice was mailed to all the people in the Interested Parties List. The notice stated that a public informational hearing would be held at the Edward L. Walls Activity Hall at Fair Hill, 4640 Telegraph Road, Elkton, at 6:00 pm on November 12, 2019. The hearing officer granted the hearing attendees a sixty days from the date the permit conditions were added to the MDE website to submit further comments. The permit conditions were added to the MDE website on January 23, 2020. DNR and the WSP have complied with the notification and hearing procedures for this application.

4. *Comment:* What is under construction north of the race track?

Response: That is a separate project for a potable water supply upgrade of the existing water distribution system. The upgrades to the water system include a water tower, new distribution pipes, fire protection, and additional storage.

5. *Comment:* With more events, won't more potable water be used? What will happen for sanitation?

Response: DNR indicated bottled water, hand wash stations and portable toilets will be brought in for events. As such, the potable water demands are not anticipated to be increased.

6. *Comment:* What are the big tanker trucks doing at the project?

Response: The trucks are hauling water from off-site to establish sod. Water is pumped from the trucks to the pond and will ultimately be used to irrigate the sod. This is a temporary irrigation method during construction.

7. *Comment:* How much will the production well be used relative to the water from the pond being used?

Response: The production well will be used as needed, when needed. The well is a supplemental water source to the pond. The pond water will be the primary source of irrigation water. Although either source may be used up to the limits imposed on the total allocation, DNR has no incentive to pump any more water from the well than needed, as pumping water increases costs. As such, water that is available in the pond will be used first, and the well will be utilized if pond levels dictate more water is necessary.

8. *Comment:* Will the consultants' presentation be available online?

Response: Yes, the report, presentation and audio recording of the public hearing were all made available on MDEs' website:
https://mde.maryland.gov/programs/Water/water_supply/Pages/FairHillSpecialEventZoneHearing.aspx

9. *Comment:* Can the public see the permit before it is issued? How do I submit comments?

Response: Yes, the draft permit conditions were added to the MDE website on January 23, 2020 for comment. At the public hearing, the hearing officers' email and the WSP email (john.grace@maryland.gov and/or water.supply@maryland.gov) were announced as one method to submit comments.

10. *Comment:* Does the permittee report water withdrawals?

Response: Yes, water withdrawal reports are required to be submitted semi-annually.

11. *Comment:* When a house is built, a permit is required before beginning construction. For this project, why is the construction completed, and now MDE gives DNR a permit? Turf is being purchased and put down. How did turf get selected and put down before determining water availability?

Response: MDE is not obligated to grant a permit because constructed preceded the use of water at the site. MDE is not indebted to DNRs' decision to proceed with construction in anyway. Water Appropriation and Use Permits allow water to be pulled from the well and the pond. DNR proceeded with construction at their own risk.

12. *Comment:* How will the drawdown models be validated in real life? Will there be on-going monitoring so that pumping can be stopped before the drawdown impacts nearby wells?

Response: In this type of geology, there is always uncertainty. MDE believes that uncertainty necessitates monitoring. As such, a groundwater level monitoring plan is required as a permit condition. This special condition is shown below:

Groundwater Level Monitoring Plan – The Permittee shall submit to the Administration, at least sixty days prior to the initiation of water use, a monitoring plan to measure groundwater changes in the region of the withdrawal from well CE-18-0085 for review and approval. The plan shall include a description of the wells to be monitored, the frequency of the monitoring, and a map showing the wells to be monitored. The plan shall describe the records associated with monitoring water levels that will be maintained. The plan shall include monitoring of the pumping well, CE-18-0085, and identify wells for monitoring in the orientation of nearby residential users (northwest, west, southwest and south). All monitoring is subject to the permission of the property owner(s). The Permittee shall not initiate withdrawal under this permit without an approved groundwater level monitoring plan.

13. *Comment:* The previous track has been there since 1937, and it did not use any water for irrigation. Why is DNR installing a track that needs irrigation? What is the benefit of the water use to the public? This project is not benefitting the public, the county, nor residents close to Fair Hill. This project is only benefitting a small percentage of the population coming here to race their horses. Why is this a public benefit?

Response: DNR is putting in a specialized type of footing, a porous surface with turf on top, designed for the safety of horses that race on the track. Specialized media, six inches of growing media that is 90% sand with organics, is under the turf. Under the specialized media, another six inches of pea gravel is layered with a fabric separation. In order to maintain the integrity of turf, the track has to be irrigated. In order to host five (5) star events, this type of footing needs to be installed. Irrigation of the site will be used when precipitation is inadequate to maintain the turf.

The Fair Hill NRMA is a public facility that will be improved by this project. Fair Hill is now eligible to host additional events because of the new infrastructure. The public is able to attend the equestrian

events and benefit from their attendance. Members of the public at large also include the equine community, which is poised to benefit from this project.

14. *Comment:* Who came up with the number of gallons for the allocations? Does the proposed allocation reflect actual usage, or is it arbitrarily high so that they can pump whatever they want? Where did the maximum daily withdraw allocation number come from?

Response: Landscape architects gave a monthly breakdown of the water requirements to keep the turf living. Turf needs about 2 feet of water per year. The deficit between what nature provides and what sod requires is the amount of water needed for irrigation. The water demand estimate assumed that the entire withdraw would come from either the groundwater well or the surface water pond.

The water demand is based on the irrigation of turf/landscape on the Timber Course (16.1 acres) and Oval Track (11.6 acres) and maintaining soil moisture content in the Arena areas (6 acres) in addition to the existing potable supply and sanitary facility requirements. To determine the total demand for irrigation, an average per acre irrigation demand of 24.2 inches was multiplied by 33.7 acres. The total irrigation demand and the water needed for maintaining soil moisture in the Arenas Area was added to the existing potable/sanitary demand. The highest reported annual average water use and average during the month of maximum use for the potable supply and sanitary facilities over the past 15 years is 5,000 gpd, and 15,000 gpd, respectively. No additional water is expected to be needed for the potable and sanitary use because portable toilets will be provided for the equestrian events to be hosted at Fair Hill, and there will be no new bathrooms. Bottled drinking water will be provided for the equestrian events to be hosted at Fair Hill. From the aforementioned factors and including a 20% safety factor, the total annual average allocation was determined to be 79,000 gpd.

The track will be irrigated as needed from March through October when rainfall is inadequate to maintain the turf. The maximum daily withdrawal applies to the surface water permit (pond) only and is 160,000 gallons. The maximum daily withdrawal is based on the maximum pumping rate and the number of hours the pump will operate in one day.

15. *Comment:* How much water will the irrigation well produce?

Response: The irrigation well is capable of producing 35 gallons per minute.

16. *Comment:* What type of grass will be used on the race track?

Response: The turf is Kentucky blue grass.

17. *Comment:* How often will the track be irrigated for the current one or two events per year?

Response: The track will be irrigated as needed when rainfall is inadequate to maintain the turf. The permit gives permission to irrigate based on needs of the turf. How much irrigation will be required depends on the weather. The number of events held at the facility may increase.

18. *Comment:* What happens if the ponds do not hold water?

Response: The ponds are lined with a geo-synthetic liner that impedes water loss. The only losses are from evapotranspiration or irrigation water use. 3.2 million gallons are available for use above the water intake. An additional 2.8 million gallons are stored below intake.

19. *Comment:* Irrigation will make the ground tighter and hard, and the water will run off of the track.

Response: The track surface is engineered. A porous surface with turf on top is installed. Six inches of specialized growing media that is 90% sand with organics, is under the turf. Under the specialized media, another six inches of pea gravel is layered with a fabric separation in between. Irrigation water will be taken up by the sod through transpiration, be lost to evaporation, or will infiltrate the media below the sod. Excess water may flow from the media to the stormwater pond where it can be re-used for irrigation. Alternatively, excess water from the media would serve to charge to local groundwater table.

20. *Comment:* How does stormwater and rainwater collection from the site before it runs off overland impact water levels in wells?

Response: The site is collecting and storing the stormwater in the pond that would have runoff to the stream. The use of the collected runoff lowers the reliance on the groundwater sources, thereby requiring less usage of the irrigation well. As such, the water table would be less impacted due to the capture and storage and use of the stormwater runoff. The amount of water that would infiltrate into groundwater storage (the water table) is not anticipated to be impacted by the stormwater collection.

21. *Comment:* How was the location of the monitoring wells determined for the aquifer test? Were any private wells monitored? Is there a reason you did not put more monitoring wells towards the south?

Response: The further away from a pumping source, the less drawdown occurs to the water level. Based on professional judgement and experience, a 1,500 foot radius from the irrigation production well was determined to be adequate to capture drawdown effects from a pumping well at the proposed rates. Landowners within that radius were contacted and asked to participate in the monitoring during the aquifer test. DNR looked at wells with available access, information on pump setting and casing depths and well tag identification numbers. Two private wells were monitored during the analysis.

The nearest residential wells to the south of the irrigation well are in the Surrey Ridge community, the northern edge of which is about 3000 feet away from the irrigation well. At distances this great drawdown would not be observed during an aquifer test. Well E, which was previously drilled as a potential production well is approximately 2000 feet south of the production well D and was included in the monitoring since it was readily available and is physically between the production well and the community to the south.

22. *Comment:* Some monitoring wells did not show a response to pumping. How could those wells be valid monitoring wells?

Response: Monitoring wells were selected to help determine the degree of hydraulic connection to the pumping well in multiple directions. Even a well that does not respond provides valuable information as part of a test. If a monitoring well is off fracture and at a distance to a pumping well that is tapping a different set of fractures, the two wells may not communicate hydraulically. This would indicate that such a well would be less likely to be impacted from the production well. The number of data points (monitoring wells) during the aquifer test was sufficient to demonstrate the local aquifer has preferential flow paths and that wells connected to the main water bearing fracture that the irrigation well uses would be more susceptible to impacts than off fracture wells. As shown during the hearing (slide 15 at this link https://mde.maryland.gov/programs/Water/water_supply/Documents/FairHillSpecialEvent/FairHill_Public_hearing_11112019-Locked.pdf) the orientation of the major fracture is to the northwest and southeast of the Well D.

23. *Comment:* How deep is the water level in the wells while pumping? What is the total depth of the irrigation well?

Response: The irrigation well, CE-18-0085, was drilled over 400 feet deep. The pumping water level at the well during the test was over 300 feet deep. The closest off fracture monitoring well (97 feet away from the pumping well) experienced eight feet of drawdown. The closest on-fracture monitoring well (171 feet away from the pumping well) experienced 14 feet of drawdown.

24. *Comment:* What do you monitor during an aquifer test? What are artesian conditions? How is the aquifer test used to simulate drawdown on water level contour maps? Does the drawdown model consider recharge?

Response: During an aquifer test, water levels and the pumping rate are monitored. An artesian condition refers to when water is under pressure and rises in a well above the level of the water bearing zone. Sometimes the term artesian conditions references wells, where the water level in the well rises above the land surface (a flowing artesian well). In the case of Well D, the non pumping water level was approximately 2 feet above land surface, and about 68 feet above the shallowest water bearing zone in the well. This indicates that the there are portions of the aquifer supplying water to Well D that are at a higher elevations than the land surface at Well D.

The Administration uses the information collected during the aquifer test to simulate drawdown over longer time periods than the test itself. Using drawdown observed in observation wells, the Administration followed methods published by I.S. Papadopulos (1965) to predict drawdown in an anisotropic fractured rock aquifer. This method estimates transmissivity along the most prominent fracture orientation and also in a perpendicular direction. Transmissivity along the major fracture orientation was determined to be 753 gpd/ft, and the transmissivity at right angles to the major fracture

was determined to be 85 gpd/ft. The effective transmissivity is 253 gpd/ft. Using the aforementioned transmissivity values and a storativity of .005 applied in Papadopulos' solution for nonsteady flow to a well in an infinite anisotropic aquifer, a simulated drawdown along the major and minor axis from the pumping well was determined. Drawdown simulations were modeled using the irrigation wells' maximum pumping rate (50,400 gpd) for 90 days with no recharge to the aquifer system. The amount of drawdown in any well is dependent upon the distance from the pumping well and whether the well is on the major fracture or not. The drawdown model does not consider recharge to the aquifer. The predicted drawdown is based on water being derived from water stored in the aquifer, not recharge.

25. *Comment:* How long did it take the water level to recover after the pumping stopped during the aquifer test?

Response: The water level in the production well rebounded 95% to the prepumping level after 26 hours.

26. *Comment:* You tested during spring in rainy season. What happens during a dry season?

Response: The aquifer tests helps to determine aquifer characteristics such as transmissivity and storativity, such values do not change seasonally. The aquifer characteristics can then be input into a model to simulate the change in water levels in combination with natural variation in the water table. The predicted drawdown is additive to the change in water level that naturally occurs in this area.

27. *Comment:* What is a fracture trace analysis? How do you know the fractures are there?

Response: A fracture trace analysis is a standard water supply technique used to site production wells. Fracture zones are mapped from aerial photographs. Weaknesses in rock over geologic time can have surface manifestations, which is where stream valleys line up, where old trees grow (they have withstood drought so they have better access to water), or linear features on land surface that may have a relationship to where groundwater will be more easily accessed, etc. Fractures are common and prevalent in this type of geology.

28. *Comment:* Several attendees were concerned about impacts to wells in a nearby community, known as Surrey Ridge. The commenters expressed the wells are already low yielding. Some people have two or 3 wells on their property The lots are small and therefore there is not much room to put a new well and meet regulatory setback criteria. Many of the wells are very shallow.

Response: This development is more than 3,000 feet from the irrigation well, and not along the major fracture zone. The modeling shows that wells at that distance will not be adversely impacted.

29. *Comment:* Is there enough recharge around the well to support the withdrawal?

Response: Yes. In this geology, groundwater movement generally follows the hydraulic gradient perpendicular to the contour. The recharge area of the irrigation well was delineated based the surrounding topography. Using ArcMap, this area was determined to be about 136 acres. The capture area was assumed to stop at topographic high points, or a distance less than 1,800 feet based on drawdown simulations from the aquifer test. Based on a drought effective recharge rate of 365 gallons per day average per acre, the recharge area to this well supports a withdrawal of about 50,000 gpd, which is equivalent to the well yield determined from the aquifer test of 35 gallons per minute.

30. *Comment:* Concerns were raised relating to sediment runoff into Grammies Run from the land disturbance associated with the improvements at the site.

Response: During construction, the pond was functioning as a sediment basin. Once the project is complete, the sediment basin will be converted into a stormwater management/irrigation pond. The WSP relayed concerns regarding sediment runoff to the appropriate MDE compliance program.

31. *Comment:* Concerns were raised relating to the use of herbicides.

Response: Regulating the use of herbicides is beyond the scope of the Water Appropriation and Use Permit.

32. *Comment:* Who is managing this facility day to day?

Response: DNR indicated DNR will manage the facility itself; but, other options are being considered to manage special events that DNR does not have the expertise in. DNR is looking at partnership opportunities. Some functions may be contracted out. For instance, irrigation may be contracted out to a turf specialist.

33. *Comment:* How many "Nos" do you need to shut this project down?

Response: In regards to the Water Appropriation and Use Permit, the decision is based on a scientific and legal evaluation of facts, not the number of people supporting or in opposition to a project.

July 10, 2020
Date

John Grace, Division Chief
Source Protection and Appropriation Division
Water Supply Program