



May 10, 2022

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Sent via email to: [Kimberly.Henry@lacity.org](mailto:Kimberly.Henry@lacity.org)

**RE: Comments on Harvard-Westlake River Park Project DEIR**

Dear Ms. Henry:

Thank you for the opportunity to comment on the Harvard-Westlake River Park Project Draft Environmental Impact Report (DEIR). The project involves the redevelopment of an approximately 16 acre site along the Los Angeles River for an athletic and recreational facility, and includes installation of an artificial turf field. Public Employees for Environmental Responsibility (PEER) is restricting its comments to adverse impacts associated with the proposed artificial turf field, particularly in regard to per- and polyfluoroalkyl substances (PFAS). Our specific comments are set forth below.

**What are PFAS?** PFAS are a large family of chemicals that number between 6,504<sup>1</sup> and 12,034<sup>2</sup> human-made chemicals that provide heat, stain, and water resistance. Yet, due to the strong carbon-fluorine bonds that occur in these molecules, PFAS do not easily break down in the environment and are called “forever chemicals.” Well-studied PFAS are toxic to humans in concentrations as small as parts per quadrillion (ppq).<sup>3</sup> EPA’s Office of Pollution Prevention and Toxics (OPPT) applies the following “working definition” when identifying PFAS: “a structure that contains the unit R-CF<sub>2</sub>-CF(R’)(R’’)”, where R, R’, and R’’ do not equal “H” and the carbon-carbon bond is saturated (note: branching, heteroatoms, and cyclic structures are included).”<sup>4</sup> However, the Organisation for Economic Co-operation and Development (OECD) defines PFAS as “fluorinated substances that contain at least one fully fluorinated methyl or

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<sup>1</sup> <https://www.epa.gov/system/files/documents/2021-10/pfas-natl-test-strategy.pdf>

<sup>2</sup> ENVTL. PROTECTION AGENCY, *PFAS Master List of PFAS Substances*, [https://comptox.epa.gov/dashboard/chemical\\_lists/pfasmaster](https://comptox.epa.gov/dashboard/chemical_lists/pfasmaster)

<sup>3</sup> CAL. OFFICE OF ENVTL. HEALTH HAZARD ASSESSMENT, *Announcement of Availability of a Draft Technical Support Document and Public Workshop for Proposed Public Health Goals for Perfluorooctanoic Acid and Perfluorooctane Sulfonic Acid in Drinking Water*, (July 22, 2021) <https://oehha.ca.gov/water/cmr/announcement-availability-draft-technical-support-document-and-public-workshop-proposed>.

<sup>4</sup> See EPA, PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) IN PESTICIDE PACKAGING, <https://www.epa.gov/pesticides/pfas-packaging>. EPA has recently requested public comment on its working definition of PFAS.

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methylene carbon atom (without any H/Cl/Br/I atom attached to it).”<sup>5</sup> Regardless of which definition is used, adverse health impacts of PFAS are undeniable.

Specifically, PFAS are associated with cancer and have been linked to growth, learning, and behavioral problems in infants and children; fertility and pregnancy problems, including pre-eclampsia; interference with natural human hormones; increased cholesterol; and immune system problems.<sup>6</sup> Epidemiological studies have found decreased antibody response to vaccines,<sup>7</sup> and associations between blood serum PFAS levels and both immune system hypersensitivity and autoimmune disorders like asthma and ulcerative colitis.<sup>8</sup> The negative immune system effects of PFAS are extremely concerning given the ongoing COVID-19 pandemic. Recently, the Centers for Disease Control and Prevention released a “Statement on Potential Intersection between PFAS Exposure and COVID-19,” which recognized the “evidence from human and animal studies that PFAS exposure may reduce antibody responses to vaccines . . . and may reduce infectious disease resistance.”<sup>9</sup>

Numerous studies have found toxicity in legacy PFAS, such as PFOS and PFOA. Yet, as scientists study newer replacement PFAS, they are finding similar adverse toxicological outcomes in the new PFAS they test.<sup>10</sup> A compilation of PFAS toxicity studies shows that virtually every PFAS examined is correlated with adverse health outcomes.<sup>11</sup>

**Routes of exposure for PFAS include ingestion, inhalation, and dermal absorption.** While ingestion of PFAS is the most common route of exposure, scientists are finding that inhalation and dermal absorption are important routes of exposure. Indeed, even the federal Agency for Toxic Substances and Disease Registry (ATSDR) states that people working with PFAS “may be exposed to PFAS by inhaling them, getting them on their skin, and swallowing them.”<sup>12</sup> Moreover, recent work shows that firefighters can be exposed to PFAS through “ingestion or

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<sup>5</sup>[https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/CBC/MONO\(2021\)25&docLanguage=En#:~:text=The%20rationale%20behind%20the%20revision,noted%20exceptions%2C%20any%20chemical%20with](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/CBC/MONO(2021)25&docLanguage=En#:~:text=The%20rationale%20behind%20the%20revision,noted%20exceptions%2C%20any%20chemical%20with)

<sup>6</sup> U.S. Dept. of Health and Human Services, Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Perfluoroalkyls*, (May 2021), <https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf>

<sup>7</sup> Sunderland, E. M. et. al., *A Review of the Pathways of Human Exposure to Poly- and Perfluoroalkyl Substances (PFASs) and Present Understanding of Health Effects*, 29 JOURNAL OF EXPOSURE SCIENCE AND ENVIRONMENTAL EPIDEMIOLOGY, no. 2, (2018), <https://pubmed.ncbi.nlm.nih.gov/30470793/>.

<sup>8</sup> See U.S. Environmental Protection Agency, *Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA)*, 39 (May 2016), [https://www.epa.gov/sites/production/files/2016-05/documents/pfoa\\_health\\_advisory\\_final\\_508.pdf](https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_health_advisory_final_508.pdf).

<sup>9</sup> Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry, *Statement on Potential Intersection between PFAS Exposure and COVID-19*, <https://www.atsdr.cdc.gov/pfas/health-effects/index.html> (last visited Mar. 29, 2021).

<sup>10</sup> U.S. Dept. of Health and Human Services, National Toxicology Program, *Per- and Polyfluoroalkyl Substances (PFAS)*, <https://ntp.niehs.nih.gov/whatwestudy/topics/pfas/index.html>

<sup>11</sup> <https://pfasproject.com/pfas-toxic-database/>

<sup>12</sup> <https://www.atsdr.cdc.gov/pfas/health-effects/exposure.html#:~:text=Workers%20may%20be%20exposed%20to,your%20body%20through%20your%20skin>

inhalation, or direct contact with the skin and dermal absorption.”<sup>13</sup> Recent studies have shown that some PFAS can migrate from car seat fabric to sweat, showing a potential dermal exposure route.<sup>14</sup>

**There are per-and polyfluoroalkyl substances (PFAS) in artificial turf, and the DEIR does not address these impacts.** Although the narrative of the DEIR does not mention PFAS as a hazardous component of the artificial turf, Appendix H states that:

The artificial grass blades are formed through a molding and extrusion process, which uses per- and polyfluoroalkyl substances (PFAS). PFAS are not used in the artificial grass blades or base material themselves. Rather, PFAS are used during the extrusion process to avoid clogging of the extruding machines.<sup>15</sup>

We believe that this statement is only partially true. While PFAS are added to the machines to assist in the extrusion process, PFAS are also used as, “a slip agent that is intentionally added to the molten hydrocarbons in order to make the plastic grass blades free of defects.”<sup>16</sup> In other words, PFAS *are* used in the base material itself. In fact, every sample of dozens of artificial turf, regardless of the manufacturer, show PFAS<sup>17</sup> in the grass blades, the backing, and sometimes the shock pad and the infill. Moreover, Synthetic Precipitation Leaching Procedures (SPLPs) show that these PFAS leach off the fields into surrounding waters.<sup>18,19</sup>

Therefore, the failure of the DEIR to discuss the impacts associated with PFAS in the artificial turf, their ability to leach into the groundwater and Los Angeles River, and potential impacts on the athletes using the fields, is a critical flaw which must be cured in the Final EIR.

**Even minute amounts of PFAS are dangerous.** The U.S. Environmental Protection Agency (EPA) revised the risk assessments of three PFAS (PFOA, PFOS, and GenX) in November of 2021. The new risk assessments showed that there is basically no safe level of these compounds; specifically, they state that the Lifetime Health Advisory may be as low as 6 parts per quadrillion (ppq).<sup>20</sup> Indeed, California’s Office of Environmental Health Hazard Assessment recommend a health protective limit of 7 ppq of PFOA and 1 ppt of PFOS.<sup>21</sup> Given that we are seeing PFAS at much higher levels than these leaching off artificial turf, it is incumbent on Harvard-Westlake

<sup>13</sup> <https://www.sffcpf.org/wp-content/uploads/2020/06/6.23.2020-DR-PEASLEE-STUDY-ANOTHER-PATHWAY-FOR-FIREFIGHTER-EXPOSURE-TO-PFAS-FIREFIGHTER-TEXTILES.pdf>

<sup>14</sup> <https://www.sciencedirect.com/science/article/abs/pii/S0269749120361650?via%3Dihub>

<sup>15</sup> DEIR, Appendix H, p. 2

<sup>16</sup> [https://oakbluffs.zoom.us/rec/play/XRPkH-Yd8joprhyIovKEPo3SpdVyri6t5Intk1wSyaXPB10ZXZ6U\\_IUjX9npl9X4DduJgE7gjIndVKMS.qSRjKd7F9cH\\_sF-e?continueMode=true&\\_xzm\\_rtaid=oO\\_jk5lWTT-Y7W-V3an6Yw.1652118740167.3adaa7e26df2bb777484f4cc1217465c&\\_xzm\\_rhtaid=887](https://oakbluffs.zoom.us/rec/play/XRPkH-Yd8joprhyIovKEPo3SpdVyri6t5Intk1wSyaXPB10ZXZ6U_IUjX9npl9X4DduJgE7gjIndVKMS.qSRjKd7F9cH_sF-e?continueMode=true&_xzm_rtaid=oO_jk5lWTT-Y7W-V3an6Yw.1652118740167.3adaa7e26df2bb777484f4cc1217465c&_xzm_rhtaid=887)

<sup>17</sup> Dr. Graham Peaslee and Kristen Mello, NEWMOA Conference, April 6, 2022

<sup>18</sup> Id.

<sup>19</sup> [https://www.mvcommission.org/sites/default/files/docs/210301\\_Turf%20Laboratory%20Testing%20Report%20Review\\_HWSIGNED%281%29.pdf](https://www.mvcommission.org/sites/default/files/docs/210301_Turf%20Laboratory%20Testing%20Report%20Review_HWSIGNED%281%29.pdf)

<sup>20</sup> <https://www.huntonnickelreportblog.com/2021/11/icymi-epa-takes-a-big-science-step-towards-setting-a-drinking-water-standard-for-pfoa-and-pfos-and-the-implications-are-much-broader/>

<sup>21</sup> <https://oehha.ca.gov/media/downloads/crn/pfoapfosphgdraft061021.pdf>

proponents to assess the impacts to the ground water, surface water, and drinking water from the PFAS in these products.

**The DEIR incorrectly claims artificial turf will save water.** The DEIR states that the “artificial grass ... [is] a sustainable alternative to turf grass and [will provide a] reduction in water demand.”<sup>22</sup> However, this is not necessarily true. A 2017 study in New Mexico concluded that, “in order to provide a cool, playable surface, irrigation amounts for artificial turf are *greater* than for natural warm-season turf” (emphasis added).<sup>23</sup> This study was confirmed in 2020 when researchers found that, “that the amount of water required to maintain [artificial turf] temperatures at levels comparable to irrigated [natural turf] over a 24-h period exceed the water requirements of Bermuda grass [natural turf] in the same environment.”<sup>24</sup> In fact, a member of the Synthetic Turf Council claims that irrigation systems for artificial turf must be “over-engineered” and that “a large amount of water has to be dumped evenly across the whole field—and quickly because players will want to play immediately. And the cooling effect only lasts about an hour, maybe less.”<sup>25</sup>

Therefore, the numerous statements in the DEIR that state that the artificial turf will reduce “irrigation water demand, which would reduce the Project’s GHG emissions associated with water conveyance and wastewater treatment” are not true.<sup>26</sup> The Final EIR must look at recent scientific studies regarding the necessity of watering artificial turf to maintain cool enough temperatures to play.

**The DEIR’s analysis of GHG emissions is flawed.** Recent research shows that “the substitution of artificial grass for natural grass contributes to global warming.”<sup>27</sup> Additionally:

...artificial grass reaches significantly greater temperatures than those reached by natural grass under the same meteorological conditions... artificial grass creates an additional amount of energy absorbed by the atmosphere. With the number of nationwide artificial grass installations, a typical result yields an additional energy deposited into the atmosphere during moderately warm summer days of 10 to 20 gigawatts.<sup>28</sup>

More recent research conducted this year states that artificial turf “can significantly increase ground surface temperatures and consequently increase ambient air temperatures near the ground as well as its surroundings.”<sup>29</sup> Indeed, the scientists conclude that, “[c]oncerning climate mitigation, replacing natural ground with heat-absorbent artificial turf may be counter-productive.”<sup>30</sup>

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<sup>22</sup> See, e.g., DEIR, p. IV.G-55

<sup>23</sup> <https://scisoc.confex.com/crops/2017am/webprogram/Handout/Paper106290/Ahmed%20Kanaan.pdf>

<sup>24</sup> Kanaan, A. et al., Water Requirements for Cooling Artificial Turf, *J. Irrig. Drain Eng.*, 2020, 146(10): 05020004

<sup>25</sup> <https://www.parksandrecbusiness.com/articles/2016/10/part-2-watering-synthetic-turf>

<sup>26</sup> DEIR, p. IV.G-72

<sup>27</sup> Golden, L.M., Sustainability and Climate Change. Dec 2021.436-449. <http://doi.org/10.1089/scc.2021.0038>

<sup>28</sup> Id.

<sup>29</sup> Shi, Y. and C.Y. Jim, *Developing a Thermal Suitability Index to assess artificial turf applications for various site-weather and user-activity scenarios*, Landscape and Urban Planning, Volume 2017 (2022).

<sup>30</sup> Id.

The DEIR's net Project emissions (Table IV.G-7) does not appear to take the additional water use needed to cool the fields into account. It is therefore clear that the DEIR did not adequately examine recent research on this topic; alternatively, data were cherry-picked to give the authors the answer they sought. The Final EIR must include this more recent research and amend the calculation of net Project emissions.

**The DEIR cherry-picks studies on the dangers of crumb rubber infill.** The DEIR relies heavily on old and biased scientific literature regarding the dangers of crumb rubber infill. For example, the DEIR repeatedly cites a 2018 “study” by Gradient, a consulting firm that works for industry, to demonstrate that crumb rubber infill does not pose a risk. Scientists have been aware for years that Gradient employees are not impartial. Indeed, Gradient has been outed for their bias:

Gradient belongs to a breed of scientific consulting firms that defends the products of its corporate clients beyond credulity, even exhaustively studied substances whose dangers are not in doubt, such as asbestos, lead and arsenic. Gradient's scientists rarely acknowledge that a chemical poses a serious public health risk. The Center for Public Integrity analyzed 149 scientific articles and letters published by the firm's most prolific principal scientists. Ninety-eight percent of the time, they found that the substance in question was harmless at levels to which people are typically exposed...“They truly are the epitome of rented white coats...”<sup>31</sup>

Moreover, *all* the studies cited in the DEIR were conducted before PFAS was discovered in artificial turf in 2019, and all the studies showing risk or harm were not included. The DEIR conveniently leaves out a 2022 peer-reviewed study that shows metals in crumb rubber are “above safe levels” and “accidental ingestion could lead to chronic effects and cancer risks”;<sup>32</sup> that crumb rubber contains “harmful to human health PAHs in amounts exceeding the permissible limits”;<sup>33</sup> and that chemicals in crumb rubber kill salmon and other fish.<sup>34</sup> There are a plethora of other articles that come to similar conclusions, and it is not PEER's job to bring all of those to the attention of the project proponents. Suffice it to say that it is clear that the literature search was insufficient and/or biased, and the Final EIR must include these additional research papers.

**The DEIR does not comprehensively discuss the issue of microplastics.** Both the grass blades of the plastic turf and the crumb rubber infill migrate off the field and get into adjoining waters. Hundreds of pounds of microplastics shed off these fields each year, despite industry's claims that they do not break.<sup>35</sup> In fact, research from Sweden indicates that microplastics coming off

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<sup>31</sup> <https://publicintegrity.org/environment/meet-the-rented-white-coats-who-defend-toxic-chemicals/>

<sup>32</sup> Cátia A.L. Graça, Filipe Rocha, Filipa O. Gomes, M. Rosário Rocha, Vera Homem, Arminda Alves, Nuno Ratola, *Presence of metals and metalloids in crumb rubber used as infill of worldwide synthetic turf pitches: Exposure and risk assessment*, Chemosphere, Volume 299 (2022)

<sup>33</sup> Gryniewicz-Bylina, B., Rakwicz, B. & Słomka-Słupik, B. Tests of rubber granules used as artificial turf for football fields in terms of toxicity to human health and the environment. *Sci Rep* 12, 6683 (2022)

<sup>34</sup> Tian, Z. et al., *A ubiquitous tire rubber-derived chemical induces acute mortality in coho salmon*, Science, Volume 371, 185-189 (2021).

<sup>35</sup> <https://www.youtube.com/watch?v=A8OLBfWmt7g&t=2s>

artificial turf fields is the second largest source of microplastics in the environment.<sup>36</sup> The Final EIR must discuss this issue, and include information regarding the PFAS and other toxic chemicals that will migrate with these microplastics.

**Artificial turf cannot currently be recycled.** The only section of the DEIR that discusses end of life issues for the artificial turf is in Section IV.H-45. Indeed, the DEIR concludes, “Compliance with applicable regulatory requirements would ensure that Project impacts related to disposal of artificial turf would be less than significant.” This is not true. The DEIR fails to mention that there are no recycling facilities in the United States, and old fields are being unceremoniously dumped all over the country.<sup>37</sup> The Final EIR must specifically disclose what will happen to the tons of PFAS-laden plastic at the end of the field’s life.

**Conclusion.** It is somewhat ironic that the DEIR states that, “[t]he Project would install artificial turf fields designed to simulate the experience of practicing and playing on grass fields.”<sup>38</sup> Given the PFAS that leaches off artificial turf, the microplastics, the toxic chemicals associated with crumb rubber, the inability to recycle the fields at end of life, the contribution to climate change, and the intense water use, it seems logical that if Harvard-Westlake wants to “simulate the experience of practicing and playing on grass fields,” they should simply install grass fields.

It appears that all artificial turf contains PFAS, including one of the most toxic (PFOA). Because we only discovered PFAS in artificial turf three years ago, there have been no studies investigating health impacts to athletes using the fields from these PFAS. This absence of evidence does *not* mean that it is safe for people to use the fields; it merely means it has not yet been studied. However, we do know that even minute quantities of PFAS are dangerous to human health; and we do know that the PFAS in the fields leaches off into groundwater, soils, and drinking water. The DEIR is deeply and fatally flawed given its failure to address the aforementioned issues, and in order to adequately assess impacts from the proposed project, the Final EIR must be significantly amended.

Thank you for your consideration of these comments.

Sincerely,

Kyla Bennett, PhD, JD  
Director, Science Policy  
Public Employees for Environmental Responsibility

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<sup>36</sup> <https://www.diva-portal.org/smash/get/diva2:1549783/FULLTEXT01.pdf>

<sup>37</sup> <https://www.theatlantic.com/science/archive/2019/12/artificial-turf-fields-are-piling-no-recycling-fix/603874/>

<sup>38</sup> DEIR, IV. H-28

