From:	Heidi S.
To:	City Clerk"s Office
Cc:	Walker, Kristina; Ushka, Catherine; Hines, John; Diaz, Olgy; Bushnell, Joe
Subject:	Public comments for Nov. 30th IPS Special Meeting
Date:	Tuesday, November 29, 2022 3:54:27 PM
Attachments:	Malach Consulting Moratorium Letter.pdf
Importance:	High

Regarding the STGPD Moratorium consideration:

I am writing in support of the moratorium to pause permitting on:

- underground storage tanks and
- metal recycling/auto-crushing...

In addition, I am again requesting the inclusion of:

- square-footage surface-coverage due to current lack of modern best-science regarding infiltration/recharge impacts,

... for all the reasons and still unanswered questions mentioned in the attached letter, from Steven H. Emerman, Ph.D. specializing in hydrogeologic impacts.

[See attachment, to also be submitted as part of public comment for this meeting.]

Heidi Stephens

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MALACH CONSULTING

Steven H. Emerman, Ph.D.
Specializing in Groundwater and Mining

shemerman@gmail.com • (801) 921-1228
785 N 200 W, Spanish Fork, Utah 84660, USA

November 29, 2022

Heidi Stephens
South Tacoma Economic Green Zone
E-mail: heidigs@hotmail.com
Tel: (253) 671-8232

Dear Ms. Stephens,

I am writing to respond to the following question from you: Should the proposed moratorium on heavy industrial uses and storage of hazardous materials within the South Tacoma Groundwater Protection District include a moratorium on the construction of large impervious surfaces (greater than 10,000 square feet)? I understand that the purpose of the moratorium is to pause further development and possible groundwater degradation while awaiting an update of the South Tacoma Groundwater Protection District Code, as well as any new hydrogeologic studies that will form the basis for the update.

My answer is yes. The proposed moratorium should include a pause on the construction of any new large impervious surfaces (greater than 10,000 square feet). Before explaining my reasoning, I will first review my professional background and then the materials I reviewed in order to answer your question.

I have a B.S. in Mathematics from The Ohio State University, M.A. in Geophysics from Princeton University, and Ph.D. in Geophysics from Cornell University. I taught hydrology and geophysics at the university level for 31 years, including teaching as a Fulbright Professor in Ecuador and Nepal, and I have over 70 peer-reviewed publications in these areas. Since 2018 I have been the owner of Malach Consulting, which specializes in evaluating the hydrogeologic impacts of proposed and existing large-scale development, especially urban development, mining, and timber harvesting. I have evaluated proposed and existing large-scale development projects in North America, South America, Europe, Africa, Asia and Oceania, and I have testified on issues of water and large-scale development before the U.S. House of Representatives Subcommittee on Indigenous Peoples of the United States, the European Parliament, the United Nations Permanent Forum on Indigenous Issues, and the United Nations Environment Assembly. I am the Chair of the Body of Knowledge Subcommittee of the U.S. Society on Dams and one of the authors of Safety First: Guidelines for Responsible Mine Tailings Management.

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Prior to writing this memo, I reviewed the following materials:

1) Power Point presentation from July 27, 2022 entitled "South Tacoma Groundwater Protection District: Consideration of a Moratorium on Heavy Industrial Uses and Storage of Hazardous Materials"

2) Video of meeting of South Tacoma Groundwater Protection District on July 27, 2022

3) Video of meeting of Infrastructure, Planning and Sustainability Committee on November 9, 2022

4) Video of meeting of Tacoma City Council on November 15, 2022

5) Video of meeting of Tacoma City Council on November 22, 2022

6) Video of City of Tacoma Virtual Forum on November 22, 2022

I am in favor of a moratorium on the construction of large impervious surfaces because the hydrogeologic knowledge that could predict the impact of such construction appears to be non-existent. Thus, there is no basis for excluding large impervious surfaces from the proposed moratorium. The development of such hydrogeologic knowledge should form the basis for the update of the South Tacoma Groundwater Protection District Code.

Therefore, the inclusion of the construction of large impervious surfaces in the moratorium is perfectly in alignment with the purpose of the moratorium, which is to prevent further groundwater degradation while hydrogeologic knowledge is developed and the groundwater protection code is updated.

I understand from the meeting of the Infrastructure, Planning and Sustainability Committee on November 9 that, currently, the only industries that are being considered for inclusion in the moratorium are underground storage tanks, automotive crushing, metal recycling, and automotive service and repair. The first three industries in the list have a long history of groundwater pollution globally, but I am not familiar with their particular history in South Tacoma. The inclusion of automotive service and repair is somewhat surprising since this industry tends to be highly regulated at the local, state and federal levels. In addition, many automotive service and repair businesses are franchises and follow strict franchise regulations. However, I am not familiar with the particular history of groundwater pollution by automotive service and repair businesses in South Tacoma.

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The following is a partial listing of the critical questions that apparently cannot be answered based on existing hydrogeologic knowledge:

1) What is the current groundwater recharge rate of the South Tacoma Aquifer through the South Tacoma Groundwater Protection District? Note that this is a very different question than asking about the current groundwater recharge rate through the entire catchment area of the South Tacoma Aquifer, which appears to be reasonably well-known.

2) What would be the rate of replenishment of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District if the groundwater recharge through the South Tacoma Groundwater Protection District were significantly restricted?

3) What is the functional dependance of the groundwater recharge rate of the South Tacoma Aquifer through the South Tacoma Groundwater Protection District on the quantity of impervious surface within the South Tacoma Groundwater Protection District?

4) What is the functional dependance of the water table of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District on the quantity of impervious surface within the South Tacoma Groundwater Protection District?

5) What will be the impact of climate change on the recharge rate and water table of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District?

6) What will be the combined impacts of climate change and an increase in the quantity of impervious surface in the South Tacoma Groundwater Protection District on the recharge rate and water table of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District?

7) What will be the impact of population growth on the recharge rate and water table of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District?

8) What will be the combined impacts of population growth, climate change, and an increase in the quantity of impervious surface in the South Tacoma Groundwater Protection District on the recharge rate and water table of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District?

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9) How will climate change and population growth affect the availability of water in the Green River?

10) How will a change in the availability of water in the Green River affect the demand for groundwater from the South Tacoma Aquifer?

11) What will be the combined impacts of a decrease in the availability of water from the Green River, population growth, climate change, and an increase in the quantity of impervious surface in the South Tacoma Groundwater Protection District on the recharge rate and water table of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District?

12) How will changes in the groundwater recharge rate or the water table of the South Tacoma Aquifer affect the water quality of the South Tacoma Aquifer beneath the South Tacoma Groundwater Protection District?

In summary, the proposed moratorium should include a prohibition against the construction of large impervious surfaces. In fact, the moratorium will be an ideal opportunity to fill the preceding gaps in hydrogeological knowledge prior to making critical decisions regarding the future of the South Tacoma Aquifer.

Please do not hesitate to contact me if I can answer any further questions.

Sincerely,

Steven H. Emerman

Steven H. Emerman

From:	Heidi S.
To:	City Clerk"s Office
Cc:	Walker, Kristina; Ushka, Catherine; Hines, John; Diaz, Olgy; Bushnell, Joe
Subject:	Additional written public comments to IPS Special Meeting on Nov. 30th
Date:	Tuesday, November 29, 2022 3:54:38 PM
Attachments:	image.png

RE: Nov. 30th, IPS Special Meeting

In follow-up to the prior IPS panel meeting, I am providing sources (below) to items referenced during the discussion on November 9th of topics still lacking acknowledgement and needing current best-science regarding the South Tacoma Aquifer and Recharge Area:

Tacoma Public Utilities - Tacoma Water
Integrated resource plan by city of Tacoma 2018 by Tacoma Waters Tacoma Public Utilities https://www.mytpu.org/wp-content/uploads/tacomawaterirp0219.pdf
Table 4.1 WYSDM outputs for planning scenarios shows groundwater use in 2037 and 2050,
with predictions of Percent of Groundwater Utilized: 50-60% by 2037, 60-70% by 2050
(... and this was before significant population/development impacts and swift-moving climate change -- see the separately attached letter from Malach Consulting regarding infiltration/recharge considerations.)

WA State Water Quality Standards
Noncompliance [https://www.northwestenvironmentaladvocates.org/2021/12/30/protections-for-washington-waters/]
A recent U.S. District Court ruling identified many toxins as not having been updated as required by law including the following:

aluminum,
ammonia,
arsenic,
copper,
cyanide,
mercury,
nickel,
PCBs,
selenium,
pentachlorophenol, and
tributylin.

In addition, **PFAS contamination** need stronger monitoring and quicker action (EPA announced there are no safe levels of certain PFAS).
[https://www.epa.gov/newsreleases/epa-announces-new-drinking-water-health-advisories-pfas-chemicals-1-billion-bipartisan]

Two of Tacoma's wells have been taken off-line and shallow groundwater is above acceptable levels of contamination:
"Two wells (both located near South 74th Street) had PFOS levels near the EPA's previous health advisory level and were removed from service. The levels in the remaining wells... are above the new EPA interim lifetime health advisory levels for PFOS and PFOA."

Recently, the **U.S. Environmental Protection Agency (EPA) published the Final Fifth**

Drinking Water Contaminant Candidate List (CCL 5), which will serve as the basis for EPA's regulatory considerations over the next five-year cycle under the Safe Drinking Water Act. This update includes a substantial expansion of per- and polyfluoroalkyl substances (PFAS), an important first step towards identifying additional PFAS that may require regulation under the Safe Drinking Water Act.
https://sab.epa.gov/ords/sab/f?p=100:18:14475496335862:::RP,18:P18_ID:2600#report

2.4.1. Chemical Contaminants Recommended for Consideration or Inclusion
- Bisphenol F, Bisphenol S and other Bisphenols
- PFAS
- Organophosphate Esters
- Antimicrobials
- Antimicrobial resistance genes
- Microplastics
- Nanoparticles
- Saxitoxin

List of agencies which all should have been included in this discussion but haven't yet, and the number of sites not yet being considered (not to mention the 1,106 sites with no regulatory oversight at all).
https://www.mytpu.org/wp-content/uploads/appendix-k.pdf

Tacoma Wellhead Protection Program
Summary of Potential Contaminant Sources
To be Included in the Agency Notification Process

April 2002

Agency	Number of Sites
No Regulatory Agency -	1,106 Sites
DNR -	1 Site
DOA -	9 Sites
Ecology -	1,374 Sites
PCD -	7 Sites
PCPWU -	2 Sites+
TPCHD -	1,503 Sites*
	4,002 Total Sites

DNR- Washington State Department of Natural Resources
DOA- Washington State Department of Agriculture
Ecology-Washington State Department of Ecology
PCD- Pierce Conservation District
PCPWU- Pierce County Public Works and Utilities
TPCHD- Tacoma-Pierce County Health Department

+ These two sites are Pierce County Public Works and Utilities' property and the PCPWU was notified through the Potential Contaminant Source mailing. Hence, no letter needs to be mailed regarding agency notification.

* The TPCHD does not have regulatory jurisdiction over the great majority of these sites but rather has a small quantity hazardous materials education program that may be able to assist these sites in handling and disposal of hazardous materials. The TPCHD only has regulatory jurisdiction over those businesses in the South Tacoma Groundwater Protection District.