RESPONSES TO PUBLIC COMMENTS
Application 30009 – Radius Recycling (Facility 208)

The Bay Area Air District published a draft Permit to Operate for Application 30009, for new abatement equipment at Radius Recycling's metal shredding and recycling facility in West Oakland, in September 2024 and solicited comments from interested members of the public. The Air District has reviewed all of the comments received and is now issuing a final Permit to Operate incorporating these comments. This document provides the Air District's responses to the comments it received.

TABLE OF CONTENTS

AIR DISTRICT RESPONSES TO PUBLIC COMMENTS RECEIVED ON DRAFT PERMIT

The Air District received five sets of comments on the September 2024 draft Permit to Operate: from the applicant (Radius Recycling, formerly known as Schnitzer Steel Products Co.); from West Oakland Environmental Indicators Project (WOEIP); from Karen Chen of the Natural Resources Defense Council (Chen); from Venable LLP, attorneys for the Oakland Athletics (Venable); and from resident Sean Taylor (Taylor). The Air District thanks all of the commenters for their thoughtful comments on the draft permit. The Air District has reviewed all the comments, and has the following responses. Since many of the comments addressed similar topics, the Air District has grouped the comments by topic area in order to respond to all the comments on a particular issue in the same place. All of the comment letters are attached in Appendix A for reference, and references are provided in the discussion below so that readers can easily cross-reference the specific portions of the comments letters being discussed.

I. TOXIC AIR CONTAMINANT EMISSIONS & HEALTH RISK ASSESSMENT

A. Health Risk Assessment and Maximally Exposed Receptor Location

Comment: Several commenters stated that the Air District used the wrong maximally exposed receptor to evaluate compliance with the carcinogenic health risk limits in Rule 2-5. These commenters stated that the Air District previously has used a residential building a few hundred feet north of Radius Recycling's facility in HRAs for Radius Recycling and others. The commenters noted that the maximally exposed receptor used for the HRA for the draft permit was at a hotel located farther away from the facility. The commenters stated that if the closer residential location is used as the maximally exposed receptor, the cancer risk would be approximately 7.5 in one million, above the 6.0-in-one-million limit specified in Rule 2-5. The commenters stated that the Air District may not approve the Permit to Operate until the Facility's cancer risk at the correct maximally exposed receptor location meets the required threshold. (WOEIP Comment 16.a; Venable Comment 31; Chen Comment 34.)

Air District Response: The Air District agrees that the HRA for the draft permit used an incorrect location for the maximally exposed receptor. The commenters are correct that at the closer location, the HRA showed a cancer risk level exceeding the 6.0-in-one-million limit specified in Regulation 2-5-302. To ensure that the health risk at the correct maximally exposed receptor remains within the applicable Regulation 2-5-302 limits, the Air District is imposing a toxicity-weighted TAC emissions limit in the Permit to Operate that corresponds to a cancer risk of 5.9 in one million. The basis for this new limit is described in more detail in the Permit to Operate Addendum to the Engineering Evaluation. To ensure that TAC emissions stay below this toxicity-weighted emissions limit, the Air District is requiring Radius Recycling to conduct compliance testing once every two years, instead of the normal frequency of once every five years. If any future testing were to show elevated TAC emissions rates, the facility will be required for the facility to reduce its level of operations to ensure that its annual emissions do not exceed the specified limits. These

additional requirements being imposed in the Permit to Operate will ensure that no receptor experiences a cancer risk exceeding 6.0 in one million.

B. Cancer Risk Prior to Installation of the New Abatement Equipment

Comment: Several commenters also noted that the Air District calculated that the previous cancer risk from before the new abatement equipment was installed at 21.6 in a million (using the incorrect maximally exposed receptor location that is not the closest to the facility). The commenters noted that the Air District regularly renewed Radius Recycling's permit annually over the years, even though the cancer risk was at this high level that exceeds the Air District's limits on risk from new and modified sources in Rule 2-5. These comments suggested that given the facility's history, even a current cancer risk below 6 in a million is not sufficiently protective of this community. (WOEIP Comment 16.b.; Venable Comment 32.a.; Chen Comment 37.)

Air District Response: These comments refer to the level of cancer risk associated with the metal shredder emissions before installation of the new abatement equipment. The Air District provided this information in the Engineering Evaluation Report Addendum for the draft permit to illustrate the magnitude of the reductions the new equipment is achieving. This high level of risk was not discovered until recently, because before the shredder was enclosed, there was no way of measuring emissions directly. The only way to assess the level of risk at that time was to use emissions factors published by US EPA, which we now know underestimated the full extent of the emissions from this facility. When the shredder was enclosed, it became possible to test the emissions directly, and the Air District discovered the full extent of the emissions and required Radius Recycling to install the additional abatement equipment.[1] The Air District agrees that the high level of cancer risk that was occurring before the installation of the new abatement equipment exceeded the Rule 2-5 cancer risk limits. This is one of the major reasons why it is so important that Radius Recycling use this equipment – and why the Air District is issuing the Permit to Operate to require its continued use going forward.

Regarding whether the 6-in-a-million risk level is sufficiently health protective for this community, that limit was established by the Air District's Board of Directors in 2021 specifically to be more health-protective in overburdened communities like West Oakland. The Board of Directors reduced the cancer risk limit for such communities from the normal 10-in-a-million limit that applies generally in the Bay Area to the new, lower level out of recognition that these communities suffer a greater cumulative public health burden and require the extra protection that a lower limit provides. We are not aware of any other regulatory agency in the United States that has taken this approach of establishing lower, more protective standards for areas facing a higher cumulative health burden. As noted above, with the additional conditions the Air District is imposing in the final permit, the facility's emissions will remain below this more stringent cancer risk limit.

[1] As noted above, the California Attorney General, the California Department of Toxic Substances Control, and the Alameda County District Attorney also took a similar enforcement action to require Radius Recycling to install the abatement equipment.

C. Toxic Air Contaminant (TAC) Emission Limits

Comment: In the draft permit, the Air District proposed to remove the provision in Condition 27348, Part 11, that allowed Radius Recycling to continue operating if emissions testing shows emissions exceeding the TAC limits specified in Part 11, as long as it submits a permit application and Health Risk Assessment showing that the emissions are within acceptable health risk limits within 60 days. Instead, the Air District proposed to require that Radius Recycling cannot operate with emissions exceeding the permit limits, unless and until the Air District actually issues a permit with revised limits. The purpose of this proposed revision was to ensure that the Air District can evaluate any emissions increases above what is specified in the permit condition and ensure that they do not present an unacceptable level of health risk.

WOEIP supported this proposed change, commenting that any adjustments to the TAC emissions limits should be addressed through a permit modification. WOEIP stated that any exceedance of the TAC emissions limits in the permit should be considered a violation, given the concerns about carcinogenic health risk from this facility. (WOEIP Comments 23 & 28.) Radius Recycling, on the other hand, requested that the original condition (allowing operation as long as a permit application and HRA is submitted within 60 days) be maintained to provide the flexibility of performing an HRA to ensure that the applicable requirements under Regulation 2-5 are not violated. (Radius Recycling Comment 4.)

Air District Response: The Air District agrees with WOEIP's comments on this issue and disagrees with Radius Recycling's requested approach. It is important that TAC emissions comply with the emissions limits specified in the permit, unless the Air District can conduct a full Health Risk Assessment to confirm that any emissions above the specified limits are adequately protective of public health. If Radius Recycling believes that revised limits are appropriate and will still comply with the health risk requirements in Air District regulations, it can apply for a revision to its permit, and the Air District will review any such application in accordance with Regulation 2. But Radius Recycling may not exceed any of the limits in the current permit unless and until the Air District confirms that increased emissions will not jeopardize public health and issues a revised permit authorizing such operation.

Comment: WOEIP commented that it supports expanding the list of TACs that will be monitored during future testing, amending the hourly limits for these compounds, and removing alternative actions to meeting these limits. (WOEIP Comment 22.)

Air District Response: The Air District appreciates the commenter's support. The Air District is including the full list of TACs subject to the testing requirements as proposed in the draft permit; is incorporating the hourly limits for TACs that contribute to acute (short-term) health risks, along with stringent toxicity-weighted annual emissions limits for chronic (long-term) health risks; and is not including any alternative actions for meeting these limits. With respect to the toxicity-weighted annual emissions limits, the Air District is also including a requirement that Radius Recycling will have to reduce its operations in the event of any elevated testing results to ensure that the limits are not exceeded.

Comment: Radius Recycling requested that the limits on acrylonitrile, 1,3-butadiene and mercury emissions be removed from the permit, stating that these TACs have not been detected in any emissions testing since the new regenerative thermal oxidizers (RTOs) were installed. Radius Recycling stated that mercury was not detected in its 2022 source test, and the reported result at 50% of the detection level was 3.35E-03 lb/hr, which is 99% of the proposed limit. (Radius Recycling Comments 5 & 7.)

Air District Response: The Air District disagrees that the permit conditions should exclude these TACs. Even if they have not been detected in recent emissions testing, that does conclusively establish that they could not be emitted in the future. Moreover, if they are not emitted (or are emitted only in small amounts), compliance with these limits should not be a problem.

As discussed in the Permit to Operate Addendum to the Engineering Evaluation, the Air District is revising the approach to setting limits on TAC emissions to address cancer risk and chronic non-cancer risk. Instead of specific emissions limits on individual TACs, the Air District is imposing a toxicity-weighted emissions limit for all TACs combined. Acrylonitrile is a TAC that contributes to cancer risk and chronic non-cancer risk only; it does not contribute to acute non-cancer risk. The Air District is therefore removing the limit on acrylonitrile specifically. Acrylonitrile emissions will be subject to the toxicity-weighted emissions limits in Parts 11b and 11c of Condition 27348. 1,3-butadiene and mercury contribute to acute non-cancer risk, however. The Air District is therefore retaining the specific emission limits for these TACs as proposed in the September 2024 draft permit. See Section III.E. of the Permit to Operate Addendum to the Engineering Evaluation Report for further discussion of these TAC limits.

Comment: Radius Recycling requested that the emission limits for manganese, naphthalene, and nickel be made less stringent to allow for testing variability. Radius Recycling asked for the manganese limit to be relaxed from 1.1E-03 lb/hr to 1.5E-03 lb/hr and for the naphthalene limit to be relaxed from 3.0E-03 lb/hr 4.1E-03 lb/hr, which represent the mean test result from 2022 plus two standard deviations. For nickel, Radius Recycling asked that the 4.8E-04 lb/hr limit specified in the draft permit be relaxed to 1.5E-03 lb/hr, the limit specified in the Authority to Construct. (Radius Recycling Comments 6, 8 & 9.)

Air District Response: For nickel, the proposed limit the Air District included in the draft permit already incorporates three standard deviations from the mean of source test results reviewed in order to account for test variability. The Air District is therefore retaining that limit in the final Permit to Operate. For manganese and naphthalene, these TACs contribute to cancer risk and chronic non-cancer risk only; they do not contribute to acute non-cancer risk. Manganese and naphthalene will therefore be addressed by the toxicity-weighted emissions limits in Parts 11b and 11c of Condition 27348. The Air District is not including specific emissions limits for these TACs. See Section III.E. of the Permit to Operate Addendum to the Engineering Evaluation Report for further discussion of these TAC limits.

Comment: Radius Recycling also made a technical comment regarding the proposed PAH limit, asking for clarification that this limit does not include naphthalene emissions, which are addressed separately. Radius Recycling requested clarification that the limit applies to the sum of the PAHs for which Table 2-5-1, footnote 8 in Regulation 2-5 shows a Potency Equivalence Factor, in order to enable adjustment of the PAH emission rate to be on an "as benzo(a)pyrene" basis. (Radius Recycling Comment 10.)

Air District Response: Radius Recycling is correct that naphthalene is not included in PAH-derivatives as benzo(a)pyrene-equivalents under Air District regulations. Naphthalene is evaluated separately, and it has its own health risk values and HRA trigger thresholds under Regulation 2-5.[2] All of these TAC emissions will be subject to the toxicity-weighted TAC emissions limits being imposed in Condition 27348, Part 11. (*See* Section I.A. above, and the Permit to Operate Addendum to the Engineering Evaluation Report, for further discussion of the toxicity-weighted TAC emissions limits.)

II. NOx EMISSIONS

Comment: WOEIP noted that additional NOx offsets will be required in connection with the Permit to Operate for the RTOs. WOEIP stated that the offsets will come from the Air District's emissions bank and the reductions will not be occurring in West Oakland, and therefore the community will continue to be exposed to excess NOx emissions. (WOEIP Comment 29.)

Air District Response: The Air District requires NOx offsets as part of the "No Net Increase" program for the Bay Area air basin as a whole. This program is designed to address regional air quality concerns like smog, not more localized concerns. The program therefore aims to ensure that there is no net increase in emissions regionwide from new and modified sources subject to the program by requiring emissions increases to be offset by emission reductions elsewhere within the region. Since it is a regional program, the offsets can come from anywhere withing the region, as long as there is no net increase regionwide. The Air District has other programs that address localized air quality impacts, and we share the commenter's concern about exposures and health risks in the surrounding community. The Air District addresses localized concerns through our Toxics New Source Review program in Rule 2-5, our Facility Risk Reduction program in Rule 11-18, our AB 617 programs, and other initiatives. Further information is available in the Air District's 2025 Toxic Air Contaminant Control Program annual report. The addition of the new abatement equipment is compliance with applicable Air District regulations designed to protect public health in the West Oakland community, and in fact has resulted in significant public health benefits by greatly reducing POC emissions and cancer risk associated with the metal shredder.

Comment: Venable objected to the proposed revisions to the Authority to Construct permit conditions to account for the NOx emissions associated with nitrogen in the feedstock being

[2] The health risk values and trigger levels for naphthalene (CAS number 91-20-3) are listed in Table 2-5-1 immediately below PAHs, on p. 2-5-24 of the regulation.

processed in the metal shredder. Venable noted that the new NOx emissions limits will allow up to 9.03 tons per year of NOx emissions, about 2.8 times higher than the initial limits in the Authority to Construct. Venable stated that this revised limit is "absurd" and "insulting to the people of West Oakland…." (Venable Comment 33.)

Air District Response: This comment addresses the fact that there will be secondary NOx emissions from operation of the RTOs. Secondary emissions are emissions associated with the use of abatement equipment to limit the emissions of a more significant pollutant. As described in the Engineering Evaluation Report and Addendum for this permit, Air District regulations require Radius Recycling to use Reasonable Available Control Technology (RACT) to minimize these secondary emissions, which requires the abatement equipment to meet the lowest emission limit that can be achieved taking into account technological feasibility and cost-effectiveness. (See Air District Regs. 2-2-102 & 2-2-225.) The abatement equipment's secondary NOx emissions comply with this RACT requirement, as documented in the Addendum.

The reason for this revision is to account for nitrogen compounds in the shredder feedstock that the Air District was initially unaware of when it issued the Authority to Construct, and which only came to light after the equipment was installed and started operating. (See Section III.D. of the Permit to Operate Addendum for further discussion of the revised NOx limits.) It is not unusual for the Air District to adjust permit conditions in this manner based on real-world testing of the equipment after it is installed. This is one of the main reasons for the Air District's two-step permitting process, with an initial pre-construction evaluation before the equipment is installed (for the Authority to Construct), and then an evaluation of the equipment as built based on startup emissions testing (for the Permit to Operate). Adjusting the permit NOx limits in this manner conforms the RACT limits to what the Air District would have imposed in the Authority to Construct, if it had the benefit of the startup testing data at the time.

It is also important to note that these secondary emissions are necessary to achieve the very significant air quality benefits the new abatement equipment has provided for the West Oakland community. As outlined in the Engineering Evaluation Report and Addendum, the new abatement equipment has reduced the metal shredder's potential to emit Precursor Organic Compounds by over 232 tons per year, and it has achieved significant reductions in emissions of cancer-causing Toxic Air Contaminants. This is why the Air District required Radius Recycling to install the equipment through its 2020 enforcement action and settlement agreement, and why the California Attorney General, the California Department of Toxics Substances Control, and the Alameda County District attorney required the equipment in their 2021 enforcement case, *People v. Schnitzer Steel Industries, Inc.* (Alameda County Superior Court Case No. RG21087468). The people of West Oakland benefit from these emissions reductions every day, notwithstanding the abatement equipment's secondary NOx emissions.

III. PARTICULATE MATTER EMISSIONS

Comment: Sean Taylor, who said he lives about a half mile from the Radius Recycling facility, urged the Air District to reject the permit application for this abatement equipment until the facility can guarantee that particulate matter emissions can be decreased with the new system. Mr. Taylor stated: "It is simply not acceptable to increase particulate matter emissions in our neighborhood. We are exposed to emissions from traffic on the 880 and port traffic, and the area has historically had air quality issues. My indoor air purifiers (triggered by PM detectors) run immediately as soon as I open a window, it's not acceptable to have even a small increase in emissions from the facility." (Taylor Comment 1.)

Air District Response: The commenter is correct that, in addition to the very significant air quality benefits the new abatement equipment has provided for the West Oakland community, the equipment emits a small amount of additional particulate matter as secondary emissions. Specifically, as noted in the Engineering Evaluation Report for the new abatement equipment, the equipment may emit up to 1.36 pounds per day of particulate matter.[3] But the equipment also reduces the metal shredder's potential to emit Precursor Organic Compounds by over 232 tons per year (emissions that contribute to the formation of particulate matter in the atmosphere), and it has achieved significant reductions in emissions of cancer-causing Toxic Air Contaminants. These emission reduction benefits from the equipment are also described in more detail in the Engineering Evaluation Report. The new abatement equipment cannot do anything about emissions from traffic on Interstate 880 or emissions associated with port traffic, but it does provide real benefits in terms of the air quality issues in West Oakland by reducing emissions from the Radius Recycling facility. This is why the Air District required Radius Recycling to install the equipment through its 2020 enforcement action and settlement agreement, and why the California Attorney General, the California Department of Toxics Substances Control, and the Alameda County District attorney required the equipment in their 2021 enforcement case, *People v. Schnitzer Steel Industries, Inc.* (Alameda County Superior Court Case No. RG21087468). Issuance of the Permit to Operate will require Radius Recycling to continue to use the equipment going forward.

IV. MANDATORY COMPLIANCE TESTING

A. NOx Emissions Testing Frequency

Comment: The Air District included a provision in the draft Permit to Operate requiring more frequent compliance testing for NOx emissions to ensure compliance with the limits in Condition #27348, Parts 10.c and 10.d. Specifically, updated testing requirements in Condition #27348, Part 12, increased the testing frequency of NOx emissions from annual testing to quarterly testing for at least two years, with the possibility of reverting to annual testing if continued compliance is demonstrated with a high margin of compliance during that period. Radius Recycling asked that the Air District not require any quarterly testing at all, and that this condition be left simply as an

[3] Engineering Evaluation Report, Application No. 30009 (August 2021), Section III.A.2, table 1.

annual testing requirement. Radius Recycling stated that NOx emissions have been tested several times since the RTO was installed in 2022, in both Standby Mode and Operation Mode, and that this testing showed NOx emissions were less than 50% of the NOx limits in the draft permit. (Radius Recycling Comment 11.) Conversely, WOEIP requested that the Air District retain the quarterly testing requirement permanently, with no possibility of reverting to an annual testing frequency regardless of how low the emissions are. (WOEIP Comment 19.)

Air District Response: After considering these comments, the Air District continues to believe that quarterly testing is necessary and appropriate to ensure compliance with the NOx emission limits in Parts 10.c and 10.d. Shredder feedstock may vary over time, and if constituents in the feedstock affect NOx emissions, it is important that the emissions be well characterized. The Air District's standard practice is to require testing annually, however, and in cases that warrant quarterly testing, the Air District generally allows the testing frequency to revert to annual testing if the operation demonstrates consistent compliance after a specified number of years. If subsequent testing indicates any compliance concerns, the testing frequency will return to quarterly. For these reasons, the Air District agrees with the concerns expressed by WOEIP regarding the importance of ensuring ongoing compliance for this operation, and it is therefore revising the quarterly testing provision to require quarterly testing for at least three years. We agree with Radius Recycling, however, that demonstrated consistent compliance warrants going back to an annual testing frequency. The Air District will therefore consider allowing the testing frequency to be reduced from quarterly to annually if Radius Recycling demonstrates compliance for three consecutive years.

B. TAC Emissions Testing Frequency

Comment: The Air District also included a provision in the draft Permit to Operate requiring more frequent compliance testing for emissions of Toxic Air Contaminants (TACs). Specifically, the draft permit proposed to require TAC emissions testing every two years instead of every five years. Radius Recycling stated that it should be required to conduct a complete test program (including TACs) following issuance of the Permit to Operate, but then only be required to conduct further TAC emissions testing once every five years thereafter. (Radius Recycling Comment 12.) Conversely, WOEIP stated that TAC emissions testing every two years is inadequate to demonstrate continuous compliance. WOEIP stated that it would prefer quarterly testing, but asked that at minimum the Air District require annual testing given the existing risk from the source and considering the facility's compliance issues. (WOEIP Comments 20, 24 & 25.)

Air District Response: After considering these comments, the Air District continues to believe that testing every two years is important and necessary to ensure compliance with the TAC emission limits in the permit. The Air District's standard TAC testing frequency is once every five years, which is the testing frequency the Air District required in the Authority to Construct for this equipment. But Radius Recycling's operations involve feedstock materials with high variability, and they have unique and non-standard emission profiles. Therefore, in order to identify in a timely manner any emissions variation that may result in a permit limit exceedance, it is necessary to test more frequently than once every five years. Testing once every two years is more appropriate given

the nature of this operation. Testing every two years is already a conservative departure from the Air District's standard practice, however, and the District does not find any reason to conclude that quarterly or annual testing is warranted. Testing every two years will provide appropriate assurance that the equipment is meeting its permit limits.

V. COMPLIANCE WITH OTHER AIR QUALITY REGULATIONS

Comment: In addition to the concerns addressed above that the level of health risk associated with the new abatement equipment does not comply with Rule 2-5 standards, several commenters also stated that Radius Recycling is operating out of compliance with various other Air District regulations. Specifically, these commenters stated that Radius Recycling is operating without a required Clean Air Act Title V permit, without installing Best Available Control Technology (BACT) on the shredder, and without permits for its materials storage piles and its torch cutting operations. (Venable Comments 30 & 32.b.; Chen Comments 36 & 37.)

Air District Response: The Air District disagrees that Radius Recycling is currently in violation of any of the regulatory requirements raised in these comments.

With respect to Title V permit requirements, Air District Regulation 2-6-407 provides that if a facility subject to Title V permit requirements submits a timely and complete application for a Title V permit, it will not be subject to enforcement action while the Air District is evaluating the application. Regulation 2-6-404.1 provides that the facility must submit its application within 12 months after the facility becomes subject to the Title V permit requirement. Here, Radius Recycling submitted a Title V permit application within 12 months after it came to light that its potential to emit POCs exceeded the 100-ton-per-year threshold above which a Title V permit is required,[4] and the Air District is still evaluating that application. As a result, Regulation 2-6-407 applies and Radius Recycling is not subject to enforcement action for not having received its permit yet. (Note also that with the addition of the new abatement equipment, the facility's potential to emit POCs is now well below the 100-ton-per-year threshold at which a Title V permit is required, and so the Air District is also evaluating the alternative of compliance with Rule 2-6 through a Synthetic Minor Operating Permit under Regulations 2-6-310 and 2-6-231 instead of a Title V Major Facility Review permit.)

With respect to installing BACT on the shredder, Radius Recycling is already using the typical BACT control technologies on the shredder. It has constructed an enclosure around the shredder, it vents the emissions from the enclosure through a venturi scrubber to abate particulate matter emissions, and it abates POC emissions using the RTOs (and abates TAC emissions from the RTOs with the packed bed scrubbers). The commenters did not identify any way in which the controls that Radius Recycling is using fail to comply with BACT. Moreover, BACT is a requirement that applies to the APCO's issuance of a permit, to the extent the permit will authorize an emissions increase above 10 pounds per day of a BACT-regulated air pollutant. (See Reg. 2-2-301.) Any

[4] See Application 29573.

objections or disagreements regarding the applicability of BACT to a given permit issuance action need to be raised *at the time the permit is issued*. To the extent that these commenters believe that any historical permitting decisions from years ago should have been made in a different way, or that BACT requirements should have been applied differently in those permits, the time to raise those concerns has long since passed. There are no BACT requirements that apply to the current permit being issued for the new abatement equipment, because it does not increase emissions from the shredder, it significantly decreases emissions.[5]

With respect to materials storage piles and torch cutting, those sources are exempt from permitting requirements under Rule 2-1, and the Air District has always treated them that way. Because of the concerns raised around these issues, the Air District conducted further, more detailed analysis, and has confirmed that they do in fact qualify for a permit exemption. The Air District's analysis of the relevant exemptions is provided in Appendix B.

Finally, even if Radius Recycling were non-compliant in any of these other areas (which it is not), that would not provide a reason to deny this permit for the new abatement equipment or prohibit Radius Recycling from using it – especially given the beneficial emissions reductions it is providing. If Radius Recycling were in fact non-compliant in any of these areas, the proper approach to addressing such non-compliance would be to issue a Notice of Violation and pursue appropriate legal action to resolve the violation. It would not be to deny this permit for the abatement equipment or prohibit Radius Recycling from using it. The Air District's permit requirements apply on a source-by-source basis, and if the source that is the subject of the application is compliant (as is the case with the RTOs and packed bed scrubbers here), then it is eligible for a permit, even if the facility has other sources that are not currently compliant.

For all of these reasons, the Air District did not find anything in these comments to suggest that it should not issue the Permit to Operate for the new abatement equipment.

VI. TITLE VI CIVIL RIGHTS ISSUES, HEALTH IMPACT ASSESSMENT & MEANINGFUL COMMUNITY ENGAGEMENT

Comment: WOEIP stated that although the Air District did include a discussion of Environmental Justice and Title VI civil rights issues in its evaluation of the draft Permit to Operate, the discussion was "inaccurate in its selective and erroneous reading of Title VI guidance" and did not address WOEIP's request to consider any Radius Recycling permit applications in the context of environmental justice and civil rights requirements. WOEIP stated that the Air District's analysis improperly reduced the Title VI analysis to a question of whether the District's decision "would, on balance, be beneficial to the surrounding community." WOEIP stated that this is a "simplistic reading of federal and state civil rights requirements" and does not comport with the Air District's

[5] As noted above and in the Engineering Evaluation Report and Addendum, the new abatement equipment does generate some secondary emissions, but these emissions are subject to the "RACT" requirement under Regulation 2-2-102, not the "BACT" requirement of Regulation 2-2-301. As the Air District has explained in detail, these secondary emissions comply with the RACT requirement.

2024-2029 Strategic Plan, which states that the Air District will center environmental justice and will advance and prioritize compliance with civil rights laws. WOEIP stated that these are "laudable" principles and commitments, but stated that the position the Air District took in the Addendum directly contradicts those principles and commitments. WOEIP stated that relying on this posture would subject the Air District to formal complaints and investigation under Title VI of the federal Civil Rights Act and California Government Code section 11135. WOEIP concluded by saying "We urge [the Air District] to change course and live up to the letter and spirit of not only its Draft Strategic Plan but also Title VI and California Code 11135." (WOEIP Comment 15.)

In a similar vein, WOEIP stated that a Health Impact Assessment (HIA), not a Health Risk Assessment, is the most appropriate assessment tool for a permitting decision in an overburdened community like West Oakland. WOEIP referenced US EPA's comments on the General Iron metal shredding facility in Chicago, in which US EPA recommended "a robust analysis to assess the full environmental justice implications of siting this facility in a community already overburdened by pollution, and then use that analysis to inform any permitting decision" – and made specific reference to an HIA as an appropriate tool to provide the necessary information. (WOEIP Comment 16.c.)

WOEIP also stated that the Air District did not provide for meaningful public involvement in the development of the draft permit for the new abatement equipment. WOEIP expressed disappointment that the draft permit was released prior to involving the community, which WOEIP stated is necessary for the community to have a say in the structure and elements of the proposed permit and to fully understand the source and its processes. WOEIP further commented that meaningful involvement is not accomplished through one community meeting and making the permit available online. Karen Chen also expressed similar concerns about meaningful community engagement in her comments, noting Radius Recycling's history of prior violations and the sensitive nature of the facility's location in a low-income community of color with a long history of suffering environmental pollution, and within a mile of thousands of residents and many sensitive receptors. (WOEIP Comment 17; Chen Comment 35.)

Air District Response: The Air District appreciates these comments about its civil rights and environmental justice analysis for this permit. As WOEIP notes, the Air District has committed to expanding its focus on civil rights and environmental justice in the permitting process. The Agency's 2024-2029 Strategic Plan commits the Air District to "review how we issue permits to ensure we are following civil rights laws and regulations," including potentially using recently published EPA guidance as a starting point.[6] The *Path to Clean Air* Plan for the Richmond - North Richmond - San Pablo AB 617 community similarly sets a 2026 goal for developing "a process

[6] Bay Area Air District 2024-2029 Strategic Plan (Sept. 2024), available at https://strategicplan.baaqmd.gov/, Strategy 2.10.

for applying civil rights/disparate impact analyses for Air District refinery-related permitting activities in the … area."[7]

The Air District has made some progress with these initiatives, but they are still in the very early stages of development. On December 4, 2024, the Air District Board of Directors established an Office of Civil Rights in part to help move this work forward. We will reach out to community stakeholders and to the public more broadly for input as our work progresses through 2025. Given that we are still early in this process, the analysis in the Addendum for this permit represents a first step from which we hope to learn, rather than a fixed endpoint.

Consistent with this growth-oriented approach, the Air District wishes to clarify two things about the civil rights and environmental justice analysis in the draft Addendum circulated for public comment. First, procedurally, recent EPA guidance suggests many different steps that may help ensure civil rights and environmental justice concerns are adequately incorporated into air permitting processes. In considering this permit, the Air District went beyond our standard practice to take several such steps. Among other things, we developed, published, and translated into four languages an illustrated fact sheet to describe the proposed permit; conducted an in-person public workshop about the proposed permit in close proximity to Radius' facility; did on-foot outreach to unhoused populations near the facility to discuss the proposed permit; and sent mailed notices of the proposed permit issuance to businesses and residences well past the required 1,000 foot radius from the shredder. None of these actions were required by any rule or regulation, and some of them we had never done before, but we implemented them because we understand the environmental justice implications of operations at Radius' facility.

There were other steps we did not take, including, as WOEIP specifically notes, preparing a Health Impact Assessment (HIA) and having substantive communications with community stakeholders about the permit prior to issuing the draft permit for public comment. We look forward to having discussions about these steps with community members in the near future as part of broader conversations about our permitting program. Regarding this permit, however, we generally disagree with WOEIP's comment that an HIA should have been prepared and agree with WOEIP's comment that community engagement could have taken place earlier. Specifically, an HIA was not appropriate here given the massive positive impact of the abatement equipment being permitted and the significant resource and time burden of conducting an HIA. However, in retrospect, we acknowledge that more robust early engagement would have been beneficial. Although WOEIP was aware of the permit application and although we had communicated with WOEIP about the permit application well before the opening of the public comment period, we believe that our process could have benefited from earlier substantive communication to bring potential community concerns to our attention earlier, and so we plan to use this as a learning experience going forward. To be clear, the failure to conduct such outreach did not violate any legal

[7] Path to Clean Air Community Emissions Reduction Plan (April 2024), available at www.baaqmd.gov/community-health/community-health-protection-program/richmond-area-community-health-protection-program/community-emissions-reduction-work, Action FR 3.10.

requirement, but on reflection we recognize that this permit warranted more advance engagement as a matter of policy and implementation of best practices.

Second, and more substantively, the Air District's civil rights analysis does not imply that a beneficial project cannot violate Title VI or Government Code section 11135. It is well established that, if benefits are inequitably distributed, then the lack of access to benefits can be a harm under these laws.[8] Here, however, this principle does not suggest that issuing this permit violates these laws. This permit is for abatement equipment that multiple public agencies required Radius to install because it is the most effective available to mitigate POC and toxics emissions from Radius' shredder. As discussed in the Engineering Evaluation and Addendum, combustion emissions from the abatement equipment are mitigated, and the actual operation of the equipment has dramatically decreased potential harmful emissions from Radius' facility. Further, the equipment is subject to rigorous monitoring, performance requirements and emission limits.

VII. MISCELLANEOUS TECHNICAL COMMENTS

A. Clarification of Permit Type

Comment: WOEIP asked for clarification on what type of operating permit the Air District is issuing for the new abatement equipment. WOEIP stated that if this is a Title V permit action, the Air District can consider enhanced monitoring, and it requires certification of compliance by the Owner/Operator under penalty of law. WOEIP stated that it believes Title V is "the appropriate permit mechanism to provide the appropriate tools to support ongoing compliance with this source," asserting that Radius Recycling has a "long-standing history of noncompliance and the illegal manipulation of data…." (WOEIP Comment 18.)

Air District Response: This is an Air District permit to operate issued under Regulation 2-1-302 and related provisions. It is not a Title V permit issued under Rule 2-6. As stated in subsection 2-1-302.1, a Title V permit is separate from and in addition to the permit required under Regulation 2-1-302. As noted above, Radius Recycling has submitted an application for a Title V permit, which is currently under consideration.

B. RTO Operating Temperature

Comment: In the draft permit, the Air District proposed to increase the minimum required operating temperature for the RTOs from 1600 °F to 1830 °F. The Air District proposed this increased temperature requirement because the RTOs were operating at an elevated temperature during the startup source test used to demonstrate compliance. Radius Recycling requested that the minimum temperature be set at 1700 °F, citing more recent test data from 2024 showing that the polychlorinated biphenyl (PCB) destruction efficiency is similar when the RTOs are operating at 1850 °F and 1750 °F. Radius Recycling noted that requiring a higher temperature than necessary

[8] U.S. Dep't of Justice, Title VI Legal Manual, Section VII, *Proving Discrimination – Disparate Impact*, pp. 13-14, available at: www.epa.gov/sites/default/files/2021-01/documents/titlevi_legal_manual_rev._ed_1.pdf.

will require it to use more natural gas than necessary, which causes additional air pollution and greenhouse gas emissions. (Radius Recycling Comment 2.)

Air District Response: The Air District has reviewed the 2024 source test results, which show that the RTOs are able to achieve the desired PCB destruction efficiency at 1750 °F. Based on these test results, the Air District agrees that it is appropriate to set the minimum operating temperature for the RTOs to 1750 °F. The Air District disagrees that it would be appropriate to lower the minimum temperature requirement as low as 1700 °F, however, given the lack of source test results demonstrating an adequate destruction efficiency at temperatures below 1750 °F. In addition, the Air District is not finalizing the proposed addition of a 15-minute averaging period for this limit. The Air District proposed this averaging period to address short-term temperature deviations that do not have any significant impact on the destruction efficiency achieved by the RTOs. These short-term temperature deviations are already addressed by the temperature excursion provisions in Parts 6 and 7 of condition 27348.

C. Packed-Bed Acid Gas Scrubber Pressure Differential

Comment: In the draft permit, the Air District proposed adding a new requirement to Condition 27348, Part 9, to require Radius Recycling to maintain the packed-bed acid gas scrubber pressure differential within an operating range of 5"-10" H_2O. Radius Recycling asked that this proposed requirement not be included in the permit, stating that the air flow rate through the control train can only be set using one parameter, and that setpoint will determine the flow rate across the entire control train. Radius Recycling stated that the pressure drop within a certain piece of equipment cannot be changed to be something different from that achieved with the overall setpoint. It stated that currently it operates the control trains in a manner designed to meet the required pressure drop at the venturi scrubbers. (Radius Recycling Comment 3.)

Air District Response: The Air District understands the unique nature of the abatement system and is not including the proposed pressure differential operating range limit in the final Permit to Operate. The range of 5"-10" H_2O for the scrubber system was initially proposed simply based on Air District staff's research on the typical pressure drop range for a packed-bed acid gas scrubber. No specific value exists for the facility's packed bed scrubbers because they were custom-made. The pressure differential operating range restriction is also unnecessary because of the low concentrations of the pollutants that the scrubber system is intended to control (i.e., HCl, HF), and because of the low contributions to the project's cancer risk from these pollutants. The Air District is retaining the requirement to monitor and record the pressure drop across each packed bed scrubber at least once per operating day, however.

D. Shredder Enclosure Operation & Maintenance (O&M) Requirements

Comment: In the draft permit, the Air District proposed to add several requirements to Condition 27410, Part 2, to require specific operating practices to minimize fugitive emissions from the shredder enclosure while the shredder is operating. WOEIP stated that it supports including these requirements for operation and maintenance of the enclosure in the permit conditions. (WOEIP

Comment 26.) Radius Recycling, on the other hand, commented that the permit does not need to include such specific requirements, but should instead broadly set forth the requirements for the O&M Plan, which the Air District can review and approve. Radius Recycling requested the following changes to the language of Condition 27410 published in the draft permit (Radius Recycling Comment 13):

- Part 2a: Clarify that the O&M Plan will be maintained and followed with the Air District's approval, to ensure the Air District's access to the Plan, and require Air District approval of any amendments to the Plan.
- Part 2b: Remove the descriptions of the openings; these details should be included in the O&M Plan, not in the permit conditions.
- Part 2c: Clarify the timeline required for any repair needed based on the monthly enclosure inspection.
- Part 2e: Remove the requirement for pressure monitoring inside the enclosure with pressure monitoring devices, as there is no appropriate location for installing such pressure monitoring devices, as they will either be inaccurate in terms of the measurement, or the sensors will be damaged frequently due to proximity to the shredder. Instead of pressure monitoring inside the enclosure, Radius proposes to monitor the flow rate across the control systems via a continuous flow measurement device in the exhaust stacks to ensure a face velocity of 200 feet per minute based on the calculation procedure in EPA Method 204, Section 8.3.

Air District's Response: After considering these comments, the Air District continues to believe that specific O&M requirements need to be included in the permit condition in order to provide maximum transparency and enforceability. In this respect, the Air District agrees with WOEIP's comment on this issue. The Air District does agree with Radius Recycling, however, that certain details such as the description of the specific openings in the shredder enclosure can be left to the O&M Plan. These details have been removed from the permit language and will be addressed in the Plan itself.

Regarding the timelines for repairs, these are specified in the permit condition language.

Finally, the Air District agrees that flow monitors in the exhaust stacks are a more appropriate method to confirm that the enclosure is operating with a high capture efficiency than pressure monitoring inside the enclosure. The Air District is revising the permit conditions accordingly. The Air District will rely on the calculated average face velocity of air through all openings in the shredder enclosure to verify that emissions are effectively captured and airflow is directed inward (into the enclosure). To support this, the Air District is also including requirements for the facility to maintain records of the total area of natural draft openings on the shredder enclosure – including damage-related openings – as well as continuous measurements of exhaust stack flow rates whenever the shredder is operating. Using this data, the facility will be required to calculate and keep records of the average in accordance with EPA Method 204, Section 8.3, and demonstrate that it meets or exceeds 220 feet per minute. The Air District is including this 220 ft/min

requirement, which is 110% of what EPA Method 204 requires, in order to ensure an adequate safety margin.

E. Shredder Infeed Conveyor Water Application Monitoring

Comment: Radius Recycling noted that the draft permit contained a requirement in Condition 27410, Part 4.b., that the water application rates for the "infeed conveyor and the shredder" must be recorded during each required compliance test. Radius Recycling explained that the water application rate to the infeed conveyor is not monitored because water application is required only "as needed." Radius Recycling noted that there are nozzles installed for water application inside of the shredder, and that water usage can be tracked that way. But it requested removal of the phrase "the infeed conveyor" from the requirement for recording the water application rates. (Radius Recycling Comment 14.)

Air District Response: The Air District agrees with this comment and has removed the reference to the infeed conveyor from the relevant provision in Condition 27410, Part 4.b. The inclusion of this language in the draft permit language was an error on the Air District's part.

F. Recordkeeping Requirements

Comment: WOEIP stated that the records of natural gas usage and source testing results required to be maintained under Condition 27348, Part 15, should be maintained for 5 years, not 2 years as the Air District proposed in the draft permit. (WOEIP Comment 21.)

Air District's Response: Although the Air District's standard recordkeeping duration for Air District permits is 2 years, the Air District does require records to be maintained for 5 years for Title V permits. Since this facility is expected to be subject to a Title V Major Facility Review permit and/or a Synthetic Minor Operating permit, which would require recordkeeping for 5 years, the Air District is adding the 5-year requirement to Condition 27348, Part 15. This is consistent with other recordkeeping requirements in this permit, such as in Part 9 of Condition 27410.

G. Venturi Scrubber Water Flow and Pressure Differential Requirements

Comment: WOEIP expressed support for the requirements to operate the venturi Scrubbers in accordance with manufacturer specifications, and to maintain a minimum water flow rate of 260-300 gallons per minute and an effective pressure differential within a range of 15"-22" H_2O. (WOEIP Comment 27.)

Air District's Response: The Air District agrees that these requirements are appropriate for this permit, and it thanks the commenter for its support.

H. Oakland Meteorological Data

Comment: Radius Recycling commented that the Air District should use a consistent set of meteorological data that meets EPA criteria and is representative of conditions at the West Oakland

facility. Radius Recycling noted that the Air District's website has a dataset that includes Oakland STP meteorological data for 2013-2017, and stated that it has an Oakland STP AERMOD input file used for a previous Air District analysis that uses a 2009-2013 Oakland STP dataset. Radius Recycling cited an email from and Air District staff member suggesting that 2009 data do not meet the 90% data capture rate requirement in EPA's criteria. (Radius Recycling Comment 38.)

Air District Response: The Air District did not select the Oakland STP meteorological data for 2013-2017 because that dataset does not meet the 90% data capture requirement. The Air District used the most recent available five-year dataset that meets this requirement, which is the 2009-2013 dataset. The requirement applies to the five-year dataset as a whole, not to any individual year within the larger dataset.

Comment: Radius Recycling stated that the met tower height at the Oakland STP station does not comply with EPA siting criteria because the anemometer height is not at least 2.5 times the height of the building it is atop. (Radius Recycling Comment 39.)

Air District's Response: The Air District disagrees with this comment. At the Oakland STP meteorological (met) station, the height of the building that the anemometer is atop is 34 ft (10.4 m), based on Google Earth. Given that the tower height is 53.5 ft (16.3 m), the tower height above ground level is 34 + 53.5 = 87.5 ft, which is higher than 2.5 times the height of the building (34 x 2.5 = 85 ft). Note also that the EPA guidance states that sensor height should be above obstructions (or building wake in this case), and the depth of the building wake is estimated to be "approximately 2.5 times the height of the building." This limit has been provided by EPA as a rule of thumb, not a strict requirement to stay above. The tower building at the Oakland STP met station is therefore consistent with the EPA siting criteria.

Appendix A:

Comment Letters

Davis Zhu

From: Sean Taylor <seanjtaylor@gmail.com>
Sent: Friday, October 11, 2024 7:19 PM
To: Davis Zhu
Cc: Shiu Pei Luu
Subject: Permit Application #30009

Hi Davis,

My name is Sean Taylor and I live about a half mile from the Schnitzer Steel facility.

I would urge the Air District to reject the permit application until the facility can guarantee that PM2.5 and PM10 emissions can be decreased with the new system. It is simply not acceptable to increase particulate matter emissions in our neighborhood. We are exposed to emissions from traffic on the 880 and port traffic, and the area has historically had air quality issues.

My indoor air purifiers (triggered by PM detectors) run immediately as soon as I open a window, it's not acceptable to have even a small increase in emissions from the facility.

1

Thanks for your consideration,

Sean

West Oakland Environmental Indicators Project

October 28, 2024

Public Notice Response
Air District - Engineering Division
375 Beale Street, Suite 600
San Francisco, CA 94105
Attn: Davis Zhu (dzhu@baaqmd.gov)

Subject: Schnitzer Steel Products Company (A/N #30009)

Dear Dr. Zhu:

West Oakland Environmental Indicators Project (WOEIP) is submitting these comments on the draft operating permit for Schnitzer Steel. As you are aware we have been very concerned about the operations and history of lack of compliance with this source and it's impact on the surrounding community. We have reviewed this permit as part of our long-term involvement and concern about the operation of this facility in our community. We will present our comments in two different sections. The first will be overarching concerns about the permit and its development, which will be followed by detailed comments on the draft permit.

Overarching Concerns

1) Title VI and environmental Justice, Health Risk Assessment.

a. Civil Rights, Title VI and California Code 11135

WOEIP has a long been concerned about the disproportionate impacts of this source on our community, as indicated in our letter dated November 1, 2023 ("Schnitzer Steel, Environmental Justice and Civil Rights") we requested:

> "...that the District consider these requirements and address them on the record in any proposed actions on the Schnitzer permits. We note that the District itself, incorporating directly language from federal Title VI regulations, prohibits "[u]sing criteria or methods of administering its program that has the effect of discriminating against a user, or potential user, of the program offered by BAAQMD." In considering the Schnitzer applications in light of these policies and requirements, there are a number of recent documents which may be of use to the District, including:

15

- "Interim Environmental Justice and Civil Rights in Permitting Frequently Asked Questions"[1]
- "Principles for Addressing Environmental Justice in Air Permitting"[2]

"Significantly, these documents also suggest the consideration of alternative sites for the facilities, and include the possibility of denying a permit. The possibility of relocation is reinforced by the requirement in Title VI regulations of the U.S. EPA and other federal agencies to consider potential discriminatory effects due to "siting".

"It should be understood that these civil rights requirements may differ from and go beyond environmental and public health regulatory requirements with regard to both (1) the breadth of discretion available to decision makers and (2) the range of alternatives considered, including consideration of "less discriminatory alternatives".

"We would hope that the District, in considering its range of discretion and alternatives for regulating and permitting this source, will include consideration of regulatory approaches not only within the United States, but those beyond the borders in Europe and elsewhere."

15 (Con't)

We note that the District did include a discussion of Environmental Justice and Title VI in the permit development, specifically on pp 24-27 of the "Draft Permit to Operate Addendum to Engineering Evaluation Report" dated September, 2024. That discussion, however, not only ignores our request in the November 1, 2023 correspondence, it goes on to provide an interpretation of the requirements of Title VI of the Civil Rights Act that is inaccurate in its selective and erroneous reading of Title VI guidance, reducing the Title VI test to one of whether the District's decision "would, on balance, be beneficial to the surrounding community" (p26).

For the District to adopt such a simplistic reading of federal and state civil rights requirements makes the District's posture in its Draft 2024-2029 Strategic Plan ring hollow, with its supposed "centering" of environmental justice, and more specifically with regard to civil rights. Under that Plan the District identifies "Strategy 2.10 Civil Rights Laws", providing that the District "will advance and prioritize compliance with civil rights laws, including the federal Civil Rights Act of 1964 and related California laws." The Plan goes on to describe that:

[1] https://www.epa.gov/system/files/documents/2024-01/ej_and_cr_permitting_faqs.pdf
[2] www.epa.gov/caa-permitting/ej-air-permitting-principles-addressing-environmental-justice-concerns-air

"Under this strategy, we will review how we issue permits to ensure we are following civil rights laws and regulations. In 2022, the United States Environmental Protection Agency published guidance to help state and local governments comply with civil rights laws as they carry out their permitting programs. This interim guidance may be a starting point in examining whether additional steps need to be taken in reviewing permit decisions for civil rights compliance," (p58).

It is notable that this language cites exactly the same 2022 document referenced in the November 1, 2023 WOEIP letter noted above. For the District to imply that the positions taken in this Engineering Evaluation Addendum in any way comport with the approach provided in the 2022 US EPA document would be in direct contradiction to the laudable principles and commitments in the District's Strategic Plan.

15 (Con't)

Please understand that for the District to rely on the posture on Title VI and Government Code 11135 in the Addendum would invite formal complaints and investigation under both federal law at Title VI of the Civil Rights Act and California 11135. We would hope to avoid calling for such investigations, but the District's dereliction may leave us no choice. We urge BAAQMD to change course and live up to the letter and spirit of not only its Draft Strategic Plan but also Title VI and California Code 11135.

b. Health Risk Assessment

Regarding the Health Risk Assessment, we do not believe the HRA developed accurately reflects the risk posed by this source on the surrounding community. Even though the application requires controls and reductions at the source. We do not believe that the remaining risk is below the level required by the District and the State of California.

In reviewing the HRA we believe that WOCAP, BAAQMD were required to reduced the cancer-risk limit that a new or modified source of toxic air contaminants must meet in overburdened communities (including West Oakland) from 10.0-in-one-million to 6.0-in-one-million cases at the maximally exposed receptor. BAAQMD Rule 2-5-302.1. BAAQMD rules require BAAQMD to deny a permit if a facility's cancer risk exceeds the applicable cancer-risk limit.

16

In the Health Risk Assessment for the proposed permit, BAAQMD finds that Schnitzer's cancer risk is 5.7 with the abatement equipment (RTOs + acid gas scrubbers), which BAAQMD says meets the cancer risk limit. However, BAAQMD and Schnitzer used the wrong maximally exposed receptor to evaluate compliance with the risk limit. BAAQMD previously has used Phoenix Lofts, a residential building a few hundred feet north of Schnitzer's Facility, in HRAs for Schnitzer and others. But BAAQMD now uses a receptor—The Waterfront Hotel—much farther from the Facility. Our understanding from the spreadsheets accompanying the HRA is that, if BAAQMD had used Phoenix Lofts as the maximally exposed receptor, the cancer risk would be well above the 6.0-in-one-million limit, and BAAQMD would have to deny the permit.

The HRA documents show that inconsistent application of the maximally exposed receptor results in the source barely meeting the requirements. Even with this inappropriate receptor, given the compliance history and behavior of the source operators a cancer 5.7 is not protective of this community. Moreover, consistent with the community-wide HRA in the WOCAP, BAAQMD's HRA accompanying the proposed permit finds that, before Schnitzer installed this equipment, its cancer risk at this incorrect, farther-away receptor was *21.6*, significantly above even the 10-per-million risk limit that has applied for decades even at this receptor. At the correct receptor–Phoenix Lofts–the cancer risk was even higher. This shows that BAAQMD has continued to renew Schnitzer's permit year after year, and is proposing to do so again, despite Schnitzer's not meeting cancer risk thresholds protective of West Oakland.

Finally, regarding health risk assessment (HRA) vs. health impact assessment (HIA) we offer the following comment. Over the past year we have repeatedly referred to the relevance of the experience of Chicago regulators in dealing with the General Iron facility, and the assessments carried out in decision-making on that facility, like the Schnitzer/Radius facility, a metal shredder located in an EJ community. In our November 1, 2023 WOEIP letter mentioned above, we referenced the US EPA's weighing in on that permitting process and recommending "a robust analysis to assess the full environmental justice implications of siting this facility in a community already overburdened by pollution, and then use that analysis to inform any permitting decision."[3] The Agency made specific reference to a Health Impact Assessment (HIA) as an appropriate tool to provide the necessary information. Given the increased scope and depth of an HIA and its enhanced role for public engagement during the HIA process, we repeat our many previous suggestions that an HIA should be seen as the most appropriate assessment tool for a permitting decision in such an overburdened community.

16 (Con't)

c. Public Involvement

WOEIP has long requested meaningful involvement in the development of the permits associated with this source. As part of the EPA, District and WOEIP Rapid Response Task Force. WOEIP has requested to be involved in the development of permits associated with this source. We were disappointed that the permit was released prior to conducting meaningful involvement. It is important to recognize that meaningful involvement is not accomplished through one community meeting, and making the permit available on line. WOEIP encourages pre-proposal engagement so the community can have a say on the structure and elements of the proposed permit and to fully understand the source and it's processes.

17

[3] See: www.epa.gov/system/files/documents/2022-02/letter-to-mayor-lightfoot-5.7.21.pdf.

2) Operating Permit

a. Similar to the comment on meaningful engagement WOEIP has expressed concern and questions on what this operating permit is: For example, this operating permit is a modification of an existing source, so is this a modification of the unacted upon Title V permit or of the Nonattainment New Source Review Permit ? If this is a modification of the Title V permit, that would mean that this opens the permit for cause, and can allow more consideration of enhanced monitoring for other aspects of the operations of the source. It also requires certification of the Owner Operator under penalty of law if they misrepresent data required to ensure compliance. As we have discussed previously, we believe Title V is the appropriate permit mechanism to provide the appropriate tools to support ongoing compliance with this source considering it's long-standing history of noncompliance and the illegal manipulation of data provided by the source.

18

Permit-Specific Comments

1) Compliance Monitoring – Generally speaking given the compliance history of this source the permits should require more frequent monitoring. WOEIP recognizes that the permit tightens testing and reporting frequency but we believe more frequent testing and monitoring is essential for ensuring continuous compliance at the source.

a. NOX – "To ensure ongoing compliance, the Air District is requiring more frequent emissions testing of NOx emissions. Condition #27348, Part 12, increases the testing frequency of NOx emissions from annual to quarterly testing for at least two years. If continued compliance is demonstrated with a high margin of compliance, testing frequency may be reduced to usual annual frequency." WOEIP suggest that the quarterly testing requirement stay permanent and not revert to annual frequency.

19

b. Toxics Air Contaminates – WOEIP does not believe source testing every two years is adequate to demonstrate continuous compliance. WOEIP would prefer quarterly testing but minimally annual testing.

20

c. WOEIP supports part 15 – "In order to demonstrate compliance with the above parts of this permit condition, the owner/operator shall maintain the following monthly records in a District-approved log for at least 24 months from the date of entry. Log entries shall be retained on-site and made available to District staff upon request: a. Monthly quantity of Natural Gas Consumed in A-15 and A-16 combined. b. Monthly quantities shall be totaled for each consecutive twelve-month period. c. All source test records required per Parts 12 and 13. (bBasis: Cumulative Increase)" However, records should be maintained for 5 years.

21

2) Toxic Air Contaminants a. WOEIP supports expanding the list of toxic air contaminants that will be monitored during future testing, amend the hourly limits for these compounds, and remove alternative actions to meeting these limits.	22
b. WOEIP does not support "If source testing shows that toxic air contaminant emissions exceed these permit limits, the owner/operator may apply to increase the limits if it can demonstrate that the AN 30009, Draft Permit to Operate Addendum to Engineering Evaluation Report September 2024 31 increased emissions will not cause health risks exceeding any applicable limits or requirements of Regulation 2, Rule 5, but the owner/operator shall not operate with emissions exceeding these permit limits until revised limits are approved by the Air District. (Basis: Regulation 2-5). Given the HRA finds the cancer risk to be 5.7 per million (WOEIP believes it to be higher – see above), any exceedance of the limit should be considered a violation.	23
c. WOEIP does not believe bi-annual testing is adequate to demonstrate continuous compliance.	24
d. PCB and Hexavalent Chrome – Testing should be annual instead of every two years given the existing risk from the source and considering the sources ongoing compliance issues.	25
3) Enclosure Requirements a. WOEIP supports the requirements for operation and maintenance of the enclosure.	26
4) Venturi Scrubber a. WOEIP supports "The owner/operator shall operate each Venturi Scrubber in accordance with manufacturer specifications. The owner/operator shall maintain a minimum water flow rate of 260300 gallons per minute (gpm), averaged over a 1-hour period, to each venturi scrubber and an effective pressure differential operating range of 15 to 22 inches of H2O across each venturi scrubber."	27
b. WOEIP does not support "The District may adjust these operating parameter limits if source test data demonstrates that alternate values are necessary for or capable of maintaining compliance with the particulate emission limits" We believe the adjustments should be addressed through a permit modification	28
5) NOX RACT, Offsets. In order to meet the NOX RACT requirements, the source needs offsets and will need additional offsets then previously were expected. Since these offsets will come for the District's emissions bank the reductions won't be occurring in West Oakland and therefore the community will continue to be exposed to excess NOX emissions.	29

Thank you for the opportunity to review this permit. We hope that in the future we can have more meaningful engagement on the District's permitting actions with regard to this source.

Best regards,

Ms. Margaret Gordon
Co-Director, WOEIP

Brian Beveridge
Co-Director, WOEIP

NOTES

List of participating agencies in the Rapid Response Task Force convened by CalEPA and US EPA to address the August 9, 2023 fire at Schnitzer Steel (dba Radius Recycling):

- Alameda County Department of Environmental Health Hazardous Materials Division
- Alameda County District Attorney's Office
- Bay Area Air Quality Management District, Compliance and Enforcement Division
- Oakland City Attorney's Office
- California Attorney General's Office
- San Francisco Bay Regional Water Quality Control Board
- State Water Resources Control Board
- California Air Resources Board
- Department of Toxic Substances Control
- CalEPA, Environmental Justice Enforcement & General Counsel for Enforcement
- US Department of Justice
- US EPA Enforcement and Compliance Division

Department of Toxic Substances Control map of existing metal shredding facilities (5/24)

VENABLE LLP

October 28, 2024

T 415.653.3750
F 415.653.3755
WMSloan@Venable.com
TGWelti@Venable.com

VIA E-MAIL and CERTIFIED U.S. MAIL

Davis Zhu
BAAQMD Engineering Division
375 Beale Street, Suite 600
San Francisco CA 94117
dzhu@baaqmd.gov

Re: Schnitzer Steel Products Company – Proposed Permit to Operate for New Air Pollution Abatement Equipment

Dear Mr. Zhu:

On behalf of the Oakland Athletics (the A's), we submit this comment letter on the Bay Area Air Quality Management District's (BAAQMD) proposed Permit to Operate (PTO) Regenerative Thermal Oxidizers and Packed Bed Scrubbers at Schnitzer Steel's Metals Recycling Yard and Port (the Facility) in West Oakland.

As BAAQMD is aware, West Oakland is a low-income community of color with a long history of suffering environmental pollution. The Facility is adjacent to the San Francisco Bay and within a mile of approximately 23,000 residents and many sensitive receptors, including schools, daycare centers, hospitals, senior living centers, and parks. BAAQMD has allowed Schnitzer to operate in this sensitive location even though Schnitzer has violated air quality regulations for many years. As the A's have made clear in prior comment letters,[1] BAAQMD has allowed Schnitzer to operate—and to continue to operate today—without a required Clean Air Act Title V permit, without installing Best Available Control Technology (BACT), and without permits for its stockpiles and torches that emit toxic air pollutants. BAAQMD has also allowed the Facility to operate for years even though the cancer risk caused by its emissions far exceeded regulatory trigger levels. Even after installing regenerative thermal oxidizers (RTOs) and packed bed scrubbers, the Facility continues to violate air quality rules. This PTO must therefore be denied.

30

The Health Risk Assessment (HRA) prepared for this PTO makes clear that the Facility still does not meet the cancer risk threshold of 6.0 in one million at the maximally exposed receptor.[2] In 2022, as a result of WOCAP, BAAQMD lowered the cancer risk threshold for

[1] The A's hereby incorporates prior comment letters, to the extent applicable.
[2] *See* BAAQMD Rule 2-5-302.1.

overburdened communities like West Oakland from 10.0 to 6.0 in one million at the maximally exposed receptor. The HRA finds that the Facility's cancer risk after installing the RTOs and scrubbers is 5.7. This is wrong because the HRA uses the incorrect maximally exposed receptor to evaluate compliance with the risk limit. In previous HRAs conducted for the Facility, BAAQMD used Phoenix Lofts, a condo/apartment building a few hundred feet north of the Facility. Phoenix Lofts is still a residential building with units for sale and rent.[3]

In this HRA, however, BAAQMD uses a residential receptor much farther from the Facility—the Waterfront Hotel—to evaluate health risk. A comparison of the locations of Phoenix Lofts and the new residential receptor are shown in the figure below.

31

As a result of using this farther receptor, BAAQMD concludes the Facility's cancer risk is below 6.0 in one million. But had BAAQMD used the correct receptor—the receptor it has used in previous HRAs—it would have found that the Facility's cancer risk is approximately 7.5, which exceeds the applicable cancer risk threshold. BAAQMD must update the HRA to use the correct receptor. And in accordance with BAAQMD rules,[4] the Agency must not approve this PTO until the Facility's cancer risk at the proper maximally exposed receptor meets the required threshold.

[3] Listings for rentals and condos at Phoenix Lofts are available at https://www.zillow.com/b/phoenix-lofts-oakland-ca-5XsDLk/.

[4] Under BAAQMD Rule 2-1-304, BAAQMD is required to deny a PTO if a source or facility "would not or does not comply with any emission limitations or other regulations of the District . . . or federal or California laws or regulations."

The fact that BAAQMD is even considering approving this PTO in light of the Facility's ongoing exceedance of the cancer risk threshold is disturbing in light of what the HRA reveals about Schnitzer's cancer risk before it installed the RTOs and scrubbers. According to the HRA, the Facility's cancer risk at the maximally exposed receptor pre-installation was 21.6, over 3.5 times the current trigger level of 6.0 in one million and over twice the previously applicable trigger level of 10.0 in one million. At the correct receptor (Phoenix Lofts), the cancer risk was even higher. Yet from 2006 when the shredder was installed until 2022 when Schnitzer installed the RTOs and scrubbers, BAAQMD continued to renew Schnitzer's PTO the Facility. And as the A's have made clear on numerous occasions, the cancer risk threshold is not the only air quality requirement the Facility has violated and continues to violate. Schnitzer continues to operate without a Title V permit, continues to operate without BACT at the shredder, and continues to operate open-air, multi-story stockpiles and large torch-cutting operations without necessary permits and controls. This HRA thus confirms that BAAQMD has allowed and still allows Schnitzer to operate in violation of the law.

32

It is also worth noting that this PTO represents an unfortunate backsliding in BAAQMD's already tepid attempts to regulate Schnitzer. After installing the RTOs and scrubbers, Schnitzer conducted source tests to assess their effectiveness at reducing harmful emissions. The source tests showed reductions in precursor organic compound emissions but detected nitrous oxide (NOx) emissions far above Schnitzer's then-permitted limit of 50 MMscf. According to BAAQMD's Draft Engineering Evaluation, the NOx exceedances were the result of mechanical issues with the RTOs and "a source of nitrogen in the feedstock being processed in the Metal Shredder," most likely "ammonia or similar compounds that are used as blowing agents during the manufacture of foam used as insulation in appliances, cars or objects found in the metal scrap processed by the shredder." BAAQMD claims it was not aware of nitrogen in the metal shredder feedstock when it initially set the NOx limit in Schnitzer's PTO the Facility. So, BAAQMD has now proposed increasing the amount of NOx Schnitzer is permitted to emit to 9.03 tons per year, "about 2.8 times higher than the original limit." Allowing a Facility that has skirted air quality rules for decades to emit more of a harmful air pollutant is absurd and insulting to the people of West Oakland who have borne the brunt of this pollution for far too long.

33

Schnitzer's ongoing violations of the Clean Air Act and District rules warrant a denial of this PTO. Given the importance of these issues to the residents and workers of West Oakland, the A's request a response from BAAQMD to these concerns by November 4.

Sincerely,

William M. Sloan
Tyler Welti
Attorneys for Oakland Athletics

From: Chen, Karen
To: Davis Zhu
Subject: Comment on Proposed Permit to Operate for New Air Pollution Abatement Equipment
Date: Monday, October 28, 2024 4:30:53 PM

Dear Mr. Zhu,

I am writing to echo concerns raised by community members about BAAQMD's inappropriate calculation of cancer risk in the Health Risk Assessment, along with inadequate community engagement for the pending Permit to Operate (PTO) Regenerative Thermal Oxidizers and Packed Bed Scrubbers at Schnitzer Steel's Metals Recycling Yard in West Oakland.

The Health Risk Assessment (HRA) prepared for this PTO indicates that the Schnitzer facility still does not meet the cancer risk threshold of 6.0-in-one-million at the maximally exposed receptor. In 2022, as a result of the West Oakland Community Action Plan, BAAQMD reduced the cancer-risk limit that a new or modified source of toxic air contaminants must meet in overburdened communities from 10.0-in-one-million to 6.0-in-one-million cases at the maximally exposed receptor. BAAQMD Rule 2-5-302.1.

In the Health Risk Assessment for the proposed permit, BAAQMD finds that Schnitzer's cancer risk is 5.7 with the abatement equipment (regenerative thermal oxidizers + acid gas scrubbers). However, HRA uses the incorrect maximally exposed receptor to evaluate compliance with the risk limit. In previous HRAs conducted for the Facility, BAAQMD used Phoenix Lofts, a condo/apartment building a few hundred feet north of the Facility. Phoenix Lofts is still a residential building with units for sale and rent. But BAAQMD now uses a receptor—The Waterfront Hotel—much farther from the Facility. Our understanding is that if BAAQMD had used Phoenix Lofts as the maximally exposed receptor, the cancer risk would be approximately 7.5, which exceeds the applicable cancer risk threshold. BAAQMD must update the HRA to use the correct receptor. BAAQMD rules also counsel that the agency must not approve this PTO until the Facility's cancer risk at the correct maximally exposed receptor meets the required threshold. BAAQMD Rule 2-1-304. **34**

It is also concerning to hear about the lack of meaningful community engagement during this permit proposal process, given the facility's decades-long history of compliance violations and its affect on an overburdened community. West Oakland is a low-income community of color with a long history of suffering environmental pollution. Schnitzer's Facility is adjacent to the San Francisco Bay and within a mile of approximately 23,000 residents and many sensitive receptors, including schools, daycare centers, hospitals, senior living centers, and parks. BAAQMD has allowed Schnitzer to operate in this sensitive location even though Schnitzer has violated air quality regulations for many years. **35**

Our understanding is that BAAQMD has allowed Schnitzer to operate—and to continue to operate today—without a required Clean Air Act Title V permit, without installing Best Available Control Technology, and without permits for its stockpiles and torches that emit toxic air pollutants. **36**

BAAQMD has also allowed the Facility to operate for years even though the cancer risk caused by its **37**

emissions far exceeded regulatory trigger levels. Even after installing regenerative thermal oxidizers and packed bed scrubbers, Schnitzer continues to violate air quality rules and saddle a disproportionately impacted community with continued environmental and public health harms.

36
(Con't)

We implore BAAQMD to fully address these and other concerns raised by the community, and ensure no permit allows Schnitzer to skirt air quality rules and emit harmful air pollutants at expense of the surrounding community.

Sincerely,

KAREN CHEN
Attorney / Litigation Fellow

NATURAL RESOURCES DEFENSE COUNCIL
111 SUTTER STREET, 21ST FLOOR
SAN FRANCISCO, CA 94104
415-875-8261
KCHEN@NRDC.ORG
PRONOUNS: SHE/HER

Radius Recycling, Inc.
dba Schnitzer Steel Products Co.
1101 Embarcadero West
Oakland, CA 94607

October 4, 2024

Mr. Davis Zhu
Senior Air Quality Engineer
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
dzhu@baaqmd.gov

RE: Comments on Draft Permit Conditions of Permit to Operate Addendum – AN 30009

Dear Mr. Zhu:

Thank you for providing the draft permit conditions for Permit to Operate addendum for AN 30009. Radius Recycling, Inc. dba Schnitzer Steel Products Company (Radius) appreciates the opportunity to review the files and respectively submits the following comments to Bay Area Air Quality Management District (the District). Radius requests a few changes and clarifications to the draft Permit to Operate, as detailed below.

Condition 27348

Part 3

The District proposes to increase the minimum operating temperature for the Regenerative Thermal Oxidizers (RTOs) from 1600 °F to 1830 °F. Additionally, the District has specified compliance with this temperature is to be based on a 15-minute average, while the current permit does not have a specified averaging period. In order to meet a temperature limit based on 15-minute averages, Radius expects a setpoint at least 50 °F higher than the limit would be necessary to ensure compliance.

It is our understanding that the District determined the 1830 °F value based on April 2022 test data. As we have indicated in the past, 1700 °F is the recommended temperature setpoint provided by the RTO vendor. Radius initially operated the RTOs at a temperature of 1850 °F out of an abundance of caution to ensure that the precursor organic compound (POC) permit limits would be met. Operating at a temperature higher than the vendor's recommended limit of 1700 °F results in substantially more natural gas usage, generating more greenhouse gases as well as increasing NO_X emissions. In an effort to reduce emissions while ensuring continued compliance with permit limits, Radius performed the annual source test in April 2024 at an operating temperature of 1750 °F at both RTOs; compliance with NO_X, CO and VOC emission limits were confirmed at this lower operating temperature. To allow for normal fluctuations inside the RTO, Radius requests the minimum temperature for the RTOs to be specified as 1700 °F if compliance is based on an average over 15-minute period. Radius plans to request a further reduction in the minimum operating temperature to 1650 °F averaged over 15-minute period to enable operation at the manufacturer's recommended

setpoint of 1700 °F, and will perform a stack test at this requested temperature to ensure compliance with the applicable limits.

Additionally, the District has expressed concerns related to the destruction efficiency of polychlorinated biphenyls (PCBs) at lower RTO operating temperatures. Radius has consulted with the RTO vendor, and confirmed that the PCB destruction efficiency would not significantly change when the RTO is operated in the range of 1700 °F to 2000 °F. Table 1 below summarizes the PCB test results for the two source tests where the destruction efficiency was calculated, which further indicates that the PCB destruction efficiency is similar when the RTOs are operating at 1850 °F and 1750 °F.

2 (Con't)

Table 1. Post-2022 PCB Test Summary

Test Date	Run #	RTO Operating Temperature (°F)	Exhaust Stack Outlet Total (lb/hr)	RTO Inlet Total (lb/hr)	Estimated Destruction Efficiency
Feb- 2023	1	1850	4.10E-04	3.00E-03	86%
Feb- 2023	2	1850	3.10E-04	1.86E-03	83%
Apr- 2024	1	1750	9.60E-04	1.12E-02	91%
Apr- 2024	2	1749	4.80E-04	3.10E-03	85%
Apr- 2024	3	1751	4.90E-04	3.30E-03	85%

Part 9

The Districted proposed adding a pressure differential operating range of 5" to 10" of water for the Acid Gas Scrubbers (AGS). Based on the actual operation of the control trains (each of which consists of a venturi scrubber, an RTO, and an AGS), the air flow rate through the control train can only be set using one parameter, and that setpoint will determine the flow rate across the entire control train. The pressure drop within a certain piece of equipment cannot be changed to be something different from that achieved with the overall setpoint. Currently, Radius operates the control trains in a manner designed to meet the required pressure drop at the venturi scrubbers. The resulting pressure drop at the AGS units is not within the proposed pressure differential operating range in Part 9. Therefore, Radius requests removal of the pressure differential operating range limit for the AGS.

3

Part 11

The District has proposed to remove the ability of Radius to perform a Health Risk Assessment (HRA) under BAAQMD Regulation 2-5 if any of the emission limits in the table in Part 11 is exceeded. Additionally, the District has proposed to update several of the emission limits, and has proposed to provide the option to request an increase in the limits if Radius can demonstrate compliance with the risk limits under BAAQMD Regulation 2-5. However, an exceedance of any of the limits in Part 11 would constitute a violation of the permit until such time as the District has approved a change.

4

- Acrylonitrile: The District has proposed to add a limit of 4.2E-03 lb/hr for this compound. This compound was never detected during any source test performed at the Oakland facility, even prior to the installation of shredder controls. It appears that the District's current policy for

5

Radius's shredder is to use a value of 50% of the detection limit for any compound not detected before. This policy is inconsistent with the polices of CARB and OEHHA, which allow a value of zero emissions for a toxic air contaminant (TAC) if all of the test results at a facility for that TAC are below the detection limit. The April 2022 source test reported 50% of the detection level as the test result for acrylonitrile, which is 86% of the proposed limit. Considering the potential for variability in detection limits in each test due to factors outside of Radius's control, this proposed limit leaves little room for accounting these test variations and may result in violation of the proposed limit, even while acrylonitrile still remains below the detection level. Therefore, Radius requests that this proposed limit be removed because the limit is based on an assumption by the District that this compound is present even though it has not been detected at this facility either prior to or after installation of the RTOs.

5 (Con't)

- 1,3-butadiene: The District has proposed to increase this limit from 6.1E-04 lb/hr to 1.1E-03 lb/hr. However, similar to acrylonitrile, 1,3-butadiene was not detected in the 2022 test. The 2022 test result reported at 50% of the detection level, which is 83% of the proposed limit. 1,3-butadiene was only tested above the detection level in one of the three runs in the 2019 test (prior to installation of the RTOs), at a value of 21 ppb as compared with the detection level of 20 ppb. Since the 2019 test was for emissions from the shredder prior to installation of the control devices, it is reasonable to conclude that the post-control concentrations will be well below the detection level for this TAC. Radius requests removal of this proposed limit.

- Manganese: The District has proposed to retain the current limit of 1.1E-03 lb/hr. To allow for test variability, Radius requests that this limit be increased to 1.5E-03 lb/hr, which is the mean test result from 2022 plus two standard deviations.

6

- Mercury: The District has proposed to add a limit of 3.4E-03 lb/hr for this pollutant. Mercury was not detected in 2022 source test, and the reported result at 50% of the detection level was 3.35E-03 lb/hr, which is 99% of the proposed limit. Radius requests removal of this proposed limit.

7

- Naphthalene: The District has proposed to retain the limit of 3.0E-03 lb/hr for this pollutant. To allow for test variability, Radius requests that this limit be increased to 4.1E-03 lb/hr, which is the mean test result from 2022 plus two standard deviations.

8

- Nickel: The District proposed to reduce the limit for this pollutant from 1.5E-03 lb/hr to 4.8E-04 lb/hr. To allow for test variability, Radius requests that the current limit of 1.5E-03 lb/hr be retained.

9

For the proposed PAH limit, Radius proposes a clarification that this limit does not include naphthalene emissions (which are addressed separately), and that limit applies to the sum of the PAHs for which Table 2-5-1, footnote 8 in Regulation 2-5 shows a Potency Equivalence Factor to enable adjustment of the PAH emission rate to be on an "as benzo(a)pyrene" basis.

10

Finally, Radius proposes to maintain the flexibility of performing a HRA to ensure that the applicable requirements under Regulation 2-5 are not violated, as an alternative to the language revisions proposed by the District. The requested language is presented in Attachment 1.

4 (Con't)

Part 12

The District proposed to increase the testing frequency for NO_X emissions from the control system to quarterly from annually. Radius has tested NO_X emissions several times since the upgraded emission control system was installed in early 2022, and has demonstrated in both Standby Mode and Operation Mode that the NO_X emissions are less than 50% of the proposed NO_X limits. Therefore, Radius requests that the existing annual testing requirement for NO_X be retained.

11

Part 13

The District has proposed to change the testing frequency for TACs from once every five years to once every two years. Radius proposes to conduct a complete test program (including TACs) within 60 days of issuance of the PTO, and proposes to retain the current testing frequency of once every five years thereafter for TACs. Radius proposes the same updates to the testing frequency under Condition 27410, Part 4.

12

Condition 27410

Part 2

The Districted has proposed to add specific operating practices to minimize fugitive emissions from the shredder enclosure during shredder operation. While most these specific requirements appear to be obtained from Radius's Operation and Maintenance (O&M) Plan for the shredder enclosure, Radius believes that the permit should broadly set forth the requirements for the O&M plan. Therefore, Radius proposes the following changes:

- Part 2a: clarification that the O&M Plan will be maintained and followed with the District's approval. This will ensure the District's access to the O&M Plan and will require District approval of any amendments to the Plan.
- Part 2b: removal of the descriptions of the openings. These details are included in the O&M Plan.
- Part 2c: clarification of the timeline required for any repair needed based on the monthly enclosure inspection.
- Part 2e: removal of the requirement for pressure monitoring inside the enclosure with pressure monitoring devices. There is no appropriate location for installing such pressure monitoring devices, because they will either be inaccurate in terms of the measurement, or the sensors will be damaged frequently due to proximity to the shredder. Radius believes that compliance with the requirements for pressure drop across the venturi scrubbers and fan amperage will be sufficient to ensure that the capture efficiency of the enclosure will be maintained during shredder operation.

13

Part 4

The existing permit requires that the water application rates for the "infeed conveyor and the shredder" to be recorded for each source test. Radius would like to clarify that the water application rate to the "infeed conveyor" is not monitored because it is required to be applied "as needed". There are nozzles installed for water application inside of the shredder, and that water usage can be and has been tracked. Therefore, Radius proposes removal of the phrase "the infeed conveyor" from the requirement for recording the water application rates.

14

A copy of the draft permit with Radius's requested changes is provided in Attachment 1. The requested changes are highlighted in yellow.

If you have any questions or comments about the information presented in this letter, please do not hesitate to call me at (510) 912-7576 or email me at pgray@rdus.com.

Sincerely,

Pamela Gray
Senior Environmental Manager

Attachments

cc: Mariano Mandler(Radius)
Linda Shaffer (Radius)
Dane Morales (Schnitzer)
Gary Rubenstein (Foulweather Consulting)

ATTACHMENT 1

Red-Lined Draft Permit

VII. PERMIT CONDITIONS

Regenerative Thermal Oxidizers (A-15 and A-16) and Packed Bed Scrubbers (A-17 and A-18) are currently subject to Condition # 27348 and 27410. Proposed changes to Condition # 27348 and 27410 are shown in strikeout and underline format.

Condition # 27348

A-11 Venturi Scrubber, A-12 Venturi Scrubber, A-15 Regenerative Thermal Oxidizer, A-16 Regenerative Thermal Oxidizer, A-17 Packed Bed Scrubber, and A-18 Packed Bed Scrubber abating S-6 Shredder and S-7 In-feed Conveyor.

1. The owner/operator shall abate emissions from A-11 and A-12 Venturi Scrubbers with A-15 and A-16 Regenerative Thermal Oxidizers during all periods of operation. Combined flow rate shall not exceed 180,000 acfm.
(~~bB~~asis: Cumulative Increase, BACT/TBACT)

2. The owner/operator shall operate A-15 and A-16 each to meet the following VOC destruction efficiency requirements:
   a. Outlet VOC concentration of 20 ppmv or less; or
   b. All of the following standards depending on the applicable inlet VOC concentration:
   c. VOC destruction efficiency ≥ 98.5% if inlet VOC concentration > 2,000 ppmv;
   d. VOC destruction efficiency > 98% if inlet VOC concentration > 200 to < 2,000 ppmv;
   e. VOC destruction efficiency > 90% if inlet VOC concentration < 200 ppmv.
   (~~bB~~asis: Cumulative Increase; BACT/TBACT)

3. The owner/operator shall operate A-15 and A-16 at a minimum combustion zone temperature of ~~1600~~ ~~1830~~ 1700 degrees F, averaged over 15-minute period, at all times when the shredder S-6 is operating. The District may adjust this operating temperature limit if source test data demonstrate that alternate values are necessary for or capable of maintaining compliance with Part 2 above.
   (~~bB~~asis: Cumulative Increase; BACT/TBACT)

4. To determine compliance with the temperature requirement in these permit conditions, the owner/operator shall equip A-15 and A-16 each with a temperature measuring device capable of continuously measuring and recording the temperature in each regenerative thermal oxidizer. The owner/operator shall install, and maintain in accordance with manufacturer's recommendations, a temperature measuring device that meets the following criteria: the minimum and maximum measurable temperatures with the device are 560 degrees F and ~~1750~~1900 degrees F, respectively, and the minimum accuracy of the device over this temperature range shall be 1.0 percent of full-scale.

(~~b~~Basis: Cumulative Increase; BACT/TBACT)

5. The owner/operator shall report any non-compliance with Part 3 of this condition to the Director of the Compliance & Enforcement Division at the time that it is discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well at the time of occurrence.
(~~b~~Basis: Cumulative Increase, Regulation 2-5)

6 The temperature limit in Part 3 shall not apply during an "Allowable Temperature Excursion", provided that the temperature controller setpoint complies with the temperature limit. An Allowable Temperature Excursion is one of the following:
   a. A temperature excursion not exceeding 20 degrees F; or
   b. A temperature excursion for a period or periods which when combined are less than or equal to 15 minutes in any hour; or
   c. A temperature excursion for a period or periods which when combined are more than 15 minutes in any hour, provided that all three of the following criteria are met.
      i. the excursion does not exceed 50 degrees F;
      ii. the duration of the excursion does not exceed 24 hours; and
      iii. the total number of such excursions does not exceed 12 per calendar year (or any consecutive 12-month period).

   Two or more excursions greater than 15 minutes in duration occurring during the same 24-hour period shall be counted as one excursion toward the 12-excursion limit.
(~~b~~Basis: Regulation 2-1-403)

7. For each Allowable Temperature Excursion that exceeds 20 degrees F and 15 minutes in duration, the Permit Holder shall keep sufficient records to demonstrate that they meet the qualifying criteria described above. Records shall be retained for a minimum of five (or two years) years from the date of entry and shall be made available to the District upon request. Records shall include at least the following information:
   a. Temperature controller setpoint;
   b. Starting date and time, and duration of each Allowable Temperature Excursion;
   c. Measured temperature during each Allowable Temperature Excursion;
   d. Number of Allowable Temperature Excursions per month, and total number for the current calendar year; and
   e. All strip charts or other temperature records.
(~~b~~Basis: Regulation 2-1-403)

8. The owner/operator shall not use more than 1,332,980 therms combined during any consecutive twelve-month period in A-15 and A-16 regenerative thermal oxidizers.
(~~b~~Basis: Cumulative Increase)

9. The owner/operator shall abate emissions from A-15 and A-16 Regenerative Thermal Oxidizers with A-17 and A-18 Packed Bed Scrubbers during all periods of operation.

Exhaust gas flow rate to each Packed Bed Scrubber shall not exceed 90,000 acfm, averaged over a 1-hour period, and liquid flow rate shall be at least 720 gallons per minute, averaged over a 1-hour period. ~~The owner/operator shall maintain an effective pressure differential operating range of 5 to 10 inches of H2O across each packed bed scrubber.~~ The District may adjust these limits if source testing demonstrates that alternate values are necessary for or capable of maintaining compliance with the requirements of this Condition and the particulate emission limits in Condition 27410, Part 3.
(~~bB~~asis: Cumulative Increase, BACT/TBACT)

10. The owner/operator shall not emit more than following from A-15 and A-16 Regenerative Thermal Oxidizers at stacks P-17 and P-18:
    a. CO Limit: The owner/operator shall not emit more than 84 pounds of CO per million (MM) scf of fuel burned from either A-15 or A-16.
    b. Standby Mode NOx Limit: When there is no feed material entering the shredder (S-6), the owner/operator shall not emit more than 50 pounds of NOx per MM scf of fuel burned from either A-15 or A-16.
    c. Shredder Operation Mode NOx Limit: When there is feed material entering the shredder (S-6), the owner/operator shall not emit more than 4.23 pounds of NOx per hour from either A-15 or A-16.
    d. Annual NOx Limit: The owner/operator shall not emit more than 9.027 tons of NOx per year in total from A-15 and A-16 combined.

~~NOx CO~~
~~(lb/MMscf) (lb/MMscf)~~
~~A-15 50 84~~
~~A-16 50 84~~

(~~bB~~asis: RACT, Cumulative Increase, Source Test Method 13A and Method 6)

11. The owner/operator shall not emit more than the following toxic air contaminants from the exhaust of A-17 and A-18 Packed Bed Scrubbers, combined. ~~, unless the owner/operator complies with all of the procedures and limits in Parts 11a-d:~~
    a. ~~Within 60 days of receiving source test results demonstrating that total emissions from stack P-17 and P-18 combined exceed any one of the limits in this part, the owner/operator shall submit a permit application to the Air District to request revisions in the TAC emission limits below. The permit application shall include all information required to conduct an updated health risk assessment for the Shredder, Thermal Oxidizers, and Acid Gas Scrubbers, including new proposed emission limits for fugitive emissions from the shredder building and for each stack for the full list of potential TACs for these devices, as identified in Part 13, that also demonstrate compliance with the source test results.~~
    b. ~~The health risk assessment for this project shall demonstrate that total health risks resulting from the proposed limits on shredder building fugitive emissions, P-17 emissions, and P-18 emissions do not exceed the lower of (a) a cancer risk limit of 3.0 in a million for this project or (b) the applicable project cancer risk limit identified in Regulation 2, Rule 5. The health risk values shall be evaluated at the~~

~~Maximally Exposed Individual Resident (MEIR) and Maximally Exposed Individual Worker (MEIW), but not the Point of Maximum Impact (PMI). In addition, the health risk assessment for this project shall demonstrate compliance with any other applicable limits or requirements of Regulation 2, Rule 5.~~

c. ~~The health risk assessment shall be conducted in accordance with the Regulation 2-5 procedures in effect at the time the HRA is conducted.~~

d. ~~If the health risk assessment for the revised TAC emissions limits for the shredder and its associated abatement equipment find that health risks exceed any of the limits described in Part 11b, the owner/operator shall submit a compliance plan to reduced TAC emissions, change operational parameters, or make other improvements such that the health risk assessment meets the requirements of Part 11b. This compliance plan shall be submitted to the District within 60 days of notification by the District that such a plan is required.~~

Pollutant	Total Stack Emissions (P-17 + P-18) (lbs/hour)
~~Acrylonitrile~~	~~4.2E-03~~
Arsenic	1.1E-04 ~~8.2E-06~~
Benzene	2.8E-02 ~~2.4E-02~~
~~Butadiene, 1,3-~~	~~1.1E-03~~ ~~6.1E-04~~
Cadmium	4.4E-04 ~~5.0E-04~~
Chromium, Hexavalent	1.0E-04 ~~7.8E-05~~
Dioxins/Furans	2.0E-08
Ethyl Benzene	4.4E-02 ~~5.0E-02~~
Lead	3.2E-03 ~~3.2E-03~~
Manganese	~~1.1E-03~~ 1.5E-03
~~Mercury~~	~~3.4E-03~~
Naphthalene	~~3.0E-03~~ 4.1E-03
Nickel	~~4.8E-04~~ 1.5E-03
PAHs, as benzo(a)pyrene[1]	1.6E-03
PCBs	1.1E-03 ~~3.4E-04~~
Toluene	2.4E-01 ~~2.0E-01~~
Xylenes	2.4E-01

1. This limit excludes naphthalene, and applies to the sum of emissions of all PAHs for which a Potency Equivalency Factor is shown in Regulation 2-5, Table 2-5-1, footnote 8.

If source testing shows that toxic air contaminant emissions exceed these permit limits, the owner/operator may apply to increase the limits if it can demonstrate that the increased emissions will not cause health risks exceeding any applicable limits or requirements of Regulation 2, Rule 5, but the owner/operator shall not operate with emissions exceeding these permit limits until revised limits are approved by the Air District. An exceedance of any one or more of these limits shall not constitute a violation of this permit condition if the owner/operator demonstrates, based on a health risk assessment approved by the Air District, that measured emission values will not cause health risks exceeding any applicable requirements of Regulation 2, Rule 5. (~~bB~~asis: Regulation 2-5)

12. Not later than 60 days from the startup of A-15 and/or A-16 and annually thereafter, the owner/operator shall conduct source tests to determine ~~initial~~ compliance with the limits in ~~pP~~arts 2 and 10. ~~After [enter PO issue date], the owner/operator shall conduct quarterly source tests for NOx during Shredder Operation Mode to determine compliance with limits in Part 10 c and d.~~ The owner/operator shall submit the source test results to ~~the~~ Air District staff no later than 60 days after the source test. ~~After at least two years of quarterly testing demonstrating continuous compliance with the limits in Part 10 c and d, the owner/operator may submit a permit application to reduce the testing frequency.~~ (~~bB~~asis: Cumulative Increase, Regulation 2-5)

13. Not later than 60 days from ~~the startup of A-15 and/or A-16~~ [enter PO issue date] and every ~~five~~ ~~two~~ five years thereafter, the owner/operator shall conduct source tests to determine compliance with the limits in ~~pP~~art 11. In addition to the compounds identified in Part 11, this source test shall include, as a minimum, the full list of potential TACs for the Shredder, Thermal Oxidizers, and Acid Gas Scrubbers identified below. The owner/operator shall submit the source test results to ~~the~~ Air District staff no later than 60 days after the source test. (~~bB~~asis: Cumulative Increase, Regulation 2-5)

Potential TACs	**Potential TACs**
Acetaldehyde	Perchloroethylene
Arsenic	PCBs
Benzene	Propylene
Beryllium	PAHs (as benzo(a)pyrene)
Butadiene, 1,3-	Selenium
Cadmium	Styrene
Chromium, Hexavalent	Toluene
Cobalt	Vanadium
Copper	Xylenes (mixed)
Ethyl Benzene	o-Xylene
Formaldehyde	Cumene
Hexane	Hexachloroethane (PCA)
Isopropyl Alcohol	Methyl Isobutyl Ketone (MiBK)
Lead	Trimethylpentane, 2,2,4-

Manganese	Acrylonitrile
Methanol	1,1 Dichloroethene
Methyl Chloroform	Carbon Disulfide
Methyl Ethyl Ketone	1,4-Dioxane
Methylene Chloride	1,4-Dichlorobenzene

Potential TACs	**Potential TACs**
Mercury	Hydrogen Fluoride
Naphthalene	Hydrogen Chloride
Nickel	
Polychlorinated Dibenzo-p-Dioxins (PCDDs), Polychlorinated Dibenzo Furans (PCDFs), and Dioxin-like PCBs*	

* This is a large group of compounds with different toxic equivalency factors (TEF) values as listed in Table 2-5-1.

14. The owner/operator shall comply with all applicable testing requirements as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing.
(~~b~~Basis: Cumulative Increase, Regulation 2-5)

15. In order to demonstrate compliance with the above parts of this permit condition, the owner/operator shall maintain the following monthly records in a District-approved log for at least 24 months from the date of entry. Log entries shall be retained on-site and made available to District staff upon request:
    a. Monthly quantity of Natural Gas Consumed in A-15 and A-16 combined.
    b. Monthly quantities shall be totaled for each consecutive twelve-month period.
    c. All source test records required per Parts 12 and 13.
    (~~b~~Basis: Cumulative Increase)

End Conditions

Condition # 27410
This permit condition became effective upon the installation and start-up of the Regenerative Thermal Oxidizers (A-15 and A-16) and the Packed Bed Scrubbers (A-17 and A-18).

S-6 Shredder and S-7 Infeed Conveyor; abated by A-6 Water Sprays, A-11 Venturi Scrubber, A-12 Venturi Scrubber, A-15 Regenerative Thermal Oxidizer, A-16 Regenerative Thermal Oxidizer, A-17 Packed Bed Scrubber, and A-18 Packed Bed Scrubber.
(Revision 1: A #14194, 6/16/06; Revision 2: A #16721, 4/9/09; Revision 3: A #27762, 11/10/16; Revision 4: A #27762, 11/20/2020, Revision 5: A #30009, 8/26/2021; Revision

6: A #30009, 3/2/2022, ~~12/30/2022~~ [enter PO issue date])

1. The owner/operator shall not exceed the scrap-in throughput limit of 720,000 tons in any calendar year at this facility.

   (Basis: Regulations 2-1-301–- baseline 2005 production level of 431,471 tons/year–- and 2-5-302 and Cumulative Increase for the incremental throughput)

2. The owner/operator shall enclose the shredder, S-6, and shall vent the captured shredder emissions to the Venturi Scrubbers, A-11 and A-12, followed by Regenerative Thermal Oxidizers, A-15 and A-16, followed by Packed Bed Scrubbers, A-17 and A-18, during all times that S-6 is operating. The owner/operator shall minimize fugitive emissions from the shredder enclosure during shredder operation by meeting the following requirements:

   a. maintaining and following a~~n~~ District-approved operating and maintenance plan (O&M Plan) for the shredder enclosure and associated equipment and keeping records of all monitoring, inspections, maintenance, and repair events;

   ~~b.~~ ~~(a) designing the enclosure such that the total surface area of all openings in the enclosure does not exceed 5% of the total surface area of the enclosure walls, floor, and ceiling.~~ cClosing ~~the following~~ openings as specified in the approved O&M Plan prior to shredder operation~~.: rubber roll-up door (N-2) in the north face, steel door (E-1) in the east face, personnel door (S-1) in the south face, and steel door (S-3) in the south face~~;

   ~~(b)~~ using and maintaining blast curtain walls or strip curtains on the inlet feed conveyor opening and as specified in the approved O&M Plan~~and on all partial openings in the east and south faces of the enclosure~~; ~~and~~

   c.~~b.~~ inspecting the enclosure, curtain walls and strip curtains on a monthly basis; repairing or replacing damaged curtain materials ~~within 7 days of discovery;~~ and repairing any damages to the enclosure within 14 days of discovery;

   d.c. ~~(c) ensuring that the ventilation fan is operating within its design range.,~~ operating the ventilation fans such that the average amperage for the two fans is at least 82 amperes, averaged over a 1-hour period, during shredder operation; and monitoring and recording fan amperes at least once per 15-minute period during shredder operation;

   e.~~d.~~ ~~identifying a minimum of 4 Air District approved locations for monitoring air flow direction and pressure drop during shredder operation; verifying that air is flowing into the enclosure at each enclosure monitoring location once per operating day; monitoring for pressure drop once per operating day at each monitoring location; maintaining an average pressure drop of at least 0.007 inches of water averaged over all enclosure monitoring locations; maintaining records of all pressure drop measurements.~~

   ~~The owner/operator shall operate each Venturi Scrubber in accordance with manufacture specifications. The owner/operator shall demonstrate this by maintaining a minimum water flow rate of 260~~300 ~~gallons per minute (gpm), averaged over a 1-hour period, to each venturi scrubber and an effective pressure differential~~

~~operating range 15-22 inches of H2O across each venturi scrubber, averaged over a 1-hour period. The District may adjust these operating parameter limits if source test data demonstrates that alternate values are necessary for or capable of maintaining compliance with the particulate emission limits in Part 3.~~

(Basis: Regulation 2, Rule 5 Project Risk Limits and TBACT)

3. Total emissions from the S-6 Auto Shredder shall not exceed any of the emission limits listed below:

   a. Maximum Permitted Emission Rates:

	P-17 and P-18 Pounds/Hour Per Stack	P-17 and P-18 Tons/Year Per Stack
PM10 (total filterable + condensable)	3.11	3.32
POC (calculated as methane)	2.74	2.55

   b. Total particulate emissions from stacks P-17 and P-18 shall not exceed a grain loading of 0.0048 grains/dscf in each stack as determined in accordance with Regulation 6-1-602.1.

   c. The owner/operator shall demonstrate compliance with the Part 3a stack emission limits as described in Part 4.

   d. The owner/operator shall operate each Venturi Scrubber in accordance with manufacturer specifications. The owner/operator shall maintain a minimum water flow rate of 260~~300~~ gallons per minute (gpm), averaged over a 1-hour period, to each venturi scrubber and an effective pressure differential operating range of 15 to 22 inches of H2O across each venturi scrubber. The District may adjust these operating parameter limits if source test data demonstrates that alternate values are necessary for or capable of maintaining compliance with the particulate emission limits in Part 3.

   (Basis: Cumulative Increase, BACT, TBACT, and Regulations 2-5-302 and 8-2-301)

4. Source Testing Requirements for Part 3:

   a. The owner/operator shall conduct quarterly monitoring for the total carbon concentration in stacks P-17 and P-18, using authorized procedures and methods, to demonstrate compliance with Part 3a and Regulation 8-2-301. This quarterly monitoring shall continue until an organic abatement system is operating and continued compliance with Regulation 8-2-301 has been demonstrated.

   b. On an annual basis, unless noted otherwise, the owner/operator shall conduct a District approved source test at stacks P-17 and P-18, while the S-6 Auto Shredder is operating at or near the maximum operating rate, to demonstrate compliance with the stack emission limits in Parts 3a-b and Regulation 8-2-301.

The owner/operator shall record the shredder processing rate, the water application rates for ~~the infeed conveyor and~~ the shredder, the water flow rates and the pressure differential operating ranges at each venturi scrubber and at each packed bed scrubber, and the ventilation fan amperage during the source test. The source test shall determine the hourly emission rate and the average emission factor (pounds of pollutant per ton of material processed by the shredder) for the following compounds:

- total carbon (calculated as methane and as defined in Regulation 8-2-202) shall be determined by Air District approved methods, such as EPA Methods 25A and 18,
- total POC (calculated as methane), where total POC = total carbon (excluding methane only) – total NPOC. Total NPOC (calculated as methane) shall be determined by Air District approved methods, such as EPA Method 18 and EPA Method TO-15 or other similar GC/MS methods. Total NPOC is the sum of all NPOCs (other than methane) identified in Regulation 2-1-207, expressed as methane.
- total particulate emissions shall be determined using EPA Method 5/202. All measured total particulate emissions shall be assumed to be PM10 for comparison to the limits in Part 3a.
- Full speciation of organic TACs shall be determined by Air District approved methods, such as EPA Method TO-15 or other similar GC/MS methods.
- PCBs shall be determined by Air District approved methods, such as CARB Method 428. (This test shall be conducted ~~within 90 days of Permit to Operate issuance and~~ once every ~~four~~ ~~two~~ five years ~~thereafter~~.)
- PAHs and naphthalene shall be determined by Air District approved methods, such as CARB Method 429. (This test shall be conducted ~~within 90 days of Permit to Operate issuance and~~ once every ~~four~~ ~~two~~ five years ~~thereafter~~.)
- Full set of metal TACs (including arsenic (As), beryllium (Be), cadmium (Cd), chromium (Cr) which includes total chromium and hexavalent chromium (Cr VI), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), and selenium (Se)), shall be determined using Air District approved procedures for each compound, including CARB Method 425 for hexavalent chromium. (This test shall be conducted ~~within 90 days of Permit to Operate issuance and~~ once every ~~four~~ ~~two~~ five years ~~thereafter~~.)
- Dioxin and furans shall be determined by Air District approved methods, such as EPA Method 23/23A.
- Annual emissions for each stack shall be calculated based on the most recent 12-month shredder feedstock throughput rate and the pounds/ton emission factors determined by the most recent source test for total POC and total particulate emissions. Annual stack emission rates shall be compared to the Part 3a limits.

The annual source test shall also determine the outlet grain loading and the concentration of total carbon in stacks P-17 and P-18 to demonstrate compliance with Part 3b Regulation 8-2-301 using Air District approved methods.

c. The owner/operator shall submit a source test protocol and notification of the scheduled source test date to the Air District's Source Test Section Manager and to the Permit Engineer at least 30 days prior to the scheduled test date.

d. The owner/operator shall notify the Source Test Section Manager of any changes to the scheduled test date as soon as possible.

e. The owner/operator shall submit a copy of the source test report to the Source Test Section Manager and the Permit Engineer within 60 days of the test date.

(Basis: Cumulative Increase, TBACT and Regulations 2-5-302 and 8-2-301)

5. The owner/operator shall apply water sprays (A-6) at the shredder, S-6, and infeed conveyor, S-7, at sufficient rates to ensure that non-metallic material exiting the sources is moist to the touch at all times of operation.
(Basis: Cumulative Increase, TBACT; and Regulation 2-5-302)

6. The owner/operator shall operate the Recycling Center in such a manner that particulate emissions into the atmosphere from any operation/equipment for a period or periods aggregating more than three minutes in any hour shall not cause a visible emission which is as dark or darker than No. 0.5 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree or result in fallout on adjacent property in such quantities as to cause public nuisance per District Regulation 1-301.
(Basis: Regulations 1-301 and 6-1-301)

7. The owner/operator shall use water spray to minimize fugitive dust emissions from material/scrap handling and storage to comply with Part 6. The owner/operator shall operate the facility at all times in accordance with its approved Emissions Minimization Plan (EMP).
(Basis: Regulations 1-301, 6-1-301, and 6-4-301)

8. The owner/operator shall not exceed a total of 26 ship calls and 63,875 truck calls per calendar year to haul in/out scrap/materials at the facility.
(Basis: health risk assessment for CEQA review)

9. In order to demonstrate compliance with Parts 1 and 8, the owner/operator shall keep records of monthly and yearly throughput of shredder feedstock materials, ship calls and truck calls in a District approved log. Shredder feedstock shall be totaled for each consecutive rolling 12-month period. All records shall be maintained for a period of at least 5 years from the date of data entry and shall be made available to Air District staff for inspection upon request.
(Basis: Regulations 2-1-301 and 2-5-302, Cumulative Increase, CEQA)

End Conditions

Davis Zhu

From: Gary Rubenstein <gary@foulweatherconsulting.com>
Sent: Wednesday, October 23, 2024 3:13 PM
To: Kevin Oei; Davis Zhu; Daniel Alrick
Cc: Gary Rubenstein; Hui Cheng
Subject: FW: Oakland STP AERMOD-ready met data

Kevin/Davis/Dan – This is one of the things that is confusing for us about the met data. The BAAQMD website has a dataset that includes Oakland STP data for 2013-2017. We have an Oakland STP AERMOD input file used for a previous BAAQMD analysis that uses a 2009-2013 Oakland STP dataset. Jim's email below indicates that the only Oakland STP dataset that meets EPA completeness criteria is 2010-2014. And our review of the met tower height at that stati**30**on indicates that it does not comply with EPA siting criteria because the anemometer height is not at **30**least 2.5 times the height of the building it is atop. We're not trying to argue about this; we just want to be sure we are all using a consistent met data set that meets EPA criteria and is representative of Schnitzer's Oakland facility. 38 39

Gary

From: Hui Cheng <hcheng@trinityconsultants.com>
Sent: Wednesday, October 23, 2024 3:02 PM
To: James Cordova <JCordova@baaqmd.gov>
Cc: Gary Rubenstein <gary@foulweatherconsulting.com>
Subject: RE: Oakland STP AERMOD-ready met data

Hi Jim,

Thanks for the note. I have submitted the request through the portal. The request number is 2024-10-0199.

Hui Cheng, P.E. (she/her)
Managing Consultant

P 253.867.5600 ext. 4803 | D 253.262.5888
Trinity Consultants – Seattle Office
315 5th Ave. S., Suite 830, Seattle, WA 98104
Email: hcheng@trinityconsultants.com

Book time to meet with me

From: James Cordova <JCordova@baaqmd.gov>
Sent: Wednesday, October 23, 2024 2:49 PM
To: Hui Cheng <hcheng@trinityconsultants.com>
Subject: Oakland STP AERMOD-ready met data

Hello Hui,

Please submit a Public Records Request at our Public Records Portal (Request Public Records) for the AERMOD-ready Oakland STP data. Please note that the 2009 data do not meet the 90% data capture rate by discrete quarter recommended by EPA guidance for regulatory modeling. The years that do meet the 90% data capture rate are 2010 through 2014. In your request, please indicate the years you want and list me as your point of contact.

Regards,

Jim

James Cordova
Assessment, Inventory and Modeling Division
Modeling and Analysis Section
The Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
Office: 415.749.5104
jcordova@baaqmd.gov | www.baaqmd.gov

Appendix B:

Storage Pile & Torch Cutting Exemption Analysis

Exemption Analysis Report
Material Storage Piles and Torch Cutting Operations
Radius Recycling (f/k/a Schnitzer Steel Products Company)
Facility ID Number 208

July 2025

Radius Recycling (formerly known as Schnitzer Steel Products Company[1]) operates a metal shredding and recycling facility located in Oakland, California. The facility processes end-of-life automobiles, appliances, and other scrap metal items for recycling. The facility's principal means of doing so is a large electric hammermill, or "shredder," which shreds the material into fist-sized chunks for shipment to recyclers. For some larger items that cannot be processed in the shredder, Radius Recycling cuts them into smaller pieces using shears and torches.

The facility operates under a permit to operate issued by the Air District. The permit covers emissions from various items of equipment at the facility, including the shredder and certain other equipment that require a permit under Air District regulations. In addition to this equipment covered by the permit, Radius Recycling also has other equipment and operations that do not require a permit from the Air District. These operations qualify for one or more exemptions from permitting requirements under Air District Regulation 2.

Among the operations that have historically been treated as exempt from permitting requirements are (i) various storage piles, in which Radius Recycling stores materials coming into the facility for processing, materials in various stages of the shredding and sorting process, and finished-product materials leaving the facility; and (ii) torch cutting used to cut large pieces of steel into smaller sections. The Air District has always considered these operations to be exempt, and so it has never issued a permit for them. Questions have been raised recently from various quarters regarding the applicability of these exemptions, however. The Air District has therefore conducted a more formal analysis to evaluate whether the material storage piles and torch cutting operations qualify as exempt from permitting requirements. This report summarizes the Air District's analysis and conclusions.

Based on the best available analytical tools and information currently available, the facility's storage piles and torch cutting operations qualify for exemptions from permitting under various provisions in Regulation 2, Rule 1 (Rule 2-1). As explained in more detail herein, both types of operations are covered by exemptions specified in Rule 2-1, and neither involves significant emissions or any significant public health risk that would preclude exemption eligibility. The Air District is continuing to evaluate these operations and may revisit this analysis if further

[1] Schnitzer Steel Products Company recently changed its name to Radius Recycling, Inc. This report uses the new Radius Recycling name, although other Air District documents use the older Schnitzer Steel name. These references refer to one and the same company and one and the same facility.

information comes to light. Based on current information, however, the evidence does not show that Radius Recycling must obtain a permit for the storage piles or torch cutting operations.[2]

I. EXEMPTION ANALYSIS FOR MATERIAL STORAGE PILES

Radius Recycling's material storage piles have been an area of developing concern recently for several reasons. First, storage of "Non-Ferrous Raw" material from the shredder (described in more detail below) has been the source of "Light Fibrous Material" (LFM) that has been blown from the storage piles into the surrounding community, although recent efforts have reduced the LFM traveling offsite. The LFM has been found to contain toxic heavy metals and has been the subject of enforcement action by the Department of Toxic Substances Control (DTSC). Second, Radius Recycling has had three major fires in its storage piles, in 2018, 2020, and 2023. These developments have made the storage piles a subject of concern for regulators (including the Air District, DTSC, the U.S. Environmental Protection Agency (USEPA), and others), for community members, and for neighboring businesses. One such business that had planned to establish operations near the facility (the Athletics Investment Group) filed three lawsuits regarding these and related issues. The Air District has therefore conducted this analysis to evaluate the applicability of permitting exemptions for these sources more closely.

A. Description of Storage Pile Operations

Radius Recycling stores scrap material in various piles as it moves through the facility. Raw bulk scrap metal is brought on-site by trucks and rail, inspected for acceptability, and sorted into stockpiles for further processing. These infeed piles fall into two categories:

- **Shredder Feedstock:** Scrap material that will be processed in the shredder, including compressed automobiles, appliances and light iron scrap metal.
- **Heavy Melting Scrap:** Scrap material that is too large or is otherwise inappropriate for processing in the shredder. This material may be processed by shear cutting or torch cutting into smaller pieces for shipment.

These piles are sprayed with water in accordance with Radius Recycling's Emissions Minimization Plan (EMP).[3]

---

[2] Note that this report analyzes permit exemption applicability for Radius Recycling's operations based on the Air District's current permit regulations. It does not assess whether the regulations should be changed to require permits for these types of operations. The Air District is currently undertaking a review of the regulations applicable to metal shredding facilities, and one question being evaluated is whether storage piles at metal shredding operations should be subject to additional permitting requirements. See www.baaqmd.gov/en/rules-and-compliance/rule-development/metal-recycling-and-shredding for more information.

[3] Emissions Minimization Plan, Regulation 6, Particulate Matter, Rule 4 Metal Recycling and Shredding Operations, Schnitzer Steel Products Co. dba Radius Recycling (April 2024), available at: www.baaqmd.gov/~/media/files/compliance-and-enforcement/metal-facilities/schnitzer-regulation-6-rule-4-emissions-minimization-plan-04092024-pdf.pdf?rev=4f5aac125f1e4c808f6b0940d3a927b5&sc_lang=vi-vn. Air District Rule 6-4 requires such plans for all regulated metal shredding and recycling facilities, and Radius Recycling's permit requires implementation of these measures. *See* Condition 27085 ¶ 7 & Condition 27410 ¶ 7.

The shredder feedstock material is loaded onto the infeed conveyor and fed into the metal shredder for shredding. Water is used continuously throughout the process to keep the material wet. The shredded material exiting the shredder is then separated into ferrous material (which is magnetic) and non-ferrous material (which is not magnetic) using a large drum magnet. The sorted material is then deposited into two piles:

- **Ferrous Metals:** The ferrous metal separated out by the drum magnet, which is stored in piles at the facility and eventually loaded onto cargo ships for export.
- **Non-Ferrous Raw (NFR):** The non-ferrous material that is not separated out by the drum magnet, which is a mixture containing non-ferrous materials that were contained in the scrap, including (i) non-ferrous metals such as aluminum, copper, brass and zinc; and (ii) and non-metallic materials that may have been in the scrap products that were shredded such as plastics, rubber, glass, foam, fabrics, and other debris.[4] A conveyor takes the NFR material to a large NFR pile, where it is kept temporarily until trucks transport it to the Joint Products Plant for further processing. Starting in late 2023, the NFR pile has been surrounded by 3-sided, 17-foot high enclosure made of two levels of shipping containers stacked on top of each other.

In the final step in the process, Radius Recycling sorts the NFR in the Joint Products Plant to recover usable materials. The first half of this operation is conducted in the fully enclosed Joint Products Plant building, which is equipped with a baghouse to abate particulate matter emissions. The second half of the operation uses water immersion to separate materials. The Joint Products Plant operation results in multiple grades and sizes of recovered metals at the end of the Joint Products Plant processing lines, as well as residual LFM. The LFM is mixed with cement to stabilize any residual metals in the waste and is disposed of at local landfills that use the LFM as alternative daily cover material. This final product is called chemically treated metal shredder residue (CTMSR). These materials are stored in piles consisting of the following:

- **Non-Ferrous Final Products:** These are the non-ferrous metals (also known as "zorba") recovered through processing at the Joint Products Plant.
- **CTMSR:** This waste product that is loaded into trucks inside the Joint Products Plant building and taken off-site for disposal.

The number and size of the individual piles at the facility vary over time based on how much material is being processed, and of what types. But generally there are 10-11 storage piles at any given time. Figure 1 below provides a Google Earth (2024 version) satellite image showing 11 stockpiles at that time. The total footprint area for the 11 stockpiles is approximately 5.5 acres, with the base area of the largest stockpile being approximately 1.5 acres. In accordance with the Air District's general practice, all piles that contain the same type of material have been grouped together as a single emissions source for purposes of this analysis.

[4] These lighter materials are what creates the LFM that was the subject of DTSC's enforcement action.

Figure 1: Storage Piles at the Radius Recycling Facility, with Approximate Boundaries Outlined in Yellow

B. Relevant Exemptions from Permit Requirements

Air District Regulation 2-1-115.1 exempts specified types of particulate matter sources at vehicle shredding facilities and other similar facilities from the permit requirements of Regulations 2-1-301 (Authority to Construct) and 2-1-302 (Permit to Operate). Subsection 2-1-115.1.4.5 specifies that the exemption applies to operating, loading and unloading storage and weigh hopper/bin systems processing exclusively material with a moisture content greater than or equal to 5 percent by weight. The storage piles at Radius Recycling's facility constitute the facility's storage system, and the facility is a vehicle shredding facility. The storage piles are therefore eligible for this exemption, provided the materials are adequately wetted to a moisture content of at least 5%.

The exemption is limited to sources that do not require permitting pursuant to Regulation 2-1-319, however. Regulation 2-1-319 provides that notwithstanding the Section 2-1-115.1.4.5 exemption, a source remains subject to permitting requirements if (i) it emits any regulated air pollutant (except greenhouse gases) in an amount greater than 5 tons per year, after abatement; or

(ii) it is subject to the requirements of Regulations 2-1-316, -317, or -318. Regulations 2-1-316, -317, and -318 impose the following requirements for the exemption to apply:

- **Section 2-1-316** requires that the source must comply with the Toxic Air Contaminant risk requirements in Regulation 2-5-301 and 2-5-302, which require:
  - 2-5-301: The source must use the "Best Available Control Technology for Toxics" (as defined in Section 2-5-205) if it has a carcinogenic risk greater than 1.0 chances per one million population exposed, and/or a chronic Hazard Index greater than 0.20.[5]
  - 2-5-302: The project must not have a carcinogenic risk greater than 10 chances per one million population exposed (or greater than 6 per one million if it is in an Overburdened Community); and must not have a chronic or acute Hazard Index greater than 1.0.

  In addition, Section 2-1-316 requires that the source (and other sources that are part of the same proposed construction or modification) must not emit 2.5 tons per year or more of any single Hazardous Air Pollutant, or 6.25 tons per year or more of any combination of Hazardous Air Pollutants.

- **Section 2-1-317** requires that the source must not have received more than one public nuisance violation under Regulation 1 or Health & Safety Code Section 41700 within any 180-day period;

- **Section 2-1-318** requires that the source must not emit more than specified amounts of eight listed pollutants, if the facility emits over 250 tons per year of any "PSD pollutant" as defined in Regulation 2-2-223; or over 100 tons per year if the facility is in one of the 28 categories listed in Section 169(1) of the Clean Air Act, 42 U.S.C. § 7479(1).

It is also worth noting that, even if these storage piles did not technically fall within the language of the Regulation 2-1-115.1.4.5 exemption (which they do), they may still be exempt under Regulation 2-1-128.19, which provides an exemption for sources that are "deemed … to be equivalent to a source or operation which is expressly exempted by Sections 2-1-113 through 128." This regulation provides for the Section 115.1.4.5 exemption to be extended to other sources where the same rationales for not requiring a permit apply.

---

[5] Carcinogenic (cancer-causing) risk is evaluated by assessing the level of exposure of the "maximally exposed individual," usually the person closest to the emissions source. It is measured by assuming that one million people would be exposed at that level of exposure for an entire lifetime. The carcinogenic risk is specified as the number of additional cancer cases one would expect to develop out of that population of one million exposed people. One cancer per million exposed population means that if one million people were exposed to that level of exposure for a lifetime, one would expect one additional cancer case in that population.

Non-cancer toxic health risk is evaluated using a "Hazard Index" (HI). The HI is a health-based guidance value that is designed to protect sensitive populations against the noncancer health effects from short- and long-term exposure to TAC emissions. An HI value of 1 (HI = 1) corresponds to the level of TAC exposure below which there is not expected to be any observable impacts on human health, based on medical research and scientific studies. An HI value below 1 (HI < 1) indicates that TAC exposure is considered safe and is not expected to cause any health problems. An HI value above 1 (HI > 1) indicates that adverse health impacts may start to be observed.

C. Exemption Analysis

The Air District has evaluated the storage piles to determine whether they qualify as exempt from permitting requirements under Regulation 2. The analysis below addresses each element of the exemption provisions outlined in the preceding section.

1. Public Nuisance

The storage piles satisfy the requirement not to have more than one public nuisance violation issued within a 180-day period. The Air District has issued one public nuisance violation to Radius Recycling during the last five years: NOV A61931, issued on August 10, 2023, for the August 9-10, 2023, fire in a temporary pre-shred storage pile. Since no more than one public nuisance violation has been issued within any 180-day period, Regulation 2-1-317 does not preclude Radius Recycling's storage piles from using the exemption in Regulation 2-1-115.1.4.5.

2. Moisture Content

The storage piles also satisfy the requirement to have a moisture content of at least 5%.

For the infeed piles (the Shredder Feedstock and Heavy Melting Scrap piles) and the shredded Ferrous Metals piles, the individual pieces of metal scrap, metal parts and metal products are too large and/or too heavy to become airborne and are not an emissions concern. The air pollutant emissions concern with these storage piles arises because they contain small particles of dust, dirt, rust and similar material that can become airborne during storage or handling. Radius Recycling's permit conditions and the Emissions Minimization Plan (EMP) require that it apply sufficient water sprays to all storage piles to minimize fugitive dust emissions during material handling and storage. Radius Recycling uses water cannons, fog misters, and water trucks to control emissions from all storage, loading, and unloading operations. These watering practices drench the Infeed and Shredded Ferrous Storage Piles with water, keeping the moisture content of any small particulate debris on the individual pieces of metal well over 5%.[6] The dirt and dust that presents the air pollution concern is therefore adequately wetted to the extent required to qualify for the Regulation 2-1-115.1.4.5 exemption.

The NFR pile contains greater quantities of lighter materials that can become airborne – i.e., the LFM discussed above. This material is also kept heavily wetted. The shredder itself uses large amounts of water when it shreds the materials, and the shredded material exiting the shredder is quenched with water, which results in the materials exiting the shredder being heavily saturated.

[6] Moreover, to the extent that the dust and dirt on the infeed scrap material could be below 5% moisture content, Radius Recycling would be able to address any such deficiency by increasing the watering intensity. Low moisture content can be remedied by increasing the moisture content; it does not invalidate the applicability of the Regulation 2-1-115.1.4.5 exemption for all time.

Monthly sampling of the water content of the NFR material exiting the shredder, prior to processing in the Joint Products Plant, consistently shows a moisture content of well over 5%.[7]

The final storage piles holding the Non-Ferrous Final Products and CTMSR after processing in the Joint Products Plant are also required to be kept wetted by Radius Recycling's permit conditions and Emissions Minimization Plan. Materials are immersed in water as part of the separation and recovery process, and additional water is added to the piles after separation. The Joint Products Pant piles also satisfy the 5% moisture content requirement.

3. Storage Pile Emissions and Health Risks

The other elements necessary to be eligible for an exemption depend on emissions from the piles, including (i) the amount of the emissions, which must be below the various limitations specified in Regulations 2-1-316, -317, and -318; and (ii) the public health risk associated with the emissions, which must not exceed the risk limits of Regulations 2-5-301 and 2-5-302. In order to evaluate these elements, the Air District took the approach of calculating the emissions and health risk impacts based on a worst-case scenario assuming the highest emissions and highest health risk that would be expected from any of the various piles at the facility. If the highest possible emissions and health risk impacts calculated using the most conservative assumptions for the worst-case storage pile shows that the pile qualifies for an exemption, then one can be confident that all other piles that have a lower potential for emissions and health impacts also qualify for the exemption.

The Air District used the NFR pile as the basis for this conservative worst-case-assumptions approach. The NFR pile is the pile that has generated the most concern from regulators and others because it contains significant amounts of LFM, the light fibrous material that results from the shredding of foam, fabrics, rubber and similar materials contained within automobiles, appliances and similar shredder feedstocks. Emissions of LFM have been found in the surrounding community and have driven the regulatory and enforcement responses by DTSC and other agencies. Moreover, by its nature NFR is the material that is the most likely to create air emissions. NFR contains a higher proportion of the small, light particles that can become airborne. Other piles contain primarily larger metal objects that cannot become airborne, such as the automobiles, appliances, and other metal items in the infeed piles and the fist-sized chunks of metal in the ferrous metal shredder output piles.

This is not to say that those other piles have no air emissions. To the contrary, as noted above the material in those piles does contain a certain amount of dirt and dust particles on the surface of the larger objects, which can become airborne when disturbed (although the potential for such emissions is minimized by regular water spraying at all of the piles). But the emissions

[7] See Excel Spreadsheet, *NFR Moisture Content Measurements November 2013 – June 2025*.

potential from those piles is lower because they contain primarily large metal pieces and have a smaller proportion of the smaller, lighter particles that create an airborne emissions concern.[8]

For these reasons, the Air District used the NFR pile as the worst-case storage pile for purposes of analyzing emissions from the piles. The Air District also used worst-case assumptions to estimate emissions from the NFR pile. This approach provides an overly conservative assessment of actual emissions from Radius Recycling's material storage piles. But doing so provides a mechanism to determine with relative confidence that the piles do not exceed any of the thresholds that would make them ineligible for an exemption. If the conservative worst-case estimate of emissions does not exceed any of those thresholds, then it is unlikely that actual emissions exceed any such thresholds. This conservative approach is especially appropriate here, where there is no standard way to measure emissions from the storage piles, and considerable uncertainty in the available estimates of the piles' actual emissions. But it is important to emphasize that these estimates are likely to overstate actual emissions and health risks. The actual emissions rates for the material storage piles at this facility, and the corresponding health risks, are expected to be less than the conservative estimates provided here.

To evaluate the amount of emissions from the NFR pile, the Air District used two approaches. The first approach is to use emissions factors published by USEPA in its AP-42 *Compilation of Air Pollutant Emissions Factors from Stationary Sources* (AP-42).[9] AP-42 is a compendium of USEPA's recommended emissions factors for use in estimating emissions from a wide variety of stationary sources. The analysis used the emission calculation equation in AP-42 Chapter 13.2.4, Aggregate Handling and Storage Piles. This approach is not ideal, because storage and handling of aggregate does not necessarily have exactly the same emissions characteristics as storage and handling of NFR or other scrap metal materials. There are no published emissions factors specifically applicable to scrap metal recycling, however. AP-42 Chapter 13.2.4 is the most analogous emissions factor for LFM materials and handling. Moreover, using the AP-42 aggregate emissions factors provides a conservative approach because the material stored in stockpiles at aggregate production facilities is more granular than the NFR material stored in the Radius NFR storage pile, and therefore more likely to be carried into the air when disturbed by wind or by handling.

[8] Particulate matter is the only significant pollutant of concern from Radius Recycling's storage piles. Organic compound emissions are an air pollution concern when the scrap materials are shredded, because the scrap may contain organic compounds that is released during the shredding process. For example, although motor vehicles have their fuel tanks drained before processing, they may have residual fuel or other organic compounds in the fuel lines or other areas where it cannot practically be removed, and these compounds will be released when the vehicle is shredded. But these organic compounds are not expected to be emitted to any significant extent before shredding, while the vehicles are still intact and being stored in the infeed piles. Radius Recycling has reported small amounts of organic compounds from these piles in its Rule 11-18 emissions reports, but these estimates are below any levels that would invalidate the applicability of an exemption under Regulation 2-1-319 (including the screening thresholds that would require a Health Risk Analysis to determine compliance with Rule 2-5 toxic risk limits).

[9] www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors-stationary-sources.

The second approach is to try to measure emissions directly from storage and handling operations at the NFR pile. This approach is not ideal either, as there is no universally accepted testing methodology for fugitive emissions such as this. Nevertheless, Sonoma Technology, a specialized air quality consulting firm, developed a testing protocol in conjunction with Dr. Eric Winegar, Ph.D., of Winegar Air Sciences, to measure particulate matter emissions from Radius Recycling's NFR pile.[10] The Air District considered both of these approaches as the best available means of assessing pile emissions for purposes of the exemption analysis, as described below.

- AP-42 Emissions Factor Analysis

AP-42 Chapter 13.2.4 specifies the following equation for estimating emissions from materials handling and storage:[11]

$$E = \mathrm{k}(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \quad \left(\frac{lb}{ton}\right)$$

where:

E = particulate matter emissions (in pounds of emissions per ton of material processed)

k = a particle size multiplier (0.74 for PM_{30}, 0.35 for PM_{10}, and 0.053 for $PM_{2.5}$)

U = mean wind speed (mph)

M = material moisture content (%)

For the mean wind speed (U), the Air District used a value of 7.8 mph, based on the 5-year average wind speed data from the nearby Oakland East Bay Municipal Utility District Wastewater Treatment Plant meteorological tower. For the material moisture content (M), the Air District used a value of 5%. Actual moisture content is expected to be above 5%, but using 5% results in a conservative estimate of particulate matter emissions because a higher moisture content corresponds to decreased emissions.

Based on these inputs, AP-42 provides the following emissions factors for PM_{30} (using the specified particle size multiplier (k) for PM_{30} of 0.74[12]):

[10] E. Winegar, Winegar Air Sciences, & D. Coe, Sonoma Technology, *Emission Factor Determination for Non-Ferrous Raw and Ferrous Shred Storage Piles at Schnitzer Steel/Radius Recycling, Oakland, California*, Final Report (July 2024) ("Sonoma Techology Report").

[11] www.epa.gov/sites/production/files/2020-10/documents/13.2.4_aggregate_handling_and_storage_piles.pdf.

[12] Particulate matter emissions are classified by maximum particle size. PM_{30} refers to particulates with a maximum diameter of 30 microns (μg); PM_{10} refers to particulates with a maximum diameter of 10 μg; and $PM_{2.5}$ refers to particulates with a maximum diameter of 2.5 μg. This analysis conservatively focuses on PM_{30}, since it is the broadest measurement of particulate matter in the air. (PM_{10} and $PM_{2.5}$ are subsets of PM_{30}.)

$$\text{Emissions} = (0.74)\ \text{x}\ (0.0032)\frac{\left(\frac{7.8}{5}\right)^{1.3}}{\left(\frac{5}{2}\right)^{1.4}}\left(\frac{lb}{ton}\right) = 0.001172\ \text{lb/ton}$$

This emissions factor provides an estimate of pile emissions based on the pile's annual throughput (i.e., the amount of material processed per year). For the NFR pile, that pile handles a little under half of the shredder's total tonnage of material process, based on 2023 data.[13] At the facility's maximum permitted throughput of 720,000 tons per year, this would correspond to approximately 306,000 tons per year handled at the NFR pile. In addition, the Air District applied a 70% particulate emissions reduction factor to account for water spay abatement and the partial enclosure around the NFR pile.[14]

With these inputs, the annual PM_{30} emissions are as follows:

PM_{30} emissions = 0.001172 lb/ton x 306,000 tons/year x (1-0.7) = **108 lbs/year**.

- Sonoma Technology Study

The Sonoma Technology study concluded that an appropriate generalized emissions factor for the NFR pile would be 0.25 grams of PM_{10} per metric ton of material processed, or 0.0005 pounds per standard ton.[15] At 306,000 tons/year throughput at the NFR pile, annual emissions would be 153 lb/year of PM_{10}. The Sonoma Technology study did not attempt to measure PM_{30}. However, to ensure the most conservative approach possible, the Air District converted the Sonoma Technology PM_{10} results into an assumed PM_{30} emissions rate by applying the ratio of PM_{10} to PM_{30} used in the AP-42 "k" factor particle size multiplier described above (0.74 for PM_{30} and 0.35 for PM_{10}). Translating 153 lb/year of PM_{10} to PM_{30} at this ratio would result in emissions of **324 lb/year** of PM_{30}.

[13] In 2023, the Joint Products Plant processed 245,141 tons of material, while the shredder's total throughput was 576,010 tons – meaning the Joint Products Plant received approximately 42.6% of the total throughput. (Email communication from Radius Recycling Manager P. Gray, May 13, 2015.) At the shredder's maximum permitted throughput of 720,000 tons per year, this means that approximately 306,000 tons per year would be processed through the NFR pile and on to the Joint Products Plant.

[14] The WRAP Fugitive Dust Handbook, a comprehensive resource on emission estimation methodologies and control measures to reduce fugitive dust emissions published by the Western Governors' Association, estimates that a three-sided enclosure with 50% porosity can reduce PM emissions by 75%, and that watering a storage pile can reduce PM emissions by 90%. See WRAP Fugitive Dust Handbook (Sept. 2006), www.env.nm.gov/wp-content/uploads/sites/2/2017/02/WRAP_FDHandbook_Rev_06.pdf, p. 9-9, tbl. 9.4. The Air District conservatively assumed 70% emission reductions from the watering and partial enclosure at the NFR pile.

[15] Sonoma Technology Report, p. 36, table 9.

These calculations show that emissions from the NFR storage pile will be well below any of the limits in Regulations 2-1-316, 2-1-318, and 2-1-319 above which a pile would not be eligible for an exemption.[16]

These calculations also provide conservative emissions rates for use in evaluating potential health risks from the storage piles. The Air District used these emissions rates as the basis for a Health Risk Assessment (HRA) to determine whether the potential health risk impacts from these emissions exceed the limits that would make the storage piles ineligible for permit exemption under Regulation 2-1-316. Based on these estimates of the total amount of particulate matter emitted, the Air District calculated the amount of Toxic Air Contaminants (TACs) that would be emitted in the particulate matter.

The Air District considered two sources of information to use in this estimate. First, Sonoma Technology measured metal mass fractions in LFM samples collected close to the NFR and ferrous stockpiles. Second, DTSC evaluated the toxic metal content of particulate matter samples collected downwind of the facility in 2021.[17] The Air District ultimately used the Sonoma Technology data because it showed higher toxics metals content overall and therefore represents the most conservative approach, and also because it is more representative in that the samples were taken very close to the NFR pile as opposed to a more distant location downwind.[18]

The Air District applied this data on TAC content of the emissions to the total PM_{30} emissions estimates summarized above to develop a conservative estimate of annual TAC emissions from the NFR pile. The results are shown in Table 1:

[16] A consultant hired by the Athletics Investment Group also used EPA's AP-42 document to estimate emissions from the scrap material handling and storage at this facility, although he took a somewhat different approach. The consultant estimated total PM_{30} emissions at 624 pounds per year from the NFR pile, but this was based on several incorrect assumptions in applying AP-42. *See* Expert Affidavit of Matt Haber on Behalf of the Plaintiff Athletics Investment Group, LLC, *Athletics Investment Group LLC v. Schnitzer Steel Industries Inc.*, (N. Dist. Cal. Case No. 3:21-cv-05246), at Exhibit B table 4c.

[17] California Department of Toxic Substances Control & Bay Area Air Quality Management District, *LFM Sampling and Air Monitoring Study Data Summary* (August 2023), available at: https://dtsc.ca.gov/wp-content/uploads/sites/31/2023/08/LFM-Final-Study-Report.pdf. Data from this evaluation is summarized in the Excel Spreadsheet *TSP Mass Fractions – DTSC Study* (D. Alrick, Bay Area Air District, Sept. 17, 2024).

[18] The Sonoma Technology Report provides metal mass fractions under three scenarios: Ferrous shred materials and handling, NFR area workday operations, and NFR area non-workday operations. The Air District conservatively chose the highest metal mass fraction values to calculate toxic metal emissions associated with the storage piles.

Table 1: Metal Toxic Emissions from the NFR Pile Based on Mass Fraction Data

TAC	Emissions Based on AP-42 Emissions Factor (lb/yr)	Emissions Based on Sonoma Technology Study (lb/yr)
Arsenic	0.0645	0.0214
Cadmium	0.0101	0.00335
Hexavalent Chromium[19]	0.0367	0.0122
Copper	0.632	0.21
Mercury	0.0156	0.0052
Manganese	0.586	0.195
Nickel	0.755	0.251
Lead	0.318	0.106
Vanadium	0.07	0.0233

The Air District used these emissions rates to conduct the HRA to evaluate potential health risks of TAC emissions from the NFR stockpile, as discussed in detail in the attached HRA report. The Air District modeled the pile as an area source, with a release height of 20.3 meters (the height of the top of the pile), conducting two separate analyses for the two sets of emissions data.[20] The results of the HRA are shown in Table 2:

Table 2: Metal Toxic Emissions from NFR Pile Based on Mass Fraction Data

Receptor	Cancer Risk (in one million)		Non-Cancer Hazard Index	
	AP-42	Sonoma Tech.	AP-42	Sonoma Tech.
Resident	0.20	0.59	0.0028	0.0083
Worker	0.033	0.099	0.0044	0.013

As Table 2 shows, HRA found that under both sets of data, the health risks would be well below the limits of 6 in a million cancer risk and non-cancer Hazard Index of 1, which are the levels the Air District uses to define a significant health risk under Regulation 2-5-302. The health risk is also below the thresholds of 1 in a million cancer risk and 0.2 Hazard Index, above which Radius Recycling would have to show that the storage piles comply with "Best Available Control Technology" emission limitation requirements for TAC emissions under Regulation 2-5-301.

[19] The Air District calculated the total chromium reported in these studies to contain approximately 5.3% hexavalent chromium, based on California Air Resources Board (CARB) ambient monitoring data for hexavalent chromium and chromium. (See CARB annual mean total chromium data from 1989 to 2002, which ranges from 3.9 to 5.5 ng/m^3, www.arb.ca.gov/adam/toxics/statepages/crstate.html; compared to annual mean concentrations of hexavalent chromium from 1992 to 2007, which range of from 0.069 to 0.29 ng/m^3, www.arb.ca.gov/adam/toxics/statepages/cr6state.html.) This is also consistent with the San Joaquin Valley Air Pollution Control District's policy to consider 5% of total chromium to be hexavalent chromium. (See https://ww2.valleyair.org/media/e4kbf1fe/metal-cutting-shredding.xls.)

[20] The maximally exposed residential receptor location was at was UTM Coordinates 563117 meters easting and 4183697 meters northing. The maximally exposed worker receptor location was at 562697 meters easting and 4183639 meters northing. These maximally exposed locations were the same for both approaches.

Since the level of risk complies with all of these requirements, the piles remain eligible for permitting exemptions under Regulation 2-1-316.

D. Conclusions

Based on this analysis using the best information available at this time, Radius Recycling's material storage piles qualify for the exemption in Regulation 2-1-115.1.4.5 and are not subject to the requirement to obtain a permit to operate. Even using conservative assumptions based on a worst-case scenario of emissions from the pile with the highest potential for toxic air emissions (the NFR pile), the level of emissions and health risk is within the limits that qualify the piles for the Regulation 2-1-115.1.4.5 exemption. Moreover, actual emissions are likely even lower than the levels assumed in this conservative analysis, as noted above.

This conclusion does not mean that the storage piles are not subject to Air District regulations to address their potential for air pollutant emissions. To the contrary, as noted above, the piles are required to comply with other Air District regulations, including the requirements of Radius Recycling's Emissions Minimization Plan under Rule 6-4 and the general prohibition on emissions that create a public nuisance. The applicability of the Regulation 2-1-115.1.4.5 exemption simply means that Radius Recycling does not need to obtain a permit in order to operate the storage piles.

It is also important to note this conclusion is based on the best information available at this time, including USEPA's published AP-42 emissions factors and the Sonoma Technology study. These are valuable analytical tools for assessing the emissions and health risks associated with the storage piles, but as noted above they also have inherent limitations. The Air District will continue to evaluate the storage piles, and it will revisit this analysis of the piles' emissions and the health risks associated with them as additional information is developed. If further information shows that the storage piles should be required to obtain permits, the Air District will take appropriate enforcement action to require permits under Regulation 2. The Air District is also currently evaluating the scope of the permit exemptions in Regulation 2 and will consider whether they should be revised with respect to how they apply to metal shredder operations.

II. EXEMPTION ANALYSIS FOR TORCH CUTTING OPERATIONS

In addition to the storage piles, the Athletics Investment Group has also questioned whether Radius Recycling's torch cutting operations are exempt. The Air District therefore conducted a detailed exemption analysis for these operations as well.

A. Description of Torch Cutting Operations

As noted above, Radius Recycling uses torch cutting to cut large pieces of metal scrap into more manageable sizes. Torch cutting uses oxygen and fuel gas (such as acetylene, propane, MAPP, propylene and natural gas) to create a high-temperature torch that burns and volatilizes the metal on contact. Torch cutting can emit particulate matter and toxic air contaminants.

B. Relevant Exemptions from Permitting Requirements

Air District Regulation 2-1-121.1 exempts equipment used for cutting metal from the permit requirements of Regulations 2-1-301 (Authority to Construct) and 2-1-302 (Permit to Operate), provided that organic emissions from the use of coolant, lubricant or cutting oil are not more than five tons per year. Radius Recycling's torch cutting uses torches to cut metal as part of the recycling process, so it falls within the scope of this exemption.

This exemption is subject to the same exceptions outlined above for the Regulation 2-1-115.1.4.5 exemption for storage piles. Specifically, under Regulations 2-1-316 through 2-1-319, the torch cutting operations are not eligible for the exemption if the torch cutting (i) emits any regulated air pollutant (except greenhouse gases) in an amount greater than 5 tons per year, after abatement; (ii) does not comply with the Toxic Air Contaminant risk requirements of Regulation 2, Rule 5; (iii) has received more than one public nuisance violation in any 180-day period; or (iv) emits more than the amounts specified in Regulation 2-1-318 for major emitters of "PSD Pollutants."

C. Exemption Analysis

The Air District evaluated the applicability of these exceptions as follows.

1. Public Nuisance

The torch cutting operations have never had a public nuisance violation.

2. Torch Cutting Emissions and Health Risks

Emissions from the torch cutting operations are minimal. The principal pollutant emitted from these operations is particulate matter, but emissions are less than one pound per year as noted below. At these levels, emissions are well below the limits on the applicability of the exemption.

The torch cutting emissions still need to be evaluated for toxic risk, however, because TAC emissions can constitute a public health concern even at very low levels. As noted above, TAC emissions sources are not eligible for an exemption if they do not comply with the toxic risk requirements of Rule 2-5.

There are two types of TAC emissions associated with torch cutting: (i) TACs contained in the small airborne particles (aerosols) that are emitted from the cutting operation, and (ii) TACs emitted from the combustion of the gas used in the cutting torches.

For particulate TACs, the Air District used an emissions rate of 2 mg/min for total particulates generated by the cutting operations, based on a laboratory study of aerosol emissions

from oxy-acetylene gas cutting of carbon steel plates.[21] Radius Recycling uses a mister system during torch cutting operations, which abates particulate emissions by 70% or more. Based on emissions of 2 mg/min and abatement by the mister system, particulate emissions were calculated as follows:

PM = (2 mg/min) x (60 min/hr) / (1000 mg/g) / (453.6 g/lb) x (1-0.7) = 0.000079 lb/hr

Radius Recycling typically operates its three torch cutters a combined total of 1864 hours per year,[22] making for total annual particulate emissions of up to 0.15 lb/year.

To determine the toxic metals content of these particulate emissions, the Air District used the Guidelines for Ferrous Scrap published by the Institute of Scrap Recycling Industries, which provides that mild steel contains approximately 0.20% chromium, 1.65% manganese, and 0.45% nickel.[23] For the chromium content, the Air District conservatively assumed that as much as 20% of the total chromium emitted is hexavalent chromium, which is the toxic form of chromium.[24] The Air District used these percentages to calculate the emissions of metal TACs from the torch cutting operations, as shown in Table 3 below.

For TAC emissions from combustion of the gas used in the cutting torches (benzene, formaldehyde and toluene) the Air District used EPA's published AP-42 emissions factors for propane combustion,[25] again using up to 1864 hours of cutting per year to calculate annual emissions. These TAC emissions rates are also shown in Table 3.

[21] Wong et al 1981, *Aerosols from Oxy-Acetylene Gas Cutting Operations on Metal Plates: A laboratory Study*, Inhalation Toxicology Research Institute Annual Report (December 1981), pp. 22-26, available at: https://s3.amazonaws.com/janus-cloud2/www/lovelace/reports/LMF-91_Inhalation_Toxicology_Research_Institute_Annual_Repor.PDF. The Air District used the emissions factor for carbon steel because that is most applicable to the types of steel that Radius Recycling processes. Radius Recycling does not cut stainless steel in its torch cutting operations.

[22] Radius Recycling Rule 11-18 2020 data submission.

[23] Institute of Scrap Recycling Industries, *Scrap Specifications Circular 2024* (Feb. 15, 2024), available at: https://www.isrispecs.org/wp-content/uploads/2024/04/isri-specs2024final.pdf, p. 19.

[24] Chromium compounds exist in several possible oxidation states from -4 to +6 valence. The most common stable forms are elemental chromium (0 valence), trivalent chromium (+3 valence) and hexavalent chromium (+6 valence). Of these valence states, only the hexavalent state is included as a Toxic Air Contaminant under Air District regulations. Studies indicate a low conversion rate (average 20%) from total chromium to hexavalent chromium in welding with mild steel rod and an average of 8% conversion rate from total chromium to hexavalent chromium in welding using stainless steel rod. M. Serageldin & D.W. Reeves, *Development of Welding Emission Factors for Cr and Cr(VI) with a Confidence Level*, Journal of the Air & Waste Management Association, Vol. 59, pp. 619-26 (May 2009), available at www.tandfonline.com/doi/epdf/10.3155/1047-3289.59.5.619?needAccess=true.

[25] AP-42, Chapter 1.4, Table 1.4-3 (Emission Factors for Speciated Organic Compounds From Natural Gas Combustion), available at: www.epa.gov/sites/default/files/2020-09/documents/1.4_natural_gas_combustion.pdf.

Table 3 shows the TAC emissions rates from the torch cutting operations compared with the *de minimis* screening thresholds above which a Health Risk Assessment is required under Air District Regulation 2-5.[26]

Table 3: Torch Cutting Emissions Compared with the Thresholds Above Which a Health Risk Assessment is Required

Pollutant	Hourly		Annual	
	Emissions (lb/hr)	HRA Threshold (lb/hr)	Emissions (lb/yr)	HRA Threshold (lb/yr)
Benzene	0.000000679	0.012	0.00127	2.9
Hexavalent Chromium	0.00000143	–	0.000178	0.00051
Formaldehyde	0.0000242	0.024	0.0452	14
Manganese	0.0000118	–	0.00732	3.5
Nickel	0.00000321	0.000088	0.002	0.31
Toluene	0.0000011	2.2	0.00205	16000

As Table 3 shows, none of these TACs of concern exceed the Regulation 2-5 HRA screening thresholds, which means that no HRA is required. These screening thresholds are levels below which there is no potential for a significant health risk, so there is no need to conduct a detailed analysis to ensure that the emissions will comply with Rule 2-5's risk standards. At these low levels, it can be seen with certainty that the emissions will not create any significant health risk under Rule 2-5, even without a full HRA.

D. Conclusions

Emissions from Radius Recycling's torch cutting operations satisfy all requirements to be eligible for the exemption in Regulation 2-1-121.1. Air District regulations do not require a permit for these operations. Emissions from these operations are not expected to cause a significant public health risk.

[26] Hexavalent chromium and manganese are primarily a chronic health risk concern – i.e., they are a public health risk of concern when people are exposed to them over a long period of time. For this reason, these TACs have HRA trigger thresholds for annual emissions only, not for hourly emissions.

ATTACHMENT:

Results of Health Risk Assessment (HRA)
for Schnitzer Steel (Oakland, CA),
Plant #208, NFR stockpile

INTEROFFICE MEMORANDUM
June 16, 2025

TO: **Pamela Leong, Kevin Oei** **Via:** **Daphne Y. Chong**
FROM: **Davis Zhu**
SUBJECT: **Results of Health Risk Assessment (HRA) for Schnitzer Steel (Oakland, CA), Plant #208, NFR stockpile**

SUMMARY: Per your request, a health risk assessment (HRA) was completed for the above referenced NFR stockpile at the Schnitzer Steel facility (Schnitzer). Schnitzer has not submitted any permit application for the stockpile included in this HRA. However, in order to allow the Air District to determine whether or not the source would require Air District permits, the Air District conducted this HRA using a conservative emission estimation of the NFR stockpile. This HRA was conducted to check if the cancer risks or chronic hazard indices of the potential source were above the TBACT thresholds (a source cancer risk of 1.0 in a million and/or a chronic HI of 0.20), to determine if Regulation 2-1-316 exemption can apply. This analysis estimates the incremental health risks resulting from the fugitive toxic air contaminant (TAC) emissions from the NFR stockpiles at the facility. Results from this HRA indicate that the maximum cancer risk from the NFR stockpile is estimated at **0.59 in a million**, the maximum chronic hazard index from the NFR stockpile is estimated at **0.013**. In accordance with the District's Regulation 2-5-301, the NFR stockpile does not require TBACT because estimated source risk does not exceed a cancer risk of 1.0 in a million and/or a chronic HI of 0.20.

Table 1. Source information

Application	Source	Source Description	Project throughput	TAC Emissions (lbs/year)
N/A	NFR stockpile	Fugitive TAC emissions from the NFR stockpile	306,421 tons per year*	See attached spreadsheet

**Prorated based on shredder (S-6)'s permitted throughput of 720,000 tons per year using throughputs reported by facility in 2023: the facility's JPP plant processed 245,141 tons of NFR, while the S-6 shredder's throughput was 576,010 tons.*

EMISSIONS: Emissions from two scenarios were evaluated. The first scenario is to evaluate the health risks based on the PM30 emissions from the NFR stockpile prorated based on the PM10 emission factor and toxic speciation from Sonoma Tech. The second scenario is to evaluate the health risks based on the PM30 emissions from the NFR stockpile using AP-42 emission factors and the PM10 toxic speciation from Sonoma Tech.

MODELING: The AERMOD air dispersion computer model (version 21112) was used to estimate annual average pollutant concentrations from the modeled source. The model was run with OAKLAND STP (2009-2013) AERMOD ready meteorological data. BAAQMD meteorology staff processed the meteorological data set using Oakland International Airport station upper air data for the same time-period. The model was referenced in NAD 83 UTM coordinates and used 10-meter NED terrain data files for Alameda County. Model runs were made with urban dispersion coefficients based on the typing scheme proposed by Auer, which best represents land use around this facility. The site was modeled as an urban area (Oakland, 2010 population 390,724) with a surface roughness length of 1.0 using the AER Urban option. The NFR stockpile was modeled as an area source.

HEALTH RISK: The HARP2 Air Dispersion Modeling and Risk Tool (ADMRT) was used to evaluate risk in the following categories: (1) Cancer Risk and (2) Chronic Hazard Index for Residential and Off-site Worker receptors. Health risk estimates were calculated in accordance with the BAAQMD's Air Toxics NSR Program HRA Guidelines, dated December 2021. Estimates of residential risk assume potential exposure to annual average TAC concentrations occurs 350 days per year, for 30 years. In addition, residential risk estimates assume a 95th percentile breathing rate for age groups younger than two years old, and 80th percentile breathing rate for age groups that are older than or equal to two years of age. Risk estimates for offsite workers assume potential exposure occurs 8 hours per day, 250 days per year, for 25 years. For offsite workers, the 95th percentile 8-hour breathing rate based on moderate activity was assumed. Residential cancer risk estimates include age sensitivity factors (ASFs) and fraction of time at home (FAH) adjustments.

The ASFs are age-specific weighting factors used in calculating cancer risks from exposures of infants, children and adolescents, to reflect their anticipated special sensitivity to carcinogens. Since the NFR stockpile is abated by water sprays, a deposition rate of 0.02 m/sec was used in risk evaluation for the stockpile. The estimated health risks from the NFR stockpile are presented in the tables below.

Table 2. Health risks from the NFR stockpile Scenario 1:
using prorated PM30 EF from Sonoma Tech PM10 EF and Sonoma Tech PM10 toxic speciation.

Receptor	**NAD 83 UTM Coordinates (meters)**		**Cancer Risk (in a million)**	**Chronic Non-Cancer Hazard Index**
	Easting (x)	**Northing (y)**		
Resident	563117	4183697	0.59	0.0083
Worker	562697	4183639	0.099	0.013
TBACT Source Risk Thresholds (Regulation 2-5-301)			1.0	0.20

Table 3. Health risks from the NFR stockpile Scenario 2:
using AP-42 PM30 EF and Sonoma Tech PM10 toxic speciation.

Receptor	**NAD 83 UTM Coordinates (meters)**		**Cancer Risk (in a million)**	**Chronic Non-Cancer Hazard Index**
	Easting (x)	**Northing (y)**		
Resident	563117	4183697	0.20	0.0028
Worker	562697	4183639	0.033	0.0044
TBACT Source Risk Thresholds (Regulation 2-5-301)			1.0	0.20

Health Risks from the NFR stockpile for Scenario 1

Health Risks from the 0.32 acre NFR Stockpile using PM30 EF prorated from Sonoma PM10 EF, with Sonoma PM10 toxic speciation.

Resident Cancer **5.9E-07**

*HARP - HRACalc v22118 6/4/2025 11:04:08 AM - Cancer Risk - Input File: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\RHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RI	1ST_D	2ND_DRIVER
749	ALL		563117	4183697	1.25E-06	18540299	Cr(VI)	4.49E-07	30YrCance	76.32%	4.31E-07	1.80E-08	2.92E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####	INHAL	SOIL
749	ALL		563117	4183697	2.19E-06	7440382	Arsenic	1.17E-07	30YrCance	19.89%	1.78E-08	9.46E-08	4.61E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####	SOIL	INHALATION
749	ALL		563117	4183697	2.56E-05	7440020	Nickel	1.58E-08	30YrCance	2.68%	1.58E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####	INHALATION	
749	ALL		563117	4183697	3.42E-07	7440439	Cadmium	3.47E-09	30YrCance	0.59%	3.47E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####	INHALATION	
749	ALL		563117	4183697	1.08E-05	7439921	Lead	3.05E-09	30YrCance	0.52%	3.07E-10	2.65E-09	6.44E-11	3.19E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####	SOIL	INHALATION
749	ALL		563117	4183697	2.15E-05	7440508	Copper	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####		
749	ALL		563117	4183697	5.32E-07	7439976	Mercury	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####		
749	ALL		563117	4183697	1.99E-05	7439965	Manganes	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####		
749	ALL		563117	4183697	2.38E-06	7440622	Vanadium	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	#####		
								5.88E-07		100.00%														

Resident Chronic HI **0.0083**

*HARP - HRACalc v22118 6/4/2025 11:04:08 AM - Chronic Risk - Input File: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\RHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	DETAILS	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENEF	INH_CONC	SOIL_DOS	DERMAL_D	MMILK_I	WATER_	FISH_D	CROP	BEEF_	DAIRY_	PIG_D(	CHI(	EGG	1ST_DRIVE	2ND_DRIV	3RD_DRIVER
749	ALL		563117	4183697	2.19E-06	7440382	Arsenic	NonCance	6.48E-03	6.48E-03	0.00E+00	0.00E+00	0.00E+00	6.48E-03	6.48E-03	77.75%	0.006482	0	0	0	0	0	0	2.19E-06	1.98E-08	2.38E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	2.56E-05	7440020	Nickel	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-05	1.83E-03	21.97%	0	0	0	0	0.001832	0	0	2.56E-05	2.32E-07	9.29E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	3.42E-07	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	2.33E-05	0.00E+00	0.00E+00	1.71E-05	0.21%	0	0	0	0	0	0	0	3.42E-07	3.09E-09	1.24E-11	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	1.25E-06	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.24E-06	0.07%	0	0	0	0	5.87E-07	0	0	1.25E-06	1.13E-08	4.52E-10	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	2.15E-05	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	2.15E-05	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
749	ALL		563117	4183697	5.32E-07	7439976	Mercury	NonCance	0.00E+00	5.02E-05	0.00E+00	5.02E-05	0.00E+00	5.02E-05	0.00E+00	0.00%	0	0	0	0	0	0	0	5.32E-07	4.8E-09	3.85E-10	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	1.99E-05	7439965	Manganes	NonCance	0.00E+00	2.21E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	1.99E-05	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
749	ALL		563117	4183697	1.08E-05	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	1.08E-05	9.77E-08	3.54E-09	4E-08	0	0	0	0	0	0	0	0	INHALATIC	SOIL	MMILK
749	ALL		563117	4183697	2.38E-06	7440622	Vanadium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	2.38E-06	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
															8.34E-03	100.00%																					

Worker Cancer **9.9E-08**

*HARP - HRACalc v22118 6/4/2025 11:04:41 AM - Cancer Risk - Input File: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\WCHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RI	1ST_D	2ND_DRIVER
127	ALL		562696.5	4183639	2.74E-06	18540299	Cr(VI)	8.03E-08	25YrCance	81.29%	7.85E-08	1.66E-09	1.15E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	INHAL	SOIL
127	ALL		562696.5	4183639	4.80E-06	7440382	Arsenic	1.47E-08	25YrCance	14.83%	2.40E-09	8.75E-09	3.50E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	SOIL	DERMAL
127	ALL		562696.5	4183639	5.62E-05	7440020	Nickel	2.88E-09	25YrCance	2.91%	2.88E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	INHALATION	
127	ALL		562696.5	4183639	7.50E-07	7440439	Cadmium	6.33E-10	25YrCance	0.64%	6.33E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	INHALATION	
127	ALL		562696.5	4183639	2.37E-05	7439921	Lead	3.26E-10	25YrCance	0.33%	5.60E-11	2.45E-10	2.55E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	SOIL	INHALATION
127	ALL		562696.5	4183639	4.71E-05	7440508	Copper	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
127	ALL		562696.5	4183639	1.17E-06	7439976	Mercury	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
127	ALL		562696.5	4183639	4.37E-05	7439965	Manganes	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
127	ALL		562696.5	4183639	5.21E-06	7440622	Vanadium	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
								9.88E-08		100.00%														

Worker Chronic HI **0.013**

*HARP - HRACalc v22118 6/4/2025 11:06:23 AM - Chronic Risk - Input File: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\WChHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	DETAILS	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENEF	INH_CONC	SOIL_DOS	DERMAL_D	MMILK_I	WATER_	FISH_D	CROP	BEEF_	DAIRY_	PIG_D(	CHI(	EGG	1ST_DRIVE	2ND_DRIV	3RD_DRIVER
127	ALL		562696.5	4183639	4.80E-06	7440382	Arsenic	NonCance	9.08E-03	9.08E-03	0.00E+00	0.00E+00	0.00E+00	9.08E-03	9.08E-03	69.07%	0.009083	0	0	0	0	0	0	4.8E-06	2.39E-08	6.82E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	5.62E-05	7440020	Nickel	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.78E-05	4.02E-03	30.54%	0	0	0	0	0.004016	0	0	5.62E-05	2.79E-07	2.66E-08	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	7.50E-07	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	4.50E-05	0.00E+00	0.00E+00	3.75E-05	0.29%	0	0	0	0	0	0	0	7.5E-07	3.73E-09	3.55E-11	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	2.74E-06	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E-05	0.10%	0	0	0	0	7.45E-07	0	0	2.74E-06	1.36E-08	1.29E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	4.71E-05	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	4.71E-05	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
127	ALL		562696.5	4183639	1.17E-06	7439976	Mercury	NonCance	0.00E+00	8.19E-05	0.00E+00	8.19E-05	0.00E+00	8.19E-05	0.00E+00	0.00%	0	0	0	0	0	0	0	1.17E-06	5.79E-09	1.1E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	4.37E-05	7439965	Manganes	NonCance	0.00E+00	4.85E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	4.37E-05	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
127	ALL		562696.5	4183639	2.37E-05	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	2.37E-05	1.18E-07	1.68E-08	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	5.21E-06	7440622	Vanadium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	5.21E-06	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
															1.32E-02	100.00%																					

Health Risks from the NFR stockpile for Scenario 2

Health Risks from the 0.32 acre NFR Stockpile using AP-42 PM30 EF, with Sonoma PM10 toxic speciation.

Resident Cancer **2.0E-07**

*HARP - HRACalc v22118 6/4/2025 10:10:15 AM - Cancer Risk - Input File: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\RHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK	1ST_D	2ND_DRIVER
749	ALL		563117	4183697	4.15E-07	18540299	Cr(VI)	1.49E-07	30YrCance	76.32%	1.43E-07	5.98E-09	9.70E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHAL	SOIL
749	ALL		563117	4183697	7.29E-07	7440382	Arsenic	3.89E-08	30YrCance	19.89%	5.92E-09	3.15E-08	1.53E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL	INHALATION
749	ALL		563117	4183697	8.53E-06	7440020	Nickel	5.25E-09	30YrCance	2.68%	5.25E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
749	ALL		563117	4183697	1.14E-07	7440439	Cadmium	1.16E-09	30YrCance	0.59%	1.16E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
749	ALL		563117	4183697	3.60E-06	7439921	Lead	1.01E-09	30YrCance	0.52%	1.02E-10	8.80E-10	2.14E-11	1.06E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL	INHALATION
749	ALL		563117	4183697	7.14E-06	7440508	Copper	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
749	ALL		563117	4183697	1.77E-07	7439976	Mercury	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
749	ALL		563117	4183697	6.63E-06	7439965	Manganes	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
749	ALL		563117	4183697	7.91E-07	7440622	Vanadium	0.00E+00	30YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
								1.96E-07		100.00%													

Resident Chronic HI **0.0028**

*HARP - HRACalc v22118 6/4/2025 10:09:34 AM - Chronic Risk - Input File: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\RChHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	DETAILS	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENEF	INH_CONC	SOIL_DOS	DERMAL_D	MMILK_I	WATER_	FISH_D	CROP_	BEEF_	DAIRY_	PIG_D	CHI	EGG	1ST_DRIVE	2ND_DRIV	3RD_DRIVER
749	ALL		563117	4183697	7.29E-07	7440382	Arsenic	NonCance	2.16E-03	2.16E-03	0.00E+00	0.00E+00	0.00E+00	2.16E-03	2.16E-03	77.75%	0.002156	0	0	0	0	0	0	7.29E-07	6.58E-09	7.92E-10	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	8.53E-06	7440020	Nickel	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.29E-06	6.09E-04	21.97%	0	0	0	0	0.000609	0	0	8.53E-06	7.71E-08	3.09E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	1.14E-07	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	7.76E-06	0.00E+00	0.00E+00	5.69E-06	0.21%	0	0	0	0	0	0	0	1.14E-07	1.03E-09	4.12E-12	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	4.15E-07	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E-06	0.07%	0	0	0	0	1.95E-07	0	0	4.15E-07	3.75E-09	1.5E-10	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	7.14E-06	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	7.14E-06	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
749	ALL		563117	4183697	1.77E-07	7439976	Mercury	NonCance	0.00E+00	1.67E-05	0.00E+00	1.67E-05	0.00E+00	1.67E-05	0.00E+00	0.00%	0	0	0	0	0	0	0	1.77E-07	1.6E-09	1.28E-10	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
749	ALL		563117	4183697	6.63E-06	7439965	Manganes	NonCance	0.00E+00	7.36E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	6.63E-06	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
749	ALL		563117	4183697	3.60E-06	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	3.6E-06	3.25E-08	1.18E-09	1E-08	0	0	0	0	0	0	0	0	INHALATIC	SOIL	MMILK
749	ALL		563117	4183697	7.91E-07	7440622	Vanadium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	7.91E-07	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
															2.77E-03	100.00%																					

Worker Cancer **3.3E-08**

*HARP - HRACalc v22118 6/4/2025 10:08:10 AM - Cancer Risk - Input File: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\WCHRAInput.hra

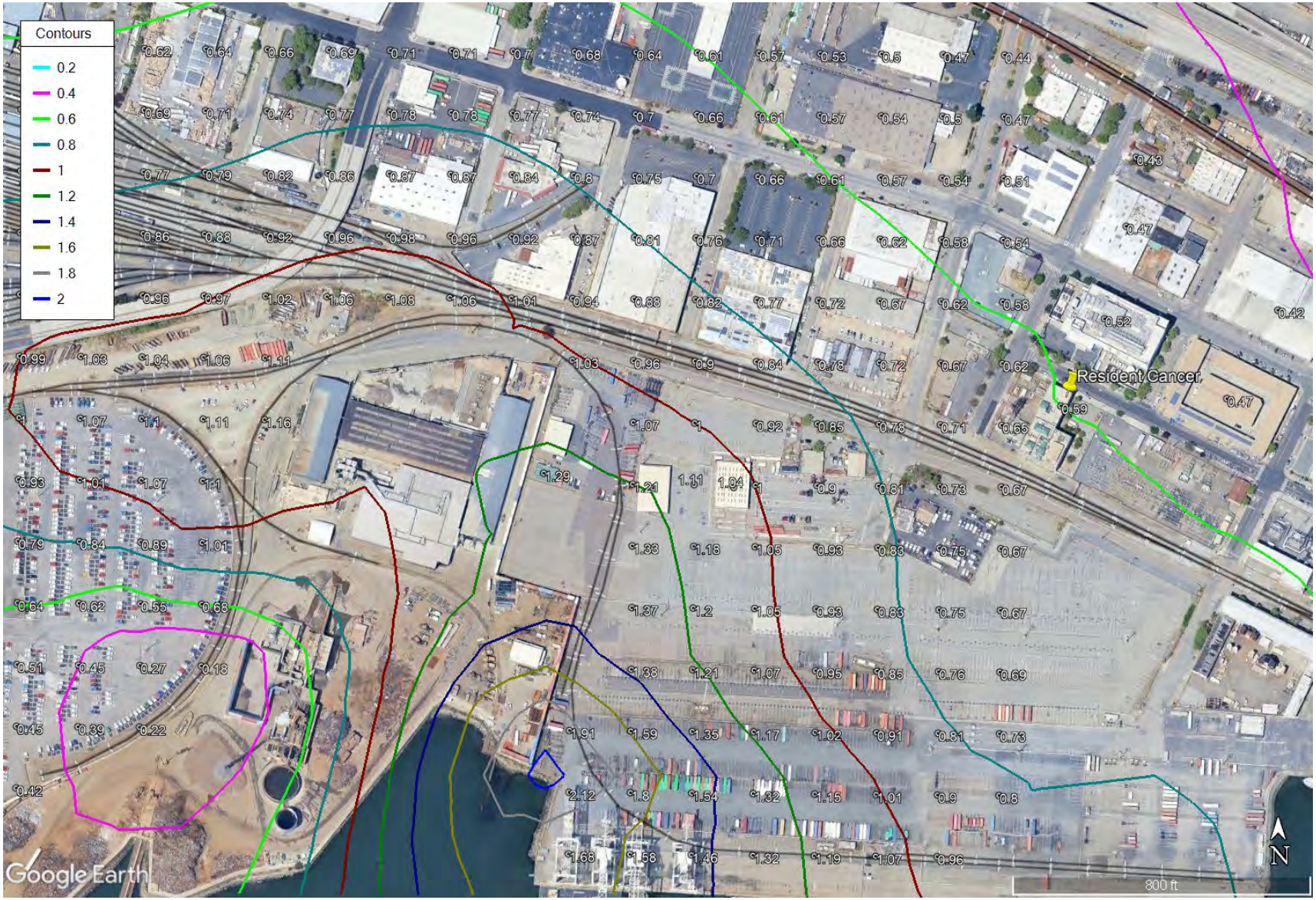
REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RIS	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK	1ST_D	2ND_DRIVER
127	ALL		562696.5	4183639	9.10E-07	18540299	Cr(VI)	2.67E-08	25YrCance	81.29%	2.61E-08	5.53E-10	3.83E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	INHAL	SOIL
127	ALL		562696.5	4183639	1.60E-06	7440382	Arsenic	4.87E-09	25YrCance	14.83%	7.97E-10	2.91E-09	1.16E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	SOIL	DERMAL
127	ALL		562696.5	4183639	1.87E-05	7440020	Nickel	9.57E-10	25YrCance	2.91%	9.57E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	INHALATION	
127	ALL		562696.5	4183639	2.50E-07	7440439	Cadmium	2.11E-10	25YrCance	0.64%	2.11E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	INHALATION	
127	ALL		562696.5	4183639	7.88E-06	7439921	Lead	1.09E-10	25YrCance	0.33%	1.86E-11	8.14E-11	8.47E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	SOIL	INHALATION
127	ALL		562696.5	4183639	1.57E-05	7440508	Copper	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
127	ALL		562696.5	4183639	3.88E-07	7439976	Mercury	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
127	ALL		562696.5	4183639	1.45E-05	7439965	Manganes	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
127	ALL		562696.5	4183639	1.73E-06	7440622	Vanadium	0.00E+00	25YrCance	0.00%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0		
								3.29E-08		100.00%														

Worker Chronic HI **0.0044**

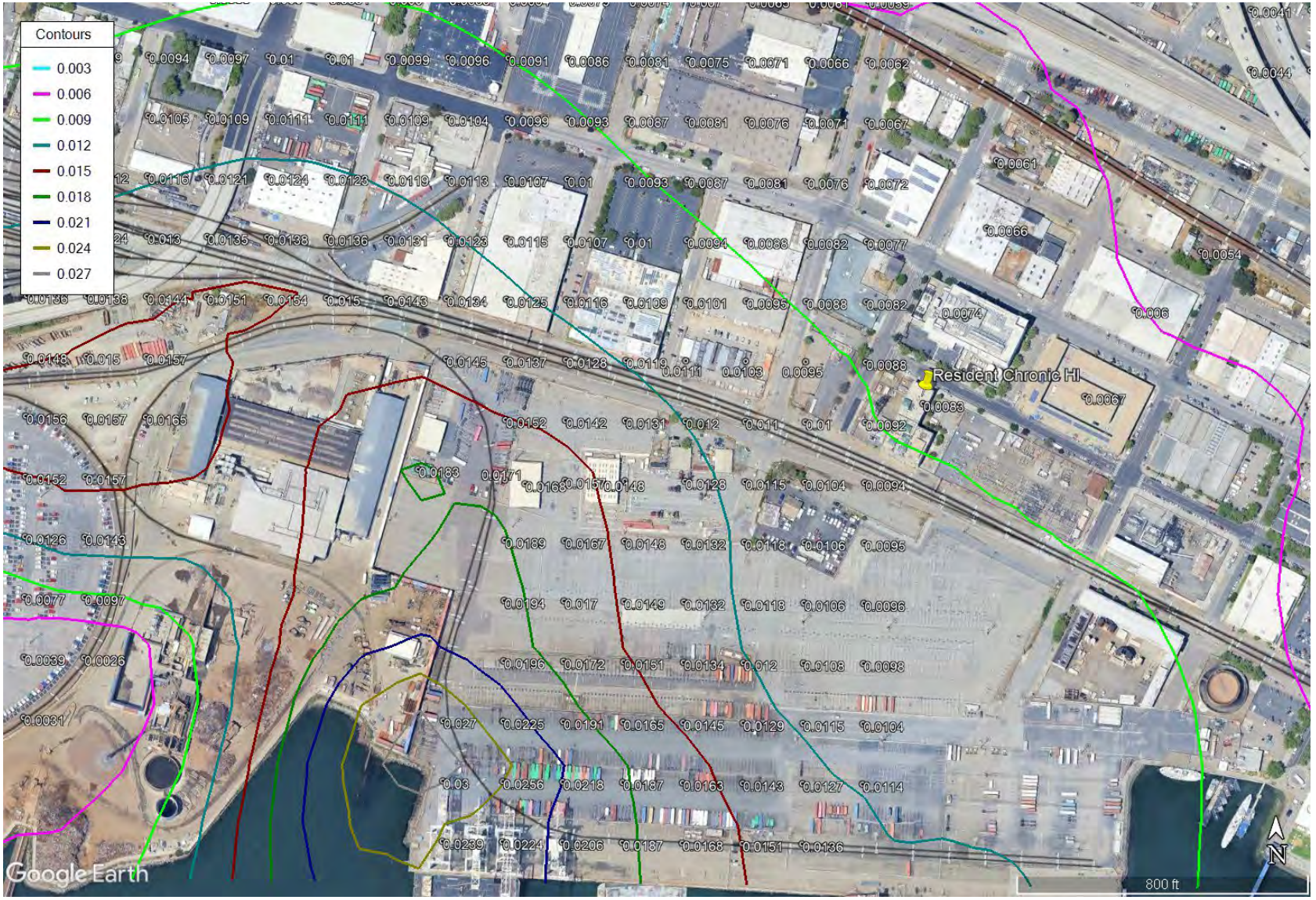
*HARP - HRACalc v22118 6/4/2025 10:07:50 AM - Chronic Risk - Input File: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\WChHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	DETAILS	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENEF	INH_CONC	SOIL_DOS	DERMAL_D	MMILK_I	WATER_	FISH_D	CROP_	BEEF_	DAIRY_	PIG_D	CHI	EGG	1ST_DRIVE	2ND_DRIV	3RD_DRIVER
127	ALL		562696.5	4183639	1.60E-06	7440382	Arsenic	NonCance	3.02E-03	3.02E-03	0.00E+00	0.00E+00	0.00E+00	3.02E-03	3.02E-03	69.07%	0.003021	0	0	0	0	0	0	1.6E-06	7.93E-09	2.27E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	1.87E-05	7440020	Nickel	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.25E-06	1.34E-03	30.54%	0	0	0	0	0.001336	0	0	1.87E-05	9.29E-08	8.85E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	2.50E-07	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	1.50E-05	0.00E+00	0.00E+00	1.25E-05	0.29%	0	0	0	0	0	0	0	2.5E-07	1.24E-09	1.18E-11	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	9.10E-07	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.55E-06	0.10%	0	0	0	0	2.48E-07	0	0	9.1E-07	4.52E-09	4.31E-10	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	1.57E-05	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	1.57E-05	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
127	ALL		562696.5	4183639	3.88E-07	7439976	Mercury	NonCance	0.00E+00	2.73E-05	0.00E+00	2.73E-05	0.00E+00	2.73E-05	0.00E+00	0.00%	0	0	0	0	0	0	0	3.88E-07	1.93E-09	3.67E-10	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	1.45E-05	7439965	Manganes	NonCance	0.00E+00	1.61E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	1.45E-05	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
127	ALL		562696.5	4183639	7.88E-06	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	7.88E-06	3.92E-08	5.59E-09	0	0	0	0	0	0	0	0	0	INHALATIC	SOIL	DERMAL
127	ALL		562696.5	4183639	1.73E-06	7440622	Vanadium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00%	0	0	0	0	0	0	0	1.73E-06	0	0	0	0	0	0	0	0	0	0	0	INHALATION		
															4.37E-03	100.00%																					

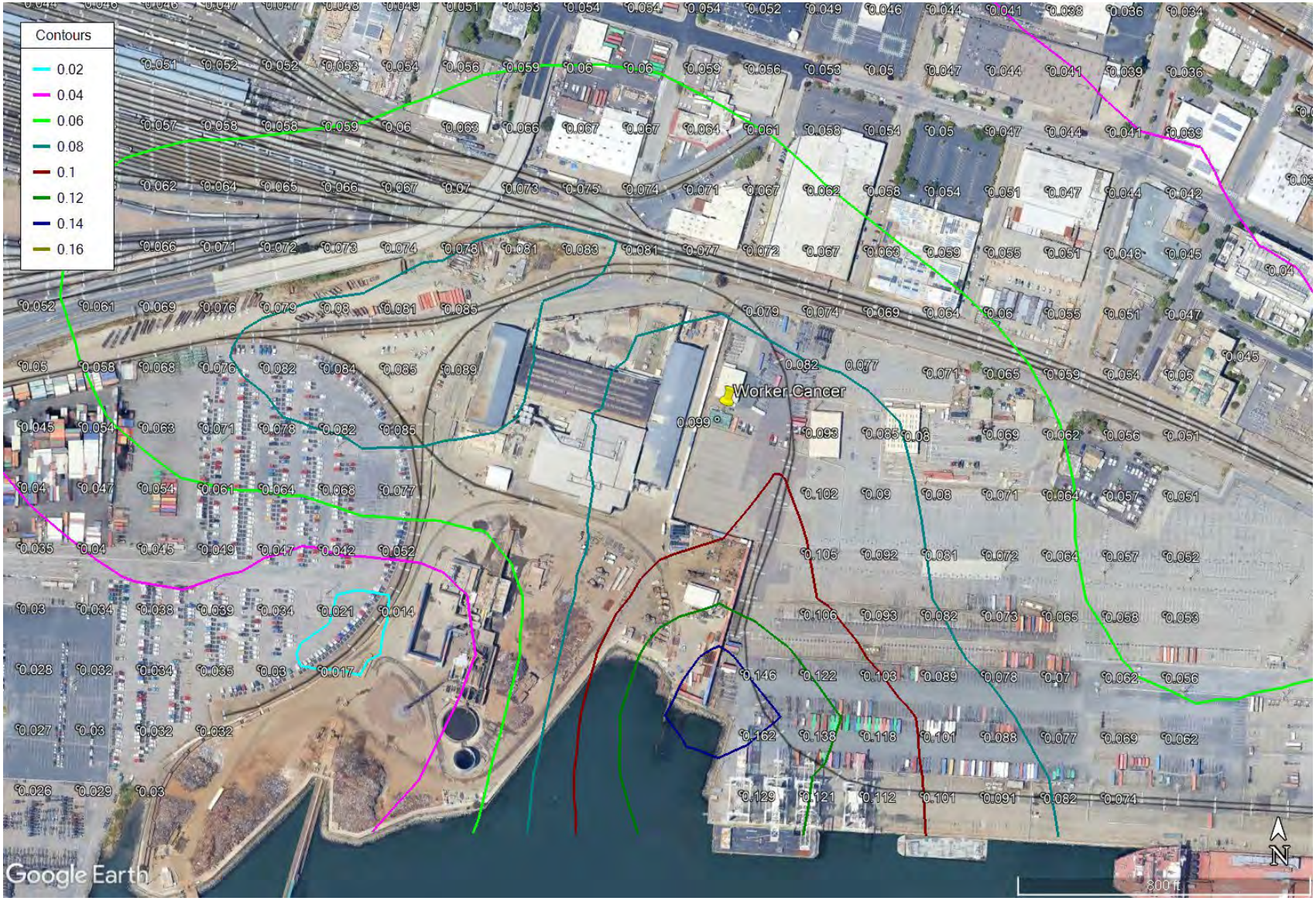
Residential Cancer Risk Contours (in a million) for the NFR Stockpile, scenario 1



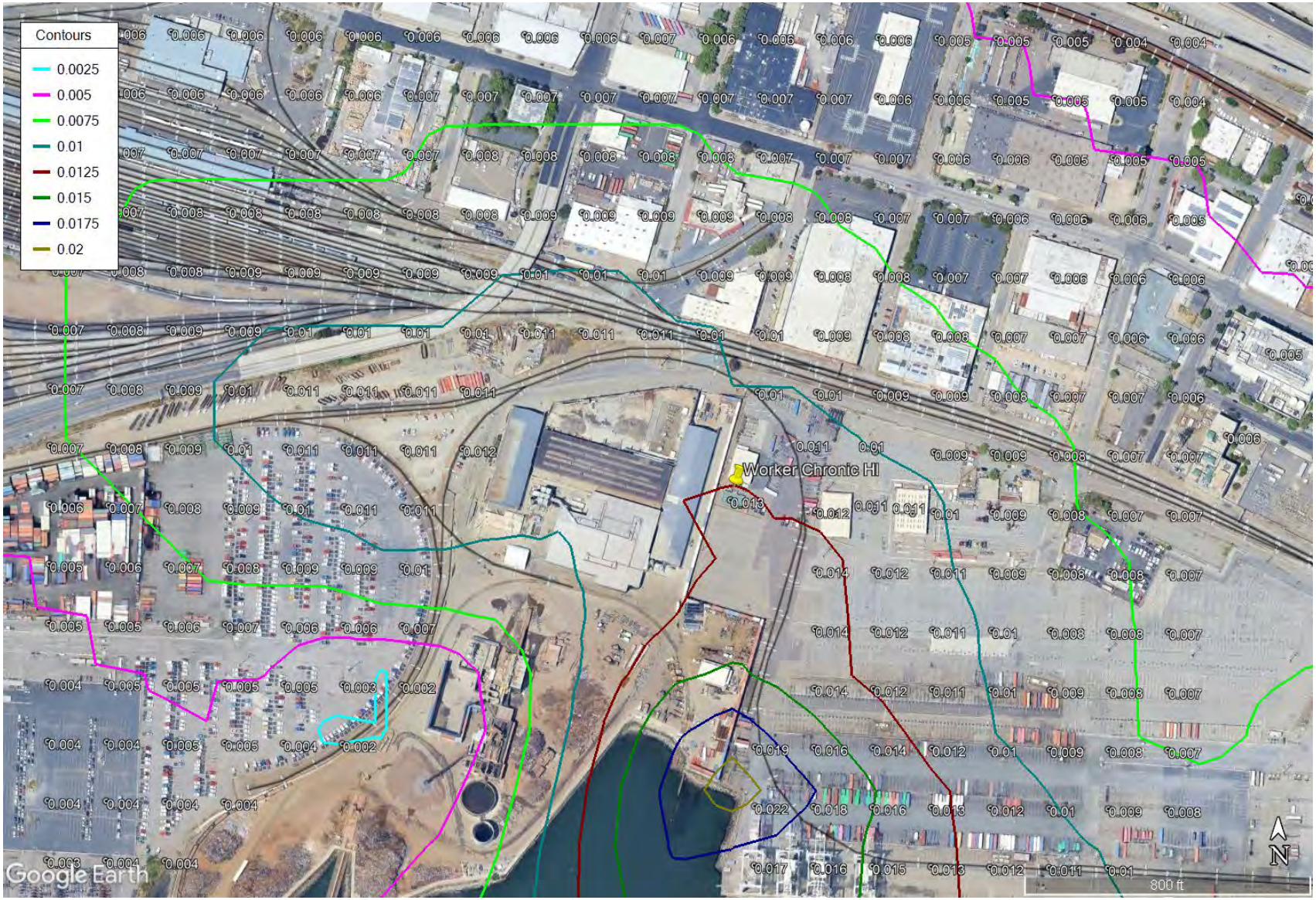
Resident Chronic HI Contours for the NFR Stockpile, Scenario 1



Worker Cancer Risk Contours (in a million) for the NFR Stockpile, Scenario 1

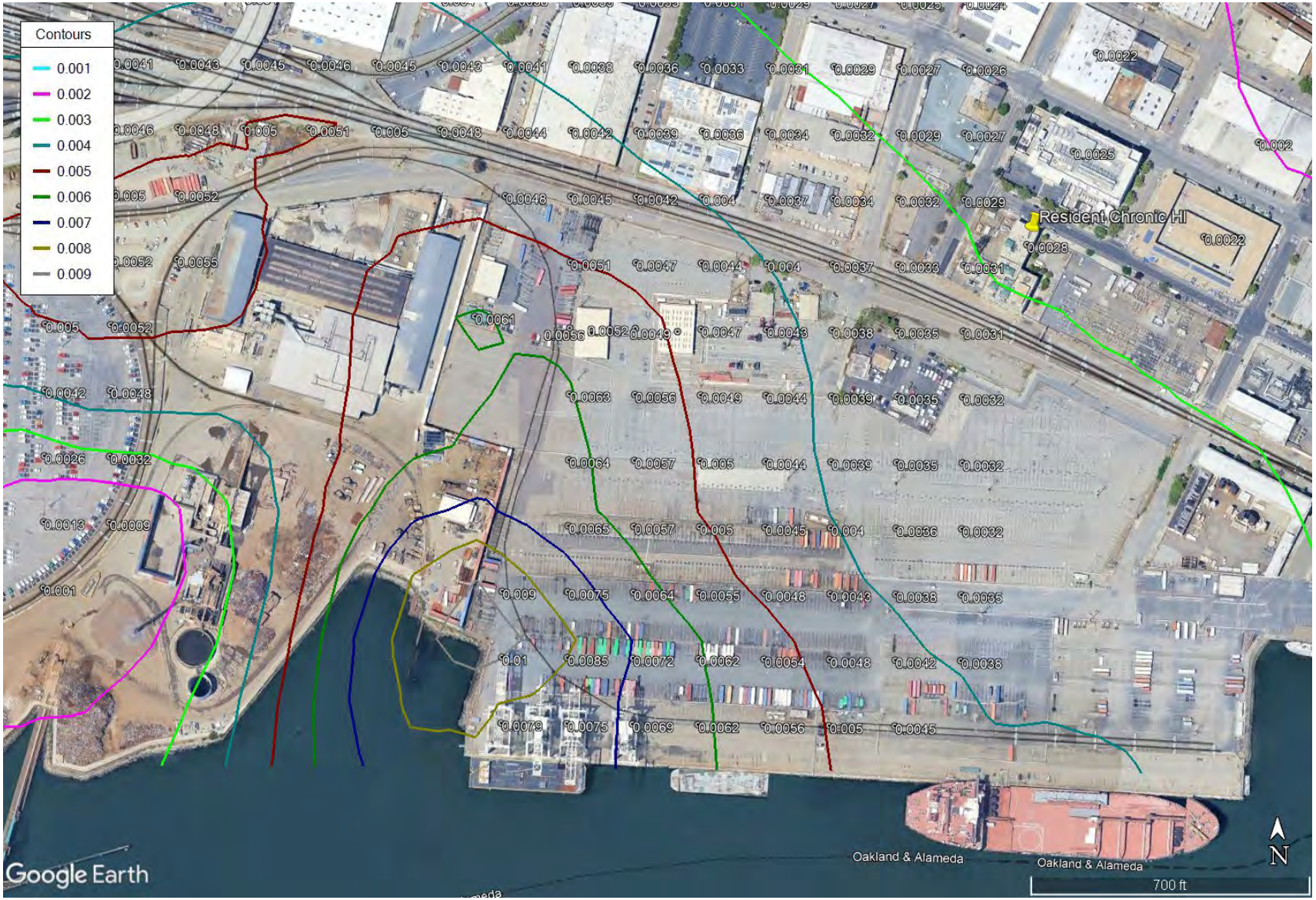


Worker Chronic HI Contours for the NFR Stockpile, Scenario 1

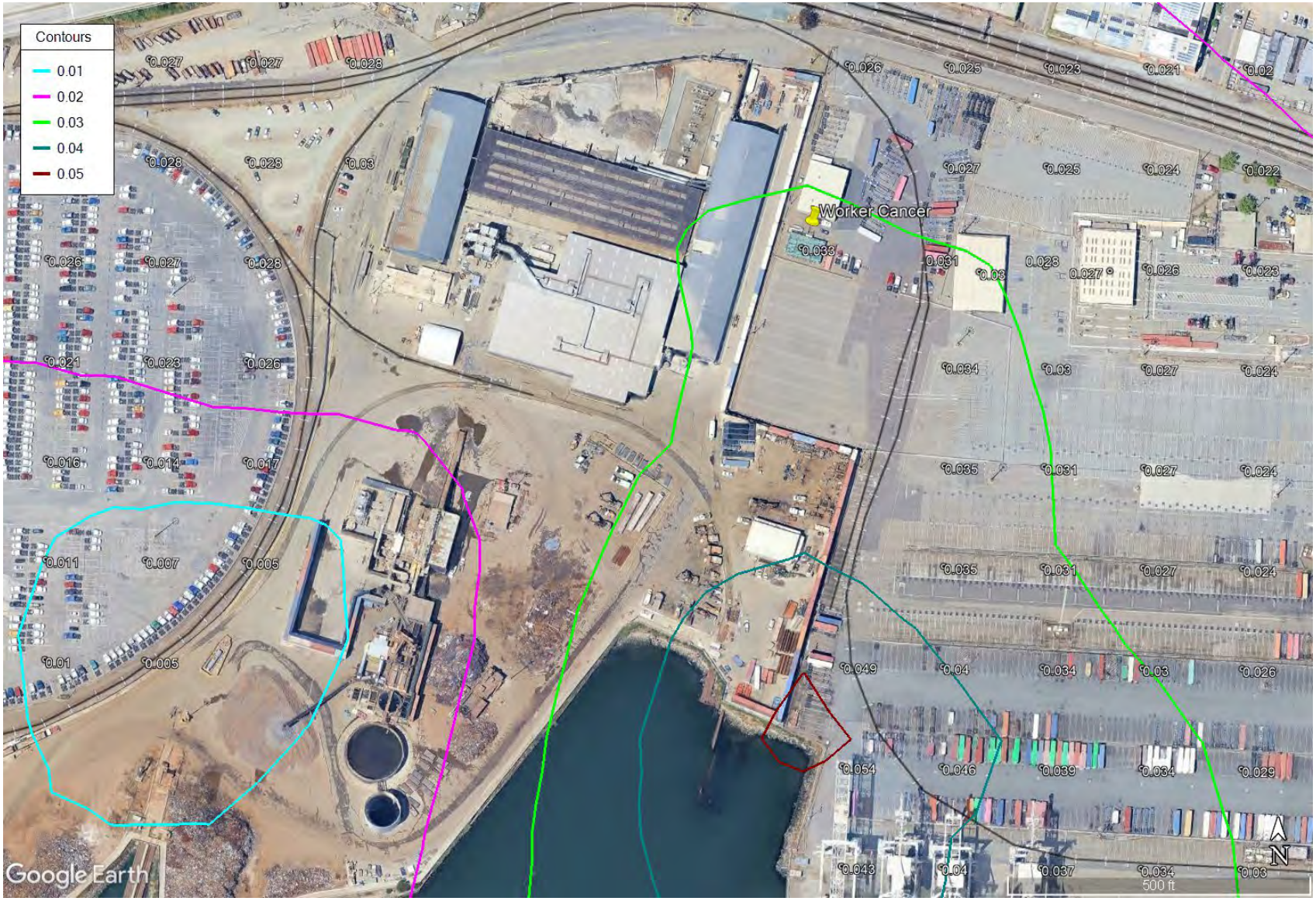


Residential Cancer Risk Contours (in a million) for the NFR Stockpile, scenario 2

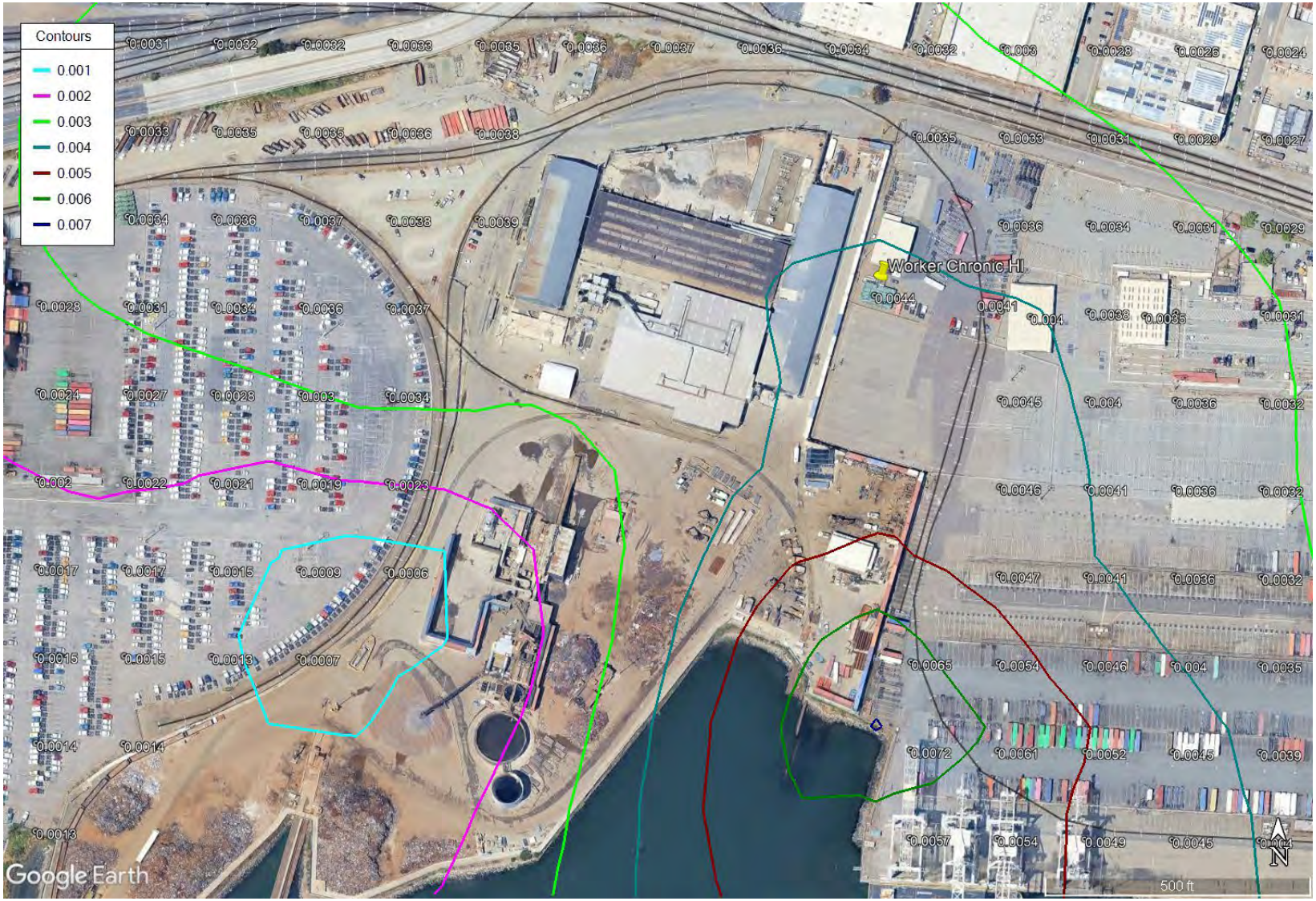
Resident Chronic HI Contours for the NFR Stockpile, Scenario 2



Worker Cancer Risk Contours (in a million) for the NFR Stockpile, Scenario 2



Worker Chronic HI Contours for the NFR Stockpile, Scenario 2



```
**BEE-Line Software:  (Version 12.07) data input file
**  Model: AERMOD.EXE     Input File Creation Date: 5/5/2025  Time: 3:53:42 PM
NO ECHO




 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =    390724.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes:      1 Source(s);       1 Source Group(s); and     762 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with a total of     0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     1.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.
```

```
**Input Runstream File:          C:\HRSA\P208 AN30009\Test\MASTERStk1_2009-2013_OTHER_1.DTA
**Output Print File:             C:\HRSA\P208 AN30009\Test\MASTERStk1_2009-2013_OTHER_1.LST

**File for Summary of Results:   C:\HRSA\P208 AN30009\Test\MASTERStk1_2009-2013_OTHER_1.SUM
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
STK032	0	0.76366E-03	562464.3	4183492.9	2.2	20.30	23	0.00	YES	

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STK032 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	390724.	STK032 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\HRSA\0 Tools\AERMOD_met_inputs\OAKLAND_STP_2009_2013.SFC Met Version: 14134
Profile file: C:\HRSA\0 Tools\AERMOD_met_inputs\OAKLAND_STP_2009_2013.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23230 Upper air station no.: 23230
Name: UNKNOWN Name: UNKNOWN
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	09	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.38	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	10	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.25	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	11	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.20	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	12	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.19	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	13	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.18	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	14	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.19	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	15	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.22	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	16	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.31	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.54	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	9.7	0	-999.	-99.00	-999.0	999.0	-99.00	-99.00
09	01	01	01	16.3	1	-999.	-99.00	-999.0	999.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STK032 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC		X-COORD (M)	Y-COORD (M)	CONC
562869.00	4183581.00	4.20592		562919.00	4183581.00	3.73620
562969.00	4183581.00	3.33500		563019.00	4183581.00	2.99139
563069.00	4183581.00	2.69947		562069.00	4183631.00	2.02225
562119.00	4183631.00	2.37721		562169.00	4183631.00	2.81133
562219.00	4183631.00	3.29329		562269.00	4183631.00	3.72060
562319.00	4183631.00	4.06877		562369.00	4183631.00	4.29716
562419.00	4183631.00	4.43483		562769.00	4183631.00	4.85716
562819.00	4183631.00	4.45643		562869.00	4183631.00	4.02501
562919.00	4183631.00	3.62511		562969.00	4183631.00	3.26619
563019.00	4183631.00	2.95039		563069.00	4183631.00	2.67381
562069.00	4183681.00	2.22358		562119.00	4183681.00	2.60205
562169.00	4183681.00	3.05805		562219.00	4183681.00	3.54480
562269.00	4183681.00	4.00182		562319.00	4183681.00	4.29849
562369.00	4183681.00	4.40769		562419.00	4183681.00	4.45299
562469.00	4183681.00	4.67124		562851.20	4183629.00	4.18337
562769.00	4183681.00	4.31279		562819.00	4183681.00	4.01611
562869.00	4183681.00	3.71377		562919.00	4183681.00	3.40682
562969.00	4183681.00	3.11703		563019.00	4183681.00	2.84752
563069.00	4183681.00	2.59889		562069.00	4183731.00	2.37544
562119.00	4183731.00	2.74832		562169.00	4183731.00	3.17357
562219.00	4183731.00	3.60479		562269.00	4183731.00	3.96156
562319.00	4183731.00	4.15141		562369.00	4183731.00	4.19540
562419.00	4183731.00	4.25515		562469.00	4183731.00	4.46134
562696.53	4183639.38	5.17897	Worker	562785.70	4183628.00	4.75884
562719.00	4183731.00	4.11730		562769.00	4183731.00	3.87284
562819.00	4183731.00	3.61809		562869.00	4183731.00	3.37483
562919.00	4183731.00	3.13901		562969.00	4183731.00	2.90732
563019.00	4183731.00	2.68868		563069.00	4183731.00	2.48019
562069.00	4183781.00	2.44592		562119.00	4183781.00	2.77978
562169.00	4183781.00	3.15382		562219.00	4183781.00	3.47376
562269.00	4183781.00	3.70450		562319.00	4183781.00	3.78991
562369.00	4183781.00	3.83977		562419.00	4183781.00	3.90194
562469.00	4183781.00	4.08955		562519.00	4183781.00	4.26895
562569.00	4183781.00	4.35133		562619.00	4183781.00	4.25719
562669.00	4183781.00	4.05066		562719.00	4183781.00	3.78726
562769.00	4183781.00	3.53601		562819.00	4183781.00	3.29950
562869.00	4183781.00	3.07768		562919.00	4183781.00	2.87230
562969.00	4183781.00	2.68786		563019.00	4183781.00	2.50676
563069.00	4183781.00	2.33326		562069.00	4183831.00	2.45093
562119.00	4183831.00	2.74145		562169.00	4183831.00	3.02591

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STK032 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
561908.00	4184807.00	0.68184	561958.00	4184807.00	0.68137
562008.00	4184807.00	0.68109	562058.00	4184807.00	0.68013
562108.00	4184807.00	0.68266	562158.00	4184807.00	0.68443
562208.00	4184807.00	0.69106	562258.00	4184807.00	0.69816
562308.00	4184807.00	0.70940	562358.00	4184807.00	0.72034
562408.00	4184807.00	0.73418	562458.00	4184807.00	0.74779
563152.00	4183768.00	2.10073	561808.00	4184857.00	0.64653
561858.00	4184857.00	0.64763	561908.00	4184857.00	0.64743
561958.00	4184857.00	0.64658	562008.00	4184857.00	0.64605
562058.00	4184857.00	0.64651	562108.00	4184857.00	0.64712
562158.00	4184857.00	0.65109	562208.00	4184857.00	0.65588
562258.00	4184857.00	0.66318	562308.00	4184857.00	0.67389
562358.00	4184857.00	0.68486	562408.00	4184857.00	0.69770
562458.00	4184857.00	0.71049	562003.00	4184167.00	1.60523
563117.00	4183697.00	2.36243 Resident	563530.60	4183539.80	1.28242
561908.00	4184907.00	0.61549	561958.00	4184907.00	0.61457
562008.00	4184907.00	0.61445	562058.00	4184907.00	0.61466
562108.00	4184907.00	0.61656	562158.00	4184907.00	0.61951
562208.00	4184907.00	0.62388	562258.00	4184907.00	0.63096
562308.00	4184907.00	0.64032	562358.00	4184907.00	0.65261
563169.00	4183843.00	1.87956	561971.00	4184177.00	1.54799

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	8.49856 AT (562719.00, 4183381.00, 1.83, 1.83, 1.50)	DC	
	2ND HIGHEST VALUE IS	7.65326 AT (562719.00, 4183431.00, 1.93, 1.93, 1.50)	DC	
	3RD HIGHEST VALUE IS	7.24590 AT (562769.00, 4183381.00, 1.97, 1.97, 1.50)	DC	
	4TH HIGHEST VALUE IS	6.75853 AT (562719.00, 4183331.00, 1.82, 1.82, 1.50)	DC	
	5TH HIGHEST VALUE IS	6.37277 AT (562769.00, 4183431.00, 2.05, 2.05, 1.50)	DC	
	6TH HIGHEST VALUE IS	6.35191 AT (562769.00, 4183331.00, 1.82, 1.82, 1.50)	DC	
	7TH HIGHEST VALUE IS	6.16916 AT (562819.00, 4183381.00, 2.02, 2.02, 1.50)	DC	
	8TH HIGHEST VALUE IS	5.85001 AT (562819.00, 4183331.00, 1.82, 1.82, 1.50)	DC	
	9TH HIGHEST VALUE IS	5.54748 AT (562769.00, 4183481.00, 2.20, 2.20, 1.50)	DC	
	10TH HIGHEST VALUE IS	5.49275 AT (562769.00, 4183531.00, 2.33, 2.33, 1.50)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 14 Warning Message(s)
A Total of 1760 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 6 Calm Hours Identified

A Total of 1754 Missing Hours Identified (4.00 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

MX W403	972	PFLCNV: Turbulence data is being used w/o ADJ_U* option	SigA Data
MX W403	973	PFLCNV: Turbulence data is being used w/o ADJ_U* option	SigA Data
MX W441	22927	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081407
MX W441	22928	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081408
MX W441	22929	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081409
MX W441	22930	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081410
MX W441	22931	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081411
MX W441	22932	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081412
MX W441	22933	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081413
MX W441	22934	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081414
MX W441	22935	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081415
MX W441	22936	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081416
MX W441	22937	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081417
MX W441	22938	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081418

****
*** AERMOD Finishes Successfully ***
****

```
**BEE-Line Software:  (Version 12.07) data input file
**  Model: AERMOD.EXE     Input File Creation Date: 5/5/2025  Time: 3:55:09 PM
NO ECHO




 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

```
                                    ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =    390724.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  HOURLY1

**Model Calculates  1 Short Term Average(s) of:   1-HR

**This Run Includes:      1 Source(s);       1 Source Group(s); and     762 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with a total of     0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     1.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.
```

```
**Input Runstream File:          C:\HRSA\P208 AN30009\Test\MASTERStkH1_2009-2013_Hourly.DTA
**Output Print File:             C:\HRSA\P208 AN30009\Test\MASTERStkH1_2009-2013_Hourly.LST

**File for Summary of Results:   C:\HRSA\P208 AN30009\Test\MASTERStkH1_2009-2013_Hourly.SUM
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
STK032	0	0.76366E-03	562464.3	4183492.9	2.2	20.30	23	0.00	YES	

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	STK032 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	390724.	STK032 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: C:\HRSA\0 Tools\AERMOD_met_inputs\OAKLAND_STP_2009_2013.SFC Met Version: 14134
Profile file: C:\HRSA\0 Tools\AERMOD_met_inputs\OAKLAND_STP_2009_2013.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23230 Upper air station no.: 23230
Name: UNKNOWN Name: UNKNOWN
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	09	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.38	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	10	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.25	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	11	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.20	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	12	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.19	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	13	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.18	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	14	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.19	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	15	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.22	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	16	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.31	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	0.54	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0
09	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.11	0.75	1.00	999.00	999.	-9.0	999.0	-9.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	9.7	0	-999.	-99.00	-999.0	999.0	-99.00	-99.00
09	01	01	01	16.3	1	-999.	-99.00	-999.0	999.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF HOURLY1 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGH VALUE IS	923.92091	ON 11091804: AT (562369.00, 4183431.00, 2.17, 2.17, 1.50)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 14 Warning Message(s)
A Total of 1760 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 6 Calm Hours Identified

A Total of 1754 Missing Hours Identified (4.00 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

MX W403	972	PFLCNV: Turbulence data is being used w/o ADJ_U* option	SigA Data
MX W403	973	PFLCNV: Turbulence data is being used w/o ADJ_U* option	SigA Data
MX W441	22927	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081407
MX W441	22928	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081408
MX W441	22929	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081409
MX W441	22930	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081410
MX W441	22931	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081411
MX W441	22932	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081412
MX W441	22933	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081413
MX W441	22934	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081414
MX W441	22935	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081415
MX W441	22936	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081416
MX W441	22937	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081417
MX W441	22938	METQA: Vert Pot Temp Grad abv ZI set to min .005, KURDAT=	11081418

****
*** AERMOD Finishes Successfully ***
****

HARP Project Summary Report 6/4/2025 11:18:15 AM

PROJECT INFORMATION
HARP Version: 22118
Project Name: SNMPM30
Project Output Directory: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30
HARP Database: NA

EMISSION INVENTORY
No. of Pollutants:9
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
STK032	0	0	7440382	Arsenic	1	0.064461201	9.01E-06	1
STK032	0	0	7440439	Cadmium	1	0.010074087	1.41E-06	1
STK032	0	0	18540299	Cr(VI)	1	0.036739645	5.14E-06	1
STK032	0	0	7440508	Copper	1	0.631654986	8.83E-05	1
STK032	0	0	7439976	Mercury	1	0.015645608	2.19E-06	1
STK032	0	0	7439965	Manganese	1	0.586305398	8.2E-05	1
STK032	0	0	7440020	Nickel	1	0.754746727	0.000106	1
STK032	0	0	7439921	Lead	1	0.318094973	4.45E-05	1
STK032	0	0	7440622	Vanadium	1	0.069967937	9.78E-06	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

18540299MAXHR.txt
18540299PER.txt
7439921MAXHR.txt
7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440382MAXHR.txt
7440382PER.txt
7440439MAXHR.txt
7440439PER.txt
7440508MAXHR.txt
7440508PER.txt
7440622MAXHR.txt
7440622PER.txt
{F4DF16FC-37EF-4441-9FA6-46E3BA2917D4}.tmp

POLLUTANT HEALTH INFORMATION

Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH20276
Official: False

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
7440439	Cadmium	15			0.02	0.0005	
18540299	Cr(VI)	510	0.5		0.2	0.02	
7440508	Copper			100			
7439976	Mercury			0.6	0.03	0.00016	0.06
7439965	Manganese				0.09		0.17
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
7439921	Lead	0.042	0.0085				
7440622	Vanadium			30			

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

RCancerRisk.csv
RCancerRiskSumByRec.csv
RGLCList.csv
RHRAInput.hra
RNCChronicRisk.csv
RNCChronicRiskSumByRec.csv
ROutput.txt
RPathwayRec.csv
RPolDB.csv
WCCancerRisk.csv
WCCancerRiskSumByRec.csv
WCGLCList.csv
WChGLCList.csv
WChHRAInput.hra
WChNCChronicRisk.csv
WChNCChronicRiskSumByRec.csv
WChOutput.txt
WChPathwayRec.csv
WChPolDB.csv
WCHRAInput.hra
WCOutput.txt
WCPathwayRec.csv
WCPolDB.csv

Spatial averaging files (\sa\)

HARP2 - HRACalc (dated 22118) 6/4/2025 11:04:08 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home

```
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

*********************************
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

*********************************
TIER 2 SETTINGS
Tier2 not used.

*********************************

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\RCancerRisk.csv
Cancer risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\RCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\RNCChronicRisk.csv
Chronic risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\RNCChronicRiskSumByRec.csv

HRA ran successfully
```

HARP2 - HRACalc (dated 22118) 6/4/2025 11:04:41 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 25

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
NOTE: The worker adjustment factors below are only used for cancer assessments. However, the GLC adjustment factor is also applied to 8-hr noncancer chronic assessments.
Worker adjustments factors enabled: YES

```
GLC adjustment factor: 1
Exposure frequency: 250

**Fraction at time at home**
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

*********************************
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

*********************************
TIER 2 SETTINGS
Tier2 not used.

*********************************

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\WCCancerRisk.csv
Cancer risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\WCCancerRiskSumByRec.csv
HRA ran successfully
```

HARP2 - HRACalc (dated 22118) 6/4/2025 11:06:23 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: NCChronic
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

****

```
TIER 2 SETTINGS
Tier2 not used.

**********

Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\WChNCChronicRisk.csv
Chronic risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\SonomaPM30\SNMPM30\hra\WChNCChronicRiskSumByRec.csv
HRA ran successfully
```

HARP Project Summary Report 6/4/2025 10:24:46 AM

PROJECT INFORMATION
HARP Version: 22118
Project Name: NFRStEF1
Project Output Directory: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1
HARP Database: NA

EMISSION INVENTORY
No. of Pollutants:9
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
STK032	0	0	7440382	Arsenic	1	0.021440795	3E-06	1
STK032	0	0	7440439	Cadmium	1	0.003350798	4.69E-07	1
STK032	0	0	18540299	Cr(VI)	1	0.012220176	1.71E-06	1
STK032	0	0	7440508	Copper	1	0.210098244	2.94E-05	1
STK032	0	0	7439976	Mercury	1	0.005203972	7.28E-07	1
STK032	0	0	7439965	Manganese	1	0.195014267	2.73E-05	1
STK032	0	0	7440020	Nickel	1	0.251040465	3.51E-05	1
STK032	0	0	7439921	Lead	1	0.105803321	1.48E-05	1
STK032	0	0	7440622	Vanadium	1	0.023272421	3.25E-06	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

18540299MAXHR.txt
18540299PER.txt
7439921MAXHR.txt
7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440382MAXHR.txt
7440382PER.txt
7440439MAXHR.txt
7440439PER.txt
7440508MAXHR.txt
7440508PER.txt
7440622MAXHR.txt
7440622PER.txt
{F4DF16FC-37EF-4441-9FA6-46E3BA2917D4}.tmp

POLLUTANT HEALTH INFORMATION

Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH20276
Official: False

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
7440439	Cadmium	15			0.02	0.0005	
18540299	Cr(VI)	510	0.5		0.2	0.02	
7440508	Copper			100			
7439976	Mercury			0.6	0.03	0.00016	0.06
7439965	Manganese				0.09		0.17
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
7439921	Lead	0.042	0.0085				
7440622	Vanadium			30			

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

RCancerRisk.csv
RCancerRiskSumByRec.csv
RCCancerRisk.csv
RCCancerRiskSumByRec.csv
RCGLCList.csv
RChGLCList.csv
RChHRAInput.hra
RChNCChronicRisk.csv
RChNCChronicRiskSumByRec.csv
RChOutput.txt
RChPathwayRec.csv
RChPolDB.csv
RCHRAInput.hra
RCOutput.txt
RCPathwayRec.csv
RCPolDB.csv
RGLCList.csv
RHRAInput.hra
RNCAcuteRisk.csv
RNCAcuteRiskSumByRec.csv
RNCChronicRisk.csv
RNCChronicRiskSumByRec.csv
ROutput.txt
RPathwayRec.csv
RPolDB.csv
WCCancerRisk.csv
WCCancerRiskSumByRec.csv
WCGLCList.csv
WChGLCList.csv
WChHRAInput.hra
WChNCChronicRisk.csv
WChNCChronicRiskSumByRec.csv
WChOutput.txt
WChPathwayRec.csv

WChPolDB.csv
WCHRAInput.hra
WCOutput.txt
WCPathwayRec.csv
WCPolDB.csv

Spatial averaging files (\sa\)
_____

HARP2 - HRACalc (dated 22118) 6/4/2025 10:10:15 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home

```
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

*********************************
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

*********************************
TIER 2 SETTINGS
Tier2 not used.

*********************************

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\RCancerRisk.csv
Cancer risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\RCancerRiskSumByRec.csv
Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\RNCChronicRisk.csv
Chronic risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\RNCChronicRiskSumByRec.csv

HRA ran successfully
```

HARP2 - HRACalc (dated 22118) 6/4/2025 10:08:10 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 25

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
NOTE: The worker adjustment factors below are only used for cancer assessments. However, the GLC adjustment factor is also applied to 8-hr noncancer chronic assessments.
Worker adjustments factors enabled: YES

```
GLC adjustment factor: 1
Exposure frequency: 250

**Fraction at time at home**
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

**********
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

**********
TIER 2 SETTINGS
Tier2 not used.

**********

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\WCCancerRisk.csv
Cancer risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\WCCancerRiskSumByRec.csv
HRA ran successfully
```

HARP2 - HRACalc (dated 22118) 6/4/2025 10:07:50 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: NCChronic
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

****

```
TIER 2 SETTINGS
Tier2 not used.

*********************************

Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\WChNCChronicRisk.csv
Chronic risk total by receptor saved to: F:\HRSA Assignments\P208 Stockpile\STK32PM30\NFRStEF1\hra\WChNCChronicRiskSumByRec.csv
HRA ran successfully
```

Exemption Analysis
** Generated by AERSURFACE, Version 20060 09/14/23

Data Type: NLCD 2016
** Title 1
** Primary Site (Zo)
** Center UTM Easting (meters) 562481
** Center UTM Northing (meters) 4183495
** UTM Zone 10

Land Cover Counts: Surface Roughness (Within 3000m Radius)

Land: Cover Counts: Surface Roughness

0	Missing, Out-of-Bounds, or Unde	0
11	Open Water	3393
12	Perennial Ice/Snow	0
21	Developed, Open Space	855
22	Developed, Low Intensity	1776
23	Developed, Medium Intensity	9848
24	Developed, High Intensity	15180
31	Barren Land (Rock/Sand/Clay)	132
32	Unconsolidated Shore	0
41	Deciduous Forest	0
42	Evergreen Forest	0
43	Mixed Forest	0
51	Dwarf Scrub	0
52	Shrub/Scrub	11
71	Grasslands/Herbaceous	28
72	Sedge/Herbaceous	0
73	Lichens	0
74	Moss	0
81	Pasture/Hay	0
82	Cultivated Crops	198
90	Woody Wetlands	0
91	Palustrine Forested Wetland	0
92	Palustrine Scrub/Shrub Wetland	0
93	Estuarine Forested Wetland	0
94	Estuarine Scrub/Shrub Wetland	0
95	Emergent Herbaceous Wetland	8
96	Palustrine Emergent Wetland (Pe	0
97	Estuarine Emergent Wetland	0
98	Palustrine Aquatic Bed	0
99	Estuarine Aquatic Bed	0
	Total	31429
	Urban=	79.63%

NAD 83

SW

562407 m E
4183512 m N

NE

562775 m E

4183798 m N

Met Data: Oakland STP
Terrain data: Alameda County