Outlook

Re: Problems and Solutions to the DTSC Post-Fire Soil Testing Guidance Document

From Andrew J Whelton <awhelton@purdue.edu>

Date Sun 8/31/2025 3:28 PM

To Sanchez, Craig@DTSC <Craig.Sanchez@dtsc.ca.gov>; Butler, Katherine@DTSC <Katherine.Butler@dtsc.ca.gov>

Cc Lichtig, Scott@EPA <scott.lichtig@calepa.ca.gov>; Scholer, Craig@DTSC <Craig.Scholer@dtsc.ca.gov>; Berg, Thanne@DTSC <Thanne.Berg@dtsc.ca.gov>

1 attachment (27 MB)

2024Nov6WILDFIRE_survivors_handbook_ENGLISH (2).pdf;

Hi,

Thank you for calling me Friday afternoon. After the meeting ended I reflected on what was discussed. I appreciate you all taking the time to talk with me and I encourage CalEPA to revise and reissue the guidance this week so it can be done and considered a closed book. Below is what I recall as a summary of the conversation and my takeaways.

Sincerely
Andrew

August 29, 2025 Conversation Summary

1. CalEPA/DTSC did not consider lithium in developing the residential soil sampling guidance development and it hasn't been a standard metal that wildfire impacted soil has been tested for in the past. In the meeting I heard that you are leaning towards not mentioning lithium because of concerns that people will pay more money for soil testing. Recognizing this concern, I encouraged that, at the bottom of the screening level table or that page, add a statement and list other metals that may or may not be a site-specific issue like lithium and chromium(VI). Simply give people information that they (and their consultants) can use it to make the decision about testing themselves.

2. You expressed concern that there was no public comment period. I appreciate this concern. To me, this 7 pager document is meant as non-legally enforceable guidance, not to be explicit in contractual requirements. A better classification of the document may be an info sheet or fact sheet to lessen any potential implied legal interpretation.

3. You decided not to suggest Cr(VI) soil testing in the 7 page guidance released 1+ week ago out of concern that soil testing would cost more for property owners and hasn't been a standard metal that wildfire impacted soil has been tested for in the past. Chromium(VI) is mentioned in the companion more technical document, but not the more public colorful 7 page document.

4. You were informed that LA County contractor Roux Associates didn't find Cr(VI) (or much) in post-debris removal property soil. This is potentially good news.

5. No LA County background soil sampling study was conducted in response to the Palisades Fire and Eaton Fire.

6. The residential soil sampling document was designed based on the DTSC "health risk assessment" related to persons on the property. The other aspects of the property use, economic value, restoration, and handling were not considered in the post-fire soil sampling guidance.

   For example, after debris removal if someone finds chromium below the USEPA 125,000 ppm residential soil screening level, the property would be considered safe for chromium exposure based on the DTSC Health Risk Assessment. But, if that property owner then decides to move that same fire impacted soil offsite during rebuilding (creating a waste), *they would need to first (and potentially pay more money again)* chemically test the soil and compare those metal levels against California Code of Regulation (CCR) hazardous waste levels. If that soil was found to contain total chromium at 3,000 ppm (exceeding the CCR haz waste limit of 2,500 ppm), then that residential soil would be defined as a hazardous waste for handling and disposal. *But, if the soil is not moved off site CalEPA/DTSC does not consider it a hazardous waste*. This is something I've encountered elsewhere in solid and hazardous waste management policy, but have not quite seen this interpretation applied for post-fire residential property restoration decisions.

   My read of DTSC's own mission statement is the agency mission includes "...enhance economic vitality by restoring contaminated land...". As presented, economic vitality and fully restoring the contaminated land was not integrated into the soil sampling guidance document's design. There would seem to be economic implications for a property owner and local community with property values, resale, etc. At the minimum, making clear to document readers that movement of soil offsite would require a comparison against different soil standards, not against those that you have listed in the document, would seem to resolve this economic consideration. This could be an Asterix or disclaimer. I have spoken with many property owners who are confused about this as they want to anticipate the costs that they could encounter during rebuilding or resale.

   > *DTSC Mission from website August 31: "DTSC's Mission is to protect California's people, communities, and environment from toxic substances, to enhance economic vitality by restoring contaminated land, and to compel manufacturers to make safer consumer products."*

7. It was also mentioned that you all believe that residential building contractors moving soil off site would know how to chemically test the soil first, would do it, and then if they found it was hazardous waste would handle the site and soil properly. Based on my experience with residential construction contractors, this is difficult to agree with. I guess there might be some contractors that would do this. The addition of a single disclaimer that any movement of soil offsite would need to be compared against different standards would resolve this.

8. If I recall correctly, you underscored that *California Code of Regulation (CCR)* hazardous waste limits are not health-based limits or something like that. Based on my understanding of the TTLC/STLC testing methods themselves I recognize your interpretation. The purpose of the limits themselves is meant to help protect public health, safety, and the environment from a waste. The key, as you mentioned during our meeting, is the word "waste". Again, I think a single disclaimer that any movement of soil offsite would need to be compared against different standards would help make this clearer.

9. CalEPA/DTSC's position is that the 125,000 ppm total chromium USEPA Regional Screening Level for residential soil is appropriate for LA County when considering health risk only, while the 2024

Ventura County Mountain View Fire 36,000 total chromium post-fire soil screening level was not necessary when considering health risk only.

10. You mentioned, if I recall, that before proceeding to do anything with the residential soil sampling guidance issued 1+ week ago, you are waiting for Professor Sanjay Mohanty at UCLA to imminently release his Cr(VI) results. I mentioned to you that I am working with him on the wildfire soils study (https://engineering.purdue.edu/PlumbingSafety/resources/Soil-Sampling-From-Past-Fires-05102025.pdf). He isn't imminently releasing results. I also spoke with him again after our Friday afternoon meeting to re-confirm that. I'm uncertain how you came to that position. Neither he nor I ever said that was happening. I encourage CalEPA/DTSC to make the slight upgrades as we discussed without waiting on his results since there is no release date. People are looking to make soil testing decisions and making these slight edits could resolve the issues. He is in fact testing for lithium, Cr(VI), among other metals.

11. You have received two comments on the wildfire email account since releasing the document. You believe the way the website is setup and relationship between the 7 pager document and more detailed document does not warrant further clarification. I have proposed explicitly mentioning (spelling out) the comparison document at the very bottom on the 7 pager document. The current weblink takes you to a general webpage where you have to determine how to navigate it. I had property owners call me in frustration that they had no idea there was another document.

Finally, after our meeting I came across this attached 2024 CalEPA wildfire document and it seems Soil Sampling was formally recognized as an important part of California wildfire recovery (pg 5, pg 10) prior to the LA Fires. I wish I had seen this document in February 2025 as it could have helped rapidly educate County officials, business leaders, property owners, and researchers who are engaging with this topic for the very first time. This attached document is really valuable so I encourage CalEPA to uplift it to property owners for future fires.

On a minor note, there seems to be a typo on that document. On page 10 it was claimed "chlorine" is in the soil after fires (pg 10). Chlorine is a gas. To my knowledge no one tests for chlorine gas in soil after wildfires. If chlorine gas is suspected present after wildfires in soils this would be important information to be considered for property entry during and after debris removal. If a typo, I'd encourage the typo correction. I am happy to share that document more widely once addressed.

From: Sanchez, Craig@DTSC <Craig.Sanchez@dtsc.ca.gov>
Sent: Friday, August 29, 2025 7:10 PM
To: Butler, Katherine@DTSC <Katherine.Butler@dtsc.ca.gov>; Andrew J Whelton <awhelton@purdue.edu>
Cc: Lichtig, Scott@EPA <scott.lichtig@calepa.ca.gov>; Scholer, Craig@DTSC <Craig.Scholer@dtsc.ca.gov>; Berg, Thanne@DTSC <Thanne.Berg@dtsc.ca.gov>
Subject: RE: Problems and Solutions to the DTSC Post-Fire Soil Testing Guidance Document

Dr. Whelton,

Thank you for taking the time today to discuss your comments on the LA Fire Guidance and Sampling and Analysis Plan. The team is actively evaluating how to incorporate your feedback.

Please do not hesitate to reach out to me or my team should you have any additional comments.

Best Regards,

Craig J. Sanchez, MS, PE
Technical Services and Special Projects Division Chief
Site Mitigation and Restoration Program
(916) 516-6200

From: Butler, Katherine@DTSC <Katherine.Butler@dtsc.ca.gov>
Sent: Friday, August 29, 2025 11:37 AM
To: Andrew J Whelton <awhelton@purdue.edu>
Cc: Lichtig, Scott@EPA <scott.lichtig@calepa.ca.gov>; Scholer, Craig@DTSC <Craig.Scholer@dtsc.ca.gov>; Sanchez, Craig@DTSC <Craig.Sanchez@dtsc.ca.gov>; Berg, Thanne@DTSC <Thanne.Berg@dtsc.ca.gov>
Subject: RE: Problems and Solutions to the DTSC Post-Fire Soil Testing Guidance Document

Hello Dr. Whelton,

Thank you for following up. By way of this email, I'm asking our Deputy Director of Site Mitigation, Thanne Berg, and Division Chief Craig Sanchez, to get back to you to schedule a meeting to discuss.

Katie

From: Andrew J Whelton <awhelton@purdue.edu>
Sent: Friday, August 29, 2025 8:29 AM
To: Butler, Katherine@DTSC <Katherine.Butler@dtsc.ca.gov>
Cc: Lichtig, Scott@EPA <scott.lichtig@calepa.ca.gov>; Scholer, Craig@DTSC <Craig.Scholer@dtsc.ca.gov>
Subject: Re: Problems and Solutions to the DTSC Post-Fire Soil Testing Guidance Document

Hello:

I'm just checking in about the status of the incorrect soil sampling guidance issued and when you will correct it. Last nights webinar hosted by community groups discussed Chromium (VI) in air but there was repeated mention of chromium in soil.

This prompted me to wonder, where is the background soil testing study that was conducted in response to these fires? I'm aware that prior background studies are conducted so property owners, engineering firms, and health officials can interpret their post-fire soil test results. It's unclear how people and businesses are interpreting the results they are receiving without a background study.

I encourage that you issue the revised guidance Monday or sooner in the spirit of protecting public safety and not allowing people to make decisions with guidance that potentially jeopardizes their health. This seems like a fairly easy correction.

Sincerely,
Andy

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From: Butler, Katherine@DTSC <Katherine.Butler@dtsc.ca.gov>
Sent: Monday, August 25, 2025 12:15 PM
To: Andrew J Whelton <awhelton@purdue.edu>
Cc: Lichtig, Scott@EPA <scott.lichtig@calepa.ca.gov>; Scholer, Craig@DTSC <Craig.Scholer@dtsc.ca.gov>
Subject: RE: Problems and Solutions to the DTSC Post-Fire Soil Testing Guidance Document

Dear Dr. Whelton,

Thank you kindly for your expeditious feedback on our guidance materials that help survivors navigate soil testing and evaluation. Our DTSC team is reviewing now, thank you so much.

Katie

Katherine M. Butler, MPH (*she/her/ella*)
Director
Katherine.Butler@dtsc.ca.gov
Department of Toxic Substances Control
California Environmental Protection Agency

DTSC Department of Toxic Substances Control
CalEPA California Environmental Protection Agency

Governor Gavin Newsom
1021 O Street, Suite 9000
Sacramento, CA 95814

cc: Honorable Ann Patterson, Senior Counselor to the Governor
cc: Secretary Yana Garcia, California Environmental Protection Agency
cc: Secretary Tomiquia Moss, Business, California Consumer Services and Housing Agency

August 24, 2025

Problems and Solutions to the DTSC Post-Fire Soil Testing Guidance Document

Dear Governor Newsom:

I am notifying you of several problems and solutions with the "Residential Soil Evaluation" August 2025 guidance document issued by CalEPA and DTSC in response to the L.A. Wildfires.[1] The file seems to have been dated and publicly released the week of August 18, 2025. I only first saw the file on Friday August 22, 2025 at 9:38 pm EST when a residential property owner from the Eaton Fire impact area sent it to me asking me to make sense of it for her.

If I had been consulted in advance, the enclosed information would have been provided to you before your Administration publicly released the PDF file. Now, however, I urge your Administration to rapidly correct these problems so that wildfire survivors, businesses, and financial institutions do not waste their limited finances. As written, unsafe conditions could be created by following the guidance. These consequences are avoidable, and this can be remedied quickly.

Thank you for considering this information. Thorough confirmatory soil testing after debris removal has been and continues to be a critical aspect of post-fire recovery. Please do not hesitate to contact me at awhelton@purdue.edu.

Respectfully,

Andrew J. Whelton, Ph.D., Purdue University, Professor

Signing as an individual, not on behalf of the organization

[1] California Department of Toxic Substances Control. *Residential Soil Evaluation.* August 2025. Sacramento, California. https://dtsc.ca.gov/wp-content/uploads/sites/31/2025/08/DTSC-Residential-Soil-Evaluation-Guidance-and-Cover-Letter-August-2025.pdf

Problem 1 – The guidance document encourages soil sampling not to be conducted in areas where foundations and patios formerly existed. The map on page 5 of 7 (Exhibit 1) makes this position clear. Garages and patios (i.e., concrete, stone, wood, etc.) are often removed during debris removal for fire destroyed properties. During the concrete pad removal process, soil contamination can be spread to or accumulate in those locations. By encouraging document readers not to sample in these locations, contractors may push contamination into these scraped spaces knowing that California does not recommend testing those locations. The entirety of the scraped property footprint should be considered in the soil sampling locations (as clearly explained by Ventura County and my colleagues and I previously).[2]

Further, garages are often where fire-damaged cars, chemicals and other materials would be. There would also potentially be worker safety risks as these unchecked areas could contain harmful levels of chemicals that go undocumented.

> ***Solution:*** *The file should be revised to make clear that the area footprint of the scraped structure, AND garage AND patio footprints that undergo debris removal should be included in the soil locations sampled.*

Problem 2 – Lithium testing is not recommended in the guidance document (page 6 of 7), but should be. It is well-known that lithium is a major urban fire pollutant, public safety and public health hazard from lithium-ion batteries, especially electric vehicles.[3,4] It has been reported that approximately 5,000 electric vehicles (EV) burned in the Palisades Fire perimeter alone.[5] EVs release high amounts of lithium into the environment during fires. Some consumer products in homes release lithium too. The U.S. Environmental Protection Agency even amplified the risk of lithium to public safety and health hazard posed to the area January 29, 2025.

> *"This will be … from our estimation, probably the largest lithium-ion battery pickup, cleanup, that's ever happened in the history of the world," said …. the Environmental Protection Agency's incident commander for the Palisades and Eaton fire cleanups. – NBC News, January 29, 2025*[6]

During my visits to the impacted areas from February through March, I encountered many burned out electric vehicles (Exhibit 2). Lithium soil contamination is a potential concern for those properties.

> ***Solution:*** Lithium should be included in the Residential Soil Screening Levels table on Page 6 of 7. The residential soil USEPA Regional Screening Level (RSL) for lithium is 16 mg/kg or 16 ppm.

Problem 3 – The Decision Unit areas on Exhibit 1 (page 6 of 7) seem to be much greater in size than Decision Unit areas used in Ventura County and areas my colleagues and I endorsed (Exhibit 3). By recommending a much greater area per Decision Unit, there is less likelihood that contractors will find contaminated soil simply because the number of soil samples collected in the guidance document is not based on the area of each decision unit.

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[2] Whelton et al. *Urgent Community Concern Over Parcel Soil Testing After Wildfire.* Letter to Governor Gavin Newsom. May 14, 2025. https://engineering.purdue.edu/PlumbingSafety/opinions/Opinion-Soil-Testing-Post-Fire-2025-05-14.pdf

[3] Quant et al. 2023. Ecotoxicity Evaluation of Fire-Extinguishing Water from Large-Scale Battery and Battery Electric Vehicle Fire Tests. *Environmental Science & Technology.* https://pubs.acs.org/doi/10.1021/acs.est.2c08581

[4] Hynynen et al. 2023. *Investigation of extinguishing water and combustion gases from vehicle fires: RISE Report 2023:22.* RISE Research Institutes of Sweden AB. https://www.diva-portal.org/smash/get/diva2:1744894/FULLTEXT01.pdf

[5] Bendix and Douglas. In cleanup from California fires, lithium-ion batteries are a dangerous challenge. January 25, 2025. *NBC News.* https://www.nbcnews.com/science/science-news/california-fire-cleanup-lithium-ion-batteries-dangerous-challenge-rcna188945

[6] Bendix and Douglas. In cleanup from California fires, lithium-ion batteries are a dangerous challenge. January 25, 2025. *NBC News.* https://www.nbcnews.com/science/science-news/california-fire-cleanup-lithium-ion-batteries-dangerous-challenge-rcna188945

Solution: The number of samples collected from each Decision Unit should follow the previously established standard practice (Exhibit 3). That should be made clear in a revised document.

Problem 4 – The level of total chromium in soil noted as a problem in the guidance document is 125,000 ppm. Yet, soil is considered hazardous waste by the California Code of Regulations if the total chromium concentration meets or exceeds 2,500 ppm.[7] The new guidance therefore endorses that fire impacted residential properties are permitted to contain hazardous waste levels of total chromium in their soil, 50 times the State's allowable limit. (NOTE: It seems Ventura County in 2024 utilized 36,000 ppm as the total chromium limit, which is lower that what is being recommended, but above the 2,500 ppm California Code of Regulations hazardous waste concentration). Persons handling or coming into contact with hazardous waste scale total chromium contaminated material (i.e., inhabitants, children, workers, landfills) would not be protected by actions set forth in the guidance document.

Solution: Reduce the maximum recommended total chromium level from 125,000 ppm to 2,500 ppm to comply with State of California law and prevent the public, workers, and landfills from coming into contact with soil material that is hazardous waste.

Problem 5 – Chromium(+6) testing is not recommended in the guidance document (page 6 of 7), but should be. *Total* chromium soil sampling was only recommended in the document, but I am aware of chromium being detected in area soils after the Eaton and Palisades Fires and other fires.[8] There is concern that wildfires can convert Chromium(+3) to Chromium(+6), the more toxic form. If a small fraction of the Chromium(+3) was converted to Chromium(+6) that could be a notable amount. The USEPA regional Screening Level for chromium(+6) level in residential soil is 0.95 mg/kg or 0.95 ppm.

Solution: A recommendation to test for chromium(+6) should be added and the chromium(+6) RSL of 0.95 mg/kg or 0.95 ppm should also be included in the Residential Soil Screening Levels table on Page 6 of 7.

[7]California Code of Regulations. 22 *CCR § 66261.24 § 66261.24. Characteristic of Toxicity.* Accessed August 24, 2025. https://govt.westlaw.com/calregs/Document/I8430AAA95B6111EC9451000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

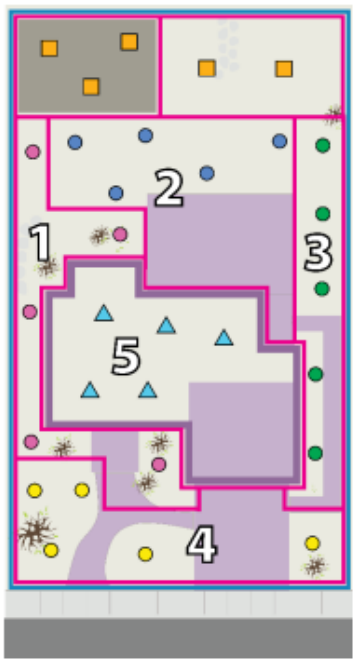
[8] Lopez et al. 2023. Metal toxin threat in wildland fires determined by geology and fire severity. *Nature Communications.* https://doi.org/10.1038/s41467-023-43101-9

SOIL SAMPLE LOCATION RECOMMENDATIONS

For all residential building situations (total loss, partial loss, homes still standing), if soil sampling is performed, DTSC recommends testing in these current and future high-use areas:

- Bare dirt areas;
- Gardens or food-growing spaces; and
- Children's play areas and sandboxes.

Samples should be taken from the top 6 inches of soil, where exposure is most likely. Consider collecting soil samples around the perimeter of structures built before 1978 to check for contamination from lead-based paint. DTSC also recommends sampling in areas with bare soils where structures such as homes and garages or vehicles burned.



The images above show the same property.

The one on the right has no structures or landscaping. The property has been divided into four major sections (circles) where composite samples could be collected. The squares in the play area and garden represent individual discrete samples in sensitive use areas. A fifth composite sample (triangles) should be taken in bare soils where structures were removed during Phase 2 debris removal and soil scraping activities.

The figures to the left show the suggested sampling strategy from DTSC's Soil Sampling Plan, which includes the collection of composite soil samples (circles). A composite sample is a sample made by mixing several smaller samples of soil taken from different spots in the same area. This gives a picture of the overall condition of the soil in that area.

DTSC recommends collecting:

- A minimum of four composite soil samples from each property as labeled on the figure. Each composite sample includes five individual sample spots (circles).
- A fifth composite sample from in the footprint of destroyed structures (triangles).
- Separate soil samples (squares) in sensitive-use areas such as children's play areas and where food is grown.

Additional samples may be helpful to evaluate larger parcels.

California Department of Toxic Substances Control **dtsc.ca.gov**

Exhibit 1. Page 5 of the 7 page PDF has the problem that should be corrected. This page pertains to "SOIL SAMPLE LOCATION RECOMMENDATIONS"

(a)

(b)

Exhibit 2. Images (a, b) of two electric vehicles damaged by the Eaton Fire in Altadena, California
(Photos taken by Andrew Whelton, Purdue University, April 10, 2025)

INTERPRETING YOUR SOIL SAMPLING RESULTS

Screening Levels and Health Risk Explained

- Screening levels are health-based numbers that help identify if the amount of chemicals in soil testing results pose a health risk.
- These levels are designed to protect sensitive people - like children, pregnant people, elderly people and those with health conditions.
- Having a detection above a screening level **does not** indicate immediate risk. More information such as individual risk factors and land use should be considered.
- The Risk Management Range is defined by the U.S. Environmental Protection Agency and refers to the range of health risks considered acceptable when making decisions about environmental hazards.
- Screening levels consider the toxicity of the chemical and exposure to that chemical over an extended period and are set at the most health-protective level in the risk range.

Residential Soil Screening Levels Used in California

Chemical	Screening Level (mg/kg)
Antimony[1]	31
Arsenic[2]	12
Barium[1]	15,000
Beryllium[3]	16
Cadmium[1]	7.1
Chromium[1]	125,000
Cobalt[1]	23
Copper[1]	3,100
Lead[3]	80
Molybdenum[1]	390
Nickel[3]	820
Selenium[1]	390
Silver[1]	390
Thallium[1]	0.78
Vanadium[1]	390
Zinc[1]	23,000

Background Metals in Soil

Metals are natural elements found in rocks, soil and groundwater across California. These natural levels of metals in soil are commonly referred to as background. Background can also include ambient concentrations from past human activities. Arsenic is commonly compared to background rather than a health-based screening level. For more information see DTSC's *Arsenic in Soils Fact Sheet*.

References:

1) USEPA Regional Screening Level
2) DTSC Southern California Ambient Arsenic Screening Level
3) DTSC Screening Levels

California Department of Toxic Substances Control **dtsc.ca.gov**

Exhibit 3. Page 6 of the 7 page PDF has the problem that should be corrected. This page pertains to "INTERPRETING YOUR SOIL SAMPLING RESULTS"

Exhibit 4. Approach to Soil Sampling on a Residential Property Used by Ventura County, 2024 and Recommended by My Colleagues and I to Governor Newsom April 2025

Estimated Square Footage of Ash Footprint	Number of 5-Point Aliquots (Composite Sampling)
0-100 square feet	1
101-1,000 square feet	2
1,001-1,500 square feet	3
1,501-2,000 square feet	4
2,001-5,000 square feet	5
>5,000 square feet	Must consult with local Environmental Health officials

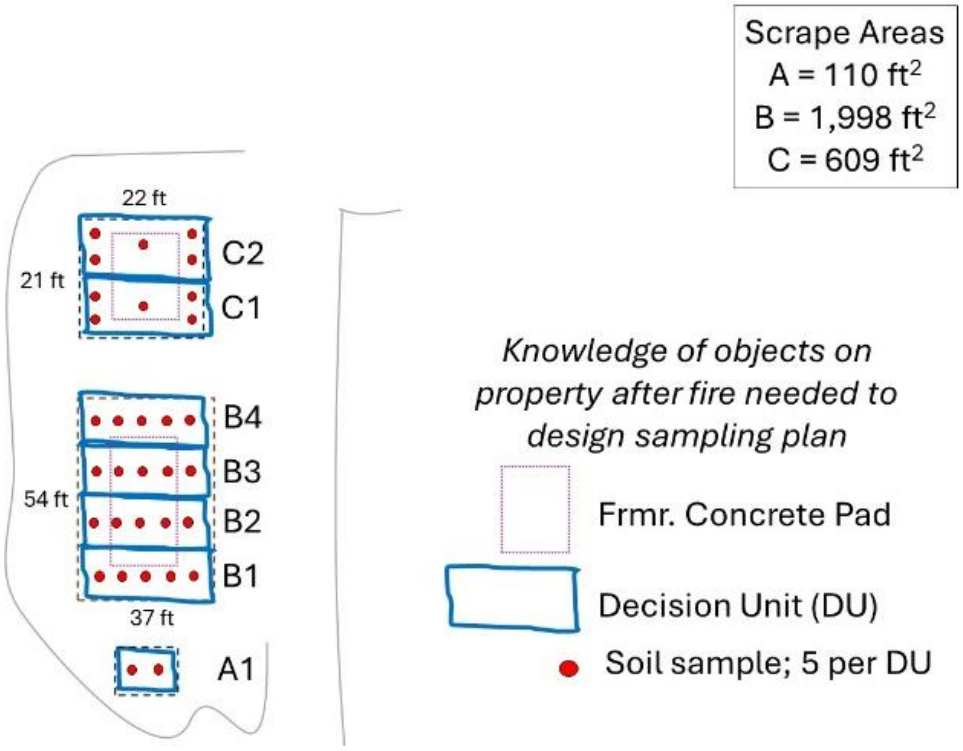


Exhibit 5. This example diagram shows that soil samples should be collected in each decision unit where the scraped footprints were located and is based on prior State of California practice. You should note that it is well-known that when concrete pads are removed, that area is considered for soil sampling of the Decision Unit.