

Tar Creek Superfund Site

Technical Issues Summary

Prepared for LEAD Agency

and the

Citizens of Ottawa County, Oklahoma

Prepared as a

Summary of the Technical Aspects

Discussed During the Two Year TAG Grant Period

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Technical Issues Report for the Tar Creek Superfund Site, Ottawa County, Oklahoma

Introduction and Overview

The purpose of this report is to identify and discuss a number of the Technical Issues found to be associated with the Tar Creek Superfund Site during the TAG Grant. A final discussion of these issues should assist the local residents to better understand the long and complicated history, as well as the ongoing activities at the Site. Our goal is to provide interested parties with information that can be used in influencing ongoing and future opportunities for protection of human health and the environment and eventual remediation of this Superfund Site. These issues are based on a review of the reports generated during the Grant period and discussion with local agency personnel and citizens.

A fundamental question that many people want addressed is whether the Tar Creek activities conducted thus far, 23 years after this was declared a Superfund Site, have resulted in a high quality, effective elimination of the problems inherent at this Site. A quality remediation effort may involve different factors to different people, including: will the work be completed in a timely manner (as in our lifetime); has the work performed thus far addressed the known hazards at the site; will the remediation remedy used be permanently effective; will the remedy adequately protect the local residents and the environment in the future; will the clean-up itself pose new hazards to the local residents; has the Site received appropriate attention by the federal and state agencies involved, and has the remediation effort afforded local residents all the protection provided for by applicable laws?

For a Site such as this, with its long, well publicized history, including numerous government reports, newspaper and magazine articles, many will think there is nothing new or unknown about the Tar Creek Site. This is absolutely incorrect. This review focuses on past decisions and work, as well as what remains to be done at this Site. This review should foster a new round of questions for citizens to ask the federal and state agencies involved in this Superfund Project.

Technical Issues and Their Status

1. Issue: Have all the hazards at the Tar Creek Site been adequately characterized?

Status: This Site has definitely not been adequately characterized as to the hazards present. Typically, EPA requires this to be done as the first step in Superfund work. EPA has a fundamental responsibility under the law to effectively identify and address the full range of environmental and health effects for all Site contaminants of concern. When the hazards have been determined, the appropriate remedial actions are selected and scheduled as OUs under the Superfund Program. This has not been done at Tar Creek.

EPAs Citizens Guide to Superfund Sites states that EPA first performs a detailed study of the Site to identify the extent of contamination at the site, determine threats to the environment and people nearby and options for clean up. EPAs response to a comment at the Kellogg Idaho Site stated that EPA is required to determine the nature and extent of contamination at a Superfund Site. There are many obvious and potential hazards that have not been determined nor characterized so far at Tar Creek.

2. Issue: Have the Site dimensions been properly determined?

Status: The Site was generally defined back in 1983, but in the past three years, contamination has been found and removed in nearby towns such as Miami. The Site dimensions are now questionably defined.

3. Issue: Has the Site been adequately and properly mapped?

Status: At a large, complex Superfund Site such as Tar Creek, EPA typically requires the Site to be mapped using GIS technology. This is a form of computer layering that shows the important land and water features, with the location of the various hazard (such as boreholes and chat piles) overlain on the basic features. This type of mapping facilitates evaluating the Site hazards, and planning and tracking the clean up. The entire state of Louisiana has been mapped for key features in this fashion, so it isn't terribly expensive or complicated.

4. Issue: Has a reasonable schedule for the total remediation of the Site been established?

Status: Without a schedule, there can be no budget or plan. There is no schedule for the work that will eventually be done at this Site, to our knowledge. It is impossible to prepare a schedule for a clean up when all the hazards haven't been characterized and the OU's defined.

5. Issue: Has the Tar Creek Site been separated into reasonable Operable Units (OUs) that include the known hazards and/or Site Areas, as is typically done at a Superfund Site?

Status: There is one OU (OU4) in the offing. OU4 is not inclusive of many of the remaining Site hazards or areas. EPA has never properly established OUs for this site. They have belatedly (sometimes years later) called certain actions that were initiated “OUs”. Without Site Characterization, mapping, separation into OUs, scheduling, etc, the clean up is essentially endless and has no order. Also, there can be no budget and considerable time and dollars will be wasted.

6. Issue: Have the clean up technologies used at the Tar Creek Site thus far been state of the art and adequately protective of human health and the environment, as required by law?

Status: We really don't know, but we suspect that cost issues have prevented EPA from doing all they could do under Superfund regulations at the Tar Creek Site. EPA has a lot of latitude in selecting what they do and how they do it. The size and complexity (and potential cost of clean up) of this Site may have caused EPA to err on the side of saving money in many of their decisions. We are not sure EPAs own Lead Technical Review Work Group has reviewed and approved what has been done under OU2. Had EPA anticipated the lead exposures to children living on the Tar Creek Site, as they should have done, most could have been prevented. Also, when a population has been exposed to toxic metals, the Government has a responsibility to work even harder to reduce future exposures, because the health effects of further incremental increases may be even more significant.

The work done under the title OU1 was certainly not protective of the environment. Known Site hazards have also been ignored for more than 20 years. Allowable lead action levels in children's blood may soon be reduced by the CDC, therefore casting doubt on the adequacy of the entire OU2.

There is evidence from other Superfund Sites that children living in houses that had their soils remediated can continue to be highly exposed to lead because of the time spent playing at nearby highly contaminated sites such as chat piles. Also, adults studied at other heavy metals sites show correlations between bone lead measurements and neurological function. No studies have been done so far regarding adolescents or adults exposed to lead and other contaminants at the Tar Creek Site.

7. Issue: Are the clean up techniques used at this Site permanent solutions, as typically required at a Superfund Site?

Status: The Superfund Act (CERCLA) clearly expresses a preference for EPA to use remedies at Superfund Sites that achieve true permanence. Removing soil from a yard that is a few yards from two giant piles of contaminated chat is not very permanent. Neither is using a definition of hazardous waste that allows leaving characteristic hazardous wastes on site. This essentially makes the entire Site a waste repository and poses a long-term threat to public health and the environment; this process may be inconsistent with EPAs own rules. Future generations will have to revisit most of what

has been done. On Site disposal would probably not be allowed if the clean up was being funded by PRPs.

Also, one of the subtleties of the Superfund Program is that EPA can walk away from the site after initial major actions are completed and the state then assumes responsibility for maintenance of the Site. States often don't have the long-term interest or funding to effectively maintain partial clean ups at a Site. This is probably true under OU2 at the Tar Creek Site.

8. Issue: Are Impacts downstream of the site adequately understood and addressed?

Status: Contamination from the Tar Creek Site and from similar sites in adjoining states has resulted in heavily contaminated sediments in local streams, rivers and especially in Upper Grand Lake. These sediments are disturbed by seasonal flooding after heavy runoff and by periodic dredging in Grand Lake, and the heavy metals reenter the water column and therefore the food chain. Benthic organisms may also be a source of heavy metals entering the food chain. EPA and state agency personnel are aware of this potential serious problem, but have so far failed to act to reduce this continuing downstream contamination. The enormously valuable recreational resources of Grand Lake are therefore at risk.

There is considerable evidence that EPA has considered downstream impacts at other Superfund Sites. At the Kellogg, Idaho, Superfund Site, EPA expanded its Site study area to include the entire Coeur d'Alene River Basin, the lake below, and the Spokane River all the way to the Washington border.

9. Have Federal agencies properly considered relocation of residents living on the Site?

Status: EPA has the authority to and an extensive history of relocating residents of a Site that is a serious threat to human health. The EPA has refused to consider this option at Tar Creek; incorrectly stating this is not part of their Superfund options. In a removal action for a Superfund Site in Pennsylvania, EPA spent 55 million for relocation of 40 homes; in another Site in New Jersey, EPA spent 10 million relocating 17 homes, or \$600,000 per residence. There are dozens of examples where EPA has used relocation as their primary option. Some legislators are now calling for relocation.

10. Issue: Have the federal and state agencies adequately considered the positive and negative aspects of creating a huge wetlands at the Tar Creek Site?

Status: A constructed wetland is a very complex potential alternative for remediation of part of the Tar Creek Site. Its attractiveness is its low cost and apparent rapid results. There are many very serious environmental issues to be considered in creating a huge contaminated wetland, including whether this approach would meet federal clean up standards for a Superfund site. EPA has funded one small trial site nearby. A full EIS should be considered for this potential option.

11. Issue: Has dust and lead based paint in on site houses been adequately addressed?

Status: When EPA chose not to move people away from the Site contamination; they surely were responsible for removing the hazards from the people. This should specifically include household dust containing lead and possibly many other potential hazards. OU2 involved removal of contaminated soil from some yards and playgrounds. So far, an information program has been initiated and HEPA vacuums have been made available to those who asked for them. This may not be adequate protection from blowing dust that recontaminates nearby homes. EPA implemented dust suppression at over 600 acres at the Kellogg Idaho Superfund Site.

12. Issue: Have the possible effects of flooding and leaving contaminated sediment on the Tar Creek flood plain and on the remediated yards and HAAs been properly evaluated.

Status: The aspect of floods leaving contaminated sediment on the Tar Creek floodplain and remediated yards was discussed in the OU2 ROD. It is not known what has been decided by EPA regarding these issues.

13. Issue: Have the responsible agencies adequately considered those instances where corrosive, contaminated chat was placed beneath houses, where it has caused rusting of the central heating and air conditioning air plenums beneath these houses. In some cases this has resulted in heavy metals contaminated air being entrained in the system and continually redistributed throughout these houses where small children live.

Status: The responsible agencies have not accepted this as part of their responsibilities under Superfund. There seems to be little difference in this type of contamination and that caused by dust in the yards. Humans are being exposed by contamination from the Superfund Site. This contamination also greatly reduces the value and marketability of affected dwellings.

14. Issue: Have federal and state agencies properly controlled the continued use and distribution of contaminated chat from this Superfund Site?

Status: Most chat is a characteristic hazardous waste. It appears that chat continues to be handled by workers that may not be properly protected, and continues to be transported off this Superfund Site, out of the county and probably out of the state. EPA requested the state take charge of this problem (in the ROD of OU2). The state has little funding or inclination to get involved in this explosive issue, especially involving interstate commerce, an EPA responsibility. Chat contaminated with heavy metals may continue to be placed on yards or school grounds in unknown locations throughout the Southwest.

15. Issue: It is well documented that information from clean ups eventually becomes unavailable for use in future actions and decisions regarding the remediated areas

unless it is handled appropriately. Site maps are usually made available; information as to whether a contaminated site was remediated is placed on deeds, and clauses are added to Real Estate sales forms that indicate whether specific locations are contaminated. What has EPA or the local Governments done in this regard?

Status: It is our understanding that maps exist but are not available to the public due to a decision by the EPA. The OU2 ROD indicated that key information should be added to property deeds, but made no provisions to ensure this occurred. Contractors already have trouble determining which properties are clean. Also, many properties are contaminated, but at levels just below the clean up level. This will become a serious problem as property changes hands and locals forget which yards were cleaned.

16. Issue: Are there adequate controls in place to prevent recontamination of the yards and playground that have been remediated?

Status: We don't know. There were some ideas discussed in the ROD for OU2 for preventing recontamination, including dust control and runoff diversion. We don't know if any of these have been implemented. There may be no way to prevent recontamination of some yards that lie next to huge piles of Chat. The first strong winds will bring huge amounts of dust contaminated with heavy metals to these yards, and in a few years, they will be as dangerous to children as they were before remediation. Also, the few signs that were put up to prevent people from using the chat piles have quickly disappeared. The ROD indicated fencing would be used to prevent entry.

17. Issue: Silica Quartz is known to be a major component of the Chat; Silica Quartz is a very hazardous material that causes silicosis and other lung disease in humans. Has the concentration of and exposure to Silica Quartz in the dust from the chat been evaluated, both to workers loading chat and to residents of homes during yard excavation?

Status: We don't believe Silica Quartz in air has been adequately monitored, even though EPA must realize this is a potential health hazard. We would like to see the results of all EPA and its subcontractors air monitoring. The same question could be asked about asbestos and Radon Gas.

18. Issue: Has the opportunity for public involvement in the decisions related to Tar Creek been adequate?

Status: Local citizens have not been involved in many critical decisions related to Tar Creek. The EPA, ODEQ and other agencies typically decide what they want to do, and then present only these options as alternatives for the public to consider. The public has not been involved in the planning, scheduling, discussions of costs, negotiations of scopes of work with the PRPs, etc.

This means public involvement has only been available after the real decisions have been made in the closed offices of the agencies. There have been dozens of public meetings conducted in the Tar Creek area, but the deck is stacked against meaningful public involvement. The most recent example is there was no public involvement in deciding what scope of work would be used in EPAs recent discussions with the PRPs on OU4. If a specific scope of work was considered, this has precluded meaningful public involvement in the process. Also, there was no meaningful public involvement in the recently established scope of work for OU4.

19. Issue: Has the remediation of contaminated water in the mines at Tar Creek been adequately considered?

Status: The volume, recharge rate and outflow locations and volumes of this water are generally known. However, treatment and use, and prevention of continued contamination of Tar Creek and other area surface waters has not been thoroughly considered since 1983. In the reports mentioned in the ROD for OU1, treatment of water from the mines was evaluated, and though the cost seemed to be excessive at the time, there may be new and inexpensive treatments available now. There is also a demand for water in the Oklahoma City Metroplex areas. It may be that the water in the mines is sufficiently valuable that users might pay for both treatment and transport and make this a “win win” situation for the Tar Creek area.

20. Issue: Has the present status and potential remediation of Tar Creek been adequately evaluated recently?

Status: There have been no comprehensive studies of Tar Creek since about 1991. The ODEQ and the EPA have improperly mandated that the problems of Tar Creek are irreversible and said there are no organisms to protect. This is not true, according to EPAs own reports from 1991. There are fish, amphibians and many aquatic organisms and vegetation in Tar Creek. The state, with EPA concurrence, has designated Tar Creek damage so extensive and irreversible that local industries and cities are legally allowed to add a high pollution load to Tar Creek. This logic encourages polluters to horribly damage water bodies to get the agencies to declare the impacts irreversible so they don't have to clean up the Site. It has also encouraged Kansas to refrain cleaning up their portion of Tar Creek.

Tar Creek can be cleaned up and returned to being a useful stream and a valuable resource.

Issue: Is it reasonable to assume that EPA, under the Superfund Program, will eventually clean up the Tar Creek Site?

Status: No, this is not a reasonable assumption. EPA has maintained for years that they do not have enough money under Superfund to clean up the entire Site. The logical solution is to obtain a Congressional appropriation similar to what was done for the Everglades, let the Corps of Engineers manage the funds and remediate the entire Site.

We do not understand why Oklahoma's State and Federal Legislators do not fight for these federal funds to eliminate further harm to local children and make this area usable again. This would result in millions of federal funds being appropriated for this task and create hundreds of jobs in the area.

21. Issue: What portion of a Superfund clean up is the State required to fund.

Status: The applicable EPA Region typically stipulates this; most Regions require 10 % matching funds. This matching funding is not required on Native American Lands. The state is nearly always responsible for long-term Operations and Maintenance and Institutional Controls Programs, which can be very expensive. In recent years, very few states have been sufficiently solvent to fund these activities; this typically results in further delay in implementing clean up programs.

22. Are there reasonable solutions to the known major problems at Tar Creek?

Status: We believe there are very reasonable, cost effective solutions to all of Tar Creeks' problems. Consider the following. The chat can be placed back into the underground mines, with proper compensation to the present owners of this "resource". The remaining piles can be leveled, topsoil added and then revegetated, as was done in Kansas and Missouri. The water in the mines can be treated to the degree necessary and sold or released downstream. A wetland can be created to help solve some of the surface water problems. People can be moved from residences near the Chat piles and subsidence-prone areas. The boreholes and small subsidence areas can be filled with Site rubble. The large subsidence areas can be fenced, and after treatment, these waters can become recreational resources such as they are at similar sites in Kansas.

The yards that aren't abandoned and high use areas can be remediated as is presently being done. Tar Creek sediments can be removed. The floatation ponds can have topsoil added and then be revegetated. All this can be done in a reasonable time and for a reasonable cost. This degree of clean up has already been accomplished in Kansas and Missouri; why not here?

23. What is the status of negotiations with the PRPs of the Tar Creek Site?

Status: We don't know, and would like a full update on this from EPA. This is a notorious problem at Superfund Sites. The PRPs will spend enormous amounts on attorneys to keep from spending those same funds on cleaning this Site. These negotiations generally take years; often the PRP will then declare bankruptcy or transfer funds out of the country. These discussions are typically not public and usually result in negotiation of a reduced scope of work. Often the PRP itself will be allowed to perform a major part in the clean up. Funds spent by PRPs for clean up are typically tax deductible.

24. Would a full Site cleanup create new hazards to the Tar Creek area residents?

Status: Probably; moving residents, either temporarily during the clean up, or permanent relocation should be considered due to the dust that would be generated by clean up activities.

25. Issue: Has the possibility that local or migratory birds or wildlife are being harmed by contamination from Tar Creek been adequately considered by state or federal agencies?

Status: No: There was a recent incident of a Swan dying of heavy metals poisoning at the Tar Creek Site. These type studies have been conducted at Superfund Sites throughout the US. There have been no studies of wildlife or migratory Swans, Ducks, Hawks or other top predators that might accumulate heavy metals from the Site, to our knowledge.

26. Issue: There is evidence by ATSDR that elderberry, blackberry, boysenberry and wild asparagus can accumulate significant levels of heavy metals. Has the presence of heavy metals or other site contaminants in local garden or agricultural crops, berries, or traditional native foods been adequately studied and recommendations made?

Status: There has been very limited study of a few garden products and traditional foods. These limited studies were used to downplay the possibility of contaminants entering the food chain in the ROD for OU2. No comprehensive studies have been done.

27. Issue: Has the soil sampling performed by EPA and its various contractors been of high quality?

Status: A brief review of the sampling approach, methods and conduct in the field has led to the conclusion that there were serious defects in many aspects of the sampling program. This has resulted in serious questions concerning the adequacy of many sample results, especially in instances where soils with moderate levels of contamination are concerned. Recently, EPA's contractor has consented to resample several locations at HAAs in Miami. Quality Control as related to field sampling has been inadequate. The field procedures have not been sufficiently specific to allow valid sampling. Many of the normal sampling protocols have not been observed. This has resulted partly from not allowing citizen review and comment on the sampling program and to observe the sampling. This is often a weakness where EPA has oversight of their own programs.

EPA should make all the air and soil sampling results from all the work performed thus far related to the Tar Creek work available for public review. There will be particular interest in soil plots where lead levels were below the action level. What were the Cadmium and Zinc levels at these locations?

28. Issue: Has there been too narrow a focus on lead contamination and inconsistent or inadequate attention paid to other site contaminants?

Status: This may be true. In the ROD for OU2, EPA simply states that the removal of soil to a certain level will adequately remove all other site contaminants. We believe it is EPA's responsibility to consider all hazards, their routes of exposure and all the population groups affected (i.e. adults). We would like a review of this issue by an independent group. Contaminants in this category include Radon, Silica Dust and asbestos, in addition to cadmium, manganese, and zinc.

29. Issue: Has soil excavation resulted in potential health hazards to workers or the residents of houses where soil was excavated?

Status: There is possible but unknown. Air samples have not been taken where yards were remediated for Silica Dust, Cadmium, house dust or other known site contaminants, to our knowledge. We also don't know the levels of lead in the air that were produced during excavation.

30. Issue: What was the result of the CEQ Committee's review of the Tar Creek Site during the spring of 2002?

Status: There has been no official work from this group since their visit. This visit has resulted in further uncertainty and delay of initiation of significant clean up at the Tar Creek Site, and is another example of how Government bureaucracy interferes with efficiency and progress at Superfund Sites. We have spent nearly two years waiting for some meaningful result from this group.

31. Issue: What work is presently being done at Tar Creek or planned for next summer, and has this work received appropriate review?

Status: There is no central coordinating agency for Tar Creek, so we don't know much about all the work underway or planned for Tar Creek. The Tag Technical Adviser has not been invited to meetings between the Corps, the EPA and the State ODEQ where some of this work has been discussed. EPA typically produces Fact Sheets to keep people aware of the studies planned and ongoing, as well as the results of such studies. We would like to establish a mechanism where citizens are made aware of all ongoing work on a timely basis, preferably in time to comment on the scope of the work to be done. This is especially difficult since EPA has recently changed the technical representative for the Tar Creek Site.

32. Issue: Are there mechanisms for requesting high-level review of EPA's handling of the Tar Creek Site for the past 22 years?

Status: There is strong evidence that EPA's handling of the Tar Creek Superfund Site had been highly irregular at best, and many decisions have not been in the public's interest. One would only have to review and compare what EPA has done at some of the other 400 or so Superfund Sites in the U.S., which involved lead contamination to evaluate this assumption.

There are a few ways to seek review and hold EPA personnel responsible for their decisions related to this Site. This can be done through request to the EPAs Ombudsman Office, requesting a Special Review by EPAs Office of Inspector General or request a review by the GSA. Citizens at the Kellogg Idaho Site got an opinion from the Inspector General that the EPA Regional Administrator prevented his staff from performing their normal activities at this Site. Attorney fees are high but their involvement is recommended in order to obtain a fair review. A thorough review might be appropriate for the Tar Creek Site.

33. Issue: Is the Technical Adviser Program effective in informing local citizens about issues concerning the Tar Creek Site?

Status: The purpose of the Technical Adviser Program is to help the local community understand what the Government has done or not done at a Site. Then the community can make more informed decisions. The Tar Creek clean up went on for 20 years through three OUs without a Technical Adviser. There has been a period of about two years when there has been a Technical Adviser. There will soon be an indefinite period when there is no longer a Technical Adviser, unless additional funding is requested by LEAD Agency. This often doesn't constitute enough involvement over a long enough period for the TAG program to be very helpful or effective at a Superfund Site that may last for 40 years.