BoRit Citizens Advisory Group
Comments on the
Proposed Remedial Action Plan
March 1, 2017

The BoRit Citizens Advisory Group (CAG) would like to submit our comments and suggestions concerning the USEPA's Proposed Remedial Action Plan, released to the CAG and then to the public in early December of 2016. We will organize our comments under the following general headings:

1. Flood Plain Effects
2. Protection of Human Safety and Health
3. Risk Assessment
4. Assignment of Responsibility
5. Future Uses and Protection of Human Health
6. Institutional Controls (ICs)
7. Potentially Responsible Parties (PRPs)

1. Flood Plain Effects

The remediation performed by the EPA at the BoRit site has been very thorough. However, the calculations for potential flood damage are all based on a 100-year floodplain. There have been multiple 100-year hurricane-related floods in the last 20-years (Floyd 1999, Allison 2001, Ivan 2004, Irene 2011 and Lee 2011). We recognize that the cost of remediation to the standard of a 500-year flood plane would be prohibitive. However, should a flood overwhelm the current remediation, it will require substantial additional funds to repair damage to the cap.

Furthermore, flood damage is likely to contaminate the Wissahickon Creek with asbestos fibers. The Wissahickon Creek is close to the water supply for the city of Philadelphia. This water segment is already listed as impaired and is on the CWA 303(d) list for impaired waters and is currently subject to a Total Maximum Daily load (TDML) for several pollutants. Therefore, it is imperative that potential flood damage is repaired as soon as practicable.

Flooding is becoming more frequent along the U.S. coastline. Nearly every site measured has experienced an increase in coastal flooding since the 1950s. The rate is accelerating in many locations along the East and Gulf Coasts. The Mid-Atlantic region suffers the highest number of coastal flood days and has also experienced the largest increases in flooding. ***The real potential***

for future catastrophic flooding provides an additional compelling reason for the EPA to continue providing operations and maintenance for the BoRit site.

The CAG requests shaping remediation efforts to be protective to the standard of the 500- year flood.

To date, the USEPA has patrolled the Wissahickon stream bed from the BoRit site downstream to the offices of the Wissahickon Valley Watershed Association. Although the CAG is pleased with the asbestos cleanup in the Creek as far as it goes, we believe that patrols of the entire Wissahickon are warranted. Asbestos pieces in a stream with the Wissahickon's high storm water volume have been and will continue to be moved throughout the stream's length and should be removed to be protective of public health and safety.

The Cag requests that asbestos removal from the entire Wissahickon Creek be added to the PRAP. This should be done on a yearly basis until such time as the Creek is deemed to be clear of asbestos containing materials.

Concerns have been raised about the compacted soils on the BoRit site, and whether the runoff from the site might create erosion in the slopes and subsequent asbestos exposure. Concern was expressed about the steepness of the slopes as well.

The CAG requests a protocol on how storm water will be handled on the BoRit site.

The CAG would like clarification from USEPA on whether any ARARs will be waived under the PRAP; in particular, the CAG wishes to know if ARARs for floodplains are applicable.

Will Floodplain Management Executive Order 11988 and the Obama amendment EO 13690 be considered as an applicable ARAR?

On January 30th, 2015, President Obama issued Executive Order (EO) 13690 that revises Executive Order 11988 and proposes a new Federal Flood Risk Management Standard (FFRMS). This Exec Orders requires federal agencies to do the following:

- Use data and methods informed by best-available, actionable climate science;
- Build two feet above the 100-year (1%-annual-chance) flood elevation for standard projects, and three feet above for critical buildings like hospitals and evacuation centers; or
- Build to the 500-year (0.2%-annual-chance) flood elevation.

Other elements of the EO include a directive for agencies to use, where possible, natural systems, ecosystem processes and nature-based approaches when developing alternatives for consideration. Also, the new EO specifies that it is the policy of the United States to improve the resilience of communities and Federal assets against the impacts of flooding and recognizes the risks and losses due to climate change and other threats.

The CAG agrees with EO 13690 and requests that EPA remember these guidelines when executing the remedy.

2. Protection of Human Safety and Health

The CAG believes that comprehensive and systematic human health monitoring needs to be incorporated as part of the annual and five-year monitoring protocols in perpetuity for the population surrounding the BoRit site. The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and make recommendations to address them.

The CAG believes that without additional focus on human health monitoring, the monitoring process will only assess potential exposures, and neglect the human health assessment associated with risk characterization. Monitoring should be frequent enough to assure the health and safety of the affected population in perpetuity.

Initial analyses of available death certificate and cancer registry incidence information did not document a statistically significant increase in mesothelioma or lung cancer in community members from Ambler (PADOH, 1975, Possible Health Hazards of Asbestos Waste Pile: Ambler, PA; ATSDR/PADOH Health Consultation, 2009, Health Outcome Data Evaluation, 1996-2005, https://www.atsdr.cdc.gov/HAC/pha/BoritSite/BoritHODHC01-28-2009.pdf). However, incorporation of additional years of cancer registry data subsequently supported a finding from the public health agencies of a statistically significant increase in mesothelioma incidence in Ambler: These data were reported on the following websites - PADOH, 2011, Cancer Evaluation Community Factsheet and ATSDR/PADOH, 2015, Public Health Assessment:

(http://www.health.pa.gov/My%20Health/Environmental%20Health/Health%20Assessment%20Program/Documents/BoritFS_CAUpdate_Final_Ju1_20_11.pdf)

https://www.atsdr.cdc.gov/HAC/pha/BoritAsbestosNationalSite/Borit%20Asbestos%20National%20Priorities%20List%20Site%20_%20(final)%20PHA%20_%2001-09-2015.pdf

Public health agencies typically do not have information available to evaluate the burden of non-cancer asbestos-related diseases in this community, such as asbestosis. Collaboration with Dr. Edward Emmett and Dr. Fran Barg and their team at the University of Pennsylvania has emphasized the continuing importance of further examining both cancer and non-cancer asbestos-related diseases in this community (Clapp *et al. Soc Sci Med*. 2016; 170:143). Furthermore, the latency period is difficult to assess for asbestos-related diseases, the pathways of exposure are not yet fully characterized, and the transport of asbestos fibers in soil needs to be further evaluated during the next phase of the project.

The CAG notes that if soil testing after completion of remediation shows migration of asbestos fibers into the clean fill above, the USEPA may have to reopen the project and implement a whole new remedy.

Therefore, continued and special attention needs to be paid to human health monitoring at BoRit. Furthermore, compilation and monitoring of human health data for the Ambler population should be done on a regular basis to track incidence of morbidities and mortalities that might be related to exposure from BoRit. It is important to use population health data as a prevention tool to detect any changes in exposure as well as to implement a program of exposure biomarker analysis based on those conducted at the Penn SRP Center (see for example Mesaros *et al. Bioanalysis*. 2015;7:1157). Although mesothelioma is the most common health endpoint studied with these exposures, less well known, but significant asbestos-related diseases occur.

The CAG requests health monitoring that should also include tracking and analysis of human health data for the Ambler community and surrounding local population. This data should be collected so as to integrate with existing Penn research data.

Several CAG members commented that there are still future risks left unremediated due to the USEPA's non-inclusion of a plan for remediating the inorganic contaminants still on the BoRit site.

The CAG believes that the USEPA should remove the organic and inorganic contaminants still on the site to prevent their migration to the Wissahickon Creek via the Tannery Run. The Wissahickon Creek has its own pollution challenges, and the PRAP should consider the USEPA's decision to enforce a TMDL on the Wissahickon Creek watershed, and do anything it can to remove or neutralize any contaminants originating from the BoRit site.

3. Risk Assessment

EPA considers two types of risk: cancer risk and non-cancer risk. The likelihood of any kind of cancer resulting from a Superfund site is generally expressed as an upper bound probability of 1 in 10,000 (1E-04) or 1 in 1,000,000 (1E-6) chance. In other words, a risk of 1E-06 means that, over a lifetime, the contamination is expected to have a risk of 1 extra cancer death per 1 million people. An extra cancer case means that one more person could get cancer than would normally be expected, given the background cancer rate. EPA's acceptable target range for carcinogenic risk is 1E-04 to 1E-06 for an individual excess lifetime risk of developing cancer from the contaminants at a site, and the acceptable non-carcinogenic target hazard level is a Hazard Index (HI) of less than 1.0.

A risk if 1E-06 is commonly used when characterizing the safety (or lack of it) of various pesticides, so this is an attainable goal .It seems especially critical to apply it when assessing the safety of a site that is located within the limits of a community rather than at a more remote, less populous site.

As described in the PRAP, Activity Based Sampling (ABS) of air samples at the BoRit site were screened against a preliminary remediation goal (PRG) of 0.04 fibers/cubic centimeters (f/cc) calculated by the EPA Region 3 toxicologist specifically for a raking/lawn maintenance scenario at the BoRit Site. This PRG is derived based on an assumed residential exposure using a time weighting factor (TWF) that assumes a resident would be exposed 4 hours a day, 50 days a year ([TWF] = 4hr/24hr x 50days/365days = 0.023). The starting age of exposure is assumed to be six years, with an exposure duration of 24 years. This ABS PRG was used to screen all personal ABS air data and is based on a target cancer risk of 1E-04. This resulted in a maximum permissible aerial concentration of 0.04 asbestos particles/cc of air. This reason for choosing a cancer risk of 1E-04 rather than 1E-06 seems somewhat arbitrary. However, such calculations are somewhat theoretical. As per the International Agency for Cancer Research, there is no actual safe limit for asbestos exposure.

We propose that a revised limit for aerial asbestos and other site contaminants should be calculated and based on a cancer risk of 1E-06.

The members are uncomfortable with the design of the simulation of child recreation when using ABS while measuring child exposure and setting risk estimates. Children play hard; they roll in the dirt, throw it at each other, etc. They believe that a child would stir up more dust and dirt than a waist-height air monitor worn by an adult worker would capture.

The CAG questions whether the proposed ABS protocols really simulate child activity and exposure accurately. If they are not, would more appropriate methodology show more exposure and change the risk levels?

The CAG questions whether local children will only be at play on the site 50 days out of a year.

The CAG asks USEPA to clarify why the maintenance worker is considered to be the most conservative exposure receptor.

Thanks to the USEPA's Technical Assistance to Service Communities program, the CAG has been educated on many areas of science relating to asbestos and its qualities as a mineral. One area where the science and practice has lagged behind the need is in the actual measuring of asbestos fibers per a cubic unit of air (millimeters). The PCME asbestos examining protocol has been used by USEPA up till the present. It has been shown over time to be inadequate, but until recently, there were no better alternative methods. Such is no longer the case; ISO testing has been developed and shown to be a more accurate method.

The CAG requests that the USEPA specify ISO air sample testing as the method to use to ensure accurate results and the increased protection of health and safety.

4. Assignment of Responsibility

Air, soil, and water asbestos monitoring need to continue and to evolve with the future use of land at the BoRit site. As the site is maintained over the years, aerial monitoring is needed to

predict the risk of exposure for workers who will fill in future burrow holes, pull tree saplings to maintain the integrity of the cap, fix fences that might be disturbed or constructed upon the site. Such workers might be equipped with sample collection equipment to measure their exposure while working. As the site inevitably weathers and requires maintenance, it is imperative that systems be in place to monitor potential new exposures. Current research in the Penn SRP Center is determining whether asbestos can be transported in soil and water (see for example Wu *et al. Environ Sci Technol*. 2015;49:13340). Should these studies reveal that there is the possibility that asbestos fibers can be transported and migrate closer to private properties, it will be essential to conduct residential monitoring to detect potential environmental exposure from the BoRit site.

The CAG proposes that the PRAP provide for long-term residential, air, soil, and water asbestos monitoring by a respected independent organization to ensure transparency and public acceptance of the results.

The PRAP outlines the Superfund process, which includes potential deletion of this site from the National Priorities List (NPL), which would render the site subject to five-year reviews, but would most likely turn jurisdiction over from EPA to the State for continued governance and monitoring.

Given the complexity of this site and its nuanced history with human health impacts, the CAG believes that USEPA should continue to take responsibility in perpetuity of the annual monitoring, preparation of the five year plans for the BoRit asbestos site, and all operation and maintenance.

The CAG recommends at least yearly inspection in perpetuity, once the five-year mark is attained.

The Ambler Asbestos piles were deleted from the NPL in 1996, and since then the community has been concerned with the maintenance and use of the site. Thus, the community has a particular interest in insuring that the BoRit superfund site is maintained and operated with the utmost care and due diligence. They have confidence in the EPA continuing to take the lead on this site in infinitum, so that if one of the changes listed above occurs, it will be responded to in the efficient and professional manner that EPA has exhibited in serving the community. Ambler's history with asbestos exposure and occurrence of asbestos related disease has been devastating to the population. As asbestos exposure pathways and transport continues to be studied and asbestos related diseases continue to be characterized, it is important that the EPA retain control over the BoRit site both for logistic reasons, as well as for the continued confidence of the community. The Pennsylvania Department of Environmental Protection has played an important role, but establishing the same rapport as there is with the EPA at this point in the process seems difficult to imagine. Given the $27.5 million investment that EPA has already spent on this remediation, changing agencies at the Record of Decision (ROD) phase of the project should not be the preferred management option.

Since the asbestos will be left in place in the community, the CAG proposes that the EPA not designate responsibilities to the Commonwealth of Pennsylvania and that the EPA continue to provide all operations and maintenance for the BoRit site.

The CAG requests that regular air monitoring take place, especially during grass mowing and especially in the first five years.

The CAG requests that groundwater sampling be added to the list of media to be sampled in the ROD.

Because of perpetual operation and maintenance requirements, the site may eventually become substandard and pose unacceptable health risks due to revised and updated standards.

The CAG requests that consideration should be given in the plan to include as part of the 5-year review that changes to the standards and regional screening levels (RSLs) that occurred since the last assessment be considered for adoption as new, more protective site standards, with corresponding new risk profiles, not only for asbestos but also for the organic and inorganic contaminants.

The CAG feels that annual inspection and five year reviews are not sufficient on a capped site with BoRit's characteristics. As data is developed through these more frequent inspections, characteristics of the site can be ascertained to understand where a problem exists and solutions to these issues developed. Relaxation of safety inspections can potentially follow as warranted to maintain the integrity of the cap.

The CAG proposes a more rigorous and frequent sampling and inspection program in the initial years after final installation of the cap.

4. Future Uses for Protection of Human Health

Although the CAG is interested in seeing that this land is returned to public use, we have strong concerns about protecting the health of the public, especially when on or near the site. Although much of this will be addressed in the Institutional Controls section, ***the CAG wishes to suggest strongly that any future use be carefully considered as to the possibility of increased risk to human health and safety.*** Passive use would seem to be the safest activity on unprotected soil surfaces.

6. Institutional Controls (ICs)

The success of a soil cap is highly dependent on the continuous effective enforcement and management of institutional controls and deed restriction into the distant future. It would be helpful if these responsibilities and enforcement actions are clearly articulated in the Institutional Controls (ICs) of the ROD.

The PRAP proposes that the site be closed after a catastrophic event until inspected and deemed safe for re-entry. The CAG would like to know how the USEPA can secure a site that is essentially open by design, especially after a catastrophic event. This should be addressed in the IC's.

Due to the presence of other site contaminants (organic and inorganic) that are not being remediated, the CAG requests that that there be a ban on potable use of either surface or ground water on the entire BoRit site in the ICs.

The CAG asks USEPA to consider the possibility that improved water treatment methods might be developed in the future, and that if such technology appears, site protocols be modified to allow its introduction and use. The CAG would like to see this provision added to the ICs.

The CAG requests that IC's include the maintenance of vegetation on the entire site but especially in steep slope areas such as the Pile parcel and the banks of the Wissahickon Creek, and recommends that native grasses and wildflowers be used, when possible, to knit the soil on those slopes together (in combination with existing geocells and concrete cable mat). These meadows should be mowed once a year in February to encourage reseeding. Annual mowing is a much lower risk exposure for workers than the more frequent mowing that sodgrass calls for.

The CAG recommends that woody vegetation be NOT used, due to eventual plant death and potential asbestos exposure when the tree or shrub falls and the roots and soil are exposed.

The CAG recommends that deed restrictions be placed on the three parcels forbidding any construction, excavation, well drilling or any other disturbances that might compromise the integrity of the cap.

The CAG recommends that a requirement for signage warning the public about the site be added as an IC, and that this be codified as a deed restriction The signage should state that no ground disturbance is permitted. The signage should also have an EPA hotline number to call if a citizen should see evidence of exposed asbestos containing materials or hazardous activity taking place on the site.

5. Potentially Responsible Parties (PRPs)

The existence of Potentially Responsible Parties (PRP) who might be held responsible for more expensive but effective remediation efforts could significantly change the shape of what is considered practicable. When EPA performs investigations or cleanup work, it can recover these costs from PRPs through a cost recovery agreement. When an agreement only addresses reimbursing EPA costs, it is referred to as a Cost Recovery Agreement and takes the form of an Administrative Agreement. ***The CAG request that USEPA identify publicly any potential PRPs for the BoRit site that are still under investigation to bear some portion of the economic burden of the remediation process and monitoring and maintenance.***

6. Future Costs

Although on the face of it, a soil cap appears to be the most cost-effective method among those Remedies considered by the USEPA in its Feasibility Study, some members wondered whether that would still be so if the cost of a catastrophic event causing major cap failure took place. In this age of increasingly violent storms, this is not out of the question.

The CAG requests that USEPA include economic figures for catastrophic replacement in its cost analysis.

The CAG notes that USEPA only calculated costs 30 years out, and that these costs will continue to mount up in perpetuity. At some point, the cost of keeping the contamination in place may outweigh the cost of treating it on site.

The CAG asks USEPA to justify the cost of leaving the contamination in place, with the associated costs of monitoring and maintenance in perpetuity versus the costs of the treatment scenarios.

In preparing the PRAP, USEPA factored in future repair costs, using a discount of 7% as a part of developing cost estimates. However, in USEPA's most recent update of this practice (2016), it was recommended that a discount of only 1.5% be used for that calculation.

The CAG recommends that the USEPA use the more conservative discount of 1.5% in estimating future costs.

Respectfully submitted on behalf of the BoRit CAG,

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