Tacoma Smelter Plume Management Plan

Objectives, Priorities, Goals, and Implementation Steps

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Toxics Cleanup Program
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ACRONYMS and ABBREVIATIONS

AWSCS	Area-wide Soil Contamination Strategy
BMP	Best Management Practices
CPSC	Consumer Product Safety Commission
CUA	Child-Use Area
CTED	Community Trade and Economic Development
DOH	Washington Department of Health
DEL	Department of Early Learning
DSHS	Washington Department of Social and Health Services
Ecology	Washington Department of Ecology
IAC	Washington State Interagency Committee
L&I	Washington State Department of Labor and Industries
LTCA	Local Toxics Control Account
MTCA	Model Toxics Control Act
OSHA	U.S. Occupational Safety & Health Administration
OSPI	Office of Superintendent of Public Instruction
Parks	Washington State Parks and Recreation Commission
PHSKC	Public Health – Seattle & King County
PLP	Potentially Liable Persons
RAG	Remedial Action Grant
SEPA	State Environmental Policy Act
SHA	site hazard assessment
SSP	Soil Safety Program
STCA	State Toxics Control Account
TPCHD	Tacoma-Pierce County Health Department
TSP	Tacoma Smelter Plume
WISHA	Washington Industrial Safety and Health Act

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of the Tacoma Smelter Plume Project Plan is to provide clear objectives, priorities, and goals to guide the work conducted by the Tacoma Smelter Plume (TSP) team, including the Washington Department of Ecology (Ecology), the Tacoma-Pierce County Health Department (TPCHD), Public Health – Seattle & King County (PHSKC), and other county health departments that may conduct activities associated with the Tacoma Smelter Plume project.

This guidance document integrates work on the Tacoma Smelter Plume project with recommendations from the Area-wide Task Force, Ecology's strategy for area-wide sites, and the 2005 Soil Contamination—Children's Exposure legislation. Much of the information in this project plan is from the final draft of the "Implementation of the Area-Wide Soil Contamination Strategy" (Implementation Strategy) for Washington State (June 30, 2005). The Implementation Strategy will be finalized in the near future and major changes are not expected. This is a long-term project plan, and will be modified annually in conjunction with the evaluations set forth in this project plan.

1.2 TACOMA SMELTER PLUME BACKGROUND

A smelter operated north Tacoma community of Ruston from 1890 to 1985. Heavy metals in the air emissions from the smelter were carried by winds, and deposited on the surface soil in a large portion of the Puget Sound basin. The Department of Ecology (Ecology) and the local health departments in King, Pierce, Kitsap, and Thurston counties have been studying the extent of soil contamination since 1999. The project is known as the Tacoma Smelter Plume project.

Ecology provided site hazard assessment (SHA) grants to the local health departments to:

- Determine the "footprint" of arsenic and lead – the extent of contamination;
- Evaluate the concentration of arsenic and lead in soils where children play; and
- Provide education and outreach to affected communities regarding soil contamination and measures people can take to reduce their risk from exposure.

As of 2005, the extent of contamination covers more than 1000 square miles (see Figure 1). Nearly 300 child-use facilities have been evaluated in King and Pierce Counties, with approximately 1 in 4 having levels of arsenic and/or lead above the state cleanup levels.
The TSP team has provided numerous education and outreach activities to schools, childcares and pre-schools, and the larger public. The education and outreach activities are summarized in "Tacoma Smelter Plume, Summary of Education and Outreach, spring 1999 to spring 2005."

1.3 AREA-WIDE TASK FORCE

Soils in large parts of Washington State contain elevated levels of arsenic and lead caused by past releases from metal smelters and historical application of agricultural pesticides. This low- to moderate- level soil contamination (see Table 1), spread over large geographic areas, is referred to as area-wide soil contamination. The Tacoma Smelter Plume is an example of an area-wide contaminated site.

As Washington's population grows, many areas with elevated levels of arsenic and/or lead continue to be developed into residential neighborhoods, schools, childcares and parks. These development activities raise a variety of health, environmental, and marketplace concerns, and create pressures for cleanup. In early 2000, the Washington State Departments of Agriculture, Ecology, Health, and Community, Trade & Economic Development decided that effective, long-term solutions to area-wide soil contamination problems would require looking beyond traditional cleanup processes and agency boundaries. In 2001, the Washington Legislature appropriated $1.2 million to form and support a stakeholder Task Force to consider these issues.

The Agencies chartered a 17-member Task Force to offer advice about a state-wide strategy to respond to area-wide arsenic and lead soil contamination in Washington State. The Task Force submitted their recommendations to the Agencies in June 2003. The Task Force recommendations to the state agencies are summarized in an Executive Summary (June 30, 2003) in Appendix A. The recommendations are summarized as:

Education is the foundation of recommendations

- Work with and through local governments, particularly health departments, to increase knowledge of area-wide soil contamination through a broad-based education and awareness-building campaign.
- Take a step-wise approach to education and awareness-building.
- Focus on risks associated with exposure of children and of adults who have frequent contact with soil.
- Monitor and evaluate the success of education and awareness-building efforts.

Child-Use Areas (CUA)

- Support, encourage, and assist CUA property owners with implementation of protective measures.
- Encourage implementation of Consumer Product Safety Commission (CPSC) guidelines for maintaining children's safety.

- Require soil testing at new public CUA construction sites and implementation of additional protection measures if contamination is found.

- Establish, with the Washington Department of Social and Health Services (DSHS), a voluntary certification program for family home childcares and childcare centers to indicate that they have taken steps to minimize children's potential for exposure.

Residential Properties

- Offer technical and financial assistance to support and encourage residents to implement individual protection measures, maintain good soil cover, and conduct qualitative evaluations to understand where exposure could occur.

- Provide information on where and how to dispose of contaminated soil and help residents locate sources of soil that meets the Model Toxics Control Act (MTCA) cleanup levels.

Commercial Properties

No further response actions are necessary where surfaces are covered by buildings, parking lots, or other effective soil cover.

Open Land

- Amend State Environmental Policy Act (SEPA) checklist to include a question about whether there is the potential for area-wide soil contamination on a property.

- Encourage developers to conduct qualitative evaluations of properties and, where warranted, carry out soil testing prior to construction. Also encourage developers to incorporate appropriate additional protection measures into site development and construction plans.

- Ensure U.S. Occupational Safety & Health Administration (OSHA) and Washington Industrial Safety and Health Act (WISHA) requirements governing worker protection and safety, and implementation of requirements to control windblown dust and soil erosion due to storm water runoff during construction.

Real Estate Disclosure

Encourage the Washington Association of Realtors to:

- Pursue legislation requiring a real property transfer disclosure statement for open land (in addition to the existing requirements for residential properties) and encourage the voluntary use of the existing seller's property condition report for open land until such legislation is adopted.

- Encourage real estate agents to use disclosure documentation (similar to the lead-based paint disclosure form) for the potential presence of contaminated soils where area-wide soil contamination is likely.

- Create an education course for real estate agents about area-wide soil contamination.

- Draft an article highlighting the Task Force findings and recommendations, including key elements of individual protection measures, for the *Washington Realtor*.

MTCA

- Use regulations instead of policies to implement Task Force recommendations related to MTCA.

- Avoid listing individual properties affected by area-wide soil contamination and instead identify and describe area-wide soil contamination zones.

- Establish in regulation a new enforcement forbearance policy available where property owners choose to implement Task Force recommendations at residential and commercial properties within area-wide soil contamination zones.

- Where properties are sampled and concentrations of arsenic and lead are below cleanup levels, provide a streamlined process to reflect that properties are clean.

Other Recommendations

- Gather additional, scientifically valid information on the health of Washington residents, particularly children, who may be exposed to arsenic and lead.

- Conduct further research to characterize the location and extent of elevated levels of lead in soil from past use of leaded gasoline in Washington.

- Study the effects of area-wide soil contamination on ecological receptors, including plants and animals.

- Provide financial assistance for local government efforts to address area-wide soil contamination particularly the activities of local health departments.

- Seek funding from a broad range of Federal, State, and private sources.

1.4 AREA-WIDE SOIL CONTAMINATION STRATEGY (AWSCS)

The Agencies developed an initial strategy for implementing the Task Force's recommendations, which is documented in this October 2003 report (Appendix B). The strategy is organized around five broad objectives which are the basis for the objectives in this Tacoma Smelter Plume project plan (Section 2.2).

AWSCS Objectives	TSP Project Plan Objectives
1. Improve public awareness and understanding of area-wide soil contamination concerns and solutions	1. Improve Public Awareness
2. Collect and evaluate information to support decisions about reducing the potential for exposure to arsenic and lead in soils	2. Characterize Soil And Implement Protective Measures
3. Reduce the potential for exposure to arsenic and lead in soils at developed properties	3. Characterize Soil And Implement Protective Measures
4. Reduce the potential for exposure to arsenic and lead in soils at properties under development	4. Improve Institutional Capabilities
5. Improve institutional capabilities for responding to area-wide soil contamination	4. Improve Institutional Capabilities

Ecology developed a more detailed implementation strategy (Appendix C). The Implementation Strategy contains programmatic guidance and policies that Ecology will use to address arsenic and lead soil contamination throughout Washington caused by historic smelter releases and past use of lead-arsenate pesticides. Detailed technical guidance for specific issues such as soil sampling, cleanup actions, and Best Management Practices (BMPs) are being developed and will be added to the strategy as technical appendices.

The Implementation Strategy is based on the following key decisions:

- The MTCA regulatory process may be used at properties found to have high levels of arsenic and lead. An alternative approach will be used at properties found to have moderate levels of arsenic and lead soil contamination (see Table 1), no related groundwater contamination, and no other contaminants.

- In part, the alternative approach is a phased approach with initial emphasis on education, voluntary implementation of individual protection measures, and interim actions to prevent exposure; followed by voluntary cleanup actions as properties are developed or redeveloped over time. Elements of the alternative approach are summarized in Table 2.

- Ecology will work internally and with other state and local agencies to institutionalize (incorporate into day to day business) changes so that measures to address moderate levels of contamination are identified and implemented routinely.

- People should be provided information on soil contamination so they can take steps to reduce their exposure. However, Ecology will not implement broad based public awareness campaigns. Ecology may provide funding to other state or local entities to do so.

- Available resources will be prioritized to address properties with high levels of contamination through the regulatory process, while still making progress at properties with moderate levels of contamination. The approach is risk based and will seek to address the greatest risks first.

1.5 SOIL SAFETY PROGRAM

In April 2005, the Legislature passed a new law designed to enhance efforts to protect children from area-wide soil contamination in the Tacoma Smelter Plume (TSP). The new law requires:

(1) Identification of all known child-use areas (e.g., schools, childcares) within the TSP;

(2) Qualitative evaluation to determine potential exposure to children;

(3) Soil sampling if potential for exposure exists; and

(4) Assistance for schools and childcares to implement best management practices (BMPs) that reduce exposure to arsenic- and lead-contaminated soil.

Ecology, PHSKC, TPCHD, and other interested stakeholders have designed a Soil Safety Program to implement the law (Appendix D).

The scope of effort under the law is considerable. While this project plan identifies all proposed tasks related to the Tacoma Smelter Plume, most of the resources are focused on implementing the Soil Safety Program.

2.0 TACOMA SMELTER PLUME PROJECT PLANNING GUIDANCE

2.1 VISION FOR SUSTAINABILITY

Healthy actions to reduce risks from contaminated soil will be incorporated into daily life, through partnerships among government, educational and childcare groups, residential communities, interest groups and business.

- As soil in the plume area may be contaminated for centuries, it will be the policy and fiscal responsibility of government to provide affected populations with ready access to clear information about soil contamination and protective measures to reduce risk from exposure.

- Local and state government agencies will have procedures to address soil contamination and to educate their clients on risk reduction and remediation.

- Schools, childcares, preschools, parks and camps will apply best management practices, and cleanup of contaminated soil if appropriate, and integrate these practices into their maintenance programs and their classroom curriculum.

2.2 OBJECTIVES

Ecology, PHSKC, and TPCHD identified the following objectives which provide overarching guidance for Tacoma Smelter Plume soil contamination activities. These objectives are consistent with the recommendations of the Area-wide Task Force and the objectives of the Area-wide Soil Contamination Strategy (Appendix B).

OBJECTIVES

1. **Improve Public Awareness** and understanding of soil contamination and protective measures to reduce risk from exposure.
2. **Characterize Soil And Implement Protective Measures** - collect and evaluate information to support decisions on implementing measures to reduce risk from exposure to arsenic and lead in soil.
3. **Improve Institutional Capabilities** for responding to arsenic and lead in soil.

2.3 PRIORITIES

To achieve the objectives described above, staff resources and grant funding will be prioritized towards the following:

1. Audiences that have daily, direct influence over young children and their environment.

   Ecology and the health departments are concerned about long-term exposure to the contaminated soil, especially for young children. Children are especially vulnerable because they eat, drink and breathe more in relation to their body size than adults. They tend to put their hands in their mouths and play on the floor where dirt and dust from outside activities gets tracked inside.

   For the Tacoma Smelter Plume project, we have defined the target audience in priority order as:

   (1) Young children under 6 years of age and those that directly influence a young child's environment (e.g., parents, teachers, childcare providers).

   (2) Children 6-12 and their caretakers.

   (3) Children 12-18 and their caretakers.

2. Properties where groups of young children are present on a regular basis, including:

   - Preschools, schools, childcares, parks, camps, and residences. Within these properties, specific areas where children are most likely to have direct contact with contaminated soil (such as playgrounds) should be addressed first.
   - Properties with high levels of arsenic and/or lead in soil are a higher priority than properties with moderate levels of arsenic and/or lead in the soil. *High and moderate levels are defined in Table 1*.
   - Schools and childcares are higher priority than parks or camps. *In general, the potential exposure is higher at schools and childcares because of the greater frequency of exposure and daily density of children.*
   - Publicly owned facilities are a higher priority than privately owned facilities. *Publicly owned facilities tend to be more easily accessible by the public and serve a greater number of children. According to the legislation, funding will be provided to health departments to test soil at public and private schools and childcares, not camps or parks, during the '05-'07 biennium.*
   - Because of the large number of residential properties potentially affected by plume emissions, TSP activities will be focused only on broad based public awareness and, as funds are available, a residential soil sampling service. In addition, sampling and remediation will be incorporated into land use planning and development processes as part of Objective 3.

3. Geographic areas with greater potential for high levels of arsenic or lead in soil. *High and moderate levels are defined in Table 1.*

   For the Tacoma Smelter Plume, there are two geographic areas of interest. The first is the full extent of the plume contamination—the Footprint. The Footprint encompasses over 1000 square miles of King, Pierce, Kitsap, Thurston, and potentially Snohomish counties (Figure 1). The pattern of contamination shows higher levels closer to the smelter, decreasing with distance from the smelter.

   The second geographic area of interest is a zone of potentially higher concentrations closer to the smelter used to focus child-use area (CUA) studies—the Soil Safety Program (SSP) Service Area* (Figure 2).

   The priority area for Tacoma Smelter Plume activities covers the following:

   - Mainly, areas within the SSP Service Area as defined for the Soil Safety Program.
   - Some areas outside of the SSP Service Area necessary to address environmental and social justice issues. (For example, children with learning disabilities and pica behavior often attend specific schools which may be outside of the service area).
   - The King County SSP Service Area, which generally includes Vashon-Maury Island, Normandy Park, Burien, DesMoines, SeaTac, Federal Way, and parts of West Seattle, Kent, Tukwila and unincorporated King County.
   - The Pierce County SSP Service Area, which generally includes Tacoma, Fircrest, University Place, Lakewood, Steilacoom, Dupont and Gig Harbor.
   - The Thurston County SSP Service Area, which generally includes the highland area west of the Nisqually delta.

***Note:** CUA Study Zone is a term used for the CUA studies through 2005. In 2005, legislation was passed specific to sampling CUAs. We call the program Soil Safety Program. Now the CUA Study Zone is called the Soil Safety Program (SSP) Service Area. The SSP Service Area and CUA Study Zone were defined similarly. Both looked at the "Footprint" data and estimated the distance beyond which we don't expect to find as high as 100 ppm arsenic. The SSP Service Area was then modified based on health department input.*

2.3.1 CONSIDERATIONS

Additional considerations for Tacoma Smelter Plume activities include the following issues:

1. Measures to protect human health will take priority over protection of ecological receptors. *Property owners seeking No-Further-Action from Ecology must address both human and ecological risks.*
2. Environmental justice will be considered when making funding decisions and prioritizing services.
3. Special outreach approaches may be necessary to reach seasonal audiences within the SSP Service Area. *During the summer, there are visitors to Vashon-Maury Island, staying in summer homes and utilizing parks and camps, who are unaware of the contamination.*
4. Outreach to health care providers may need to include those providers outside of the SSP Service Area as some families within the Service Area visit physicians outside of the Service Area.

2.4 FUNDING & PARTNERSHIPS

Ecology, PHSKC, and TPCHD are working in partnership to address the public health concerns associated with the Tacoma Smelter Plume. Partnerships with other health departments (e.g., in Thurston County, Kitsap County, Snohomish County), other agencies, and stakeholders will develop over time as project activities progress.

The following sections detail the implementation steps to meet the project objectives (Section 2.2). Those implementation steps to be carried out by the local health departments are currently funded by site hazard assessment (SHA) grants from the Local Toxics Control Account (LTCA). Grant Scopes of Work detailing the health department work will be attached as appendices to this project plan. The Scopes of Work will be revisited quarterly, and may be modified as part of adaptive management.

Those implementation steps to be carried out by Ecology are generally funded by the State Toxics Control Account (STCA). A workplan detailing Ecology's work will be attached as an appendix to this project plan. Ecology's workplan will also be revisited quarterly, and may be modified as part of adaptive management.

Specific to the Soil Safety Program:

- PHSKC and TPCHD will conduct the soil sampling and outreach activities which are funded under the SHA grants.

- Ecology will oversee the implementation of BMPs. Funding will come from the Safe Soil Account, Clean Sites Initiative, and Remedial Action Grants.

- Ecology will ensure all tasks are completed by the legislative deadlines. Any activities not completed by the health departments will be completed by Ecology.

3.0 Objective 1: IMPROVE PUBLIC AWARENESS

3.1 GOALS

1. Improve awareness of soil contamination and actions that reduce exposure among the general public.
2. Children, and the adults that directly affect their environment, will have an increase in awareness about soil contamination and actions that reduce exposure and the adults will take actions that reduce exposure.
3. PHSKC, TPCHD and Ecology, will establish sustainable partnerships that result in increased capacity for improving public awareness and taking actions that reduce exposure.

3.2 IMPLEMENTATION STEPS

The Tacoma Pierce County Health Department (TPCHD) and Public Health Seattle King County (PHSKC) and Ecology annual Outreach and Education work plan(s) referenced below will be consistent with the priorities and general planning guidelines outlined in section 2 of the TSP Management Plan (pages 11-13).

General

1. TPCHD and PHSKC will develop and implement *(annually)* a broad based public awareness campaign plan through the use of the following mechanisms most appropriate for their local communities *(Deadline: ongoing):*
   a) Presentations and distribution of materials at community meetings, fairs and/or conferences;
   b) Articles in newspapers or other publications; Web site;
   c) Paid television, radio ads, posters and/or bus placards; and
   d) Direct mass mailings.

2. Ecology will develop and maintain Web sites *(Deadline: ongoing).*

3. Ecology will develop and produce for distribution: soil sampling and other guidance documents *(deadline: January 2007)* including:
   a) General guidance brochure;
   b) Large child-use play areas (parks, camps, schools, childcare centers); and
   c) Small child-use play areas (residential yards, home childcares).

4. PHSKC and TPCHD will sustain or strengthen existing partnerships and create new partnerships with established groups that are available for multi-year, long-term partnerships. A listing of those partnerships will be provided with the agency specific outreach and education plan. *(Deadline: Ongoing).*

5. PHSKC and TPCHD will develop partnerships that enhance their ability to improve public awareness and actions that reduce exposure in non-English speaking and financially disadvantaged communities. *(Deadline: Ongoing)*

Schools

6. Ecology (in coordination with the local health departments) will make initial contact with the Office of Superintendent of Public Instruction (OSPI) and school districts to explore options to support health departments' outreach and education work (e.g., curriculums, Web site coordination, teacher training). *(Deadline: June 30, 2007).*

7. PHSKC and TPCHD (and other local health departments as appropriate) will work with all school districts (in coordination with Ecology) and schools (subject to priorities in Section 2) within the SSP Service Area to implement a) general awareness, b) curriculums, and c) training programs encouraging children, school staff, and parents to reduce exposure to contaminated soils. *(Deadline: Ongoing)*

Childcares

Note: Childcares include Head Start programs, Early Childhood Education and Assistance Programs (ECEAP), preschools and licensed childcares.

8. Ecology (in coordination with the local health departments) will work with Department of Early Learning (DEL) and/or childcare organizations to raise awareness by:

   a) Supporting health departments' outreach and education work (for example, Web site coordination). *(Initial contact by June 2007 and then ongoing)*

   b) Integrating soil contamination and health risk messages into childcare licensors and health advisors training. *(Initial contact by June 2007 and then ongoing)*

   c) Providing public participation grants to non-profit childcare organizations to support local health department activities and distribute outreach and education materials to childcare providers within the SSP Service Area. *(Initial: September 2006). Review annually*

9. PHSKC and TPCHD (and other local health departments as appropriate) will work with childcares (subject to priorities in Section 2) within the SSP Service Area to provide:

   a) General awareness.

   b) Curriculum and materials.

   c) STARS accredited training to childcare providers, administrators, and other audiences as appropriate.

   d) Training that encourages children, childcare staff, and families to take actions that reduce exposure to contaminated soils.

   (Deadline: Ongoing)

Parks, Camps, Multi-family housing and Residential properties

10. Ecology, PHSKC and TPCHD will address soil contamination in existing parks, camps and multi-family housing with child use areas within the SSP Service Area that are not being addressed through the Soil Safety Program by:

    a) Developing a plan to conduct an inventory. *(Deadline: June 2009) See also Section 4, Implementation Step #5)*

    b) Developing and beginning to implement a plan to inform the parks, camps and multi-family housing residents/managers and owners about soil contamination and actions they can take to reduce exposure for employees, residents, visitors, children, and families. *(Start by December 2009)*

11. TPCHD will conduct outreach and education in conjunction with the pilot program for residential soil sampling and Home Environmental Assessment (HEAL) visits for interested residents within the SSP Service Area. *(Deadline: June 30, 2007).* At completion of the pilot, TPCHD will share lessons learned and the TSP project will evaluate whether this program should continue or be expanded to other jurisdictions.

3.3 EVALUATION and REPORTING

TPCHD, PHSKC and Ecology will develop and implement methods to evaluate the effectiveness of various outreach and education activities and report results and share lessons learned. (Deadline: at least annually; specific campaigns may have specific due dates).

Because of the difference in population size and distribution within the Tacoma Smelter Plume, some performance measures are different for each of the health departments. Specific reporting requirements related to Outreach and Education will be negotiated as part of the grant process and will be reviewed at least every six months. Evaluation results will be used to produce end of biennium reports and to revise and improve outreach and education efforts. Evaluation plans and report timing will be implemented so that information will inform the next grant cycle.

TPCHD, PHSKC and Ecology will develop, implement and coordinate on databases and information systems needed to track negotiated quantitative (and other) measures.

Qualitative Evaluation

Qualitative evaluation methods could include focus groups, surveys or program evaluations for specific programs (for example, curriculums or trainings). Reports from these evaluation methods should include findings, lessons learned and recommendations related to outreach and education activities.

Quantitative Evaluation

TPCHD, PHSKC, and Ecology will report quantitative performance measures to be identified in the agency specific Outreach and Education work plans, but should include the following priority target audiences:

(1) Number of children under 6 years of age.

Number of parents or teachers that directly influence children under 6 years.

(2) Number of children 6-12.

Number of caretakers for children ages 6-12.

(3) Number of children 12-18.

Number of caretakers for children ages 12-18.

Quantitative evaluations will measure impact on the target audiences in priority locations and geographic areas, when possible:

(1) Childcares and schools.

(2) Parks and camps.

(3) Residences.

- King County Service Area generally = Vashon-Maury Island, Normandy Park, Burien, Des Moines, SeaTac, Federal Way, and parts of West Seattle, Kent, Tukwila and unincorporated King County.
- Pierce County Service Area generally = Tacoma, Fircrest, University Place, Lakewood, Steilacoom, Gig Harbor and Dupont.
- Thurston County Service generally = highland area west of the Nisqually delta.

Process Measures

Process measures should be reported to help plan for publication and distribution of materials, including:

- Number and type of events (meetings, fairs).
- Number and type of educational materials distributed
- Type of training or presentation.

(The SSP tracking system includes outreach materials distributed at schools and childcares specific to sampling at those facilities.)

Baseline Assessments

TPCHD and PHSKC will conduct select baseline assessments to establish benchmarks to evaluate awareness or behavior change. Baseline surveys implemented will be included in work plans in the evaluation section.

Evaluate if it is possible to integrate a baseline assessment to establish benchmarks to evaluate awareness or behavior change as part of the SSP tracking system and follow-up on schools and childcares with levels above criteria.

4.0 Objective 2: CHARACTERIZE SOIL AND IMPLEMENT PROTECTIVE MEASURES

4.1 GOALS

Properties with schools and childcares

1. Soil in all child play areas at existing **schools and childcares** located within the Soil Safety Program (SSP) Service Area will be characterized for arsenic and lead using qualitative evaluation and, as appropriate, soil testing. Protective measures, or soil safety actions, will be implemented at schools and childcares with high or moderate levels of arsenic and/or lead. This goal fulfills the Soil Safety Program legislation, Chapter 70.140 RCW, and is to be completed by December 2009.
2. Soil in child play areas at **schools and childcares** outside of the Service Area will be characterized for arsenic and lead through qualitative evaluation and, as appropriate, soil testing at the property owner's discretion and cost. At play areas with high levels of arsenic and/or lead, protective measures will be implemented. At play areas with moderate levels of arsenic and/or lead, protective measures will be implemented when opportunities arise (for example, during renovation or maintenance) at the property owner's discretion and cost. After December 2009, the agencies will re-evaluate this goal using information gathered during the Soil Safety Program.

Other properties

3. Over time (10 years), soil in all child play areas at **parks, camps, and multi-family housing** within the Service Area will be characterized for arsenic and lead using qualitative evaluation and, as appropriate, soil testing. Protective measures will be implemented at play areas with high levels of arsenic or lead. At play areas with moderate levels of arsenic or lead, protective measures will be implemented when opportunities arise (such as during renovation or maintenance) at the property owner's discretion and cost.
4. Soil in child play areas at **parks, camps, and multi-family housing** outside of the Service Area will be characterized for arsenic and lead using qualitative evaluation and, as appropriate, soil testing at the property owner's discretion and cost. Protective measures will be implemented at play areas with high levels of arsenic or lead. At play areas with moderate levels of arsenic or lead, protective measures will be implemented when opportunities arise (such as during renovation or maintenance) at the property owner's discretion and cost.

5. All **residential** property owners within the Footprint interested in characterizing soil for arsenic and lead contamination, and implementing protective measures will have access to information and technical assistance.
6. All property owners within the Footprint interested in characterizing soil for arsenic and lead contamination, and implementing protective measures will have access to information and technical assistance.
7. Soil at all properties within the Footprint being developed or re-developed will be characterized, when appropriate, for arsenic and lead as a part of the development process. Protective measures will be implemented as appropriate. Properties with high levels, as defined in Table 1, will be treated as Model Toxics Control Act sites. *Implementation steps for this goal are primarily related to institutional changes and are listed in that section.*
8. Soil at all new state and federal hazardous waste cleanup sites within the Footprint will be characterized for arsenic and lead as a part of the overall cleanup for that site. Soil contamination will be remediated consistent with the substantive requirements of the Model Toxics Control Act.
   Note: "site" in this situation is defined as any area in which a hazardous substance has come to be located. Implementation steps for this goal are primarily related to institutional changes and are listed in that section.

4.2 IMPLEMENTATION STEPS

1. Ecology, in coordination with the local health departments and a consultant, will develop a Soil Safety Program design *(Deadline: April 30, 2006)* and implement the Soil Safety Program for schools and childcares within the Service Area *(Ongoing through December 31, 2009).* The program design will include the following tasks:
   a) Identify schools (public and private) and childcares.
   b) Request access and conduct qualitative evaluations/assessments.
   c) Conduct soil sampling and evaluate the results.
   d) Provide test results and steps to implement Soil Safety Actions.
   e) Provide technical assistance, including funding, to implement Soil Safety Actions.
   f) Provide outreach and education as needed.
   g) Inspect and track if Soil Safety Actions are implemented.

   See Appendix D for the detailed implementation steps for the Soil Safety Program. Note: Previously sampled schools and childcares will be contacted as a part of the Soil Safety Program

2. Ecology, in coordination with the local health departments will develop *(by January 2007)* soil sampling guidance and protective measures guidance brochures for:

   a) Large child-use play areas (parks, camps, schools, childcare centers); and

   b) Small child-use play areas (residential yards, home childcares).

   The agencies will provide these guidance brochures upon request and track the number of copies and location of recipients. *(On-going)*

3. Ecology, TPCHD, or PHSKC will follow-up with previously sampled child-use properties (parks and camps) with moderate to high levels of arsenic and lead to provide information about protective measures. *(Deadline: June 30 2008-as time allows)*

4. Ecology, TPCHD, or PHSKC will develop a plan to inventory existing parks, camps, multifamily housing with child use areas, and other places with child use areas within Service Area that are not being addressed through the Soil Safety Program. *(Deadline: June 2009). See also Objective 1 step 10 for Outreach and Education.*

5. Ecology, in coordination with the local health departments will develop soil sampling and protective measures guidance brochures for properties under development *(Deadline: June 30, 2007). See also Objective 3-section 5.*

6. Upon request, and dependent on available funding, Ecology will provide technical assistance (such as for soil characterization, protective measure implementation, and remediation) and funding (subject to priorities in Section 2) to property owners within the Footprint. Ecology will track the number and location of recipients of this technical assistance. *(Deadline: On-going).*

7. TPCHD will conduct a pilot residential outreach and education program in conjunction with soil sampling and Home Environmental Assessment (HEAL) visits for interested residents within the SSP Service Area. Soil Sampling results and lessons learned will be reported to Ecology. *See Objective 1 Implementation Step 11.*

4.3 EVALUATION

TPCHD, PHSKC and Ecology will develop and implement methods to evaluate the effectiveness of the SSP and other soil characterization activities and protective measures. The agencies will report results and share lessons learned.

Evaluation results will be used to produce end of quarter and annual reports, and special Soil Safety Program reports required by the legislature. Results will also be used to revise and improve soil characterization efforts and protective measures.

TPCHD, PHSKC and Ecology will develop, implement and coordinate on databases and information systems needed to track quantitative measures to be developed as part of the evaluation plan for this objective.

Quantitative Evaluation - Soil Safety Program (SSP)

TPCHD, PHSKC, and Ecology will address quantitative performance measures as identified in the Soil Safety Program. Information will be collected and reported for 1) public schools, 2) private schools, and 3) childcares as follows:

- Number of facilities identified within the service area.
- Number of qualitative evaluations or assessments conducted.
- Number of facilities requiring sampling.
- Number of facilities that did not need sampling and why.
- Number of sampled and number with arsenic or lead levels above MTCA.
- Number of facilities that are above the criteria for arsenic or lead and require Soil Safety Actions.
- Number of facilities initiating Soil Safety Actions.
- Number of facilities that did not implement Soil Safety Actions when they were recommended
- Any instances when it was necessary to notify a regulatory agency because Soil Safety Actions were not implemented and parents were not notified.

Quantitative Evaluation - Other

Ecology, in collaboration with local public health, will identify possible mechanisms to track and evaluate:

- Child play areas not in the SSP.
- Other properties (see Implementation Step #7).

Information tracked may include:

- Number and type sampled and results.
- Number of technical assistance consultations provided for sampling or remediation.
- Number of sites that underwent remediation such as soil removal or covering.

Process measures

- Number of soil sampling brochures distributed.
- Number of protective measure brochures distributed.
- Number of technical assistance contacts.

Qualitative evaluation

- Report on lessons learned and challenges to implementing activities.
- Follow-up processes implemented with childcare facilities and schools to assess Soil Safety Actions taken and still being implemented.

5.0 Objective 3: IMPROVE INSTITUTIONAL CAPABILITIES

5.1 GOALS

1. Increase institutional capability to improve public awareness.

   Measures to promote awareness, collect data, and reduce or prevent exposure to arsenic- and/or lead-contaminated soil at all properties will be integrated into the day to day operations of public and private stakeholders. To meet priorities (Section 2), our primary focus is on integrating these measures into the day to day operations of agencies involved in management and oversight of properties with child play areas.

2. Increase institutional capability to characterize soil and implement protective measures.

   All properties under development (or major re-development) will have concentrations of arsenic and/or lead in soil below MTCA cleanup levels of 20 ppm and 250 ppm, respectively. To meet priorities (Section 2), our primary focus is on soil in child play areas.

5.2 IMPLEMENTATION STEPS

The implementation steps are grouped by targeted institution or group. Priority for implementation is designated by HIGH, MEDIUM AND LOW. Priority for action will be taken into consideration when agencies develop and implement work plans. Many of the activities are focused on changing local policies.

Ecology and Public Health

1. Ecology will improve and streamline the agency's technical assistance, program activities and State Environmental Policy Act (SEPA) review processes related to arsenic and lead soil contamination. Examples of these processes include: Facility Site Atlas-mapping; SEPA comment language; the SEPA checklist; Voluntary Cleanup Program (VCP) language; and identification of soil disposal options. The agency will educate site and section managers in the Toxics Cleanup Program (TCP) so that cleanups for other contaminants also address arsenic and lead, as appropriate. Other program and section managers in Ecology will also be educated, such as from water quality and solid waste programs. *(Deadline: December 2007)* HIGH

2. Local public health will work with other agency staff to incorporate TSP soil contamination messages into their day-to-day work. Collaborations may include public health nurses, solid waste staff and school safety staff. *(Deadline: December 2007)* MEDIUM

Educational Institutions

3. Ecology will work with the appropriate agencies, in collaboration with local health departments, to support the integration of soil contamination issues into best management practices (BMPs) or guidance that impacts educational facility operations. Collaborations include:

    a) Working with the Department of Early Learning (DEL) and Educational Service Districts (ESDs) to condition the licensure of childcares and Head Start facilities. *(Deadline: Start by December 2007 and complete by Dec. 2009)* HIGH

    b) Working with DEL to create childcare facility operator guidance documents that meet Consumer Product Safety Commission (CPSC) guidelines. *(Deadline: Start by December 2007 and complete by Dec. 2009)* HIGH

    c) Working with the Office of the Superintendent of Public Instruction (OSPI) to create state K-12 health and safety guidance that meets CPSC guidelines. *(Deadline: Start by December 2007 and complete by Dec. 2009)* HIGH

4. Ecology will collaborate with local health departments to support the integration of soil contamination messages into training programs and healthy action curriculums for, in order of priority:

    a) Childcare teachers and workers, Head Start (working with DEL health advisors).

    b) Early learning degree programs (working with DEL, colleges, community colleges).

    c) Elementary schools teachers (working with OSPI).

    (Start by June 2008) MEDIUM

5. Ecology will work with childcare organizations/associations to identify strategies to institutionalize soil contamination concerns and to support local health education and outreach to providers and parents. *(Deadline December 2009).* MEDIUM.

Land Use and Construction

6. Ecology, in collaboration with local government stakeholders, will develop a strategy *(by December 2006)* and action plan to integrate soil contamination issues into local government land use planning and development policies and processes, including training for planning staff. *(Deadline: December 2007).* HIGH

7. Ecology will work with the appropriate state or local agencies, to support the integration of soil contamination BMPs and guidance into day-to-day practices for new construction, major maintenance or reconstruction projects, for:

    a) Schools, including construction grants (OSPI, local health officers, Department of Health (DOH)). *Deadline: December 2007* HIGH

    b) Parks, including construction grant programs (Parks and Recreation Commission (Parks), Interagency Committee (IAC), private parks work group). *Deadline: December 2007* HIGH

    c) Other state agencies with a focus on public housing, clean air, storm water and solid waste regulations/permitting. *Deadline June 2008 MEDIUM*

    d) WSDOT construction activities. *Deadline: December 2009* LOW

    e) Construction worker OSHA-WISHA standards and procedures, Department of Labor and Industries (L&I), and worker associations. *Deadline: December 2009 LOW (consider a review of this in the context of Implementation Step 6 above)*

8. Ecology will work with realtor and other land transaction professional organizations (home inspectors, appraisers, financial) to address TSP soil contamination issues through:

    a) Professional training and education programs regarding soil contamination.

    b) Identifying options to notify buyers about soil contamination, healthy actions and cleanup on affected property.

    c) Encouraging the passage of legislation requiring a real property disclosure statement for open land (and use of the voluntary seller's property condition report in the interim).

    d) Realtor use of disclosure documentation (similar to lead based paint disclosure).

    (*Deadline: December 2009):* LOW

Other Government

9) Ecology will share information and coordinate with the Federal and other governments to encourage that soil contamination is addressed on land under their jurisdiction, including:

   a) EPA –Ruston superfund site. *(Deadline: January 2007)* HIGH

   b) Military bases. *(Deadline: December 2009)* LOW

   c) Tribes. *(Deadline: December 2009)* LOW

10) Ecology will work with state agencies to implement grants in support of activities that improve institutional capabilities related to increasing public awareness and reducing or preventing exposure to contaminated soils, such as:

   a) Solid Waste program for public participation grants to childcare groups, 100% grants to public schools and childcares and/or partial site cleanups (for example, ball fields). *Deadline: December 2008* MEDIUM
   b) Explore grants to local planning agencies. *Deadline: June 2007* HIGH

5.3 EVALUATION and REPORTING

TPCHD, PHSKC and Ecology will develop and implement methods to evaluate the effectiveness of improving institutional capabilities activities and report results and share lessons learned. *(Deadline: at least annually; specific activities may have specific due dates.)*

Business Practices Assessment

A checklist of items or procedures to be changed and/or new procedures incorporated into day-to-day business practices will be developed for each of the targeted institutions or groups. An assessment will be conducted to evaluate what components have been incorporated or changed for:

- State or local agencies *(specific names/types)* responsible for educational policy or construction of public facilities with child use areas have incorporated soil contamination into day-to-day procedures and policies.
- Local jurisdiction planning offices *(listing of local jurisdictions-departments)* have integrated arsenic and lead soil contamination review into permit application, SEPA and/or other planning and development business practices.

Quantitative Evaluation

Ecology will work with local jurisdictions to develop a method to track the number of properties that have implemented soil sampling or remediation through local planning and permit activities or the Ecology VCP program.

The realtor or other land use transaction professional organizations (specific names/types) that have implemented training programs and the number of professionals (specific names/types) that have been trained about soil contamination issues will also be tracked.

The dollar amount of grants that have been issued to specific organizations to address soil contamination issues will be tracked.

Qualitative evaluation

Report on lessons learned and challenges to implementing activities. Report on informal feedback or focus groups from stakeholders.

6.0 OTHER ACTIVITIES

6.1 PHYTOREMEDIATION STUDY

Ecology is evaluating a technique that may be helpful in removing arsenic and lead from individual properties within the Tacoma Smelter Plume and other area-wide contamination zones throughout Washington State. In 2005, Ecology, Public Health-Seattle & King County and the Tacoma-Pierce County Health Department began a phytoremediation pilot study using arsenic-concentrating ferns.

Researchers at the University of Florida have determined that the introduced species *Pteris vittata*, commonly called the Chinese Brake Fern accumulates arsenic in its foliage at up to four orders of magnitude higher concentration than the soils in which it grows. Phytoremeditation of arsenic in soil has been successful in locations throughout the United States, and offers a potentially inexpensive and less disruptive remediation option for cleaning surface soils.

6.1.1 GOALS

The pilot study is designed to evaluate the effectiveness of *P. vittatae* (or a closely related species) in this climate for use in remediating arsenic at moderately contaminated (20-100 mg/kg arsenic in soil) to highly contaminated (100-500 mg/kg arsenic in soil) properties on Vashon or Maury Island.

Additional study questions include:

- Will *P. vittatae* also remediate lead? Cadmium?
- Are brake fern species invasive in western Washington?
- What is the plant survivorship ratio in western Washington?
- How much irrigation, if any, is needed for optimal plant growth here?
- Will plants successfully over-winter here?
- Do the plants propagate naturally here?
- Do any local insects or animals feed on the plants? If so, do they pose a hazard to the insect or animal?
- What are optimal growing conditions for *P. vittatae* in western Washington?
- What is the concentration of arsenic in fern fronds here? Cadmium? Lead?
- How can the arsenic-contaminated fronds be safely and legally disposed of?

- How can the arsenic-containing fronds be kept out of composting and recycling processes?

- Does the presence of cadmium interfere with *P. vittata* uptake of arsenic?

6.1.2 IMPLEMENTATION STEPS

Ecology purchased ferns from a company that propagates and sells *P. vittata* and other closely related species for use in arsenic remediation. Plots were prepared and planted initially in mid-spring (late April-early May) 2005 and maintained through the summer. Approximately 100 ferns were then planted in test plots at:

- Two locations in Dockton Park (Maury Island, King County);

- Three locations on Vashon Island School District property (Vashon Island, King County); and

- Two locations at Point Defiance Park (Pierce County).

During the planting, soil and frond samples were collected to determine the baseline levels of arsenic, lead, and cadmium.

In fall of 2005, the study team harvested the fronds before they wilted and fell to the ground potentially releasing the arsenic they had removed back to the soil. They then sampled the soil and fronds for arsenic, lead, and cadmium. Survivorship was assessed in spring 2006. Shaded plots were decommissioned in the summer of 2006 due to poor survivorship (0-22%). The remaining two plots were harvested and soils sampled in fall of 2006. Survivorship will be assessed in early Summer 2007, and remaining plots decommissioned.

6.1.3 EVALUATION

In early summer 2007, Ecology will measure the number of surviving plants and clear the remaining plots, ending the study. It appears the study will answer some of the research questions posed in section 6.1.1. Final results will be posted on the TSP Web site at http://www.ecy.wa.gov/programs/tcp/sites/tacoma_smelter/Phyto/phyto_hp.html.

7.0 PROJECT EVALUATION

A summary report will be prepared every two years and timed to inform the biennial grant cycle. The project evaluation will be based on evaluation reporting for each objective and any reports/outcomes from special studies. Proposed content includes:

1. Project Goals and Objectives – Brief summary.

2. Implementation steps.

3. Accomplishments by Objective – results tied to the implementation steps.

   - Quantitative – Summary of performance targets and indicators.
   - Qualitative – Descriptive results including whether results turned out as anticipated and if not, what was different.

4. Challenges or barriers encountered – How were these addressed?

5. Next Steps – If objectives were met, what follow-up will be done? If objectives were not met, what changes have been or will be made?

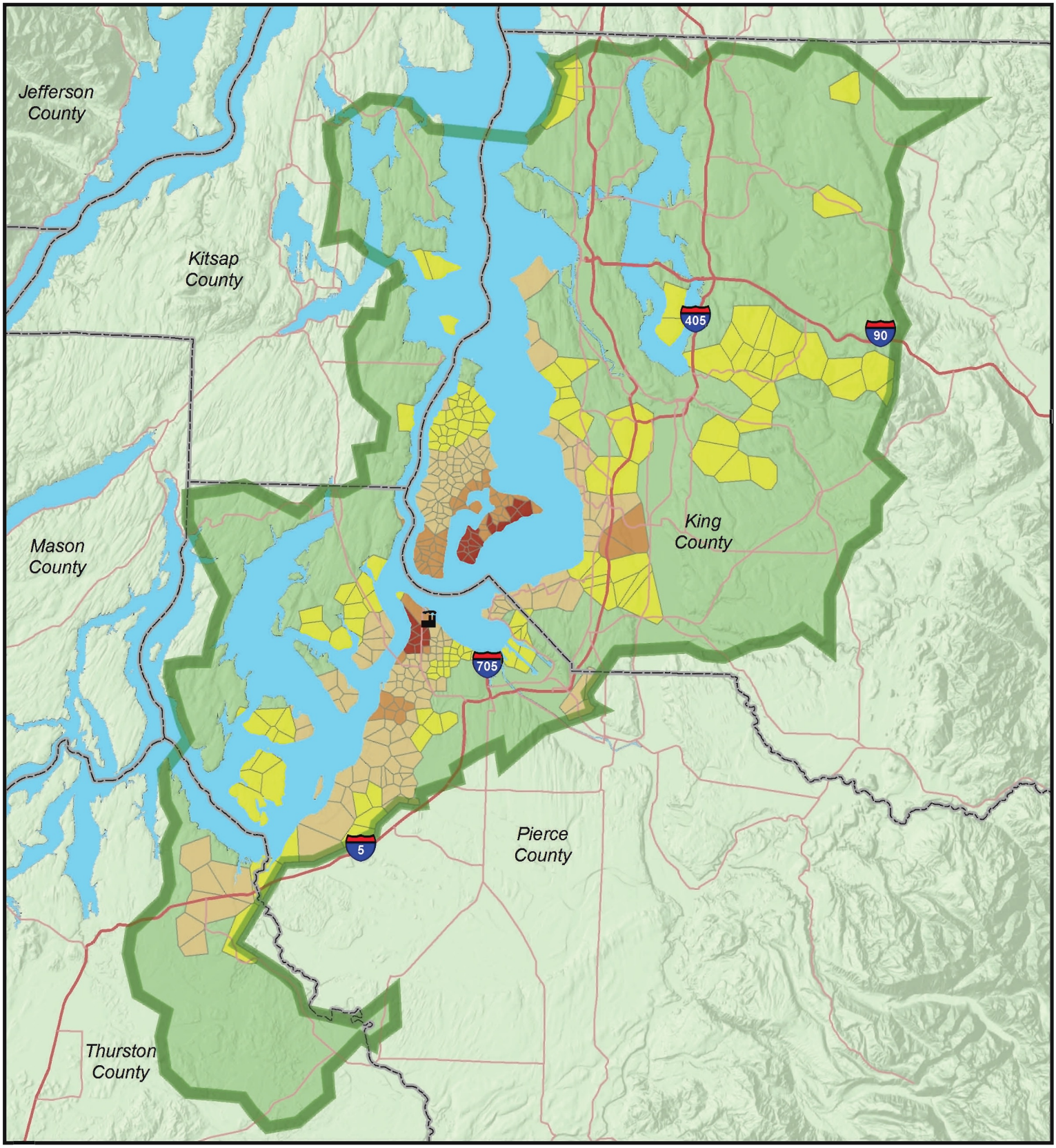

Figure 1 - Tacoma Smelter Plume FootPrint

Map Features

Arsenic Concentrations in Soil, 0-6 inches, 90th Percentile (mg/kg) in the TSP Study Area

- TSP Study Area
- 20.1 to 40.0
- 40.1 to 100.0
- 100.1 to 200.0
- > 200.0

- Stack
- County_Boundaries
- Interstates
- Highways

0 2 4 6 8 10
Miles

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Map Created: December, 2006 by Toxics Cleanup Program

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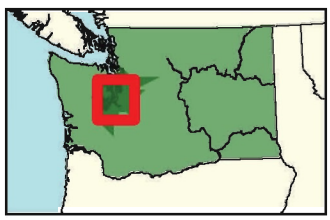

Tacoma Smelter Plume Project

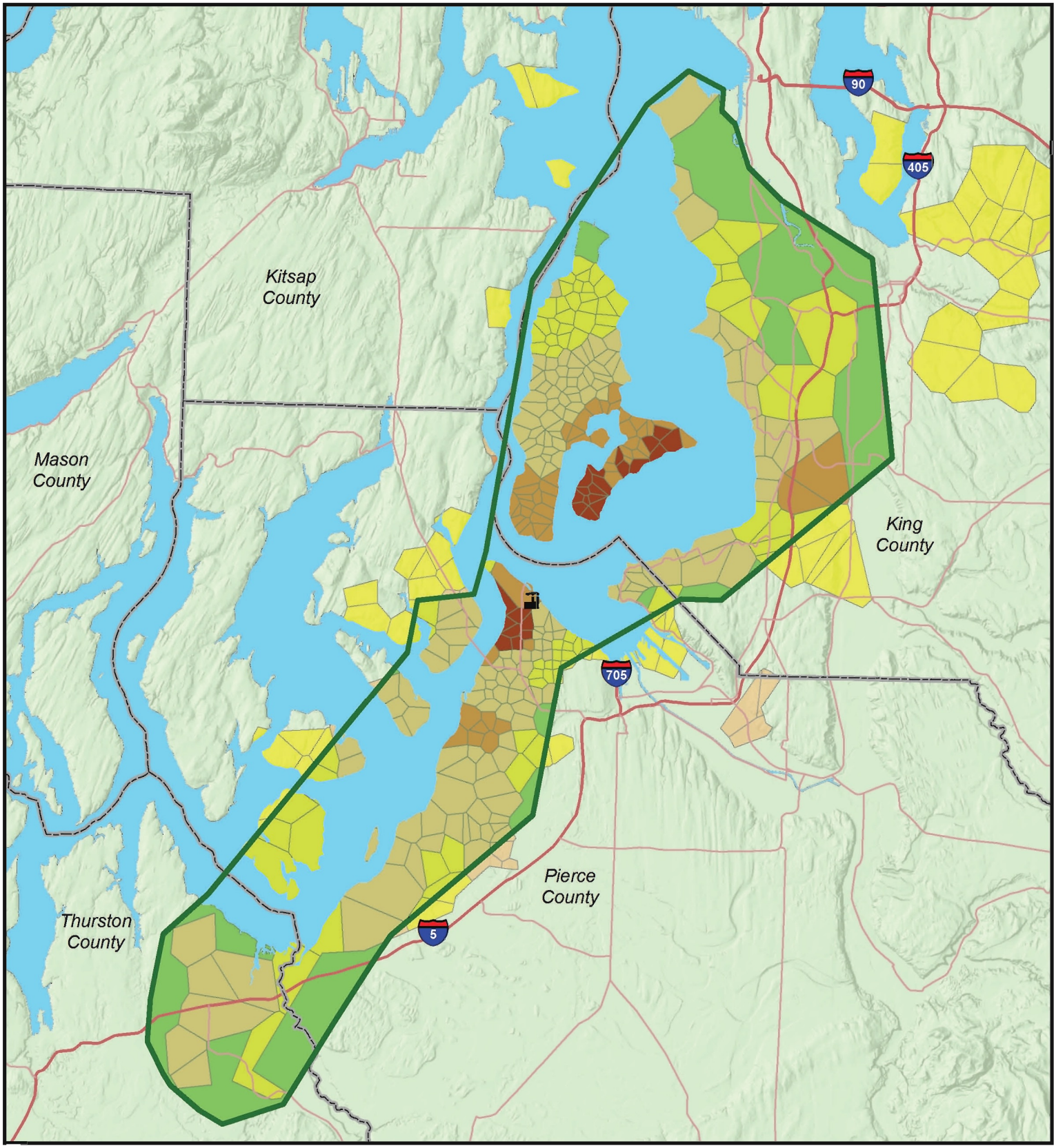

Figure 2 - Soil Safety Program Service Area

Map Features

Arsenic Concentrations in Soil, 0-6 inches, 90th Percentile (mg/kg) in the Soil Safety Program Service Area

- 20.1 to 40.0
- 40.1 to 100.0
- 100.1 to 200.0
- > 200.0

- Soil Safety Program Service Area
- Stack
- County_Boundaries
- Interstates
- Highways

0 1 2 3 4 5
Miles

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Map Created: December, 2006 by Toxics Cleanup Program

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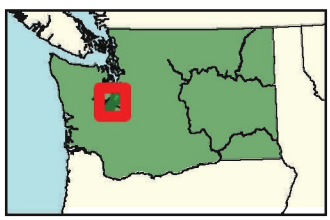

Tacoma Smelter Plume Project

TABLE 1

MODERATE AND HIGH CONCENTRATIONS OF ARSENIC AND LEAD

	Arsenic (ppm)		Lead (ppm)	
	moderate	high	moderate	high
Schools, childcares, residential properties	20 - 100	> 100	250 - 500	> 500
Parks, commercial properties	20 - 200	> 200	250 - 700	> 700

**MTCA cleanup level for arsenic = 20 ppm; for lead = 250 ppm.*
***Comparison statistics: averages above these levels; or a maximum above 2 times these levels (i.e. avg > 20 ppm, or max > 40 ppm)*
****Basis for moderate and high concentrations – MTCA cleanup levels and Interim Action Trigger Levels. Moderate and high concentrations reviewed and supported by Science Advisory Board.*

TABLE 2 ELEMENTS OF IMPLEMENTATION STRATEGY

Feature	MTCA Administrative Framework	Properties With Moderate Levels of As/Pb Inside TSP
Applicability	• High levels of As or Pb in soil, • Contamin. sources other than AW sources • Other hazardous substances above MTCA cleanup levels, • As or Pb in groundwater above MTCA cleanup levels, • Owner/operator requests NFA, or • Actions funded by a remedial action grant	• Moderate levels of As or Pb in soil, • Contamination from historic smelter emissions (some properties may have elevated levels of As and Pb due to past use of lead arsenate pesticides in orchards) and • No groundwater contamination present or expected.
Reporting	• Persons finding high levels of As or Pb on properties must report findings to Ecology per WAC 173-340-300(2).	• Ecology will not require property owners to report findings of moderate levels of As, Pb or other smelter-related metals within the TSP area.
Voluntary Cleanup Program	• Persons requesting an NFA under the VCP must evaluate past land use (e.g. Phase I Assessment). If the property is located on a former orchard (pre-1950) and/or located in the TSP or other smelter plume, the proponent must test for As/Pb and address contaminated soil in cleanup action. • If land use evaluation shows that the property is located on a former orchard that was in production after 1947, the proponent must test for applicable chlorinated pesticides (e.g. DDT, aldrin, heptachlor, methoxychlor) and address contaminated soil as part of the cleanup action.	
Site Tracking	• Individual properties listed and tracked in ISIS database.	• Tacoma Smelter Plume identified as a site and tracked in ISIS database • Individual properties will be listed and tracked in ISIS database if (1) Ecology provides grant funds for soil cleanup and/or (2) Ecology expects to make a MTCA compliance decision at the property (e.g. VCP). Information on status of BMPs at schools/child cares (ESSHB 1605) will be maintained by local health departments.
Data Management	• Ecology will store sampling data from schools, childcare and parks in the EIM system. • Soil data collected through residential soil sampling services will be maintained by local health departments.	
Residential Enforcement Policy	• Ecology will not initiate enforcement actions against residential properties owners who did not cause the contamination problem as long as they comply with the conditions in TCP Policy 540.	
Enforcement Actions at	• Ecology may initiate actions where soil levels present a threat to human	• Ecology will not initiate enforcement actions against property owners that have implemented measures to

Feature	MTCA Administrative Framework	Properties With Moderate Levels of As/Pb Inside TSP
Non-Residential Properties	health and the environment.	reduce/prevent exposure. (conditional forbearance policy) • Ecology may initiate enforcement actions against property owners that have not implemented measures to reduce/prevent exposure. •
SHA Grants	• Ecology will provide, subject to available funding, SHA grants to local health departments for soil testing at existing and new public and private schools; existing and new public and private childcares; existing public parks; new public parks.	
Remedial Action Grants	• Public entities (i.e. schools, parks, etc.) are eligible for RA grants to partially pay for investigations and cleanup actions. • Properties with high levels are given priority for funding.	
Capital Account /Clean Sites Initiative (STCA)	• Ecology will provide, subject to available funding, STCA funds for cleanup/interim actions at public and private schools, public and private childcares, public parks and public housing. • Public facilities are a higher funding priority than privately-owned facilities. • Ecology may use STCA funds to conduct cleanup actions/interim actions at residential properties with high levels. • Ecology may provide funding for cleanup actions/interim actions at private parks if levels pose imminent hazard. • Use of STCA for soil cleanup actions at proposed school, child care facility and park sites is a lower priority than existing facilities.	• Ecology will provide, subject to available funding, STCA funds for cleanup/interim actions at schools, childcares, public parks and public housing. • Public facilities are a higher funding priority than privately-owned facilities. Ecology will provide, subject to available funding, financial assistance to schools and child cares for BMP implementation (ESSHB 1605).

APPENDIX A

Area-Wide Soil Contamination Task Force Report – Executive Summary

Executive Summary

This report transmits the findings and recommendations of the Area-Wide Soil Contamination Task Force, a 17-person panel chartered by the Washington State Departments of Agriculture, Ecology, Health, and Community, Trade and Economic Development (the Agencies) to offer advice about a statewide strategy to respond to low- to moderate-level arsenic and lead soil contamination in Washington State. The Model Toxics Control Act (MTCA) Policy Advisory Committee (PAC) recommended that the Department of Ecology (Ecology) take steps to more effectively address area-wide soil contamination, and the Task Force was formed in response to this recommendation and based on the Agencies' belief that effective, long-term solutions to area-wide soil contamination would require looking beyond traditional cleanup processes and agency boundaries.

The Task Force carried out its deliberations over a 17-month period beginning in February 2002. Deliberations took place at a series of public meetings and through conference calls and e-mail discussions. Task Force members represented a diverse array of perspectives, including environmental, agricultural, schools, business, financial, insurance, real estate, public health, and local government. Preliminary Task Force recommendations were widely publicized and made available for public review and comment; Task Force members considered these comments in finalizing their recommendations.

Task Force deliberations focused on understanding the nature and extent of area-wide soil contamination, making recommendations about effective, practical, and affordable steps individuals and organizations can take to reduce their potential for exposure to area-wide soil contamination, and on creating an alternate, more streamlined approach under MTCA for properties affected by area-wide soil contamination.

One Task Force member participated in the process but chose not to sign the final report because of concerns over recommendations dealing with funding future mapping projects and the potential economic impact of creating area-wide soil contamination zones.

What is Area-Wide Soil Contamination?

"Area-wide soil contamination" refers to low- to moderate-level soil contamination that is dispersed over a large geographic area, covering several hundred acres to many square miles. For schools, childcare centers, and residential land uses, in general, Ecology considers total arsenic concentrations of up to 100 milligrams per kilogram (mg/kg)[1] and total lead concentrations of up to 500–700 mg/kg to be within the low-to-moderate range. For properties where exposure of children is less likely or less frequent, such as commercial properties, parks, and camps, Ecology considers total arsenic concentrations of up to 200 mg/kg and total lead concentrations of up to 700–1,000 mg/kg to be within the low-to-moderate range.

[1] Milligrams per kilogram (mg/kg) is numerically equivalent to parts per million.

For comparison, the cleanup levels under MTCA for total arsenic and lead in soil are 20 mg/kg and 250 mg/kg, respectively. Arsenic occurs naturally in Washington State soils at approximately 5–9 mg/kg; lead occurs at 11–24 mg/kg.

The Task Force considered area-wide arsenic and lead soil contamination primarily from two sources: past use of lead arsenate-based pesticides, and historical emissions from metal smelters located in Everett, Northport, Tacoma, and on Harbor Island (in Seattle). Based on current information, it is estimated that 676,550 acres in Washington State may be affected by area-wide arsenic and lead soil contamination from these sources. The Task Force also considered the possibility of area-wide soil contamination from combustion of leaded gasoline, and made recommendations about gathering additional information on the potential for area-wide soil contamination from this source.

Task Force Charter

The Agencies asked the Task Force to provide findings and recommendations on four sets of questions:

- What is currently known about the nature and extent of arsenic and lead soil contamination in Washington State? What steps should be taken to improve our understanding of the location and magnitude of arsenic and lead soil contamination?
- What are technically feasible measures for addressing widespread low-to-moderate soil contamination problems? What is the full range of actions that might be considered to address widespread low-to-moderate levels of soil contamination?
- What changes are needed to eliminate barriers in addressing area-wide soil contamination problems? How can agencies facilitate cleanup of area-wide soil contamination problems under the current legal system?
- What agencies need to play a role in addressing area-wide soil contamination problems and what are possible funding sources?

The Agencies also identified three areas as beyond the scope of the Task Force process: 1) MTCA cleanup standards for arsenic and lead and the policies and technical methods upon which the cleanup standards are based, 2) ongoing site-specific cleanup actions, and 3) current agricultural practices.

Task Force Guiding Principles

In making recommendations, the Task Force was guided by six principles, which it believes should also guide the Agencies. These principles are:

- A balanced approach is needed, centered on effective, practical, and affordable solutions.
- Risks from area-wide soil contamination appear to be relatively low when compared to risks at sites with higher concentrations of contaminants.

- It is prudent to take effective, practical, and affordable steps to minimize the potential for exposure to area-wide soil contamination.
- Efforts should focus on children, because they are believed to the human population most sensitive to elevated levels of lead and arsenic in the environment.
- Responses to area-wide soil contamination should be commensurate with the level of risk associated with potential exposures and should increase as potential exposure increases.
- Decisions about area-wide soil contamination should be made locally.

From these principles, the Task Force's deliberations produced agreement on and support for numerous recommendations to the chartering Agencies.

Education is the Foundation of Task Force Recommendations

The foundation of the Task Force recommendations calls for the Agencies to initiate a broad-based health education and awareness-building campaign about low- to moderate-level arsenic and lead soil contamination, and to support and encourage actions individuals can take to reduce the likelihood that they will be exposed to arsenic and lead in soil. The Task Force recommends that the Agencies:

- Work with and through local governments, particularly local health jurisdictions, to establish a broad-based education and awareness-building campaign designed to provide individuals, organizations, and communities with a toolbox of information and materials to make knowledgeable and responsible choices about responding to area-wide soil contamination. This should include information on where area-wide soil contamination is most likely, how people can conduct individual property evaluations of the potential for area-wide soil contamination, and on effective, practical, and affordable steps people can take to reduce the likelihood that they will be exposed to arsenic and lead in soil. Education should focus on people and organizations that care for children—including parents, educators, health care providers, and childcare providers—and gardeners and other adults who frequently work in soil.
- Take a step-wise approach to education and awareness-building with statewide distribution of general information supplemented by specific outreach and support for individuals and organizations located where area-wide soil contamination is likely.
- Encourage residents in area-wide soil contamination zones to implement "individual protection measures," such as hand washing, removing shoes before entering the house, frequently washing toys and pets that go outdoors, and scrubbing fruits and vegetables before eating them. Also encourage residents in area-wide soil contamination zones to maintain good soil cover.
- Evaluate the effectiveness of these outreach and education efforts.

Land-Use Specific Recommendations to Complement Education

To complement broad-based education and awareness-building, the Task Force also recommends specific approaches in different land-use scenarios.

Child-Use Areas

For child-use areas (including schools, parks, and childcare facilities) potentially affected by area-wide soil contamination, the Task Force recommends that property owners implement individual protection measures, maintain good soil cover in areas where children play, conduct qualitative evaluations to increase their understanding of where exposure could occur, test soils where qualitative evaluations indicate the potential for exposure to contaminated soil, and implement additional protection measures such as installing a geotextile fabric barrier between contaminated soils and surfacing materials in play areas if contamination is found. The Agencies should work with local health jurisdictions, school districts, and other organizations to support, encourage, and assist with implementation of these actions. Task Force recommendations for child-use areas also call for the Agencies to:

- Encourage implementation of Consumer Product Safety Commission guidelines for maintaining children's safety at existing playgrounds in parks, schools, camps, and childcare facilities.
- Require soil testing at new public child-use area construction sites and implementation of additional protection measures if contamination is found.
- Establish, with the Department of Social and Health Services (DSHS), a voluntary certification program for family home childcares and childcare centers to indicate that they have taken steps to minimize children's potential for exposure to lead and arsenic in soil.

Residential Properties

For residential properties potentially affected by area-wide soil contamination, the Task Force recommends that the Agencies offer technical and financial assistance to support and encourage residents to implement individual protection measures, maintain good soil cover, and conduct qualitative evaluations to understand where exposure could occur. Where qualitative evaluations indicate the potential for exposure to contaminated soil, the Task Force recommends that individuals consider soil testing and implementing additional protection measures if contamination is found.

Commercial Properties

For commercial properties potentially affected by area-wide soil contamination, the Task Force recommends that where commercial areas are covered with surfaces such as buildings, parking lots, or other effective soil cover, no further response actions are necessary to address area-wide soil contamination. For mixed-use areas, Task Force recommendations for non-commercial use should also be considered. For example, if a childcare center is located in a shopping center, the Task Force recommendations for child-use areas should be considered for the childcare center.

Open Land

For open land potentially affected by area-wide soil contamination, the Task Force recommends that the Agencies:

- Amend the State Environmental Policy Act (SEPA) checklist to include a question about whether there is the potential for area-wide soil contamination on a property.
- Encourage developers to conduct qualitative evaluations of properties and, where warranted, carry out soil testing prior to construction. Also encourage developers to incorporate appropriate additional protection measures into site development and construction plans.
- Support actions to enact Washington State legislation requiring a real property transfer disclosure statement for open land.

In addition, for open land being developed, the Task Force recommends that the Agencies ensure implementation of existing U.S. Occupational Safety & Health Administration (OSHA) and Washington Industrial Safety and Health Act (WISHA) requirements governing worker protection and safety, and implementation of requirements to control windblown dust and soil erosion due to storm water runoff during construction. For open land not being developed, the Task Force recommends that land owners use practical, cost-effective measures to limit the potential for exposure to contaminated soil and windblown dust.

Application of the Model Toxics Control Act

The Task Force debated MTCA and its application to area-wide soil contamination extensively. From these discussions, the Task Force identified a number of objectives related to use of MTCA and a number of elements of MTCA that Ecology might consider in meeting these objectives. The Task Force makes six recommendations related to MTCA:

- As much as possible, use regulations instead of policies to implement Task Force recommendations related to MTCA.
- Avoid listing individual properties affected by area-wide soil contamination and instead identify and describe area-wide soil contamination zones.
- Establish in regulation a new enforcement forbearance policy available where property owners choose to implement Task Force recommendations at residential and commercial properties within area-wide soil contamination zones. To complement the policy, establish a standard checklist that can be used to document property status. Announce the new policy and checklist when area-wide soil contamination zones are first described.
- Where property owners choose not to implement Task Force recommendations, they remain under the current MTCA system that includes a policy under which, in general, Ecology chooses not to take enforcement actions at residential properties.
- Where properties are sampled and concentrations of arsenic and lead are below cleanup levels, provide a streamlined process to reflect that properties are clean.

- The traditional MTCA approach remains available to property owners who want to use it to address area-wide soil contamination and to Ecology where a property is affected by contamination other than area-wide soil contamination.

Other Recommendations

Task Force recommendations also address additional information needs and funding strategies.

With respect to additional information gathering, the Task Force recommends that the Agencies:

- Gather additional, scientifically valid information on the health of Washington residents, particularly children, who may be exposed to arsenic and lead.
- Conduct further research to characterize the location and extent of elevated levels of lead in soil from past use of leaded gasoline in Washington. Possibly focus on areas adjacent to older, more heavily used roads.
- Study the effects of area-wide soil contamination on ecological receptors, including plants and animals.

With respect to funding, the Task Force recommends that the Agencies:

- Provide financial assistance for local government efforts to address area-wide soil contamination, particularly the activities of local health jurisdictions.
- Seek funding from a broad array of Federal, State, and private sources, including the State and Local Toxics Accounts, private foundations, Federal grant programs, the Federal government and the State legislature, and any identified potentially liable parties.

APPENDIX B

Area-Wide Soil Contamination Strategy: Implementation of Task Force Recommendations

Area-wide Soil Contamination Strategy:

Implementation of Task Force Recommendations

October 1, 2003

STATE OF WASHINGTON
DEPARTMENT OF COMMUNITY,
TRADE AND ECONOMIC DEVELOPMENT

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Introduction

In January 2002, the Departments of Agriculture, Community Trade and Economic Development (CTED), Ecology and Health asked the Area-wide Soil Contamination Task Force to provide recommendations on how the agencies might improve the ways we respond to elevated levels of arsenic and lead in soils in Washington State. After eighteen months of deliberation, the Task Force delivered their recommendations to the four agencies on June 30, 2003.

The agencies committed to updating the Task Force on our progress implementing the recommendations and plans for the future. This document fulfills that commitment. It is organized into four main sections:

Section 1 – Background provides a brief overview of the issues surrounding efforts to address elevated levels of arsenic and lead in soils.

Section 2 - Implementation Strategy describes the agencies' overall strategy for implementing Task Force recommendations and summarizes the major activities that the agencies will undertake over the next two years. It is organized around five broad objectives:

- Improve public awareness and understanding of area-wide soil contamination concerns and solutions;
- Collect and evaluate information to support decisions about reducing the potential for exposure to arsenic and lead in soils;
- Reduce the potential for exposure to arsenic and lead in soils at developed properties;
- Reduce the potential for exposure to arsenic and lead in soils at properties under development; and
- Improve institutional capabilities for responding to area-wide soil contamination.

Section 3 – Summary of Actions Being Taken to Implement Task Force Recommendations is a summary table that identifies the actions that the agencies plan to take in response to each Task Force recommendation. The table is organized around the chapters/sections in the Task Force report.

Section 4 – Issues Associated with Addressing Area-wide Soil Contamination summarizes the range of issues and challenges that were considered by the agencies when evaluating how to implement the various Task Force recommendations.

Background

Soil in large parts of Washington State contains elevated levels of arsenic and/or lead resulting from several historical activities including past releases from industrial operations and historical application of certain kinds of agricultural pesticides. As Washington's population has grown, many areas potentially contaminated by these historical activities have been developed into residential neighborhoods, schools and parks. These development activities have raised a variety of health, environmental, and marketplace concerns and created pressures for cleanup.

Addressing area-wide contamination is not a simple issue of protecting public health and the environment, because environmental and public health goals must be weighed against several practical considerations. The contamination is spread over hundreds of thousands of acres and its distribution is often highly variable even within a single parcel of land. The sheer size of the contaminated areas and the large number of people likely to be exposed to the contaminants challenges the ability of the agencies respond in a timely and effective manner given the limited availability of resources. Further, it is difficult for agencies to prioritize activities to address the "worst first" because of limited information about the distribution of the contamination. Another concern is the possibility of lowered property values for parcels known to be contaminated. Issues and challenges associated with addressing Area-wide soil contamination are summarized in Section 4.

To get input from a broad range of stakeholders on possible ways to balance some of these issues, the agencies chartered the Area-Wide Soil Contamination Task Force. The goals were to evaluate the range of actions that could be used to reduce the risks and to develop a comprehensive, consistent approach for addressing properties affected by area-wide contamination.

Implementation Strategy

Objective #1: Improve public awareness and understanding of area-wide soil contamination concerns and solutions

Task Force Recommendations

- **Develop an "information toolbox" that includes balanced information on area-wide soil contamination and steps that people can take to reduce potential exposures. The toolbox should include information for general use and materials for specific audiences (e.g. individuals who care for children, individuals that frequently come into contact with soil).**
- **Work with and through interested local agencies in a step-wise approach to increase awareness and understanding of area-wide soil contamination and protective measures.**
- **Monitor and evaluate whether education programs are effective in encouraging behavior changes and reducing exposures.**

During the next two years, the agencies will take the following steps to implement the various Task Force recommendations related to improving public awareness and understanding:

- Information Toolbox: Ecology and Health will work with other interested organizations to develop and distribute an information toolbox[1] by March 2004.
- Materials/Outreach Tailored to Specific Audiences: The agencies will work with other organizations to develop materials and outreach strategies that are tailored to the information needs and concerns of school officials, child care providers, real estate professionals, construction and agricultural workers, financial institutions and land developers/land use agencies.
- Local Outreach and Education Programs in the Tacoma Smelter Plume: Ecology and Health will continue to work with the Tacoma Pierce County Health Department and Public Health Seattle King County to implement ongoing outreach and education programs. Ecology will continue to provide funds from the Local Toxics Control Account (LTCA) to support these efforts.
- Local Outreach and Education Support in Other Priority Areas: Ecology and Health will work with and support efforts by interested local health agencies/school districts to implement outreach and education activities that are needed to support evaluations and responses (if any) at schools in Chelan, Douglas and Yakima counties (See Child Use Areas in Other Priority Areas, p. 4).
- Evaluating the Effectiveness of Education Programs: Ecology and Health will continue to provide technical and financial assistance to the Tacoma Pierce County Health Department and Public Health Seattle King County as they evaluate the effectiveness of ongoing education programs. The agencies are also working with local officials in Wenatchee to explore the possibility of conducting an evaluation of education efforts and administrative controls being implemented at local schools.

[1] The toolbox will include the following types of materials: Dirt Alert; Tier I and Tier II Maps and property evaluation checklist; Sampling guidance; Health risk information; information on protective measures, etc. The materials will be posted on the Ecology website and provided in paper format.

Objective #2: Collect and evaluate information to support decisions on measures for reducing the potential exposure to arsenic and lead in soils

Task Force Recommendations

- **Communicate information on area-wide soil contamination with a combination of maps and narrative, emphasizing the need for individual property evaluations.**
- **Support efforts by local agencies that choose to develop smaller-scale maps.**
- **Coordinate with interested local agencies to maintain and update smaller scale maps and use statewide GIS capability to maintain/update maps.**
- **Gather additional scientifically valid information on the health and exposure of residents, particularly children, who may be exposed to arsenic and lead.**
- **Conduct further research to characterize the location and extent of elevated levels of lead in soil from past use of leaded gasoline in Washington.**

During the next two years, the agencies will take the following steps to implement the various Task Force recommendations relating to developing information to support decision-making:

- Footprint Studies in the Tacoma Smelter Plume Area: Ecology and Health will continue to provide financial (i.e. LTCA funds provided by Ecology) and technical support to local health departments to complete ongoing footprint studies in the Tacoma Smelter Plume area.
- Tier II Maps: Ecology and Agriculture will provide financial (i.e. LTCA funds provided by Ecology) and technical support for interested local health departments who elect to prepare smaller scale maps for areas within Okanogan, Chelan/Douglas and/or Yakima counties.
- Review Preliminary Estimates for Spokane County: Ecology and Agriculture will provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Spokane Regional Health District to evaluate the preliminary estimates on the nature and extent of soil contamination for Spokane County.
- Geographic Information System (GIS) Support: Ecology and the local health departments in Pierce and King Counties are currently using GIS systems to manage information on contamination levels in the areas surrounding the former smelters in Tacoma and Everett. Ecology intends to continue to support those efforts and will work with local agencies in other priority areas to manage information and produce/update maps.
- Monitoring of Arsenic and Lead Exposure: Health and Ecology plan to continue/initiate several efforts that will improve our understanding of the relationships between elevated levels of arsenic and lead in soils and the health and exposure of Washington residents. This includes (1) work to maintain and (where possible) expand efforts to monitor blood lead levels in Washington children, (2) continue to work together on a federally-funded project evaluating the feasibility of linking environmental data with information on community health and (3) explore partnerships with academic institutions on research projects.
- Research on Roadside Lead Contamination: The Agencies do not plan to work on this issue during the next 2 years because other activities are considered to be higher priorities.

Objective #3: Reduce the potential for exposure to arsenic and lead in soils at developed properties.

Task Force Recommendations

- **Efforts to reduce exposure should focus on young children.**
- **Encourage and support local agencies to implement a step-wise approach for evaluating and where necessary reducing the potential for exposure at existing schools, parks and child care facilities.**
- **Work with local agencies to encourage/support efforts by residents to evaluate and where necessary reduce the potential for exposure to elevated levels of arsenic and lead.**
- **Do not require additional measures at commercial properties that are covered with surfaces such as buildings, parking lots and other effective soil cover.**

During the next two years, the agencies will take the following steps to implement the Task Force recommendations related to reducing exposure at child use areas, residences and commercial properties:

- Child Use Areas – Tacoma Smelter Plume: Ecology and Health will continue to provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health Seattle King County and others (e.g. school districts, etc) to conduct qualitative assessments, perform soil sampling and implement protective measures at child use areas in the Tacoma Smelter Plume area. Soil sampling and implementation of protective measures have been completed/are underway at the grade schools in the area and many child care facilities and parks.

- Child Use Areas in Other Priority Areas: Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to interested local health departments and school districts to conduct qualitative assessments, soil sampling and implement protective measures at schools in Chelan, Douglas, Okanogan, Spokane and Yakima counties. This work will build upon soil sampling and protective measures conducted at schools in Okanogan County and Wenatchee during the last two years.

- Residential Properties: Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health - Seattle King County to provide sampling assistance for residents interested in determining arsenic and lead levels at individual properties. Planned work includes: (1) provide sampling guidance; (2) supporting soil sampling and/or analysis; and (3) help residents interpret results. Ecology will also work with local health agencies in the other priority areas to determine the level of community interest in sampling and (based on the level of interest) provide support for soil sampling activities.

- Commercial Properties: The Task Force recommendations are generally consistent with current practice. Ecology will consider whether any additional measures are needed to implement this recommendation as we work with others to (1) prepare amendments to the MTCA regulation and (2) explore ways to integrate protective measures with land use planning and permitting processes.

Objective #4: Reduce the potential for exposure to arsenic and lead in soils at properties under development.

Task Force Recommendations

- **Work with land use planning/permitting agencies to increase awareness & encourage developers to test soils and integrate cleanup measures into construction plans.**
- **Create mechanisms that facilitate greater awareness of area-wide soil contamination issues early in the design and construction process. This includes (1) Amend the SEPA checklist to include a question about soil contamination; (2) Encourage local agencies to record contamination information on plat notices; and (3) Support efforts to enact new legislation requiring a real property transfer disclosure statement for open land.**
- **Require school and park districts to test the soils at proposed schools and parks and integrate protective measures into design/construction.**

During the next two years, the agencies will take the following steps to implement the Task Force recommendations relating to reducing exposure at properties under development:

- Coordination with Land Use Planning/Permitting Processes within the Tacoma Smelter Plume Area: Ecology will work with several local land use planning/permitting agencies in the Puget Sound area to identify and implement procedures for addressing soil contamination issues as part of the land use planning and permitting processes. Specific changes recommended by the Task Force (e.g. amending the SEPA checklist/supplementary materials, including information on plat notices, etc.) will be considered in this process.

- Eastern Washington Regional Planner Forum: CTED and Ecology will work with local agencies to identify and discuss possible approaches for systematically addressing soil contamination issues as part of the land use planning and permitting processes. Specific changes recommended by the Task Force (e.g. amending the SEPA checklist/ supplementary materials, including information on plat notices, etc.) will be considered during these discussions. As part of this process, CTED and Ecology hope to identify one or more local agencies interested in implementing procedures for addressing soil contamination issues as part of the land use planning and permitting processes in their community. This work (together with the results from the Puget Sound communities) would provide examples for other communities interested in modifying their local processes.

- New School Construction: Health and Ecology will work with the Office of the Superintendent of Public Instruction to develop guidance materials that provide information on soil testing and ways to integrate soil cleanup measures with school construction and maintenance activities.

- Real Estate Disclosure: The Agencies will work with the Washington Association of Realtors to (1) encourage the Legislature to enact new legislation requiring a real property disclosure statement for open land, (2) encourage the voluntary use of the existing seller's property condition report as a mechanism for providing information on area-wide soil contamination, (3) encourage real estate professionals to use the lead-based paint disclosure form or similar disclosure documentation for residential transactions where area-wide soil contamination is likely and (4) increase awareness among real estate professionals about area-wide soil contamination issues.

Objective #5: Improve institutional capabilities for responding to area-wide soil contamination

Task Force Recommendations

- **Revise the MTCA regulation to provide greater predictability on how the Department will apply MTCA where low-to-moderate levels of arsenic and lead are found in soil.**
- **Work with the Department of Social and Health Services (DSHS) to increase awareness about area-wide soil contamination among child care providers and establish a voluntary certification program for child care centers and family home daycares.**
- **Ensure implementation of existing requirements for worker health and safety, minimizing wind-blown dust and preventing soil erosion during construction.**
- **Provide financial assistance for local government efforts to address area-wide soil contamination.**

During the next two years, the agencies will take the following steps to implement the Task Force recommendations related to improving institutional capabilities:

- MTCA Regulation/Guidance: Ecology will initiate the process to amend the Model Toxics Control Act regulation and prepare guidance materials to facilitate implementation of the Task Force's recommendations. Ecology will work closely with Task Force members who were instrumental in preparing the recommendations on the MTCA process. Timing for completing the rulemaking process will be coordinated with the MTCA Science Advisory Board's review of the scientific basis for identifying low-to-moderate levels of arsenic and lead in soil. As part of this review, Ecology will work with the SAB to address two other Task Force recommendations: (1) the agencies should consider whether there are situations where low-to-moderate levels of arsenic and lead would threaten ground water supplies: and (2) the agencies should evaluate the impacts of low-to-moderate levels of arsenic and lead on ecological receptors.

- DSHS Coordination: Ecology and Health will work with the Department of Social and Health Services (DSHS) to integrate consideration of soil contamination into training programs for child care facilities and other parts of the DSHS licensing/inspection process. This will involve (1) working with DSHS to increase awareness and provide training opportunities for child care providers during Year 1 of the biennium and (2) working with DSHS to identify additional measures that might be used to increase awareness and encourage implementation of appropriate protective measures. Such measures include the voluntary environmental certification program for child care facilities recommended by the Task Force.

- Intra and Inter-Agency Coordination: Ecology will organize regular meetings for state agencies involved in the implementation of the Task Force recommendations to discuss key issues and monitor implementation status. The Agencies will also use this as a forum to coordinate implementation of existing requirements for worker health and safety, minimizing wind-blown dust and preventing soil erosion during construction activities.

- Local Agency Partnerships and Financial Support: Ecology and Health will work with local health departments to establish and strengthen working relationships on common health issues. Overall, Ecology has budgeted $2.8 million in LTCA funds to support work by local health departments and other local agencies on area-wide issues during the FY 2003-2005 biennium.

Summary of Actions Being Taken to Implement Task Force Recommendations

Activity	Recommendations	Agency Responses
Section 5: Nature and Extent of Area-Wide Soil Contamination		
Communicating Information on the Nature and Extent of Area-Wide Soil Contamination	• Information on the nature and extent of area-wide soil contamination should be communicated using a combination of maps and accompanying narrative information that emphasize the need for individual property evaluations to determine with certainty where area-wide soil contamination is present.	• The Chartering Agencies agree. As discussed below, the agencies intend to (1) include Tier I and II maps and information on property specific evaluations (e.g. flowchart/checklist, sampling guidance) in the information toolbox and (2) support efforts by local agencies to develop and maintain Tier II maps and assist people and organizations to evaluate individual properties.
Individual Property Evaluations	• The Task Force believes that individual property evaluations are an important step for people to understand the potential for area-wide soil contamination where they live or work.	• The Chartering Agencies will include the flowchart developing by the Task Force in the "information toolbox" and work with local agencies to encourage people to use the flowchart to gain a better understanding of the potential for elevated levels of arsenic and lead where they live or work.
Maps of Potential Area-Wide Soil Contamination	• The Task Force recommends two tiers of maps and accompanying information for smelter emissions and historical uses of lead arsenate pesticides.	• The Chartering Agencies will use two tiers of maps to convey information on where area-wide soil contamination is likely. The Tier I maps and Tier II smelter maps will be included in the initial information toolbox. New and/or updated maps will be added to the toolbox as they become available (see developing and updating maps)

Developing and Updating Maps	• Chartering Agencies and other organizations and individuals should use the maps developed by the Task Force as a starting point for further mapping efforts.
	
	• Chartering Agencies should provide funding & assistance to local governments to identify historical orchard locations and develop smaller scale maps of areas potentially affected by lead arsenate.
	
	• Chartering Agencies should maintain and update State maps and coordinate with local governments to regularly update local maps (especially for smelter areas) based on new information.
	
	• Chartering Agencies should define "area-wide zones" starting with TF maps (see MTCA recommendations below)
		• The Chartering Agencies will use the maps in the Task Force report as a starting for further mapping efforts.
		
		• The Chartering Agencies will work with and support efforts by interested local governments to prepare smaller scale maps.
		
		  • Ecology and Health will work with local health departments in Pierce, King, Kitsap and Thurston counties to complete footprint studies in the Tacoma Smelter Plume area by September 2004. Ecology will provide LTCA grants to the local health departments to support these efforts.
		
		  • Ecology and Agriculture will work with interested local health departments who elect to (1) explore options for preparing

		Tier II maps in Okanogan, Chelan/Douglas and/or Yakima counties and (2) prepare Tier II maps in one or more areas as part of a local effort to integrate measures to address area-wide soil contamination with land use planning and permitting. Ecology plans to provide LTCA grants to local agencies to support these activities. • Ecology and Agriculture will work with the Spokane Regional Health District to evaluate the estimates on the nature and extent of soil contamination in the Task Force report and, as appropriate, explore options for preparing Tier II maps. Ecology plans to provide LTCA funds to the health district to support this effort. • The Chartering Agencies will update state maps and work with local agencies to update local maps as new information becomes available.
Section 7: Broad-Based Education and Awareness-Building		

Information "Toolbox"	• Chartering agencies should develop a "toolbox" of educational materials for general audiences. Toolbox includes: (1) maps; (2) Checklist/guidance on conducting qualitative evaluations of the potential for exposure and/or contamination at a property; (3) Sampling guidance for different land-use scenarios; (4) Information on health risks; (5) Information on individual protection measures for targeted audiences (schools, parents, gardeners, adults who work in soil); (6) Information on actions that can be taken that go beyond individual protection measures (e.g., maintaining good cover in play areas); (7) Information about organizations available to answer questions, provide additional help
	
	• Chartering agencies should provide materials in several language and tailor the materials to meet the information needs for several audiences of concern, including schools/educators, health care practitioners, local health and planning departments, parents, community groups, PTAs, real estate professionals, people who work in the dirt, (including gardeners, construction/utility workers).
		• Health and Ecology will develop information toolbox that includes:
		  • Dirt Alert information brochure prepared for the Tacoma Smelter Plume (with updates to reflect statewide perspective)
		  • Tier I and Tier II Maps
		  • Checklist + Task Force flowchart
		  • Sampling guidance
		  • Health risks
		  • Individual protection measures
		  • Additional protection measures
		  • Links to other information sources
		
		• Health and Ecology will translate materials into Spanish and other languages that are appropriate for the range of potentially affected communities.
		
		• Ecology and Health will work with other organizations to develop information materials that are tailored to specific audiences including:
		  • Schools (administrators, teachers, parents, students);
		  • Child care providers;
		  • Real estate professionals;
		  • Financial community;
		  • Construction workers
		  • Developers and land use officials;
		  • Health care practitioners.
		
		• The Department of Agriculture plans to

		develop information materials for agricultural workers.

Stepwise Approach for Providing Information (Step 1)	• The Chartering Agencies should make basic, overview educational materials about area-wide soil contamination available to all WA residents. At a minimum, materials should be made available using the following means:
	  • Develop and maintain website that includes materials in the information toolbox.
	  • Distribute to libraries and other public information repositories.
	  • Distribute Ecology regional/field offices, local health departments and other locations where residents might go to seek information.
		• Ecology will modify the current area-wide webpage to incorporate information materials and will update the webpage on a regular basis.
		• Ecology will distribute copies of information materials to regional and field offices.
		• The Chartering Agencies will work with local health departments in areas with higher likelihood for elevated levels of arsenic and lead to (1) identify locations where residents might seek information and (2) establish and periodically update local information repositories.

Stepwise Approach for Providing Information (Step 2)	• Chartering Agencies should supplement education materials with outreach in areas where area-wide soil contamination is likely. The agencies should provide training for and distribute information to local health and land-use planning/permitting departments, school districts, and parks districts • Local health and planning/permitting departments, school districts, and parks districts should distribute information to residents, community groups and other end users.	• Ecology and Health will continue to work with the Tacoma Pierce County Health Department and Public Health Seattle King County to implement ongoing outreach and education programs. These efforts are being funded with monies from the Local Toxics Control Account. • Ecology and Health will work with and support efforts by local health agencies, local planning agencies and local school districts to design and implement approaches for distributing information on area-wide soil contamination as part of other local programs. • Ecology and Health are working with DSHS and local health departments to integrate education materials into STARs training, training for DSHS license and inspection staff and child care owners/operators. This builds upon work by Public Health Seattle King County.
Stepwise Approach for Providing Information (Step 3)	• The Chartering Agencies should provide additional outreach and education resources and support where area-wide soil contamination is known to exist because of soil testing.	• Ecology and Health will work with interested local health departments and school districts to help implement outreach and education activities associated with evaluating and addressing area-wide soil contamination problems at child use areas (see below). Ecology plans to provide funds from the Local Toxics Control Account to support these activities.
Monitoring and Evaluating Effectiveness	• Chartering agencies should monitor and evaluate effectiveness of education and individual protection measures	• Ecology and Health will work with the Tacoma Pierce County Health Department and Public Health Seattle King County to complete evaluations designed to measure the

		effectiveness of education programs. This work is being funded through a LTCA grant. The agencies will review the results and determine the need to (1) modify education programs to improve effectiveness or (2) conduct additional evaluations. • The agencies are also working with local officials in Wenatchee to explore the possibility of conducting an evaluation of education efforts and administrative controls being implemented at local schools.
Section 8: Recommendations for Specific Land-Use Scenarios		
Child Use Areas – Individual Protection Measures and Good Soil Cover	• The Task Force recommends that owners/operators of schools, parks and child care facilities implement individual protection measures and maintain good soil cover unless (1) qualitative property evaluations indicate that elevated soil levels of arsenic and lead are not likely or it is unlikely that children could be exposed to soil or (2) quantitative soil testing shows that elevated levels of arsenic and lead in soil are not present. • The Task Force recommends that the Chartering Agencies work with local health jurisdictions to support, encourage and assist with implementation of individual protection measures and activities that maintain good soil cover.	• Ecology and Health will continue to provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health Seattle King County and others (e.g. school districts, etc) to conduct qualitative assessments, perform soil sampling and implement protective measures at child use areas in the Tacoma Smelter Plume area. Soil sampling and implementation of protective measures have been completed/are underway at the grade schools in the area and many child care facilities and parks. During the next two years, local health departments will focus on the remaining child care facilities and parks. • Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to interested local health departments and school districts to conduct qualitative assessments, soil sampling and implement protective measures at schools, parks and child care facilities in Chelan, Douglas, Okanogan, Spokane and Yakima counties. This work will build upon soil sampling and protective measures conducted at schools in Okanogan County and Wenatchee during the last two years.
Child Use Areas - Qualitative Evaluations of Potential Exposure	• The Task Force recommends that owners/managers of child use areas carry out qualitative evaluations for the potential for exposure to arsenic and lead in soil in places routinely used by children.	• As discussed above, Ecology and Health will work with local health departments and school and park districts to encourage and assist owners/managers of child use areas to conduct qualitative evaluations.
Child Use Areas - Soil Testing and Implementation of Additional	• Where qualitative evaluations indicate that children may be routinely exposed to contaminated soil, the Task Force recommends that property owners/managers of child use areas (1) conduct soil sampling	• As discussed above, Ecology and Health will work with local health departments and school and park districts to encourage and support owners/managers of child use areas to (1) conduct soil sampling if qualitative

Protection Measures	to determine if elevated levels of arsenic and lead are actually present and (2) implement additional protection measures if soil sampling indicate that elevated levels are present. • The Chartering Agencies should assist local jurisdictions, other organizations and individuals to conduct soil testing and select and implement additional appropriate protection measures.	evaluations indicate that children may be routinely exposed to contaminated soil and (2) implement additional protection measures if sampling indicates that elevated levels are present. • Ecology and Health will work with interested health department and school districts to evaluate the long-term effectiveness of protective measures at schools and ways to institutionalize those measures. Ecology has held initial discussions with Wenatchee school district officials to explore ways of doing this.
Child Use Areas - Special Considerations for Playgrounds and Playfields	• The Task Force recommends that the CPSC surface material guidelines be fully implemented at existing playgrounds at parks, schools, private camps and childcare facilities (+ geotextile fabric barrier to further limit potential for contact) in areas where area-wide soil contamination is likely. • For other areas (e.g. playfields), the Task Force recommends that efforts be made to minimize the potential for contact with contaminated soils by maintaining year-around grass and clean soils in areas of bare dirt (e.g. baselines).	• Ecology agrees that compliance with existing CPSC safety guidelines will reduce the potential for contact with soils that have elevated levels of arsenic and lead. Ecology is working with local health departments and school districts to evaluate (1) the extent to which such measures are already being implemented at child use areas, (2) ways to encourage owners/operators to implement such measures and (3) the long-term effectiveness of such measures; and (4) ways to institutionalize such measures so that they are maintained over time.
Child Use Areas – Soil Testing and Additional Protection Measures at New Child Use Areas	• The Task Force recommends that officials (school district superintendents, park managers) be required to test soils at proposed child use areas during the site selection and design process. • Officials should incorporate protection measures into construction plans and budget where soil sampling shows that elevated levels of arsenic and lead are present. • At school sites, the Chartering Agencies should work with local health departments and OSPI to help interpret soil sampling results and select protection measures. • Local health inspectors (with assistance from the chartering agencies) should confirm (as part of regular site visits) that appropriate responses have been taken.	• Health and Ecology will work with the Office of the Superintendent of Public Instruction to develop guidance materials that provide information on soil testing and ways to integrate soil cleanup measures with school construction and maintenance activities. • Health and Ecology will work with local health departments and OSPI to develop information materials that health officers can use with certifying the safety of new schools. • Health and Ecology will work with local health departments to encourage school and park districts to test soils and implement appropriate protective measures as part of school and park construction and/or major renovation activities. This includes providing assistance in interpreting test results and selecting protection measures. • Ecology will provide information on the Local Toxics Control Account (LCTA) and work with public school and park districts to evaluate whether protective measures to address contaminated soils are eligible for

		grant funding.
Child Use Areas – Targeted Outreach and Voluntary Environmental Certification Program for Child Care Providers	• The Chartering Agencies should work with DSHS to provide information to child care professionals and encourage them to take actions to reduce potential exposures. • The Department of Social and Health Services (in conjunction with the Department of Health) should establish and administer a voluntary daycare certification program.	• Ecology and Health are working with DSHS to integrate consideration of soil contamination into training programs for child care facilities and other parts of the DSHS licensing/inspection process. This will involve (1) working with DSHS staff to increase awareness and provide training opportunities for child care owners and operators during Year 1 of the biennium and (2) engaging DSHS staff and managers on ways to identify additional measures that might be used to increase awareness and encourage implementation of appropriate protective measures (including the potential for developing and implementing a voluntary environmental certification program for child care facilities).
Residential Properties - Measures to Increase Awareness of Property owners, Residents	• Chartering agencies should work with and through local governments, particularly local health departments, to increase knowledge of area-wide soil contamination through a targeted education and awareness building campaign for parents, home gardeners and adults who work in soil.	• Ecology and Health will be working with local health departments to develop an information toolbox that includes targeted information for parents and/or homeowners. This will build upon information materials included in the Task Force report and materials prepared for use in the Tacoma Smelter Plume area. Ecology and Health are continuing to work with local health departments to distribute this information through an education and awareness-building campaign in Pierce and King counties. Over time, the agencies will work with interested local health departments in other priority areas to design and implement targeted programs tailored to those communities.
Residential Properties – Individual Protection Measures and Good Soil Cover	• The Task Force recommends that residents should implement individual protection measures and maintain good soil cover unless (1) qualitative property evaluations indicate that elevated soil levels of arsenic and lead are not likely or exposure to soil is unlikely or (2) quantitative soil testing shows that elevated levels of arsenic and lead in soil are not present. • The Chartering Agencies should offer technical and financial assistance to support and encourage residents to implement individual protection measures and maintain good soil cover. • Property owners should implement additional protective measures, if contamination found (e.g., bringing in clean soil for gardens)	• Ecology and Health will provide financial (LTCA funds) and technical support to the Tacoma Pierce County Health Department and Public Health - Seattle King County to provide sampling assistance for residents interested in determining arsenic and lead levels at individual properties. Planned work includes: (1) provide sampling guidance; (2) conducting soil sampling and/or analysis; and (3) help residents interpret results. Ecology will also work with local health agencies in the other priority areas to determine the level of community interest in sampling and (based on the level of interest) provide support for soil sampling activities.

Residential Properties – Qualitative Evaluations	• The Task Force recommends that residents conduct qualitative evaluations to determine the potential for elevated levels of arsenic and lead in soils and/or the potential for elevated exposures. • The Chartering Agencies should provide technical assistance to support and encourage residents to conduct qualitative evaluations.	• As discussed above, Ecology and Health will work with local health departments to encourage and assist residents to conduct qualitative evaluations.

Residential Properties – Soil Testing and Additional Protection Measures	• Property owners should consider conducting soil screening/testing if qualitative evaluations indicate that elevated levels and/or exposures are likely.
	
	• The Chartering Agencies should work with local health jurisdictions to provide incentives and opportunities for individuals who choose to sample. This includes:
	  • Provide do-it-yourself sampling kits
	  • Establish a mechanism to subsidize the costs of sampling at residential properties.
	  • Assist property owners to interpret results and select appropriate protection measures (if any)
		• Ecology and Health will provide financial (i.e. LTCA funds provided by Ecology) and technical support to the Tacoma Pierce County Health Department and Public Health - Seattle King County to provide sampling assistance for residents interested in determining arsenic and lead levels at individual properties. Planned work includes: (1) provide sampling guidance; (2) supporting soil sampling and/or analysis; and (3) help residents interpret results. Ecology will also work with local health agencies in the other priority areas to determine the level of community interest in sampling and (based on the level of interest) provide support for soil sampling activities.

Residential Properties – Confidentiality and Reporting of Sampling Results	• The Task Force recommends that data from soil testing conducted by individuals for their own use should be kept confidential and should not be associated with specific property locations in agency records except where (1) individuals volunteer to have their data used to update maps (2) individuals request a No Further Action letter or (3) the sampling results reveal soil concentrations that are not associated with area-wide soil concentrations.	• As discussed above, the health departments in King and Pierce counties are currently designing programs to assist residents to perform soil sampling and analyses. At this point, those programs involve health department staff collecting and analyzing the soil samples. Ecology intends to work with the Office of the Attorney General to evaluate ways to implement this recommendation in light of the requirements in the Public Disclosure Act and local efforts to provide sampling assistance.
Residential Properties – Support for Additional Protection Measures Individuals Choose to Implement	• The Chartering Agencies should provide guidance on affordable, effective and practical solutions for covering contaminated soils, removing and replacing small quantities of soil and other appropriate activities. • The Chartering Agencies should help residents locate sources of soil that meet cleanup standards and provide information on where and how to dispose of contaminated soil.	• Ecology and Health have developed initial information materials on measures to reduce exposure. These materials will be reviewed and updated as the agencies develop the information toolbox (including information on sources of soil and where and how to dispose of soils)
Commercial Areas	• The Task Force recommended that no further response actions are necessary to address area-wide soil contamination at commercial	• Ecology believes that the Task Force recommendations are generally consistent with current practice. Ecology will consider

	properties covered with surfaces such as buildings, parking lots or other effective soil cover. • In mixed use areas, the Task Force recommended that the Chartering Agencies follow the recommendations for non-commercial uses (e.g. child use areas) if such uses/areas/facilities are located within an area that is primarily commercial.	whether any additional measures are needed to implement this recommendation as we work with others to (1) prepare amendments to the MTCA regulation and (2) explore ways to integrate protective measures with land use planning and permitting processes.
Open Land – Recommended for Developers, Construction Workers and Property Owners	• The Task Force recommends that developers conduct qualitative evaluations and, where warranted, conduct soil testing prior to construction. Based on the results of those evaluations/testing, developers should incorporate additional protection measures into site development and construction plans. • The Chartering Agencies should set an example by adopting these practices for their construction projects. • The Task Force recommends that construction workers implement individual protection measures to reduce the potential for exposure to contaminated soils (consistent with WISHA/OSHA requirements.) • The Chartering Agencies should work with State and local air and other authorities to ensure that regulations to control dust, erosion and runoff during construction are implemented and enforced.	• Ecology will organize regular meetings for state agencies involved in the implementation of the Task Force recommendations to discuss key issues and monitor implementation status. The Agencies will also use this as a forum to coordinate implementation of existing requirements for worker health and safety, minimizing wind-blown dust and preventing soil erosion during construction activities.
Open Land – Encouraging Implementation of the Task Force Recommenda-tions for New Development	• The Task Force recommends that the Chartering Agencies educate people who work on SEPA issues in local government (as well as local planning and permitting officials) about area-wide soil contamination and how to appropriately respond to it. • The Task Force recommended that the Chartering Agencies support and encourage efforts to amend the State Environmental Policy Act (SEPA) checklist to include a question designed to prompt consideration of the potential for area-wide soil contamination during new development. For construction activities that are exempt from SEPA, the agencies should work with local governments to leverage appropriate land use or building process to reach these development activities. • The Task Force recommends that Ecology work with local building and planning	• Ecology and CTED will work with several local land use planning/permitting agencies in the Puget Sound area to identify and implement procedures for addressing soil contamination issues as part of the land use planning and permitting processes. • CTED and Ecology will work with staff and managers from local agencies in eastern Washington (through the Eastern Regional Planners Forum) to identify and discuss possible approaches for systematically addressing soil contamination issues as part of the land use planning and permitting processes. • CTED and Ecology will work with interested local agencies to identify and implement procedures for addressing soil contamination issues as part of the land use planning and permitting processes.

	departments to continue to explore the concept of standard protocols with a view to providing greater predictability and certainty. • The Task Force encourages local jurisdictions to use plat or other notices to record information on property status (whether sampled, protection measures in place) as part of the local land use approval and development process.	
Open Land Not Proposed for Development	• The Task Force recommends that the Chartering Agencies encourage property owners to take practical steps to limit trespassing if land is in or near residential areas.	• The Agencies will include information on practical steps to limit trespassing on open lands in the information toolbox.
Root Vegetables	• The Task Force recommends that the Washington Department of Agriculture request from the Northwest Food Processors Association an analysis of the NWFPA voluntary program regarding it's effectiveness in preventing human exposure to heavy metals in food crops. • The Task Force recommends that information about protective measures should be developed and distributed to home gardeners and local farmer's market growers to help prevent consumption of root crops with elevated concentrations of arsenic and lead.	• Since the NWFPA program is voluntary, they do not collect or summarize participation results. The Washington State Department of Agriculture, Food Safety Division, will request analytical results from the Food and Drug Administration on any recent findings of heavy metals in Washington food crops. • The Chartering Agencies plan to develop and distribute information materials tailored to specific audiences that supplements broadly applicable information materials (See responses in Section 5 above). In the case of home gardeners and local farmer's market growers, the agencies plan to use the Washington State University Agricultural Extension Bulletin 1884 that provides information and recommendations for reducing exposure to lead and arsenic via consumption of root crops
Section 9: Real Estate Disclosure Recommendations		
Real Property Transfer Disclosure	• The Washington Association of Realtors (WAR) is encouraged to work with legislators to enact legislation requiring a real property transfer disclosure statement for open land (in addition to the existing requirements for residential properties). • The Chartering Agencies should work with WAR to encourage the use (on a voluntary basis) of the existing seller's property condition report for open land until such legislation is adopted.	• The Chartering Agencies will encourage efforts by the Washington Association of Realtors to work with the Washington Legislature to establish real property disclosure requirements for open land. In the interim, the agencies will work with the Washington Association of Realtors to encourage voluntary use of the existing seller's property condition report.
Use of Lead-Based Paint Disclosure Form	• The Chartering Agencies should work with and through the WAR to strongly encourage real estate agents to use the lead-based paint	• The Chartering Agencies will work with the Washington Association of Realtors and other organizations to encourage voluntary use of

and EPA Pamphlet	disclosure form and EPA pamphlet for all transactions or use similar disclosure documentation where area-wide soil contamination is likely.	the lead-based paint disclosure form or other disclosure documentation where area-wide soil contamination is likely.
Information and Training for Real Estate Professionals	• The Chartering Agencies should encourage and support efforts by WAR to create an education course about area-wide contamination or to incorporate relevant Task Force findings and recommendations into realtor's existing course materials. • The Chartering Agencies should encourage the WAR to draft an article highlighting the Task Force's findings and recommendations for the *Washington Realtor*.	• The agencies will work with the Washington Association of Realtors to develop materials that can be used in courses and seminars.
Section 10: Application of the Model Toxics Control Act		
Establish Alternative to Traditional MTCA Site Listing Process	• Ecology should modify MTCA regulations and policies to establish an alternative to traditional site listing process that involves identifying and describing area-wide zones and not listing individual properties affected by area-wide soil contamination. • Ecology should describe conditions under which an individual property within an area-wide zone would be addressed using the traditional MTCA process.	• Ecology will initiate the process to amend the Model Toxics Control Act regulation to facilitate implementation of the Task Force's recommendations. This includes recommendations on site listing, and enforcement forbearance. Ecology will work closely with Task Force members who were instrumental in preparing the recommendations on the MTCA process. Timing for completing the rulemaking process will be coordinated with the MTCA Science Advisory Board's review of the scientific basis for identifying low-to-moderate levels of arsenic and lead in soil.
Enforcement Forbearance	• Ecology should establish in regulation a new enforcement forbearance policy that would be made available where property owners choose to implement the Task Force recommendations. Ecology should also maintain the current residential enforcement policy. • To complement the policy, Ecology should establish a standard checklist that can be used to document property status. • Ecology should announce the new policy and checklist when area-wide zones are identified.	• Ecology intends to develop a new enforcement forbearance policy as part of the MTCA rulemaking process described above. As part of this effort, Ecology will also work with others involved in the rulemaking process to develop a checklist or other form that will enable individuals to document property status. This checklist and/or form will be included in the information toolbox. The agencies will also work with others to increase awareness of the polices and checklist as part of broader efforts to increase awareness on this issue.
Streamlined Mechanism to Provide Recognition that a Site is Clean	• Ecology should provide a streamlined process to acknowledge situations where properties are sampled and concentrations of arsenic and lead are found to be below cleanup levels. This should be made available electronically and by other means.	• Ecology is currently working to finalize sampling guidance for various land use scenarios. As part of that effort, Ecology is also evaluating different ways of providing a mechanism to acknowledge situations where properties are sampled and concentrations of

		arsenic and lead are below cleanup levels. However, Ecology plans to (1) gain a better understanding of the types and amount of data collected actually being collected by property owners and (2) complete the rulemaking process before proceeding further on this recommendation.
Continue to Apply Traditional MTCA Approach in Certain, Site-Specific Cases	• Ecology should continue to apply the traditional MTCA approach when a property owner requests agency involvement (e.g. voluntary cleanup program) or site-specific conditions (e.g., ground water contamination, other contaminants, high As/Pb levels) warrant it	• Ecology intends to continue to apply the traditional MTCA approach in the situations recommended by the Task Force.
Section 11: Recommendations for Additional Information Needed		
Monitoring of Arsenic and Lead Exposure	• Chartering agencies should gather information on the health of Washington residents, particularly children, who may be exposed to elevated levels of arsenic and lead in soil (through blood-lead testing, fluoroscopy, or other appropriate techniques)	• Health and Ecology plan to continue/initiate several efforts the might improve our understanding of the relationships between elevated levels of arsenic and lead in soils and the health and exposure of Washington residents. This includes (1) work to maintain and (where possible) expand efforts to monitor blood lead levels in Washington children (2) continue to work together on a federally-funded project evaluating the feasibility of linking environmental data with information on community health status, and (3) explore partnerships with academic institutions on research projects.
Research on Leaded Gasoline	• Chartering agencies should conduct research to characterize the location and extent of elevated soil lead levels from past use of leaded gasoline in Washington. Agencies should focus research on public child-use areas in areas where concentrations are likely to be the greatest (i.e., near older, more heavily used roads)	• The Agencies do not plan to work on this issue during the next 2 years because other activities are considered to be higher priorities.
Research on Ecological Risks	• Ecology should conduct study to evaluate potential ecological impacts of low-to-moderate level arsenic and lead soil contamination and identify where measures beyond the Task Force's recommendations are needed to protect plants and animals	• Ecology will work with the Science Advisory Board to review the scientific basis for defining low-to-moderate levels of arsenic and lead. The ecological impacts associated with arsenic and lead will be considered as part of that review.
Section 12: Cost and Funding Recommendations		
Financial Assistance	• The Chartering Agencies should provide financial assistance for local government efforts to address area-wide soil contamination (particularly local health agencies).	• Ecology has budgeted $2.8 million to support local agency efforts to address area-wide soil contamination problems during the FY 2003-2005 biennium. These funds will be focused on mapping, public education and child use area assessments and responses in high priority areas identified by the Task Force. These areas include the Tacoma Smelter Plume (Pierce and King counties),

		Chelan/Douglas, Okanogan, Spokane and Yakima counties. • Ecology will also make remedial action funds available to public school and park districts that elect to undertake cleanup measures to address elevated levels of arsenic and lead.
Funding Sources	• The Chartering Agencies should seek funding from a broad array of Federal, State and private sources including the State and Local Toxics Control Accounts, private foundations, Federal grant programs, the Federal government, the State Legislature and any identified potentially liable parties.	• Ecology will work with the Office of the Attorney General to continue to seek funding from any identified potentially liable parties. • The agencies will continue to seek funding from federal programs to support actions to address area-wide soil contamination.

Issues and Challenges Associated with Addressing Areawide Soil Contamination

Potential for Exposure	Over the past 50 years, Washington's population growth has resulted in the conversion of many agricultural and forested areas and other open space into homes, schools or commercial uses. The population has also increased in areas affected by emissions from metal smelters. Population growth and changes in land use have combined to increase the potential that people will be exposed to area-wide soil contamination.
Geographic Scale	Available information indicates that several hundred thousand acres might contain elevated levels of arsenic and lead as a result of historic activities. Consequently, the geographic scale of areawide soil contamination is significantly greater than areas typically addressed by state and federal cleanup programs and includes many individual parcels of land.
Public Health	Numerous studies indicate that exposure to arsenic and lead in the environment can cause many different health problems in people. However, it is difficult to predict how arsenic or lead will affect a given person. Amounts that cause serious health problems for some people may have no effects on others. Small children are of particular concern because they are more likely than others to come into contact with contaminated soil and dust, in addition to being highly vulnerable to the effects of environmental lead.
Ecological Impacts	Numerous laboratory and field studies have found that arsenic and lead can adversely affect certain plant species at soil levels that are similar to levels commonly associated with areawide soil contamination. However, other field studies have documented healthy and thriving plant communities in areas with similar levels of arsenic and lead.
Financial Impacts	There are a number of potential direct and indirect costs associated with the presence of elevated levels of arsenic and lead in soils and/or implementing measures to reduce the potential for exposure. For example, homeowners and land developers who have purchased or built homes in areas with contaminated soils may face increased costs associated with paying for protective measures, reduction in property values, and difficulties in financing or selling homes. Local governments (e.g. school districts, health departments, etc.) may also face increased costs associated with responding to or assisting others to respond to elevated levels of arsenic and lead. Funding these activities is made more difficult by the fact that persons responsible for the contamination are often hard to identify and/or lack sufficient financial resources.
Public Awareness	People are often unaware that soil at their homes, future homes, children's schools, local parks, etc. may contain elevated levels of arsenic or lead. In these situations, they are unable to determine whether to take steps to reduce health or financial impacts.
Fairness	Any combination of measures to address elevated levels of arsenic and lead has the potential to appear unfair to one or more involved parties (e.g. current landowners, future landowners, parties responsible for the contamination, etc.).
Wide Variations in Soil Concentrations	Area-wide contamination does not appear to be distributed in an easily predictable manner. Consequently, site-specific evaluations/soil sampling is the only way to determine conclusively which properties are contaminated and which are not. However, soil testing raises a number of disclosure and liability issues.
Wide Variations in Risk Perception	Washington residents hold a wide range of opinions on the relative significance of the health and environmental risks posed by arsenic and lead. Some people perceive such risks as high while others consider them to be inconsequential. Studies show that people's perceptions on whether a risk is big or small are influenced by several factors including how familiar they are with a risk, how much control they can exercise over the risk, whether children are exposed to the risk, etc.
Scientific Uncertainty	The scientific methods used to investigate health and environmental risks (e.g. toxicology, epidemiology, etc.) are inherently imprecise and, consequently, open to varying interpretations. Some people note that scientists have not provided absolute scientific proof that people in Washington have been or are being harmed by area-wide soil contamination. The lack of such studies is not unique to Washington. However, the vast

	majority of health and environmental agencies in the United States (including Health and Ecology) now believe that the preponderance of scientific evidence supports the need to take reasonable steps to reduce exposure to arsenic and lead.
Agency Mandates and Responsibilities	The Washington Legislature has passed a number of laws that establish agency mandates and responsibilities that are relevant to addressing areawide soil contamination. For example, several laws direct Ecology and DOH to take steps to protect human health and the environment. (e.g. the Model Toxics Control Act). Federal, state and local laws and ordinances also establish mandates and responsibilities with respect to encouraging economic development, promoting agricultural productivity, providing high-quality public education, etc. Measures to reduce exposure to arsenic and lead must be integrated and coordinated with other local, state and federal government activities.

APPENDIX C

Implementation of the Area-Wide Soil Contamination Strategy for Washington State

APPENDIX D

Soil Safety Program Design

APPENDIX E

General Timelines – Objectives 1-3

APPENDIX E

TACOMA SMELTER PLUME GENERAL TIMELINE

This timeline depicts the major stages, or *implementation steps*, of the Tacoma Smelter Plume project and the timeframe for completion. The steps are divided into three groups based on the objective:

- Objective 1 – Improve Public Awareness;
- Objective 2 – Characterize Soils and Implement Protective Measures; and
- Objective 3 – Improve Institutional Capabilities.

(Please refer to sections 3.2, 4.2, and 5.2 for more detail on the implementation steps.)

APPENDIX E: TSP GENERAL TIMELINE

IMPLEMENTATION STEPS BY OBJECTIVE

OBJECTIVE 1: IMPROVE PUBLIC AWARENESS

		2005	2006	2007	2008	2009	2010	2020
1	Develop and implement public awareness campaigns	*Ongoing*						
2	Maintain websites	*Ongoing*						
3	Develop soil sampling and other guidance brochures							
4	Sustain/strengthen existing and new partnerships with agencies, orgs	*Ongoing*						
5	Develop partnerships- non-English; financially disadvantaged		*Ongoing*					
6	Initial contact with State Superintendent (OSPI), school districts							
7	Work with schools districts; schools: materials & training	*Ongoing*						
8	Work with Dept. of Early Learning (DEL), childcare organizations			*Ongoing*				
9	Work with childcares, develop and share materials and training	*Ongoing*						
10	Address soil contamination: parks, camps; multi-family housing							
11	Conduct residential soil sampling/Home Env. Asesment List (HEAL)							

OBJECTIVE 2: CHARACTERIZE SOILS AND IMPLEMENT PROTECTIVE MEASURES

		2005	2006	2007	2008	2009	2010	2020
1	Develop and implement Soil Safety Program: schools & childcares							
2	Distribute soil sampling and protective measures brochures							
3	Follow-up with previously sampled child use properties:							
4	Inventory existing parks, camps; multi-family house							
5	Develop guidance brochures: properties under development							
6	Provide technical assistance/characterization for property owners	*Ongoing*						

OBJECTIVE 3: IMPROVE INSTUTIONAL CAPABILITIES

		2005	2006	2007	2008	2009	2010	2020
1	Ecology improve technical assistance and SEPA review processes							
2	Public Health incorporate message: -nurses; school safety staff							
3	Incorporate soil contamination issues: educational facility operations							
4	Incorporate soil contamination message: curriculums; training							
5	Childcare organizations- institutionalize soil contamination concerns							
6	Local land use planning and development policies and processes							
7	Local-state agencies: new construction; maintenance; reconstruction							
8	Realtors and other land transaction professionals							
9	Federal and other government coordination							
10	Other state agency grants: local planning; solid waste							

APPENDIX F

Public Health Seattle & King County Work Plan

APPENDIX G

Tacoma-Pierce County Health Department Work Plan

APPENDIX H

Thurston County Health Department Work Plan

APPENDIX I

Ecology Work Plan

APPENDIX I

ECOLOGY WORKPLAN

Ecology's workplan is divided into three sections based on the project objectives:

- Objective 1 – Improve Public Awareness;
- Objective 2 – Characterize Soils and Implement Protective Measures; and
- Objective 3 – Improve Institutional Capabilities.

The far left column lists specific workplan tasks by implementation step (please refer to sections 3.2, 4.2, and 5.2 for more detail on the implementation steps). The next column, labeled "Lead" refers to the Ecology staff member who will be the lead for that task. Gray shaded boxes show the timeframe for each task. The far right column shows "deliverables" (finished products such as reports and plans) and comments that further explain the tasks.

Each workplan is also divided into sections based on the category of task. For example, each workplan has a project management section for tasks such as planning meetings, designing evaluations, and coordinating the work of other agencies.

ECOLOGY WORK PLAN *Revised May 2007*

OBJECTIVE 1: IMPROVE PUBLIC AWARENESS

			Grant cycle:	July 1, 2007- June 30, 2009												
			Years:	2007		2008				2009				2010	*(or beyond)*	
			Quarter*	1-2	3	4	1	2	3	4	1	2	3	4		
	IMPLEMENTATION STEPS	**LEAD**														**DELIVERABLES-** COMMENTS
	General															
1	**Develop/implement public awareness campaigns**															
	a) Community meetings, fairs or conferences;															**Events calendar**, provide support to counties
	b) Present at statewide meetings and conferences	HA														**Presentations**, coordinate county involvement
2	**Maintian Ecology Web site**	HA														Appropriate materials, links- reviewed quarterly
	Web site usability test	HA														**Descriptive report**
	Update publications (FAQs, focus sheets, fact sheets)	HA														**Updated guidance**
	Publish and distribute biennial legislative report	HA														**Legislative Report, cover letter, mailing list**
3	**Develop soil sampling and other guidance**															
	a) Larger, Smaller, General	HA	Jan													**Brochures sets**, Includes distribution plans
	b) Developer sampling and BMP Guidance															**Public involvement materials, final brochures**
	c) Commercial properties															As resources allow
	Update existing guidance (Dirt Alert brochure set)															**Updated guidance**
	Schools															
6	**Initial contact with OSPI-school districts**		June													**Strategy**
	Work with Ecology regional offices to distribute curriculum	HA														**Distribution plan**
7	**Review local health materials for schools**	HA														Curriculums, trainings; maintain **library of materials**
	Childcares															
8	**Work with DEL and/or childcare organizations**															
	a) support health dept O/E		June													**Strategy**
	b) integrate messages into licensor/health advisor training		June													**Strategy**, coordinate with Obj. 3 workplan
	c) Provide grants to non-profit childcare organizations	HA														Oversee grant work and **deliverables**
9	Review local health materials for childcares	HA														Curriculums, trainings; maintain **library of materials**
	Parks, camps, multi-family housing; residential															
10	**Address possible soil contamination :**															
	a. identify (inventory) parks, camps and multifamily	??										June				**Workplan** by June 09; start inventory July 09
	b. Inform about soil contamination/actions	HA												Dec		**Workplan to begin process**; start in Dec. 2009
	Project Management															
	Coordinate Tri-County O/E meetings	HA														At least one per quarter, keep minutes
	Plan for and track distribution of Ecology-printed publications (internally and through counties)	HA														**Database,** update quarterly
	Review and comment on local work and evaluation plans, including deliverables	HA		Aug		Feb		Aug		Feb						Annually and review every six months
	Review quarterly report and invoices; prepare Ecology	HA														**Report(s)**
	Prepare reports on overall outreach efforts	HA														**Report(s)**

* calendar year quarters

Implementation Step numbering refers to TSP Management Plan

HA= Hannah Aoyagi, Public Involvement Coordinator

HA participates; but is not the lead

ECOLOGY WORK PLAN *Revised May 2007*

OBJECTIVE 2: CHARACTERIZE SOILS AND IMPLEMENT PROTECTIVE MEASURES

Grant cycle:			July 1, 2007- June 30, 2009												
Years:		**2007**			**2008**				**2009**				**2010**		
Quarter*		1-2	3	4	1	2	3	4	1	2	3	4			
IMPLEMENTATION STEPS	**LEAD**													**DELIVERABLES-** COMMENTS	
Properties with child play areas															
1 **Dev. Soil Safety Program: schools & childcares**	AH													Completed April 2006; possibly review annually	
Implement Program:															
a) Identfy schools and childcares	AH													Update every 6 months; **DEL into SSTS**	
b) Conduct qualitative assessments	AH													**Contract for Thurston**; coordinate with PHSKC, TPCHD	
c) Conduct soil sampling and evaluate results	AH													**Contract for Thurston**; coordinate with PHSKC, TPCHD	
d) Provide test results - above criteria	AH														
e) Provide TA - Soil Safety Actions (SSA)	AH														
f) Coordinate outreach and education with sampling	AH														
g) Inspect and track if SSA are implemented	AH														
2 **Provide soil sampling and protective measures brochures**														(duplicates Objective 1, section 3)	
a. large child use play areas														Distributed to parks, camps, schools, childcares	
b. small child use play areas														Distributed to residences, home child cares	
3 **Follow-up with previously sampled child use properties:**															
Parks	tbd													Start June 2008 as time allows	
Camps	tbd													Start June 2008 as time allows	
4 **Inventory existing parks, camps; multi-family house**	tbd									June				**Plan developed**	
5 **Properties under development-Guidance**														Participate on Guidance team as time allows	
6 **Technical asst./characterizartion for property owners**	tbd													To be determined as funding/time allows	
Project Management															
Coordinate with samplers as needed	AH														
Assist in maintaining and improving SSTS	AH													**Workplan**	
Participate at PHSKC, TPCHD Coordination meetings														At least quarterly	
Review and comment on local work and evaluation plans	AH		Aug		Feb		Aug		Feb					Annually and review every six months	
Review quarterly report and invoices; prepare Ecology	AH													**Report(s)**	
Coordinate construction contractors	AH													**Contracts**	
Prepare legislative report	AH, MA	Jan		Oct				Oct				Oct		**Annual Report; Legislative Report**	

*calendar year quarters

Implementation Step numbering refers to TSP Management Plan

AH= Amy Hargrove

AH participates; not the lead

tbd= to be determined

ECOLOGY WORK PLAN *Revised May 2007*

OBJECTIVE 3: IMPROVE INSTITUTIONAL CAPABILITIES Priority: H= High M= Medium L= Low

Grant cycle:				July 1, 2007- June 30, 2009												
Years:			**2007**			**2008**				**2009**				**2010**		
Quarter*	Priority	Lead	1-2	3	4	1	2	3	4	1	2	3	4			
IMPLEMENTATION STEPS:															**DELIVERABLES-** COMMENTS	
Ecology and Public Health																
1 **Ecology improve TA and SEPA review processes**	H	CW			Dec										**Work plan** -link to #6;	
Map-improvements; documentation; webiste	H	MA													**Detailed workplan; written documentation**	
Educational Institutions																
3 **Educational facility operations**															**Detailed work plan**	
a) Childcare licensure	H	CW			Dec								Dec		**Assessment tool-checklist**	
b) Operator guidance documents	H	CW			Dec								Dec		**Assessment tool-checklist**	
c) K-12 health and safey guidance	H	CW			Dec								Dec		**Assessment tool-checklist**	
4 **Training programs; curriculums**																
a) childcares	M	H					June									
b) Early learning training	M	H					June									
c) Elementary schools	M	H					June								PHSKC ages 2-7 curriculum	
5 Childcare organizations- institutionalize issues	M	H											Dec		**Strategy; workplan**	
Land Use and Construction																
6 **Local land use planning- devlopment action plan**	H	CW													**Detailed work plan; revise as needed**	
Soil sampling-BMP Guidance	H	CW													**Consult contracts; draft guidance**	
Model remedies															**Study results, model remedies**	
Pilot test Model remedies-Guidance at local level	H	CW													2-3 pilot sites; **baseline assessment**	
7 **New Construction; maintenance; reconstruction**																
a) Schools	H	CW			Dec										Link to #6-**Guidance**	
b) Parks	H	CW			Dec										Link to #6- **Guidance**	
c) Other State agencies	M	CW					June								Public housing; air; storm water; solid waste	
Other Government																
9 **Federal and other government coordination**																
a) EPA-Ruston	H	MA	Jan												Identify deliverables; outcomes	
10 **Other state agency grants**																
a) Solid waste program	M	CW							Dec						**# of grants and amounts**	
b) Explore local planning grants	H	CW		June											**# of grants and amounts**	
Project Management																
Facilitate PHSKC, TPCHD Coordination meetings		CW													At least quarterly	
Review and comment on local work and evaluation plans		CW		Aug		Feb		Aug		Feb					Annually and review every six months	
Review quarterly report and invoices; prepare Ecology		CW													If local health includes in grants; **report(s)**	

*calendar year quarters

Implementation Step numbering refers to TSP Management Plan

CW= Cynthia Walker, TSP Project Manager

MA= Marian Abbett, TSP/Unit Supervisor

= begin to work on these steps when opportunities arise

OBJECTIVE 3
LOW PRIORITY IMPLEMENTATION STEPS

Review timeframe and priority at annual TSP Management Plan review

	Grant cycle:				July 1, 2007- June 30, 2009											
	Years:			**2007**			**2008**				**2009**				**2010**	
	Quarter:	Priority	Lead	1-2	3	4	1	2	3	4	1	2	3	4		
	IMPLEMENTATION STEPS:															**DELIVERABLES- COMMENTS**
	Land Use and Construction															
7	New Construction; maintenance; reconstruction															
	d-e) WSDOT; L&I	L										Dec				Link to #6
8	Land transaction professionals															
	a) Professional training and education	L										Dec				Realtors, assessors, financial
	b) Options to notify buyers	L										Dec				Soil contamination, health actions, cleanup
	c) Property disclosure legislation	L										Dec				Possible voluntary seller's property condition report
	d) Disclosure document	L										Dec				Similar to lead based paint
	Other Government															
9	Federal and other government coordination															
	a) Military based	L										Dec				
	b) Tribes	L										Dec				