



## PERIODIC REVIEW

Orondo Elementary School  
Facility/Site ID #: 9997635  
Cleanup Site ID #: 5510

100 Orondo School Road  
Orondo, Washington 98843

Prepared by:  
Washington State Department of Ecology  
Central Regional Office  
Toxics Cleanup Program

June 2013

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## 1.0 INTRODUCTION

This document is the Department of Ecology's review of post-cleanup site conditions and monitoring data to assure that human health and the environment are being protected at the Orondo Elementary School site (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA), Chapter 173-340 of the Washington Administrative Code (WAC).

Cleanup activities at this Site were completed as an interim action by Ecology. Following implementation of institutional controls, it was determined that the interim action constituted the final cleanup action for the Site per WAC 173-340-430 (1). The Site was removed from Ecology's Hazardous Sites List and it was determined that no additional remedial actions were necessary. The cleanup actions resulted in residual concentrations of lead and arsenic that exceed MTCA Method A cleanup levels for soil established under WAC 173-340-740(2). The MTCA Method A cleanup levels for soil are established under WAC 173-340-740. Institutional controls were implemented at the Site in the form of an environmental covenant to prevent exposure and release of contaminated soils capped as part of the remedy for the Site. WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

- (a) Whenever the department conducts a cleanup action
- (b) Whenever the department approves a cleanup action under an order, agreed order or consent decree
- (c) Or, as resources permit, whenever the department issues a no further action opinion
- (d) And one of the following conditions exists:
  - 1. Institutional controls or financial assurance are required as part of the cleanup
  - 2. Where the cleanup level is based on a practical quantitation limit
  - 3. Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

- (a) The effectiveness of ongoing or completed cleanup actions;
- (b) New scientific information for individual hazardous substances or mixtures present at the Site;
- (c) New applicable state and federal laws for hazardous substances present at the Site;
- (d) Current and projected Site use;
- (e) Availability and practicability of higher preference technologies; and
- (f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the Site Register and provide an opportunity for public comment.

## **2.0 SUMMARY OF SITE CONDITIONS**

### **2.1 Site History**

The Orondo Elementary School is located in the City of Orondo in Douglas County, Washington. The Site is located immediately adjacent to the west of State highway 97 approximately 20 miles north of the City of Wenatchee. The school is located approximately 1000 feet above sea level on the west shore of the Columbia River. A vicinity map is available as Appendix 6.1 and a Site plan is available as Appendix 6.2.

Orondo Elementary school was constructed on historic orchard land in 1990 to replace the schoolhouse that was built in 1912. Prior to 1948, pear and apple orchards used lead arsenate as a pesticide to control the codling moth. By 1948, lead arsenate use generally ceased because the codling moth had developed resistance to the arsenate compound, and dichlorodiphenyltrichloroethane (DDT) was found to be a much more effective control agent.

The application of lead arsenate over several decades resulted in the accumulation of lead and arsenic in surface soils at levels that are hazardous to human health and the environment. Lead and arsenic are relatively immobile in soil and generally remain in the top 12 inches of the soil column, even though application ceased prior to 1950.

### **2.2 Previous Site Investigations and Remedial Actions**

The Okanogan Health District and Ecology began initial soil analysis to evaluate the presence of lead arsenate contamination at north central Washington schools in 2002 and 2003. Analytical results from Orondo elementary showed average arsenic concentrations of 29 ppm with a maximum concentration of 139 ppm. Initial lead concentrations averaged 253 ppm with a maximum concentration of 981 ppm. Based on these results, the property was added to Ecology's Confirmed and Suspected Contaminated Sites list in February 2007.

In 2006, the Washington State legislature made funding available to Ecology to conduct interim remedial actions at schools where children were exposed to pesticide contamination in soil. Orondo Elementary was selected for remediation through this program.

### **2.3 Cleanup Levels and Point of Compliance**

WAC 173-340-704 states that MTCA Method A may be used to establish cleanup levels at sites that have few hazardous substances, are undergoing a routine cleanup action, and where numerical standards are available for all indicator hazardous substances in the media for which the Method A cleanup level is being used.

MTCA Method A cleanup levels for unrestricted land use were determined to be appropriate for contaminants at this Site. The cleanup actions conducted at the Site were determined to be

'routine', few hazardous substances were found at the Site, and numerical standards were available in the MTCA Method A table for each hazardous substance. The MTCA Method A cleanup level for arsenic is 20 ppm and the MTCA Method A cleanup level for lead is 250 ppm.

For soil, the point of compliance is the area where the soil cleanup levels must be attained. For this Site, the point of compliance is established as soils throughout the Site.

## 2.4 Remedial Actions

It was determined that a simple soil cap would provide sufficient protection from exposure to contaminated soils at the Site. The soil cap was implemented in several steps, including:

- Tilling the existing sod to break down organic material and prevent formation of an impermeable organic layer.
- Placement of a geotextile fabric to demarcate the boundary between contaminated soil and clean surface soil. The geotextile fabric was designed to allow water to infiltrate for proper drainage.
- Improving the existing irrigation system and raising sprinkler heads to the new topsoil height. Ecology and the School District used this opportunity to make small improvements to the existing irrigation to ensure adequate water supply to new seeding and sod.
- Placement of a minimum of 8 inches of clean topsoil.
- Placement of sod in areas needed for immediate school use and hydroseeding the remainder of the cap area.

Topsoil was supplied from an undisturbed Site and tested for lead and arsenic concentrations. Neither lead nor arsenic were detected above background concentrations in 10 samples taken from the import topsoil. Approximately 5,000 yards of topsoil were imported on-site.

## 2.5 Environmental Covenants

Institutional controls were required as part of the remedy for the Site to prevent future property uses that may disturb or expose capped contaminated soils. Institutional controls were implemented in the form of an environmental covenant, which was recorded for the Site in 2008. The environmental covenant imposes the following conditions:

1. Any activity on the Property that may result in the release or exposure to the environment of the contaminated soil that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: significant drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, bulldozing or earthwork.

The items listed below are excepted activities that the School District may conduct on the Property. New construction, and any of the other activities listed below that will expose substantial amounts of contaminated soils require written notification be given to Ecology. A response or approval from Ecology is not required.

- a. Field maintenance and repair, installation, maintenance, repair or replacement of major sprinkler system parts or plumbing;
- b. Repair, replacement, maintenance, or installation of plumbing or septic system components;
- c. New construction, provided all reasonable steps are taken to minimize any release or exposure to the environment of contaminated soils, and all state laws and regulations are followed;

Upon completion of the activities listed above, any portion of the Property affected by such construction activity lying outside of the footprint of any impermeable surface shall have the fabric barrier repaired, a layer of clean topsoil at least as thick as was installed during the Remedial Action shall be placed over the repaired fabric barrier, and the area shall be resodded or replanted with vegetation.

2. The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.
3. The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.
4. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.
5. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.
6. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

A copy of the Restrictive Covenant for the Site is available as Appendix 6.3.

## **3.0 PERIODIC REVIEW**

### **3.1 Effectiveness of completed cleanup actions**

#### **3.1.1 Soil Contact**

A Site visit was conducted on May 21, 2013. The Site remains occupied by Orondo Elementary School. The capped field and play areas are used by elementary school children during recess, physical education, and after school activities.

Overall, the turf at the school remains in good condition with the exception of areas where it receives concentrated use. The clean soil cap continues to eliminate human and ecological exposure pathways (ingestion, contact) to contaminated soils. Maintenance and repair activities should be conducted where the clean soil cap has been exposed. A photo log is available as Appendix 6.4.

#### **3.1.2 Institutional Controls**

The restrictive environmental covenant for the school was recorded and remains effective. There is no evidence that a new instrument has been recorded which limits the applicability or effectiveness of the covenant. The environmental covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup without Ecology's approval, and prohibit any use of the property that is inconsistent with the Covenant. The environmental covenant serve to protect the long term integrity of the surface cover by restricting property uses.

### **3.2 New scientific information for individual hazardous substances for mixtures present at the Site**

There is no new pertinent scientific information for the contaminants related to the Site.

### **3.3 New applicable state and federal laws for hazardous substances present at the Site**

There are no new relevant state or federal laws for the hazardous substances present at the Site.

### **3.4 Current and projected Site use**

The Site is currently used as a primary school facility. There have been no changes in current or projected future Site or resource uses.

### **3.5 Availability and practicability of higher preference technologies**

The remedy implemented included containment of hazardous materials, and it continues to be protective of human health and the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

### **3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels**

The analytical methods used at the time of the remedial action were capable of detection well below MTCA Method A cleanup levels. The presence of improved analytical techniques would not effect decisions or recommendations made for the Site.

## **4.0 CONCLUSIONS**

- The cleanup actions completed at Orondo Elementary School are protective of human health and the environment.
- An environmental covenant has been recorded for the Site that restricts activities that may expose contaminated soil, and notifies future property owners of contamination remaining at the Site.
- Soils cleanup levels have not been met at the Site; however, the cleanup action is determined to comply with cleanup standards at the time of the action, since the long-term integrity of the containment system is ensured and the requirements for containment technologies have been met.

Based on this periodic review, the Department of Ecology has determined that the requirements of the environmental covenants are being followed. No additional remedial actions are required by the School District, but maintenance of the field should be continued. It is the School District's responsibility to continue to inspect and maintain the Site to ensure that the integrity of the cap is maintained.

### **4.1 Next Review**

The next review for the Site will be scheduled five years from the date of this periodic review. In the event that additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years from the completion of those activities.

## 5.0 REFERENCES

Orondo School District. *Restrictive Environmental Covenant*. July 2, 2008

Ecology. *Interim Action Report – Orondo Elementary School*. September 20, 2007.

Ecology. *Site Visit*. May 21, 2013.

## **6.0 APPENDICES**

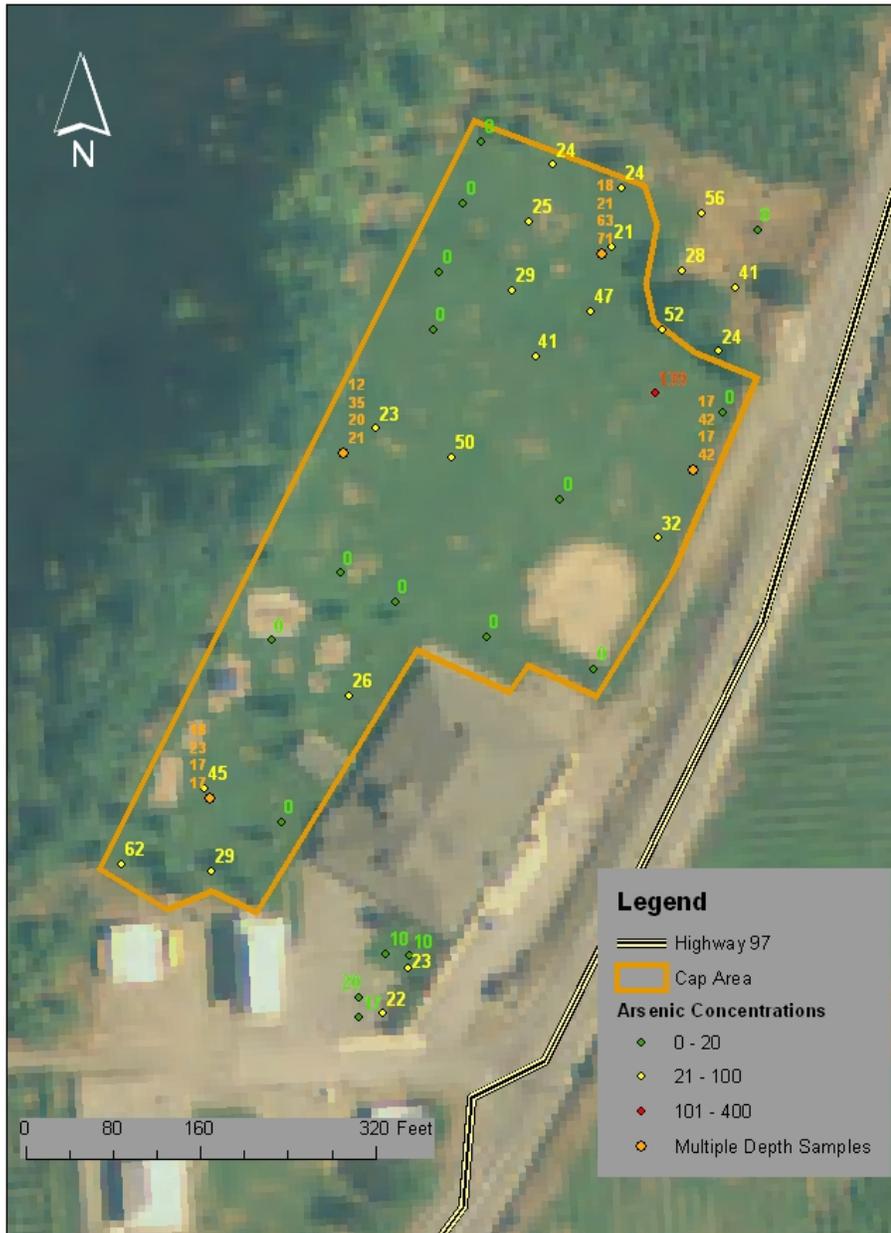
## 6.1 Vicinity Map

### Orondo Elementary School



## 6.2 Site Map

### Orondo School Arsenic Concentrations



\* MTCA Method A cleanup level for arsenic is 20 ppm

## 6.3 Environmental Covenant



### Restrictive Environmental Covenant

FSID# 9997635  
NO SIC#

After Recording Return to:  
Jeff Newschwander  
Department of Ecology  
15 West Yakima Avenue, Suite 200  
Yakima, Washington 98902

Grantor: Orondo School District  
Grantee: State of Washington, Department of Ecology  
Legal: TAX 9 LYING W OF HWY 97 ORONDO 1<sup>ST</sup> & 2<sup>ND</sup>; TAX 22 LYING W OF  
HWY ORONDO 1<sup>ST</sup> & 2<sup>ND</sup>.  
Tax Parcel Nos.: 75702000000; 75701900001

Grantor, Orondo School District, hereby binds Grantor, its successors and assigns to the land use restrictions identified herein and grants such other rights under this environmental covenant ( hereafter "Covenant" ) made this 18th day of March, 2008 in favor of the State of Washington Department of Ecology (Ecology). Ecology shall have full right of enforcement of the rights conveyed under this Covenant pursuant to the Model Toxics Control Act, RCW 70.105D.030(1)(g), and the Uniform Environmental Covenants Act, 2007 Wash. Laws ch. 104, sec. 12.

This Declaration of Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) and WAC 173-340-440 by Orondo School District, its successors and assigns, and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

A remedial action (hereafter "Remedial Action") occurred at the property that is the subject of this Covenant. The Remedial Action conducted at the property is described in the following document[s]:

1. Interim Action Report-Orondo Elementary School, Washington State Department of Ecology, September 2007.

This document is on file at Ecology's Central Region Office in Yakima, Washington.

This Covenant is required because the Remedial Action resulted in residual concentrations of lead and arsenic which exceed the Model Toxics Control Act Method A Cleanup Level(s) for soil established under WAC 173-340-900.



The undersigned Orondo School District, is the fee owner of real property (hereafter "Property") in the County of Douglas, State of Washington, that is subject to this Covenant. The Property is legally described as follows: TAX 9 LYING W OF HWY; ORONDO; TAX 22 LYING W OF HWY ORONDO 1ST & 2ND. Orondo School District makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Any activity on the Property that may result in the release or exposure to the environment of the contaminated soil that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: significant drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, bulldozing or earthwork.

The items listed below are excepted activities that the School District may conduct on the Property. New construction, and any of the other activities listed below that will expose substantial amounts of contaminated soils require written notification be given to Ecology. A response or approval from Ecology is not required.

1. Field maintenance and repair, installation, maintenance, repair or replacement of major sprinkler system parts or plumbing;
2. Repair, replacement, maintenance, or installation of plumbing or septic system components;
3. New construction, provided all reasonable steps are taken to minimize any release or exposure to the environment of contaminated soils, and all state laws and regulations are followed;

Upon completion of the activities listed above, any portion of the Property affected by such construction activity lying outside of the footprint of any impermeable surface shall have the fabric barrier repaired, a layer of clean topsoil at least as thick as was installed during the Remedial Action shall be placed over the repaired fabric barrier, and the area shall be re-sodded or replanted with vegetation.

The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement,



lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.

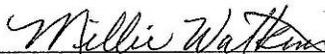
The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.

The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.

The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.

The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

**Orondo School District**

  
\_\_\_\_\_  
**Millie Watkins**  
**Superintendent**

Dated: 6/23/2008

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

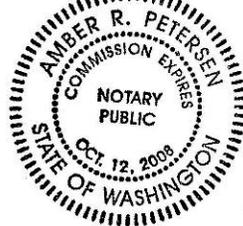
  
\_\_\_\_\_  
**Donald Abbott**  
**Section Manager - Toxics Cleanup Program**

Dated: 7-2-08



STATE OF Washington  
COUNTY OF Douglas

On this 23<sup>rd</sup> day of June, 2008, I certify that Mellie  
Watkins personally appeared before me, acknowledged that he/she signed this instrument, on  
oath stated that he/she was authorized to execute this instrument, and acknowledged it as the  
Superintendent [type of authority] of Orondo SD [name of  
party being represented] to be the free and voluntary act and deed of such party for the uses  
and purposes mentioned in the instrument.



Amber Petersen  
Notary Public in and for the State of  
Washington, residing at Orondo  
My appointment expires 10.12.08

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## 6.4 Photo log

**Photo 1: Orondo Elementary Playfield – from the northwest**



**Photo 2: Wood Chip Coverage Beneath Swings - from the northwest**



**Photo 3: Asphalt Exercise Track - from the south**



**Photo 4: Orondo Elementary School Play Field - from the southeast**

