

ATTACHMENT E

Photographs



Nov. 2008_Aberdeen Log Yard-log pile



Nov. 2008_Aberdeen Log Yard-former building foundation



Nov. 2008_Aberdeen Log Yard-log debris



Nov. 2008_Aberdeen Log Yard-Emergency spill response supplies



Nov. 2008_Aberdeen Log Yard-former log support structure



Nov. 2008_Aberdeen Log Yard-looking northeast



Nov. 2008_Aberdeen Log Yard-log pile



Nov. 2008_Aberdeen Log Yard-bioswale with absorbent booms



Nov. 2008_Aberdeen Log Yard-shoreline



Nov. 2008_Aberdeen Log Yard-shoreline looking south



Nov. 2008_Aberdeen Log Yard-shoreline



Nov. 2008_Aberdeen Log Yard-log pile



Nov. 2008_Aberdeen Log Yard-former structural beams



Nov. 2008_Aberdeen Log Yard-road



Nov. 2008_Aberdeen Log Yard-concrete wall



Nov. 2008_Aberdeen Log Yard



Nov. 2008_Aberdeen Log Yard-entrance adjacent to Aberdeen WWTP



Nov. 2008_Anderson & Middleton property looking east



Nov. 2008_Anderson & Middleton property



Nov. 2008_Anderson & Middleton property drainage ditch looking south



Nov. 2008_Anderson & Middleton property



Nov. 2008_Anderson & Middleton property shoreline



Nov. 2008_Anderson & Middleton property shoreline looking east



Nov. 2008_Anderson & Middleton property drainage ditch



Nov. 2008_Anderson & Middleton property shoreline



Nov. 2008_Anderson & Middleton property looking east



Nov. 2008_Anderson & Middleton property



Nov. 2008_Anderson & Middleton shoreline



Nov. 2008_Anderson & Middleton property excavation piles



Nov. 2008_Anderson & Middleton property excavation piles



Nov. 2008_Anderson & Middleton property



Nov. 2008_Anderson & Middleton property



Nov. 2008_Anderson & Middleton property



Nov. 2008_Anderson & Middleton property

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ATTACHMENT F

Standard Impacts and Mitigation Measures

Appendix E. Standard Hazardous Materials Impacts & Mitigation Measures

Impact Type	Impact or Effect	Mitigation Measure
Direct Impacts		
Construction: General	<p>Construction delays and increased costs often result from unexpected encounters of contamination. Delays related to stockpiling contaminated soil or pumping and containing contaminated water, coordination of sample collection, waiting for laboratory results, identifying permitted disposal facility, completing disposal facility's waste profile sheet and coordinating haul and disposal. Increased costs results from paying contractor during delay, paying a qualified professional to collect and analyze samples, laboratory charges, and disposal fees.</p> <p>Associated Permits and Specifications:</p> <ul style="list-style-type: none"> ▪ Clearing and Grading Permit ▪ NPDES Permit ▪ Hydraulic Project Approval Permit ▪ Standard Specifications <ul style="list-style-type: none"> ○ Section 1-07.4: Health Hazards ○ Section 1-07.5: Environmental Regulations ○ Section 1-07.5(1): General (Environmental Regulations) ○ Section 1-07.5(2): State Department of Fish and Wildlife ○ Section 1-07.5(3): State Department of Ecology ○ Section 1-07.5(4): Air Quality ○ Section 1-07.15: Temporary Water Pollution/Erosion Control ○ Section 1-07.15(1): Spill Prevention, Control and Countermeasures Plans ○ Section 6-07.3(2)A: Bridge Cleaning ○ Section 6-07.3(2)B: Containment of Abrasive Blasting ○ Section 6-07.3(2)C: Testing and Disposal of Containment Waste ○ Section 6-07.3(2)D: Drip Tarps ○ Section 8-01: Erosion Control and Water Pollution Control ○ Section 9-14.5(3): Clear Plastic Sheeting ▪ General Special Provisions (GSP) <ul style="list-style-type: none"> ○ 02033.FR2: Removal and Disposal of Hazardous Materials, August 1, 2005 ○ 0103A.GR8: Treatment of pH for Concrete Work, April 3, 2006 ○ Asbestos Handling and Disposal, September 30, 1996 ○ Prevention of Pollution and Preservation of Public Natural Resources ○ FR07012: Lead Health Protection Program (March 13, 1995) 	<p>Hazardous materials investigations that identify known or suspected contaminated sites can allow WSDOT staff to determine how to avoid or minimize potential construction impacts. Hazardous material investigations are conducted early in the environmental planning and design phase, ideally prior to acquisition. Investigations are conducted at graduating levels of detail in coordination with the Hazardous Materials and Solid Waste Program based on site and project specific needs. Investigation reports allow WSDOT staff to make informed decisions regarding planning needs, acquisition, design and/or construction options. Even if contamination is not identified prior to construction, hazardous material investigations are still an important resource during construction when contamination is unexpectedly encountered. The reports often indicate the type and severity of contaminants in the area. These environmental reports are maintained in the Regional Environmental Office's project file. Hazardous materials investigations and environmental reports include, but are not limited to:</p> <ul style="list-style-type: none"> ▪ Hazardous Material Discipline Reports (Historical and Record investigation for project corridors) ▪ Site Reconnaissance ▪ Phase I Environmental Site Assessment (Historical and Record Investigation) ▪ Phase II Environmental Site Assessment (Sampling) ▪ Phase III Environmental Site Assessment (also known as Remedial Investigation / Feasibility Study. This assesses cleanup options and costs) ▪ UST Closure Reports <p>WSDOT Guidance Manuals provides policy and procedures for hazardous materials encountered during construction. The <i>Environmental Procedures Manual</i> (31-11), Chapter 620.08 provides policy and procedures for identifying, handling and disposing of hazardous materials encountered during construction. The <i>Construction Manual</i> (M41-01), Section 1-2.2K provides WSDOT staff guidance and procedures to ensure environmental compliance during construction. These publications are available at http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm.</p> <p>Alternative construction design or techniques are used to avoid contaminated areas or minimize quantity of material generated. For example, different footing designs can lessen the area and depth of excavation and/or or the amount of dewatering needed.</p> <p>WSDOT Standard Specifications require the contractor to comply with Environmental Regulations and current rules of resource agencies in Section 1-07.5. Thus the contractor is required to prevent spreading or contributing to existing contamination and appropriately dispose waste material in a manner consistent with Federal, State and Local regulations. Section 1-07.04(2) of the Specification requires the Contractor to take precautions and perform any necessary work to provide and maintain a safe and healthful worksite in accordance with applicable laws. Thus the Contractor is required to abide by Labor & Industry's Occupational safety and health requirements. Section 1-07.15 and 8.01 requires the contractor to prepare and implement a project specific Temporary Erosion and Sediment Control Plan, which addresses prevention of wind dispersion of soil and water pollution during construction. Section 1-07.15(1) requires the contractor to prepare and implement a Spill Prevention Control and Countermeasures Plan, which addresses both spills from hazardous materials use (including petroleum) and specifying measures to prevent release or further spreading of materials in areas with identified preexisting contamination.</p> <p>General Special Provisions (GSPs) can be added to the construction contract when site-specific circumstances warrant special measures that can be contractually enforced. GPSs can inform the Contractor of known or potential contaminants and the investigative reports that are available for the Contractor's review. Once informed, the Contractor is responsible to be prepared to safely and responsibly manage contamination in accordance with all Federal, State and Local laws. GSPs can include specific requirements related to containment, removal and disposal of hazardous materials, USTs, contaminated soil and water. Specific GSP requirements can influence early contractor compliance to manage contamination in a cost effective manner. GPSs can also establish certification requirements of personnel, notification procedures and documentation requirements.</p> <p>Proper planning and training of WSDOT staff should be conducted for projects likely to encounter contamination. Planning should address the project specific needs (i.e., limited space constraints preventing ability to stockpile contaminated soil) to identify specific techniques and training requirements needed to effectively manage the hazardous materials generated during construction. Training of key construction staff and project inspectors should address recognizing hazardous materials and understand appropriate protocols for safely isolating, containing, characterizing, properly disposing of hazardous materials and securing disposal documentation.</p>

Appendix E. Standard Hazardous Materials Impacts & Mitigation Measures

Impact Type	Impact or Effect	Mitigation Measure
		<p>WSDOT Hazardous Materials and Solid Waste Program staff is available to provide construction support by giving guidance and recommendations for general hazardous material management procedures. When in-house staff resources are available, staff can perform the services listed under “WSDOT On-call environmental consultants.” When resources are not available, staff can direct and manage environmental consultants in coordination with WSDOT project and/or regional offices to efficiently conduct the work necessary with the least amount of impact to construction schedule and budget as possible.</p> <p>WSDOT On-call environmental consultants are available to provide hazardous material management support. Services include, but are not limited to 1) contaminant screening to identify segregate potentially contaminated media, sampling, laboratory results QA/QC and interpretation, recommendations for proper management, reuse, or disposal options, preparation of waste profile forms, assisting with waste manifesting and tracking. For projects that expect to encounter contaminants, it is recommended that a contract with an environmental consultant be established prior to construction starting.</p>
<p>-- Demolition</p>	<p>Demolitions may require special handling and disposal certain equipment, materials or structures which may result in increased costs and schedule delays. Special demolition considerations can include:</p> <ul style="list-style-type: none"> a) Asbestos-containing materials (ACMs) are likely to exist in buildings constructed prior to 1985 b) Lead-based paint (LBP) is likely to exist on structures built before 1978 and typically found on steel bridge structures c) Underground storage tanks (USTs) and associated piping d) Aboveground storage tanks (ASTs) and other containers (such as drums, cans & bottles) that store hazardous materials e) Universal waste, such as spent lead-acid batteries, mercury thermostats, or fluorescent light ballasts with PCBs. f) Creosote- or arsenic [aka chromated copper arsenate (CCA)]-treated wood, such as railroad ties, telephone poles, and marine pilings g) Well decommissioning, including groundwater monitoring, extraction, treatment, and supply wells <p>Associated Regulations:</p> <ul style="list-style-type: none"> ▪ Asbestos related: <ul style="list-style-type: none"> ○ National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Parts 61 to 71) ○ National Emission Standard for Asbestos (40 CFR Part 61, Subpart M) ○ General Occupational Health Standards: Asbestos (RCW 49.17, WAC 296-62 Part I-1) ○ Asbestos Removal and Encapsulation (RCW49.17 , WAC296-65) ▪ Lead-based paint related: <ul style="list-style-type: none"> ○ Safety Standards for Construction Work: Lead (RCW 49.17, WAC 296-155-17603 , WAC 296-62-07521) ○ WSDOT Standard Specification 6.07.3 ○ Accreditation of lead-based paint training programs and the certification of firms and individuals conducting lead-based paint activities (RCW 70.103, WAC365-230) ▪ Underground storage tank regulations (RCW 90.76, WAC 173-360-375) <ul style="list-style-type: none"> ○ Model Toxics Control Act (RCW 70.105D, WAC 173-340-450) ▪ Health and safety (ACMs, LBP and Worker Safety) related: <ul style="list-style-type: none"> ○ Washington Industrial Safety and Health Act (WISHA) (RCW 49.17. WAC 296-350) ○ General Occupational Health Standards (WAC 296-62) ○ Hazardous Waste Operations and Treatment, Storage, and Disposal Facilities (WAC 296-62 Part P) ○ Safety Standards for Construction Work (WAC 296-155) ○ Asbestos Removal and Encapsulation (WAC296-65) ▪ Resource Conservation and Recovery Act (RCRA) (42 USC Sec. 6901, et seq) ▪ Dangerous Waste Regulations (RCW 70.105, WAC 173-303) <ul style="list-style-type: none"> ○ Universal Waste Rule (RCW 70.105, WAC 173-302-573) ▪ Solid (Nondangerous) Waste Disposal (RCW 70.95, WAC 173-304) ▪ Well Decommissioning (RCW 18.104, WAC 173-160-381) 	<p>Prior to demolition work, hazardous material surveys with follow-up sampling (where required) should be conducted to identify equipment, materials and structures that require special handling or disposal. A comprehensive building survey and sampling program helps limit the amount of material required for special removal and disposal. In addition, surveys help avoid the potential for environmental contamination, construction delays and promote worker health and safety. It is recommended that any of demolition items (see list under impacts) that may be potential contaminant sources be clearly identified (locations and estimated quantities), then appropriately handled, segregated and removed for disposal as required by applicable regulations.</p> <p>ACM poses risks to public and worker safety when disturbed for maintenance, renovation and demolition of structures. Asbestos is often found in commercial and residential buildings constructed prior to 1985. A pre-demolition building survey, conducted by an AHERA certified building inspector would verify the presence of ACM and provide locations and estimated quantities requiring special handling and disposal in a report. If ACM is identified, mitigation would consist of removing these materials in compliance with regulations prior to building demolition and disposal in a legally permitted facility (i.e., lined landfill). Regulations include specific notification, work practice, packaging, labeling, and disposal requirements.</p> <p>LBP poses risks to environmental health and worker safety when disturbed for maintenance, renovation and demolition of structures including bridges and buildings. Testing and documentation should be completed as early in the project design phase as possible to determine if special procedures and disposal that will result in increased costs will be required for existing LBP. LBP testing, abatement, or related activities in Washington are required to be licensed by the Lead-Based Paint Program located within the Department of Community, Trade and Economic Development (CTED). Performing such activities without LBP certification from CTED is a violation of WAC 365-230.</p> <p>For removal of LBP on bridge structures, the WSDOT Standard Specification 6.07.3 requires the contractor to protect the surrounding environment from all debris or damage resulting from the Contractor’s operation. The Contractor must design, construct, and maintain containment systems to contain and recover all debris generated during LBP removal. The Contractor is required to test the debris using the Toxicity Characteristics Leaching Procedure (TCLP), EPA Methods 1311 and 6010 to designate the waste as Dangerous Waste, Extremely Hazardous or Solid Waste to determine the appropriate disposal facility permitted to accept the waste. The Contractor is required to provide the Project Engineer waste documentation or bill of lading listing the waste material shipped from the construction site to the waste disposal site. One copy of the shipment list shall show the signature of the Engineer and shall have the waste sites operator’s confirmation for receipt of the waste.</p> <p>Lead pipe or lead-painted metal can be recycled as scrap metal in accordance with WAC 173-303-071(3)(ff). If the material is not recycled, it must be evaluated to determine whether it requires management and disposal as a dangerous waste (per WAC 173-303).</p> <p>For Lead exposure in general, WAC 296-62-07521 indicates that the contractor is responsible to ensure that workers are not be exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50µg/m³) averaged over an 8-hour period. WAC 296-62 also outlines the personal protective equipment that shall be given to employees as well as medical surveillance procedures that are to be implemented for exposed personnel.</p> <p>UST and AST mitigation information is provided in the following section below.</p> <p>Universal Waste as defined in WAC 173-303, includes certain batteries, lamps, thermostats and mercury-containing equipment that require special handling and disposal. If these types of Universal Waste is incorrectly handled and discarded they can pose a risk to worker and public safety. A pre-demolition building survey should be conducted prior to demolition to identify these regulated materials and ensure they are properly handled and disposed in accordance with WAC 173-303-573. Additional information is available in the below listed Ecology Publications which can be accessed by using the Publication number at: http://www.ecy.wa.gov/pubs.shtm</p>

Appendix E. Standard Hazardous Materials Impacts & Mitigation Measures

Impact Type	Impact or Effect	Mitigation Measure
		<ul style="list-style-type: none"> ▪ The Universal Waste Rule, Publication 98-407 ▪ The Universal Waste Rule for Batteries, Publication 98-407a ▪ The Universal Waste Rule for Mercury-containing Equipment and Thermostats, Publication 98-407b <ul style="list-style-type: none"> • The Universal Waste Rule for Lamps, Publication 98-407c <p>Creosote or arsenic treated wood may be reused even if the treated wood designates as a hazardous/dangerous waste per a Toxics Characteristics Leaching Procedure (TCLP) test (See WAC 173-303). However, it's reuse must be utilized for its "intended end use" per 40 CFR 261.4(b)(9). This means, for example, that treated wood can not be chipped or shredded for mulch and used in landscaping applications. Ecology encourages reuse of treated wood as a preferred management alternative. <u>Ecology publication 03-04-038</u> clarifies that "If the wood is reused, it is not regulated as a dangerous waste provided that the reuse is consistent with the intended end use of the treated wood. Examples of reuse include: fence posts, retaining walls, landscaping, decks, and general construction."</p> <p>If reuse isn't feasible, disposal facilities will most likely require sampling (TCLP test for Arsenic) of treated wood to determine if it designates as a Dangerous Waste (per WAC 173-303). If not a Dangerous Waste, then the treated wood can be managed as a solid waste (per WAC 173-304) and accepted into a Subtitle D landfill or a Waste-to-Energy incinerator. If the treated wood is designated as a Hazardous/Dangerous Waste, then disposal at a higher cost is required at a Subtitle C facility (i.e., Waste Management's facility in Arlington, Oregon).</p> <p>Well decommissioning is required when wells may be impacted by a project or are located on WSDOT Right-of-Way and are unusable, abandoned, or use has been permanently discontinued. WSDOT construction projects should identify the locations of wells early in the design phase to determine if project design may impact a well and require well relocation. Location of most wells can be identified on-line through Ecology's Well Log Viewer at http://apps.ecy.wa.gov/wellog/index.asp . A licensed well driller is required to install and decommission wells. Licensed drillers complete the required Notice of Intent Forms (application) which allows Ecology to inspect a well as necessary to make sure it is completed or decommissioned according to state regulations. WSDOT has a State General Administration Contract (#11403) for Geotechnical Test Boring Services which has a list vendors licensed to perform well drilling and decommissioning work. The contract can be accessed at: https://fortress.wa.gov/ga/inet/pca/pcacont.htm .</p>
<p>-- USTs</p>	<p>Construction delays and increased costs often result from unexpected encounters of Underground Storage Tanks (USTs). USTs are often decommissioned (removed) prior to construction during property demolition. Whether USTs are decommissioned prior to or during construction, associated contaminated soil and/or groundwater can result in additional increase to the project schedule and costs. Delays and costs are similar to the impacts detailed above for "Construction: General. "</p> <p>Associated Regulations:</p> <ul style="list-style-type: none"> ▪ Resource Conservation and Recovery Act (RCRA) (42 USC Sec. 6901, et seq) ▪ Underground Storage Tank Regulations (RCW 90.76, WAC 173-360-375) <ul style="list-style-type: none"> ○ Model Toxics Control Act (RCW 70.105D, WAC 173-340-450) <p><i>Note: Read a summary these regulations in Appendix A: Applicable Laws and Regulations.</i></p>	<p>Hazardous materials investigations (as described above) can identify documented Leaking Underground Storage Tanks (LUSTs) and active regulated USTs. In addition to the above listed investigations, USTs can also be identified through Ecology's Facility Site Atlas (internet mapping system), ground penetrating radar and old WSDOT ROW maps. A majority of WSDOT Project Offices prefer to remove tanks, associated piping and contaminated soil prior to project construction.</p> <p>USTs pose an explosion hazard when vapors trapped within the tank reach explosive limits and detonate when ignited by a spark or some other incendiary device like a cigarette. USTs may be filled with product and has the potential of creating a spill if the tank is ruptured. USTs in residential areas are likely to contain heating oil, whereas tanks used in commercial/industrial fueling will typically contain automobile fuel and other petroleum products. USTs in the automobile or machine repair business will typically contain petroleum, waste oil, hydraulic and transmission fluids where commonly associated contaminants include petroleum, heavy oil, metals, PCBs, and solvents. USTs used in the dry cleaning industry typically contain chlorinated solvents where contaminants include perchloroethane (PCE), Tetrachloroethene (TCE) and Vinyl Chloride.</p> <p>Ecology is required to be notified within 24 hours after the discovery of leak or release from a UST. UST removal requires a certified UST site assessor, a licensed tank decommissioning provider, HAZWOPER safety training, submittal of a Notice of Intent form (application) 30 days prior to of tank removal. When no contamination is identified, a closure report is required 30 days after removal. When contamination is identified, a closure report is required within 90 days, which allows time for characterization, removal and disposal of contaminated soil. Some counties may also require a local permit through the fire department.</p> <p>Decommissioning costs typically include excavation of the tank, sampling of soils within the excavation and stockpiled soils requiring disposal, disposal of contaminated soil, import of clean backfill material (if needed) and completion of required reporting documents. If a UST is removed prior to construction, the estimated cost of a 1,000 to 5,000 gallon tank is about \$3,000 to \$6,000. Field activities for tank removal can take 1 to 3 days, with no associated contaminated soil. Additional sampling and disposal costs increase significantly if contaminated soil and groundwater exists.</p>
<p>-- Contaminated Soil</p>	<p>Construction delays and increased costs often result from unexpected encounters of contamination. Delays related to stockpiling contaminated soil, coordination of sample collection, waiting for laboratory results, identifying permitted disposal facility, completing disposal facility's waste profile sheet and coordinating haul and disposal. Increased costs results from paying contractor during delay, paying a qualified professional to collect and analyze samples, laboratory charges, and expensive</p>	<p>Hazardous materials investigations (as described above) conducted early in the project development phase can identify known and potentially contaminated sites within a project corridor. Mitigation of contaminated soil would include pre-construction planning to define the areas where contaminated soil may be encountered, designing road cuts to minimize the quantity of contaminated soil that must be managed, and implementing practical cleanup alternatives for contaminated soil. Mitigation includes incorporating</p>

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Impact Type	Impact or Effect	Mitigation Measure
	<p>disposal fees.</p> <p>The risk of encountering contaminated soil is higher in areas that have a long and varied history of industrial and commercial land use, and especially near properties with Underground Storage Tanks.</p> <p>Associated Regulations:</p> <ul style="list-style-type: none"> ▪ Resource Conservation and Recovery Act (RCRA) (42 USC Sec. 6901, et seq) ▪ Dangerous Waste Regulations (RCW 70.105, WAC 173-303) ▪ Model Toxics Control Act (RCW 70.105D, WAC 173-340-450) ▪ Solid (Non-Dangerous) Waste Disposal (RCW 70.95, WAC 173-304) ▪ Health & Safety (ACMs, LBP and Worker Safety) related <ul style="list-style-type: none"> ○ Washington Industrial Safety and Health Act (WISHA) (RCW 49.17, WAC 296-350) ○ General Occupational Health Standards (WAC 296-62) ○ Hazardous Waste Operations and Treatment, Storage, and Disposal Facilities (WAC 296-62 Part P) ○ Safety Standards for Construction Work (WAC 296-155) 	<p>project specific General Special Provisions which makes the contractor responsible for being prepared to appropriately handle contaminated material with minimal delays. See a full account of pre-mitigation measures under “General Construction” above.</p> <p>Soil Management Plans are developed when significant amounts of known contaminated soil required excavation. Soil Management Plans (SMP) establish specific handling and disposal procedures and chains of responsibility to effectively manage contaminated soil as it is encountered in order to minimize schedule delays and excessive costs. A comprehensive SMP would address field screening methods, notification requirements, soil stockpile management, and sampling and disposal requirements. Many times space on construction sites are constrained and requires quick decisions regarding stockpiling and disposal to avoid delays and excessive costs. SMPs prepared prior to construction ensure soil management and disposal issues are addressed in a timely manner, avoids schedule delays and minimizes additional construction costs.</p> <p>For petroleum contaminated soil, under the Solid Waste Management Act and MTCA, the highest priority is the preference to recycle contaminated soils. Ecology’s <i>Guidance for Remediation of Petroleum Contaminated Soils</i>¹ (Ecology, 1995) is a resource for evaluating management options. Petroleum contaminated soil (PCS) is sampled and the results are evaluated against Ecology’s MTCA Cleanup levels, as discussed in WAC 173-303. There are different cleanup levels, but in general the straight forward approach is to compare sample results against MTCA Method A cleanup levels, which are assumed to be the most protective of human health and the environment. The Method A approach would generally result in greater amounts of soil needing remediation, however it is appropriate in areas where PCS is located in small localized areas or needs to be removed and disposed of quickly.</p> <p>In limited cases, Ecology’s guidance allows treated or untreated soils that contain petroleum contamination above MTCA cleanup standards to be used as sub-grade material in roads, so long as the material is structurally suitable.</p> <p>PCS in excess of landfill requirements and/or containing petroleum hydrocarbons above MTCA cleanup levels would be transported to the nearest thermal treatment facility for treatment and disposal. The final selection of the offsite disposal method is for PCS ultimately depends on the volume, moisture content, and grain size of the soil.</p> <p>If soil is contaminated by other substances, (i.e., metals, chlorinated solvents, PCBs, or substances are unknown) then soil is sampled and compared against MCTA cleanup levels and possibly Dangerous Waste concentrations per WAC 173-303-090. Soils contaminated above landfill requirements and/or above MTCA cleanup levels are transported to the nearest legally permitted disposal facility.</p> <p>If soil has detectable concentrations of contaminants, but are below current MCTA cleanup levels, soils may be re-used elsewhere onsite (i.e., where fill is needed). However, the re-use of low levels of contaminated soil could expose WSDOT to potential future cleanup liability should Ecology lower the cleanup values in the future. If such contaminated soil is reused it should be placed in an area that is not likely to be disturbed and would not come in contact with groundwater or storm water.</p> <p>For all unexpected encounters of potentially contaminated soil, WSDOT provides guidance for general soil management procedures which gives direction for identifying, handling, disposing and documentation of contamination encountered during construction. This guidance is available in the WSDOT Environmental Procedures Manual, Chapter 620.08 and can be accessed at: http://www.wsdot.wa.gov/environment/.</p> <p>Disposal of waste per Standard Specification 2-03.3(7), the Contractor is required to provide the WSDOT Project Engineer the location of disposal sites and copies of required permits and approvals before any waste is hauled off the project. Project specific General Special Provisions added to the construction contract require the Contractor to provide a copy of the shipping manifest or bill of lading indicating the amount of material hauled to disposal, and bearing the disposal site operator’s confirmation for receipt of the material. It is required that the contractor dispose waste in accordance with all federal, state, and local regulations.</p>
<p>-- Contaminated Water</p>	<p>Construction delays and increased costs often result from unexpected encounters of contaminated water. The impacts and the process are essentially the same as those listed under the category for Contaminated Soil above. Of course, rather than stockpiling, de-watering would require pumping into 55 gallon drums or baker tanks (depending on the quantity) prior to sampling and disposal.</p> <p>Associated Regulations:</p> <ul style="list-style-type: none"> ▪ These regulations would be the same as listed under contaminated soil above, in addition to: ▪ Clean Water Act (33 USC 26) ▪ Water Pollution Control Act (RCW 90.48, WAC 173.201A, 216, and 2210) 	<p>Modifying contaminant migration pathways. The potential to modify contaminant migration pathways should be considered and avoided through engineering controls.</p> <p>Contaminated storm water could potentially run off from stockpiles and open excavation areas into storm water drains and local surface water.</p>
<p>-- Spills</p>	<p>Accidental release of a hazardous substance may impact sensitive areas. For example, fuels and oils needed for heavy</p>	<p>Prepare spill pollution prevention plan in accordance with WSDOT’s Standard Specification #1-07.15(1). The plan would address procedures, equipment, and material used in the event of a spill of contaminated soil, petroleum products, contaminated water, or</p>

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Impact Type	Impact or Effect	Mitigation Measure
	<p>equipment operation and maintenance could be spilled. This is a hazard common to all construction projects, but is particularly acute for construction with storm-water runoff into sensitive receptors such as water bodies. The cleanup and disposal of hazardous materials could add additional time and costs to construction operations. Large spills of hazardous materials during construction could also require emergency response agency intervention.</p> <p>Associated Regulations:</p> <ul style="list-style-type: none"> ▪ Oil Pollution Prevention Liability and Compensation (USC 40, Subchapter I) ▪ Oil Pollution Prevention (40 CFR 112) ▪ Oil and Hazardous Substance Spill Prevention and Response (RCW 90.56) 	<p>other hazardous substances during construction. The plan would also specify procedures for notification in the event of emergencies, inspection schedules for storage of hazardous materials, the identification of migration pathways, and the provision of secondary containment and security for hazardous material storage areas.</p> <p>Other measures may include the following:</p> <ul style="list-style-type: none"> • When construction work occurs within 300 feet of a stream, conducting site grading and stabilization. • Where construction must occur within stream channels, operating “in the dry” (temporarily diverting stream flows around the work site, where practicable, to prevent turbidity). • Limiting construction disturbances to the minimum area needed, the shortest duration, and an appropriate distance away from water bodies to the fullest extent practicable. Observing seasonal work windows in accordance with regulatory requirements for sensitive fish and wildlife periods. • Limiting the use, transfer, and storage of hazardous materials in sensitive areas. Establishing an SPCC plan for construction activities and detailing the procedures to be followed in the event of a spill to prevent or minimize effects on groundwater.
<p>-- Worker Safety and Public Health</p>	<p>Improper management of hazardous substances could result in worker and public exposures.</p> <p>Associated Regulations:</p> <p>Occupational Safety and Health Act (OSHA). OSHA establishes requirements for site safety procedures, worker training, and worker safety and health standards for employees engaged in work related to hazardous materials. All work relating to the handling of, and potential exposure to, hazardous substances by workers while conducting activities associated with the project must be in compliance with the relevant sections of OSHA.</p> <p>Washington Industrial Safety and Health Act (WISHA). RCW 49-17 implements the Occupational Health Standards WAC 296-62. RCW 49-17 also implements Safety Standards for Construction Work WAC 296-155, which contains the Safety Standards for Asbestos and Encapsulation WAC 296-65. These safety requirements apply to all construction activities and the regulations are enforced by the Washington State Department of Labor and Industries (L&I).</p> <p>The standards include rules covering operations at known hazardous waste sites and initial investigations conducted at sites before the presence or absence of hazardous substances has been determined. Also included are rules on site assessment and control, training, protective equipment, and emergency response. WAC 296-155 requires employers to inform their workers of the potentially hazardous conditions of the workplace. When WSDOT informs the Contractor of these conditions, the Contractor is required to train the workers to recognize hazardous conditions in the workplace and train them how to respond to and report such conditions. It is important the WSDOT inform the Contractor through the Contract and/or Special Provisions so that the Contractor is aware and responsible to prepare his employees to appropriately and safely handle encounters of hazardous materials with minimal delays.</p> <p>The safety requirements also provide specific procedures for work with asbestos-containing materials (ACM) and lead-based paint (LBP). L&I regulates asbestos and LBP removal and encapsulation (WAC296-62 Part I-1 and 296-155). All contractors must be certified in asbestos and LBP removal, and their supervisors and laborers must be trained. For asbestos, L&I and the Puget Sound Clean Air Agency (PSCAA) must be notified of any asbestos removal. Fees also must be paid, calculated on the linear or square amount of material removed. ACM and LBP must be disposed of in a specially permitted landfill. This includes disposable clothing, respirator filters, and equipment, as well as the ACM and LBP itself. The use of landfills results in an irreversible and irretrievable commitment of landfill space. Liability for asbestos and LBP disposal remains with WSDOT indefinitely.</p> <p>Hazardous Waste Operations and Treatment, Storage, and Disposal Facilities (WAC 296-62 Part P, RCW 49-17). WAC 296-62 Part P includes all of the required procedures for work involving hazardous materials. Due to the possible impacts indicated above for specific sites, there are sections of WAC 296-62 that are of key importance for this project. WAC 296-62 Part P also details the requirements for handling drums and containers. Unlabeled drums and containers must be considered to contain hazardous waste and handled accordingly until the contents are positively identified and labeled. Drums and containers that cannot be moved without rupture, leakage, or spillage must be emptied into a sound container. Personal protective equipment selection protocol is outlined in WAC 296-62-30605. The training requirements for site personnel are included within multiple sections of Part P depending upon the designation of the contamination on site.</p> <p>Safety Standards for Construction Work: Lead (WAC 296-155). WAC 296-166 indicates that workers may not be exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50µg/m3) averaged over an 8-hour period. WAC 296-166 also outlines the personal protective equipment that shall be given to employees as well as medical surveillance procedures that are to be implemented for exposed personnel.</p> <p>General Occupational Health Standards – Asbestos (WAC 296-62 Part I-1). WAC 296-62 requires that prior to commencement of work an owner must conduct a good faith inspection to determine whether materials to be worked on or removed contain asbestos. An accredited inspector must conduct the good faith inspection. WAC 296-62 Part I-1 requires that an employer shall</p>	<p>Prepare a comprehensive contingency and hazardous substance management plan and a worker health and safety plan to minimize the effects of identified and unanticipated hazardous materials from contaminating environmental media. The plans would address proper employee training, the use of personal protection equipment, contingency planning and secondary containment for hazardous material releases.</p> <p>A comprehensive contingency and hazardous substance management plan and a worker health and safety plan would be prepared to minimize the effects of identified and unanticipated hazardous materials from contaminated environmental media. The plans would address proper employee training, the use of protective equipment, contingency planning, and secondary containment for hazardous material releases. The appropriate level of personal protective equipment and other requirements would be determined prior to the start of work and in accordance with the WAC 296 and 29 CFR, parts 1910 and 1926. Material safety data sheets (MSDSs) for the suspected contaminants contained in the environmental media would be issued to workers. The need for air monitoring during excavation and soil removal activities also would be assessed.</p> <p>In addition, public access to the project construction zone, contaminated environmental media, and/or hazardous substances would be restricted. Contaminated media moved offsite would be shipped in accordance with USDOT and DOE requirements to reduce the potential for releases. These measures would minimize potential public health concerns.</p>

Appendix E. Standard Hazardous Materials Impacts & Mitigation Measures

Impact Type	Impact or Effect	Mitigation Measure
	ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter (0.1f/cc) of air as an eight-hour time-weighted average. Besides the permissible exposure limit, the regulation also requires appropriate respiratory protection as well as exposure assessment and monitoring.	
Indirect Impacts		
Acquisition	<p>WSDOT can inherit cleanup liability when 1) acquiring a contaminated site, 2) construction activities spread or causes contamination to become worse, or 3) final project construction prevents or obstructs a potentially liable party from conducting remedial activities.</p> <p>Cleanup liability can become an expensive immediate or long-term cost. WSDOT would be liable for the removal of any stored hazardous materials remaining onsite at the time of acquisition, where the agency would incur the costs for characterization and disposal. In addition to site cleanup, WSDOT could become liable for long-term monitoring.</p> <p>Associated Laws and Regulations (For electronic purposes, link this title to Appendix B: Applicable Regulations)</p> <ul style="list-style-type: none"> ▪ Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC 103) ▪ All Appropriate Inquiries (AAI) (40 CFR Part 312) ▪ Model Toxics Control Act (MTCA) (RCW 70.105D, WAC 173-340) 	<p>To avoid cleanup liability, the preference is to avoid acquiring or excavating in contaminated sites. However, there are options <i>prior to acquisition</i> to reduce liability risks when no feasible alternative or design option is available and WSDOT is forced to acquire and/or excavate contaminated property in order to complete a construction project.</p> <p>To manage potential cleanup liability risks, when necessary, WSDOT performs all appropriate inquiry <u>prior to</u> acquisition and construction of potentially contaminated property. For WSDOT projects, "All appropriate inquiry" includes a site reconnaissance, and/or varied levels of Phase I and II Environmental Site Assessments generally following ASTM standards 1527, 1528 and 1903. The type and level of environmental investigation is considered on a case-by-case basis in coordination with the WSDOT Hazardous Materials and Solid Waste Program.</p> <p>When USTs or contamination are identified prior to property acquisition, WSDOT should assign fair market property values that consider remediation costs and potential long-term (i.e., on-going monitoring and site management) cleanup costs. To limit potential liability risks prior to acquisition WSDOT uses performance bonds, indemnifications, and other tools to minimize agency costs and cleanup liability.</p> <p><i>For sites that may be substantially contaminated</i>, WSDOT must clearly demonstrate that "All Appropriate Inquiry" (per 40 CFR Part 312) had been undertaken to discover, investigate, and characterize the hazardous substance and, once discovered, that due care was exercised to prevent the release or spread of contamination. Demonstrating All Appropriate Inquiry per EPA's final ruling establishes WSDOT met specific regulatory requirements for conducting all appropriate inquiries into the previous ownership, uses, and environmental conditions of a property. This level of investigation should only be considered when WSDOT decides to acquire property that may be substantially contaminated and the responsible party is not performing cleanup or under an Agreed Order. Decisions regarding site cleanup should be made in coordination with the Hazardous Materials Program in order to ensure that the cleanup remedy will be "substantially equivalent of an Ecology conducted cleanup" to secure WSDOT's ability to recover cleanup costs from solvent companies who are potentially liable.</p> <p>Additional guidance regarding Liability and Highway Project Development is presented in WSDOT <i>Environmental Procedures Manual</i> (31-11), April 2007, Section 447.02 (5). Appraisal and acquisition guidance is presented in WSDOT's <i>Right-of-Way Manual</i> (M26-01), May 2006, Sections 4-4.4 D & E and 6-5.14. These publications are available at: http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm.</p>

ⁱ Ecology's *Guidance for Remediation of Petroleum Contaminated Soils* (1995) is being revised. In the interim, in addition to the 1995 guidance, Ecology advises referring to Table 830-1 in WAC 173-340-800 for petroleum testing parameters and WAC 173-350 for reuse of petroleum contaminated soil.