BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, v. NORTHWEST NATURAL GAS COMPANY, Respondent.	DOCKET UG-_____

NORTHWEST NATURAL GAS COMPANY

Direct Testimony of Robert J. Wyatt

ENVIROMENTAL REMEDIATION

Exh. RJW-1CT

REDACTED VERSION

December 31, 2018

DIRECT TESTIMONY OF ROBERT J. WYATT

Table of Contents

I. INTRODUCTION AND SUMMARY

Q. Please state your name and position with NW Natural Gas Company ("NW Natural" or "the Company").

A. My name is Robert J. Wyatt. I am the Director of NW Natural's Legacy Environmental Program. I manage all aspects of environmental remediation and compliance at NW Natural's former manufactured gas plant (MGP) sites.

Q. Please describe your educational and professional background.

A. I earned a Bachelor of Science degree in Geology in 1984 from Lafayette College in Easton, Pennsylvania. I studied hydrogeology at Temple University in Philadelphia, Pennsylvania from 1984 to 1986 and conducted additional graduate studies on coastal habitats at East Carolina University in North Carolina. I also have a Master of Science degree in Environmental Science from Montana State University. I am a Licensed Geologist in Oregon, Washington, and other states. In the mid-1980s, I began working as an environmental consultant focused primarily on Superfund and Resource Conservation and Recovery Act (RCRA) sites. I became Vice President of Front Royal Environmental Services, Inc. in 1989 and served as Senior Scientist and Principal in Charge for a number of large-scale projects. I began working for NW Natural in 2000.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe and demonstrate the prudency of the actions NW Natural has taken to comply with the Environmental Protection Agency (EPA) and Oregon Department of Environmental Quality (DEQ) mandates to investigate and remediate environmental impacts related to the Company's historical operation of its MGPs.

Q. Please summarize your testimony.

A. In my testimony, I:

- Provide background on the sites where the two MGPs operated by NW Natural's predecessor in interest were located and the contamination that resulted from their operation;
- Describe the sites that are subject to environmental remediation, a.k.a. "clean-up," activities;
- Describe the statutory framework that governs environmental remediation and the specific state and federal agency actions taken at the sites pursuant to this statutory framework;
- Explain the process of environmental remediation;
- Describe the status of environmental remediation activities at the sites;
- Explain the costs incurred to date by NW Natural in its remediation efforts and discuss the uncertainties surrounding future costs; and
- Describe the actions NW Natural has taken to control the costs associated with environmental remediation.

II. BACKGROUND

Q. Please describe the sources of contamination that led to the environmental remediation efforts you discuss in your testimony.

A. Natural gas did not come to Western Oregon and Southwest Washington until 1956. Before that, NW Natural's predecessor, Portland Gas & Coke (PG&C), manufactured

gas primarily at two MGPs.[1] The Portland Gas Manufacturing (PGM) facility, which was located in downtown Portland, Oregon operated from 1860 to 1913. The much larger Gasco facility was constructed downstream of PGM and operated from 1913 to 1956.

MGPs produced gas for commercial and residential use using different feedstocks. PGM used coal as a feedstock from 1860 to 1906 and then used oil as its principal feedstock from 1906 until 1913. The Gasco plant used only oil. The manufacturing process produced marketable products, recyclable materials and waste materials. The processes used to manufacture gas are described in detail in the direct testimony of Andrew Middleton. For the purpose of my testimony, it is important only to understand that the by-products and wastes from these processes resulted in contamination of the MGP sites and, in some cases, nearby areas.

Q. When were the environmental impacts of the MGPs first identified?

A. The DEQ first identified contamination at the site of the former Gasco facility (the "Gasco Site") in the late 1980s. The EPA placed the larger Portland Harbor Superfund Site on the National Priority List (NPL or "Superfund list") in 2000. Environmental impacts near the PGM site were identified in 2007 during the investigation of the Portland Harbor Superfund Site.

[1] A predecessor to PG&C, the East Portland Gas Light Company, also operated a small MGP on the east side of the Willamette River between 1882 and 1892. NW Natural has not been required to take any remedial action in connection with that operation.

III. REMEDIATION SITES

Q. Please describe the sites that are the subject of NW Natural's environmental remediation efforts.

A. There are three sites associated with former manufactured gas operations: the Portland Harbor Site, the PGM Site, and the Gasco Site. The Company is managing six remediation projects at these sites, as described below.

- **The Portland Harbor Site**, which EPA has listed as a Superfund site, is an approximate ten-mile stretch on the bed and banks of the Willamette River, spanning north from downtown Portland. EPA has identified NW Natural as a potentially responsible party (PRP) at the Portland Harbor Site; the Company's work related to the Portland Harbor Site is referred to in this testimony as our **Harborwide Project**. As I will explain later in my testimony, the Company is managing MGP-contaminated sediments adjacent to the Gasco Site as a separate project within the Portland Harbor Site, also under EPA oversight. This is our **Gasco Sediments Project.**
- **The PGM Site** is located on the Willamette River near the Steel Bridge in Portland. NW Natural is managing this site as the **PGM Project** under DEQ's oversight.
- **The Gasco Site** includes approximately 45 acres of property owned by NW Natural located on the Willamette River between the St. Johns Bridge and the Railroad Bridge—both of which are located just north of Portland. The manufacturing facility is gone, and the NW Natural property is currently occupied by the Company's Portland liquefied natural gas storage facility and

tenant facilities. The Gasco Site also includes approximately 38.5 acres of adjacent property previously owned by PG&C and currently owned by Siltronic Corporation (Siltronic). Some of the contamination on the Siltronic property resulted from PG&C's use of approximately 400 feet of the property for storage and management of MGP residuals. Subsequent owners of the Siltronic property placed a significant amount of fill on the property and redistributed MGP material across the property, including onto portions of Siltronic's property never owned or operated by PG&C. Other contaminants from different sources, including Siltronic's own operations, are also present on the Siltronic property. The Gasco Site is managed by NW Natural under DEQ's oversight. Work at this site consists of two projects: the **Source Control Project** and the **Uplands Project**.

IV. REGULATORY FRAMEWORK

Q. Please describe the general statutory framework that governs NW Natural's responsibilities related to remediation for past gas manufacturing operations.

A. Congress enacted the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in 1980. The law empowers EPA to require the owner or operator of any facility from which a release of a hazardous substance has occurred to perform or pay for cleanup of property contaminated by the release. These owners and operators are known as Potentially Responsible Parties (PRPs). CERCLA initially created a cleanup fund (the "Superfund") with revenues from a tax on certain industries but the tax expired in the mid-1990s and has not been renewed. All cleanup activities, including agency and trustee oversight costs, are now funded by the PRPs. EPA can

also require current PRPs to pay for the cleanup of contamination caused by entities that no longer exist—known as "orphan shares." Many of the entities that contributed to the contamination in Portland Harbor sediments over nearly 150 years of industrial activity are now out of business, leaving NW Natural and other current PRPs with potential liability for the orphan shares as well as the contamination attributable to their own properties or operations. Finally, under the "joint and several liability" provisions in CERCLA, EPA may order one PRP, or a small number of PRPs, to bear all of the remediation costs associated with the Portland Harbor Site. Those PRPs would then have to seek reimbursement from other PRPs, often through litigation.

Oregon's Environmental Cleanup Law provides similar authority to DEQ. Enforcement orders and agreements with EPA and DEQ ("the agencies") define the investigation and remediation activities that NW Natural must undertake.

Q. What actions have the agencies taken under these laws with respect to the Portland Harbor?

A. EPA has taken action on the Portland Harbor Site as a whole and also on the sediments immediately adjacent to the Gasco Site.

In approximately 1997, EPA began a Preliminary Assessment of sediment contamination in the Portland Harbor. In December 2000, EPA placed the Portland Harbor on the Superfund list and sent letters to 69 parties, including NW Natural, advising those parties that EPA considered them jointly and severally liable for completing a Remedial Investigation and Feasibility Study (RI/FS) for the Portland Harbor. In September 2001, EPA, NW Natural and eight other PRPs entered into an Administrative Settlement Agreement and Order on Consent for Remedial

Investigation/Feasibility Studies for the Portland Harbor Superfund Site (the "RI/FS Consent Order"). One additional party signed the RI/FS Consent Order in 2002. These ten parties, together with four other parties who provide funding for the RI/FS, were known as the Lower Willamette Group (LWG).

The RI/FS was completed in 2016 and, in January 2017, EPA issued a Record of Decision (ROD) selecting remedial actions for the Portland Harbor Site, including the Gasco Sediments Project. EPA expects its selected remedy to cost approximately $1.05 billion (present value) and to take approximately 13 years to complete. To date, EPA has identified more than 100 parties potentially responsible for the Portland Harbor cleanup.

Separately from the work identified in the RI/FS, EPA issued an Administrative Order on Consent for Removal Action in 2004, which required NW Natural to remove a tar-like feature in the Willamette River adjacent to the Gasco Site. Except for long-term monitoring, that work was completed in 2005. Shortly thereafter, EPA indicated that it would require the Company to perform a second, much more extensive, removal action at that site. The Company resisted and instead proposed carving the sediments adjacent to the Gasco Site out of the larger Portland Harbor Site for an expedited final remedial design. EPA agreed, but required that Siltronic be involved in that work. Accordingly, in 2009, NW Natural and Siltronic entered into an Administrative Settlement Agreement and Order on Consent for Removal Action with EPA. That document requires the Company and Siltronic to design a final remedy for sediments adjacent to the Gasco Site. EPA suspended work on the Gasco Sediment Project for a

period of time prior to issuance of the ROD. NW Natural is now completing remedial design work on the Sediment Project pursuant to this order.

Q. What actions have the agencies taken with respect to the Gasco Site?

A. In 1993, DEQ proposed the Gasco Site for the Oregon Confirmed Release List (CRL). The CRL is the state law equivalent of EPA's Superfund list, and DEQ may require owners and operators of listed sites to clean them up. In 1994, NW Natural entered DEQ's voluntary cleanup program for the Gasco Site by signing a Voluntary Agreement with DEQ. It is important to note that such an agreement is "voluntary" in name only. Our failure to enter into the voluntary program would have resulted in immediate enforcement action. Further, in 2006, DEQ required an amendment to the Voluntary Agreement that added stipulated penalties and other provisions typical of consent orders. The Voluntary Agreement requires NW Natural to investigate contamination from the former Gasco MGP at both the Gasco Site and the adjacent Siltronic Site and, where necessary, to perform clean-up work or take measures to prevent contamination from spreading. NW Natural's work on the Gasco Uplands Project and the Source Control Project is being performed pursuant to the Voluntary Agreement.

In 2000, DEQ issued an Order Requiring Remedial Investigation and Source Control Measures at the Siltronic Site to both NW Natural and Siltronic. In 2016, DEQ and NW Natural amended the Voluntary Agreement to clarify NW Natural's obligations with respect to the Siltronic property. The 2000 Order remains in effect primarily to ensure that DEQ and NW Natural have access to the Siltronic property.

Q. What action have the agencies taken with respect to the PGM site?

A. In 1987, EPA performed a Preliminary Assessment of the PGM site and concluded that no further federal action was warranted under CERCLA at that time. In approximately 1992, DEQ completed a preliminary assessment of the PGM site and concluded that it was a low priority for further environmental investigations. In 2007, the LWG collected sediment samples upstream of the Portland Harbor Site, in the vicinity of the PGM site. Laboratory analyses of those samples identified contaminants that may be related to MGP operations. Accordingly, on April 27, 2009, NW Natural entered into an Order on Consent with DEQ. The order requires NW Natural to define the nature, extent, and potential risks associated with gas plant-related chemicals in river sediments and to determine whether any contamination in shoreline soils or groundwater might be a continuing source of contamination to the river. In July 2016, DEQ issued a Record of Decision selecting a remedy for the PGM Site. This 2009 DEQ order and the ROD are the source of our work on the PGM Project.

Q. Have the agencies taken any additional actions with respect to the Siltronic property?

A. Siltronic is working under a separate agreement with DEQ to investigate and remediate contamination from TCE, a chlorinated solvent, that is attributable to its manufacturing operations. That work is being performed independently by Siltronic and is in addition to the work being done by NW Natural for DEQ on the Gasco projects. The Siltronic property is also impacted by groundwater contaminated by offsite sources; this contamination is being investigated by the current owners of the Rhone-Poulenc property, a nearby site from which chemical contamination is suspected to have originated.

Q. How have EPA and DEQ determined the Company's specific obligations for clean-up work?

A. The agreements and orders described above set forth the general scope of work NW Natural must perform at each site. The details of the work are generally resolved by technical consensus or negotiations with EPA and DEQ project staff. When the Company or the LWG cannot reach technical agreement with the relevant agency on some aspect of work, the agency staff will issue a directive that requires a particular approach. From time-to-time, NW Natural or the LWG will dispute an agency directive because we disagree with agency staff on legal, technical, or policy grounds. In these instances, the work is determined by upper management at DEQ or EPA.

V. ENVIRONMENTAL REMEDIATION PROCESS

Q. What is the process for remediation at the sites?

A. Each site proceeds through a sequence of activities required by the regulatory agencies. These stages are: Remedial Investigation; Risk Assessment; Feasibility Study; Remedy Design and Construction; Operation and Maintenance; and Monitoring.

Q. Please explain the Remedial Investigation stage.

A. During the Remedial Investigation (RI) stage, the parties determine the nature and extent of the contamination at the site. This stage includes extensive sampling of soil, groundwater, surface water, stormwater, air, sediment, porewater, Non-Aqueous Phase Liquid (NAPL), bioassays, and tissue. The samples are used to evaluate the physical, chemical, and biological factors at a site. Laboratory analysis of the samples determines the extent and magnitude of contamination.

The RI is an iterative process. After each round of data collection, the data must be analyzed and reported to the regulatory agency for review and approval. The process continues until the agency determines that it has the information it needs to understand the nature and extent of the contamination at the site. At that point the agency approves the RI Report.

Q. How does the RI stage of remediation transition to the Risk Assessment stage?

A. Information in the RI is used to conduct the Risk Assessment (RA). The RA determines whether the contamination at the site poses unacceptable risks to human and ecological "receptors." In the human health risk assessment, the universe of human receptors is refined into smaller population groups for focused evaluation of their exposure to chemicals from the site. In the ecological risk assessment, the receptors are organisms that may be exposed to chemicals from the site. Ecological receptors include fish, birds, mammals, amphibians, reptiles, insects, invertebrates and plants. The regulatory agency approves the RA when it is satisfied that all routes of exposure for each chemical to each receptor have been adequately evaluated.

Q. Please explain the Feasibility Study stage of remediation.

A. The Feasibility Study (FS) is written after the RA. The FS evaluates various technologies that can be used to remediate the chemical impacts that are causing unacceptable risk. The FS provides the agency with a range of clean-up alternatives. The FS evaluates each alternative in terms of its environmental benefit, its cost, and the feasibility of implementation. The agency considers the alternatives described in the FS and selects its proposed remedy. The agency solicits public comment on its proposal and then makes a final decision.

Q. Please explain the final stages of remediation—Design and Construction, Operation and Maintenance, and Monitoring.

A. Once the agency has selected a remedy, the PRP must develop a construction design for the remedy. Remedy design is also an iterative process, with revisions based on agency reviews and comments. After the agency approves a final design, the PRP begins construction. Depending on the scope and design of the remedy, the construction stage may be short or construction may be performed in phases that occur over multiple years. For example, dredging activities can only take place in the Willamette River during discrete periods of time (in total, about four months each year) when potential impacts to fish from dredging activities are lowest. A large dredging operation would therefore need to be phased over multiple years.

After construction, the agencies require operation and maintenance as well as performance monitoring and reporting. If the remedy does not perform as predicted, the agency has the authority to require additional remediation work.

Q. Do all remediation projects move through all of these stages?

A. No. In some cases governed by CERCLA, EPA has enough information early in the process to determine that some clean-up should occur before the agency has all of the information it will need to select a final remedy for the site. In such a case, CERCLA gives EPA the authority to order a "removal," also known as an "early action." Removal actions can include physical removal of material (such as excavation or dredging), or less intrusive means of preventing exposure to hazardous materials (such as capping, fencing, or installing signs). It is important to note that EPA does not issue a record of decision in such a case and the PRP performing the removal does not receive

any of the legal protections (*e.g*. covenants not to sue and release) that come with the performance of a final remedy pursuant to a record of decision.

VI. STATUS OF REMEDIATION WORK AT THE SITES

Q. What is the status of the LWG's remediation work at the Portland Harbor Site?

A. The LWG has completed the work required by the RI/FS Consent Order. EPA approved the LWG's certification of completion of work and terminated the RI/FS Consent Order in October 2017.

Q. What is the status of NW Natural's work on the Gasco Sediments Project?

A. This project is in the remedial design stage. As I mentioned earlier, in 2004, EPA required NW Natural to remove a tar-like feature from the sediments adjacent to Gasco under CERCLA's "removal" provisions. The Company completed the removal in 2005. Shortly after that project was completed, EPA indicated that it would require the Company to perform a second, more extensive removal action. The Company resisted the second action and instead proposed carving the sediments adjacent to the Gasco Site out of the larger Portland Harbor Site for an expedited final remedial design. EPA agreed. NW Natural will construct the remedy under a Consent Decree with EPA.

Q. What is the status of the remediation work at the PGM Site?

A. This site is also in the remedial design stage. NW Natural submitted 90% design documents to DEQ in October 2018 and is negotiating a consent judgment for construction implementation. Subject to receipt of necessary permits, we expect to complete construction in 2019. We will then monitor the site for a number of years to confirm that the remedy is performing as designed.

Q. What is the status of the remediation work at the Gasco Site?

The projects at the Gasco Site are at different stages:

- Gasco Uplands Project: This project is in the feasibility study stage. Extensive soil sampling, groundwater monitoring, air quality analysis, stormwater study, DNAPL evaluation, and surface water sampling have provided a comprehensive understanding of the nature and extent of the contamination in the uplands and a risk assessment has been performed. NW Natural submitted an Interim FS Report in November 2018. After DEQ approves the Interim FS Report, NW Natural will develop a final FS.
- Gasco Source Control Project: This project is in the operation and maintenance stage. DEQ requested that NW Natural use information specific to groundwater and DNAPL contamination from the Gasco Uplands RI and RA to prepare a Focused Feasibility Study (FFS) for groundwater and DNAPL source control. The FFS was submitted in 2007. After multiple additional rounds of comment and a formal dispute resolution process, DEQ approved design documents for the groundwater source control measure, and construction was completed in 2012 and 2013. The source control system began full scale operation in September 2013.

VII. NW NATURAL'S COSTS OF REMEDIATION

Q. To date, how much has NW Natural spent in connection with the remediation work described in your testimony?

A. As of November 30, 2018, we have spent about [redacted], including legal, investigation, remediation, and monitoring costs. Approximately $10.5 million of that amount was spent on removal of the tar-like feature primarily in 2005.

Q. What types of remedial actions will likely be required in the future?

A. The goal of clean-up work is to reduce the risks posed by chemicals to humans and the environment to acceptable levels. NW Natural does not have the authority to decide which measures will best achieve that goal on each site; EPA and DEQ make those decisions.

For the Gasco Sediment Project, EPA has selected a combination of dredging and capping technologies. The details of how these technologies will be applied and implemented, including associated surface water containment (e.g. silt curtains or sheet pile walls), in situ treatment, augmented and chemical isolation caps, sediment treatment and stabilization, offsite disposal, bank excavation, and construction mitigation, are being developed through the remedial design process.

For the larger Portland Harbor Site, EPA has selected various combinations of dredging, capping, enhanced monitored natural recovery and monitored natural recovery in different areas of the site. At this time, NW Natural believes that liabilities associated with the Gasco Sediment Project represent our largest exposure at the Portland Harbor Site. However, we may be required to perform or pay for other harbor-wide cleanup (including downstream petroleum contamination) that has not yet been allocated among all of the potentially responsible parties.

At the PGM site, DEQ has selected a combination of dredging, capping, enhanced monitored natural recovery and monitored natural recovery technologies. Again, implementation details are being developed in remedial design.

The Gasco Upland Feasibility Study will present viable technical alternatives to the DEQ for consideration. Technologies currently available for the Gasco Upland

site include excavation with offsite disposal, excavation with onsite treatment, *in situ* treatment of soils, capping, subsurface barrier installation, groundwater pumping and water treatment plant operations with offsite discharge, surface water body removal, DNAPL recovery and offsite disposal, engineering controls on existing structures, capping, and institutional controls.

Q. Has NW Natural projected the costs that may be incurred in the future?

A. We do not have an estimate of our total future costs due to the ongoing nature of our work and the many uncertainties surrounding the agencies' remediation decisions. As of November 30, 2018, we estimated a minimum future liability of about [redacted]. This estimate is updated quarterly and disclosed in our financial statements filed with the Securities and Exchange Commission. Future filings may reflect increased estimates as we gain more information.

Q. For how long will NW Natural incur remediation costs for the Harborwide and PGM Projects?

A. We do not know. EPA currently estimates that its selected Portland Harbor remedy will require 13 years to construct. However, the remedy must first be designed and, except at three areas of the river (including the Gasco Sediments Project) that design has not yet begun. Operations and maintenance (O&M) and monitoring costs will continue for an undetermined period of time after construction. If post-construction monitoring reveals that a remedy is not effective, EPA will likely require the design and construction of additional remedial measures, which would extend the timeframe over which the Company will incur remediation costs.

We currently expect construction of the PGM remedy to be completed in 2019, but we do not yet know the duration of post-construction monitoring DEQ will require at that site.

Q. Will the timeframe over which the Company anticipates incurring remediation costs relevant to the other Projects be different?

A. NW Natural completed construction of the source control system in September 2013. Operation and maintenance of the system is expected to continue for decades.

Timing of remediation of the Gasco Uplands will be determined by DEQ following completion of the feasibility study.

Q. In addition to the costs associated with remediation at the Portland Harbor Site, could NW Natural incur other costs associated with that site?

A. Yes. CERCLA and Oregon law also allow designated natural resource trustees to recover monetary damages for injuries to natural resources resulting from hazardous substance releases. Two federal trustees (the National Oceanic and Atmospheric Administration and the U.S. Fish & Wildlife Service), six Tribal trustees, and the Oregon Department of Fish & Wildlife have notified NW Natural and other parties of their intent to seek damages for alleged injuries to natural resources in the Portland Harbor. NW Natural and 22 other parties are participating in a cooperative assessment with the Portland Harbor Trustee Council in an attempt to reach a settlement of the trustees' claims.

In January 2017, the Yakama Nation filed suit against NW Natural and 29 other parties seeking remedial costs and natural resource damage assessment costs associated

with the Portland Harbor Site. The United States District Court for the District of Oregon is presently considering several motions to dismiss or stay the litigation.

VIII. COST CONTAINMENT EFFORTS AND EFFORTS TO RECOVER FROM THIRD PARTIES

Q. Has NW Natural attempted to contain its environmental remediation costs?

A. Yes. Two of the Company's top priorities have been to aggressively manage the costs arising from our environmental liability and to maximize recovery from our insurance companies and other PRPs. Our efforts in these areas reflect our commitment to minimize costs at the same time that we comply with applicable law, act as a responsible corporate citizen, meet our customers' expectations, and ensure solid working relationships with regulatory agencies and other stakeholders.

Q. What steps has NW Natural taken to control the costs associated with the remediation of past manufactured gas operations in its interactions with relevant agencies and parties?

A. The Company evaluates each task required by EPA and DEQ for cost effectiveness, environmental benefit, and technical merit before we perform the work. We object to tasks that we believe are unnecessary, technically unsound, or beyond the scope of the agency's jurisdiction or legal authority. Those objections are usually resolved through collaborative negotiations with the agency in question. When we cannot resolve our concerns through negotiations, we invoke the formal dispute resolution mechanisms available under both the DEQ and EPA processes and advocate vigorously for the most cost-effective approach.

Q. Please describe your formal disputes with the agencies.

A. NW Natural disputed direction from DEQ in 2010 to construct only a partial groundwater source control system because it would have been an expensive project that did not meet the objective of groundwater source control at the site. The dispute was resolved in early 2011 when DEQ agreed to a complete hydraulic containment system for groundwater source control. The Company submitted a comprehensive design for that system in May 2011. We received comments from DEQ in September 2011. The final design was submitted to DEQ on January 31, 2012, and DEQ approved ordering long-lead items for the treatment plant on April 5, 2012 and provided approval of construction on August 9, 2012.

We also disputed two EPA staff directives associated with our removal of the tar-like feature adjacent to the Gasco Site. We were unable to convince EPA to allow disposal of the dredged material at a less expensive Subtitle D (non-hazardous waste) landfill but we argued successfully for a more cost-effective containment system than EPA's project staff had required.

Q. What, if any, role did the LWG play in NW Natural's efforts to control its remediation costs?

A. The LWG negotiated rates with vendors that were below standard rates. The LWG also conducted a market analysis to ensure that vendor costs are below market. In addition, the LWG monitored its consultants' work on a regular basis and constantly seeks ways to minimize costs. In 2013, the LWG disputed EPA-directed changes to the Human Health Risk Assessment in part because the changes could have led to higher than necessary remediation costs. The outcome of the dispute led to the production of a more appropriate final Risk Assessment.

Q. Does NW Natural take internal steps to control its remediation costs?

A. Yes. NW Natural has established a thorough internal process for managing approved tasks and associated costs. Because of the magnitude and complexity of our environmental liabilities, we must maintain a team of highly qualified technical consultants and lawyers. As a result, most of the costs we incur are for external resources.

The long-term nature of our remediation work and the iterative nature of the regulatory process require us to have long-term vendor contracts and purchase orders. When NW Natural's project team identifies a potential vendor, the vendor is directed to NW Natural's Purchasing Department. The Purchasing Department negotiates the terms of the contract, including the rate schedule. The Legal Department reviews the contract to ensure that it meets our standards and requirements. After the contract is executed, we request cost estimates for the work that needs to be done to comply with regulatory requirements. Using the rate schedules in its contract, the vendor provides estimates for the number of hours and materials necessary to perform project tasks. As the Project Manager, I evaluate these estimates for accuracy and appropriateness. I also review and update all project costs and tasks on a quarterly basis.

Q. Does NW Natural track the spending associated with environmental remediation?

A. Yes. All spending is tracked both by me as the Project Manager and by the Company's Accounting Department to verify that actual costs remain aligned with approved spending limits. Cost tracking includes both project-specific spending as well as spending against the amount the Board of Directors approves each year. NW Natural

reports updated estimates of its environmental liabilities quarterly in the 10-Q and annually in the 10-K.

Q. Are the Company's environmental costs subject to outside audit?

A. Yes. The Company provides quarterly cost updates to PricewaterhouseCoopers LLP, which includes those costs in its integrated audit of the Company.

Q. Has NW Natural attempted to recover any of its remediation costs from third parties?

A. Yes. As I mentioned at the beginning of my testimony, Mr. Kravitz's testimony describes the steps NW Natural has taken to recover costs from insurance carriers.

In 2007, the LWG successfully recovered some of its RI/FS costs from PRPs who are not in the LWG and reserved its rights to pursue additional cost recovery in later legal proceedings. NW Natural's share of that recovery was approximately $430,000.

More significantly, NW Natural and 95 other PRPs are participating in a confidential, non-judicial process intended to settle claims for past and future costs related to the Portland Harbor Site. The Company has entered into tolling agreements with approximately 100 additional parties pending the outcome of this settlement process. In April 2009, NW Natural and the other signatories to the RI/FS Consent Order filed litigation in the United States District Court for the District of Oregon against 69 parties who refused to participate in the settlement process or toll claims. Most of those parties have either joined the settlement process or signed tolling agreements. Those parties have been dismissed from the litigation. Fourteen

defendants and one third-party defendant (the United States) remain in the litigation. The federal court has stayed the litigation pending completion of the settlement process.

Q. Does this conclude your direct testimony?

A. Yes, it does.