

State of Oregon  
Department of Environmental Quality

Memorandum

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**Date:** July 1, 2014  
**To:** File  
**From:** Erin McDonnell, Northwest Cleanup Section  
**Subject:** Proposed No Further Action for Building 02 Operational Unit  
Tektronix Beaverton Campus, Evaluation Area 1  
ECSI# 167

**Purpose**

This memo provides a brief summary of investigation and remedial actions conducted at the Building 02 Area of the Tektronix Incorporated Beaverton Campus (Tektronix) site at 14200 SW Karl Braun Drive in Beaverton, Oregon. The Tektronix Campus (see Attachment 1 Vicinity Map), encompassing 300 acres, is divided into Evaluation Areas 1 through 6 for the purpose of conducting site investigation and remedial activities. The Building 02 Area is located at the southwest corner of the campus in Evaluation Area 1 (EA1). EA1 is further divided into ten discrete operational units (see Attachment 2 Site Plan): Building 02; West Park and Tracts A through D bracketing Beaverton Creek; former Building 40; the former industrial waste water treatment facility (IWWTF) and Lot 14 units which included the Resource Conservation and Recovery Act (RCRA) treatment, storage and disposal facility; Building 38 unit north of Beaverton Creek and in the center of the property; the Building 16 unit adjacent to the east of the RCRA facility; and Building 04/10/12 unit north of Beaverton Creek and at the eastern property boundary. The Building 02 portion of the site is the subject of this closure memorandum.

Historically, Tektronix managed hazardous materials and wastes onsite, and has been subject to regulation under RCRA (permit number ORD 009020231, dated July 25, 1990). Tektronix began a facility investigation and corrective action under the RCRA permit in the late 1980s. In 2002, Tektronix entered into a Consent Order (ECSR-NWR-01-13) to complete a site investigation, develop a feasibility study, and implement remedial actions at the site under Oregon Department of Environmental Quality (DEQ) cleanup authority. The corrective action plan and post-closure care requirements of the RCRA permit were referenced in the Consent Order.

Extensive soil and groundwater sampling have been performed at various locations across the campus for potential constituents of concern. The 2009 Record of Decision (ROD) documenting the selected remedial action for EA1 identifies in-situ thermal technology to address elevated volatile organic compounds (VOCs) concentrations in soil and groundwater at source areas and monitored natural attenuation (MNA) to assess contaminated groundwater until applicable risk-based levels are achieved. MNA has been conducted at Building 02 Area, in addition to the other operational units within EA1, since 2009. DEQ has determined that remaining contamination at the Building 02 property does not pose unacceptable risk, and is therefore recommending a conditional No Further Action (NFA) determination. DEQ's NFA recommendation is conditional on restrictions of residential use.

## **Background/Site Characteristics**

The Tektronix Beaverton Campus is located at 14200 Karl Braun Drive in Beaverton, Oregon Section 8, T.1S, R.1W, Willamette Baseline and Meridian (see Attachment 1). Geographic coordinates for the site are 45°29'56.40" latitude and -122°49'4.40" longitude. The Tektronix Campus lies within the Beaverton urban area and is surrounded by commercial and residential properties. Beaverton Creek, a tributary of the Tualatin River, flows east to west through the center of EA1. Most of the Tektronix Campus and EA1 are bounded to the south by a Tri-Met light rail line, to the west by SW Murray Boulevard, and to the east by SW Hocken Avenue. The northern boundary of EA1 is in the center of the Tektronix Campus but is partly bounded by SW Terman Drive.

The Building 02 Area, shown in Attachment 2, is located at 3725 SW Hocken Avenue in the southwest corner of EA1 and bounded to the north by Tract D adjacent Beaverton Creek, to the south by Tri-Met Rail, and by Hocken Avenue to the east. The Building 02 Area is comprised of 5.14 acres and relatively flat at 172 to 180 feet above mean sea level (msl). Building 02 was constructed approximately 200 feet south of Beaverton Creek on Lot 7 of the Tektronix Beaverton Campus in 1967. The large commercial building covers the property, in addition to asphalt paved parking and perimeter landscaping.

Tektronix originally occupied about 300 acres beginning in 1957 and developed the site to manufacture, engineer, develop and assemble electronic measurement, display and control equipment. Various chemicals were used in these operations, and significant volumes of wastes and process wastewater were generated. By 1982, the operations included twenty four buildings. The Building 02 Area was utilized for several uses including manufacturing, assembly, recycling and materials salvage, and chemical storage. Tektronix has sold portions of the property, including the Building 02 Area in 1999, to its current size of about 156 acres and nine buildings in active use.

The Building 02 Area property is currently leased by the current owner to an electronics contract manufacturer. Activity on the property includes placing parts on circuit boards, testing the assembled circuit boards, and final product assembly. Operations do not include any "raw" circuit board manufacturing. An easement allows Tektronix to access the property specifically related to investigation activities and implementation of the selected remedy. Tektronix will decommission previously-installed monitoring wells and the access easement will be terminated upon DEQ approval of environmental activities at Building 02 Area.

Historical releases on the Tektronix Campus of hazardous materials have impacted soil, groundwater, surface water and sediment in Beaverton Creek. Releases likely have occurred mainly as a result of manufacturing operations, hazardous materials storage and handling, spills and leaks from tanks or other structures, leakage from originally unlined surface impoundments, leakage from underground process waste lines, drying and application of sludge to the ground, and stormwater and groundwater discharge to Beaverton Creek. Waste streams included acid and caustic metal sludges, and organic solvents including trichloroethene (TCE), trichloroethane (TCA), and perchloroethene (PCE).

Three distinct water bearing zones, or hydrogeologic zones, have been identified onsite and can be correlated to the upper Willamette Silt, the lower Willamette Silt and the Hillsboro Formation. The three hydrogeologic zones are defined by depth as: shallow, from 0 to 28 feet below ground surface (fbgs); intermediate, from 29 to 48 fbgs; and deep, below 49 fbgs. The water table (see Attachment 3 Groundwater Elevation Contours) was encountered at 9 to 26 fbgs, varying with topographic elevation and proximity to Beaverton Creek. A clay layer in the upper portion of the Hillsboro Formation is considered an aquitard. Groundwater within the shallow and intermediate hydrogeologic zones, and perhaps the upper part of the deep zone, flows toward and discharges to Beaverton Creek and associated drainage ditches.

Beaverton Creek is an urban stream that flows east to west through EA1 and is the main surface water feature in the site area. The creek drains into Rock Creek, which subsequently drains into the Tualatin River. Stormwater is collected from paved areas and roof drains through a system of catch basins and storm water lines that drain mainly into Beaverton Creek.

Land use was evaluated for an area within a 1-mile radius of the site and is documented in the *Preliminary Scoping Document for Remedial Investigation* (MFA, 2000). The Tektronix Campus, including EA1, is zoned by Washington County as industrial. Areas around the site have variable land use designations by both Washington County and City of Beaverton including industrial, commercial, and low- and high-density residential uses. The Tualatin Hills Park and Recreation District maintains the Tualatin Hills Nature Park along Beaverton Creek about 0.6 miles to the west. No change in the identified site land use is expected in the foreseeable future for the site or for former site parcels that have been sold for redevelopment. Surface and groundwater uses have been evaluated for the site area and are also documented in the 2000 scoping document. No current or reasonably likely future users of Beaverton Creek for drinking water were identified. Beneficial uses for Beaverton Creek surface water have been identified as anadromous fish passage and spawning, wildlife, hunting, fishing, recreation, and aesthetics.

No groundwater supply wells have been identified on the Campus. Groundwater on the site is not currently used or likely to be used in the future for any beneficial use. Drinking water for the Campus is provided by Tualatin Valley Water District. Water supply wells identified in the site area are located upgradient from the site and screened in deeper hydrogeologic units not impacted by site contamination. The identified supply wells use groundwater for domestic supply, irrigation, and industrial uses. Groundwater in the shallow hydrogeologic unit discharges to Beaverton Creek and therefore has a beneficial use of supporting aquatic habitat/life.

### **Site Investigation History**

Earlier investigation activities, completed in accordance with RCRA requirements and documented in the *Facility Assessment Summary Final Report* (MFA, 1999), delineated an area of contamination west of Building 02 attributed to a former storage area for drums of waste chemicals. The former Building 02 container management area (see Attachment 4 Lot 7 / Building 02) was approximately 100-feet by 160-feet in area and is documented to have contained up to 500 drums in the late 1970s. By 1980, the container management area was moved to another portion of the site. Wastes stored included solvents, used oils, caustics, etc. Releases from the Building 02 container management area resulted in VOC-impacted groundwater. In 1988, the extent of contamination was delineated in the shallow and intermediate water-bearing zones. Initial corrective action consisted of installing a groundwater treatment system in 1990 to hydraulically control the groundwater plume and reduce VOCs. The groundwater treatment system consisted of two recovery wells and a cut-off collar. Extracted groundwater was treated at Building 40 via air stripping. In addition to hydraulic control, Tektronix was required to monitor VOCs, specifically chlorinated solvent concentrations (TCE, PCE, and breakdown compounds) in groundwater.

On March 29, 2002, Tektronix entered into Consent Order ECSR-NWR-01-13 with DEQ to complete a site-wide investigation, develop a feasibility study, and implement remedial actions. The corrective action plan and post-closure care requirements of the RCRA permit were referenced in the Consent Order. On June 27, 2006, the RCRA permit was renewed<sup>1</sup> as a post-closure permit, since Tektronix no longer

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<sup>1</sup> The Permit was also modified in 2010 to incorporate the final remedy described in DEQ's Record of Decision issued for Evaluation Area 1 in 2009.

manages hazardous waste, and to incorporate the Consent Order for post-closure groundwater monitoring, corrective action and groundwater treatment. A site-wide remedial investigation was completed in 2003 to 2004 under DEQ oversight, including the Building 02 Area, documented in the *Remedial Investigation Report* (Landau Associates, 2007). Human health and ecological risk assessments were conducted for EA1 and are presented in the *Human Health Risk Assessment* (Landau Associates, 2006) and *Ecological Risk Assessment* (Landau Associates, 2007).

The site investigation was conducted in several phases. Phase I included soil and groundwater sampling across the site to establish the list of chemicals for analysis and to investigate all known sources of contamination. Soil and groundwater sampling locations at the Building 02 Area are shown in Attachment 5 Building 02 and Tract D Exploration Locations. Phase II included additional investigation to address data gaps identified during Phase I. Phase III included sampling of sediment, groundwater/surface water interface water, and surface water in Beaverton Creek. Phase IV included installation of groundwater monitoring wells to complete the area groundwater evaluation for gradient and seasonal variation. Chemical analyses included VOCs, semi-volatile organic chemicals (SVOCs), metals, cyanide, PCBs, and specialty chemicals (dimethylformamide, formaldehyde, nitrocellulose, and hydroquinone).

A pilot remediation study was conducted in 2004 and 2005 at Building 02 pursuant to a DEQ-approved work plan to evaluate the effectiveness of in situ bioremediation through gas injection. The gas injection system included installation of two gas injection wells and construction of an injection system for delivery of a mixture of propane and oxygen into the subsurface to stimulate aerobic co-metabolic bioremediation of the chlorinated VOCs in groundwater. In December 2005 it was determined that this is not a viable technology for the low permeability Willamette Silt and as a result the system was decommissioned with DEQ approval.

The *Feasibility Study* (Landau Associates, 2008) evaluated remedial actions alternatives to achieve remedial action objectives. Public comment was solicited in December 2008 on the *DEQ Staff Report Recommended Remedial Action for Tektronix Evaluation Area* (DEQ, 2008) to address potentially unacceptable risk to human health and the environment. The site conceptual model and nature extent of contamination at the Building 02 Area are briefly summarized below.

### ***Conceptual Site Model***

The Tektronix Beaverton campus is industrial, and the surrounding land use is a combination of commercial and residential. No water supply wells are located on the campus. Shallow groundwater discharges to Beaverton Creek which flows westerly through the campus where it intercepts several outfalls and onsite surface water drainages. It is unclear whether intermediate and deeper groundwater discharge to the creek. Based on these existing and reasonably likely future land uses, the potential receptors evaluated in the risk assessment are site workers, hypothetical future construction and excavation workers, recreational visitors using Beaverton creek and offsite residents.

The ecological risk assessment evaluated both aquatic and terrestrial ecological receptors site-wide. The Building 02 Area is covered by the facility or pavement; however, shallow groundwater at the site may discharge to the Beaverton Creek and therefore, aquatic organisms exposure to contaminants in groundwater discharging to interstitial water in sediment or surface water was considered.

The human health risk assessment addressed potential direct contact exposure to contaminants in surface soil or inhalation of volatile contaminants from soil or groundwater or soil particulate to site workers or future construction and excavation workers. Direct contact with Beaverton Creek surface water and sediment was considered as potential exposure scenario for off-site residents.

## **Nature and Extent of Contamination in Soil and Groundwater at Building 02 Area**

### ***Soil***

Soil was sampled across EA1 in areas identified as potential contamination source areas, and analyzed for metals, VOCs, SVOCs and specialty chemicals. Ten borings were advanced in the Building 02 operational unit during the remedial investigation (RI), including the collection of surface and subsurface samples from the former container storage area to supplement existing explorations. Depths of sampling included shallow soil from 0 to 3 fbs and deep soil at greater than 3 fbs. Analytical results were compared to U.S. Environmental Protection Region 9 Preliminary Remediation Goals (PRGs) for occupational direct contact and to soil background concentrations for metals. No VOCs, SVOCs or specialty chemicals were detected in soil at concentrations exceeding PRGs. No unacceptable risks were associated with exposure to soil.

### ***Groundwater***

Groundwater data were collected from the three identified hydrogeologic zones (extending from the top of the water table at 9 fbs to greater than 49 fbs). Groundwater sample results were compared to risk-based concentrations (RBCs) for the vapor intrusion to indoor air pathway for occupational workers and direct contact with construction and excavation workers. Drinking water is not a beneficial use for groundwater at the site, and therefore the vapor intrusion and excavation worker pathways are the primary source of risk from VOCs in groundwater. Groundwater data collected near Beaverton Creek was also compared to aquatic water quality criteria.

The RI established that constituents of concern (COCs) of dissolved TCE and related compounds were present in shallow, intermediate and deep water-bearing zones west of Building 02. Attachment 6 shows the distribution of TCE contamination in groundwater (shallow, intermediate, and deep) at the Building 02 Area. [Note: groundwater contamination in MW-7 is associated with the Mears Trust site and not Building 02 operations]. The horizontal extent of groundwater contamination was identified using groundwater data collected from borings and wells located between the known release area and Beaverton Creek. Elevated COCs were observed in groundwater directly downgradient of the release. Limited groundwater plume migration is attributed to subsurface fate and transport conditions, and the interim groundwater extraction system operating since 1990 to hydraulically contain the plume.

Areas where the TCE concentration exceeds the vapor intrusion pathway criterion of 110 micrograms per liter (ug/L) can be seen on Attachment 6. Vapor intrusion RBCs were updated (discussed below) in 2011 after selection of the final remedy. Attachment 7 provides groundwater data for VOCs at Building 02 Area collected from years 2000 to 2012. Elevated concentrations of solvents including TCE and cis-dichloroethene (cDCE) were detected in wells MW-19-41 and R-10R. The groundwater plume west of Building 02 exhibited the greatest concentrations in the intermediate zone and to a lesser extent in the deeper zone. TCE exceeded vapor intrusion pathway RBCs in the two hydrogeologic zones. However, groundwater contamination observed at these depths are considered unlikely to cause an unacceptable vapor intrusion risk exposure, or intercepted by an excavation worker.

Impacted groundwater potentially migrating towards Beaverton Creek was also considered. Downgradient wells near Beaverton Creek in shallow, intermediate, and deeper groundwater zones detected no VOCs during the RI; however, historically (pre-2003) low levels of VOCs below applicable RBCs were observed infrequently.

## **Record of Decision**

DEQ issued its Record of Decision for Evaluation Area 1 in 2009 selecting treatment of contaminants in soil and groundwater through a combination of electrical resistance heating and MNA. In-situ thermal treatment is prescribed for the treatment of TCE NAPL source areas present in saturated soil and in groundwater within Evaluation Area 1 of the site. The ROD also stipulates institutional controls, including use restrictions.

Primarily releases of concern are attributed to the former Building 40 / IWWTF source areas [presently undergoing remedial action] centrally located on the Tektronix Campus and north of Building 02 / Beaverton Creek. In addition, MNA is to be applied to areas that exceed groundwater RBCs but are outside of source areas where NAPL may be present. The remedial investigation established that the Building 02 Area was impacted in addition to other operational areas, to a lesser extent, but greater than that considered acceptable.

MNA is appropriate for sites with a low potential for contaminant migration (i.e., stable plumes) and where natural attenuation processes will achieve RAOs in a reasonable time frame compared to more active treatment. Interim remedial measures completed at another portion of the site, document that reductive dechlorination of PCE and TCE through anaerobic biodegradation does occur within the uppermost Willamette Silt and is effective in reducing VOC concentrations to meet RBCs.

### ***Remedial Action Objectives***

The ROD identified site-specific remedial action objectives (RAOs) for the entirety of Evaluation Area 1 for soil and groundwater for the purpose of achieving protection of human health, ecological receptors, and beneficial uses, as required by OAR 340-122-0040. The RAOs for the site are as follows:

RAO 1. Prevent human exposure to TCE in shallow groundwater through dermal contact for excavation workers that would result in unacceptable excess lifetime cancer risk greater than  $1 \times 10^{-6}$  and HI greater than 1.

RAO 2. Prevent human exposure to TCE in surface water through dermal contact and inhalation for recreational users that would result in an unacceptable risk.

RAO 3. Prevent human exposure to TCE in indoor/outdoor air through inhalation that would result in an unacceptable risk.

RAO 4. Prevent ecological receptor exposure to metals in creek bank soil that would result in unacceptable risk for populations of non-T&E species.

RAO 5. Prevent migration of VOCs in shallow groundwater into surface water or indoor/outdoor air at concentrations that exceed acceptable risk levels.

RAO 6. Remediate hot spots of contamination in groundwater, and bank soil by reducing their concentration, volume or mobility to be protective of human and ecological receptors as specified in OAR 340-122-0090(4).

## **Implementation of Remedial Action**

Restrictions on residential uses at the Building 02 Area are institutionalized into the property deed recorded in Washington County.

MNA has been performed at the Building 02 Area since 2009 in accordance with a DEQ-approved groundwater monitoring program. *A Performance Monitoring and Contingency Plan for Monitored Natural Attenuation* (Landau Associates, 2011) was prepared under the terms of the ROD and supersedes previous long-term monitoring requirements. Numerous monitoring wells installed during pre-ROD

corrective action activities were utilized as representative wells for MNA. Groundwater monitoring was initiated west of Building 02 as early as the 1980s, and conducted on a least an annual basis through 2009 as a corrective action under the RCRA permit. Therefore, a comprehensive groundwater data set was available to direct MNA activities. Furthermore, in the timeframe from completion the remedial investigation to remedy implementation, VOC concentrations decreased substantially at the Tektronix Campus including the Building 02 operational unit, presumably through natural in-situ biodegradation processes, as observed by MNA monitoring.

In 2011, DEQ approved ceasing hydraulic control via pump and treat of groundwater plumes based on the reduction of VOCs of concern, system effectiveness, and transition into implementation of the remedy. The results of the 2011 and 2012 MNA sampling events indicate that redox conditions are conducive to complete natural reductive dechlorination, breaking down toxic contaminants to innocuous end products. A focused discussion of the redox conditions observed at Building 02 Area is provided in the *2012 MNA Results Memorandum* (Landau, 2013). TCE and MNA parameters in groundwater are shown on Attachment 8.

Shallow groundwater discharges to Beaverton Creek, however, it is unclear if intermediate and deeper groundwater is hydraulically connected. Therefore, impacted groundwater potentially migrating towards Beaverton Creek was also considered at depth. Groundwater data collected at downgradient wells MW-21-17, MW-21-37, T-68-16, and T-68-40 located near Beaverton Creek in shallow and intermediate zones is provided in Attachment 7. Historically low levels of VOCs below applicable RBCs were observed infrequently at these downgradient wells and infrequently detected post-RI below aquatic water quality criteria until monitoring ceased in 2009. Remaining elevated concentrations of VOCs near the origin of the upland release are localized to MW-19-41 and R-10R and are not observed downgradient, and therefore do not pose an unacceptable risk to Beaverton Creek.

Groundwater sampling conducted in the Building 02 Area has not detected any contaminant concentrations above the applicable RBCs since 2003. Given consistent groundwater data at Building 02 Area below RBCs in the last ten years and groundwater redox data that indicate conditions conducive for continued natural attenuation, DEQ concludes RAOs at Building 02 have been achieved and MNA sampling is no longer necessary.

#### ***Revised Toxicity Assessment for TCE***

On September 28, 2011, EPA issued a final health assessment for TCE in its Integrated Risk Information System ("IRIS") database. IRIS is EPA's program through which it evaluates scientific information to determine risks of adverse human health effects as a result of exposure to environmental contaminants. The risk information developed through the IRIS program is used by EPA to support development of risk-based concentration used for risk screening. The health assessments developed by EPA through this program identify both carcinogenic and non-cancer health effects associated with chemicals.

Based on the new health assessment, DEQ has revised RBCs for TCE (and related constituents) that define protective concentrations for human exposure. DEQ has identified updated RBCs for the most sensitive pathways related to the site consisting of vapor intrusion into buildings and direct contact with groundwater by construction and excavation workers as follows:

$$\text{RBC}_{\text{wi}} = 3,400 \text{ } \mu\text{g/L}$$

$$\text{RBC}_{\text{we}} = 430 \text{ } \mu\text{g/L}$$

The new RBCs were applied to site groundwater data in the *2012 MNA Results Memorandum* (Landau, 2013). All current TCE concentrations in Building 02 groundwater, and most notably in the shallow aquifer, are significantly below the new RBCs. Attachment 7 provides monitoring results compared to the

new RBCs. Based on this information, DEQ informed Tektronix in 2013 that additional groundwater monitoring was not necessary and that DEQ would proceed with site closure.

### **DEQ Conclusions**

DEQ has concluded that groundwater contaminants associated with the Building 02 Area are below relevant RBCs and do not require additional monitoring or action. As shown in Attachments 7 and 8, concentrations in wells are below DEQ RBCs and therefore do not pose a risk.

To date, no significant soil contamination has been detected and therefore does not pose a risk to people working in the site area. VOCs including PCE and TCE are present at concentrations in groundwater both on and downgradient of the subject area are below applicable RBCs. They do not pose a risk by either direct contact or inhalation (vapor migration from groundwater into indoor or outdoor air). Some groundwater concentrations exceed DEQ and EPA screening values for ingestion (drinking), however a beneficial water use determination has shown that groundwater in the area is not used for drinking. Groundwater contamination confirmed by groundwater monitoring does not extend far enough off-site to impact area surface water bodies, the nearest being Beaverton Creek.

Cleanup at the Building 02 property has restored the site to conditions protective for human health or the environment for current and reasonably likely future land use. DEQ has reviewed investigation and remedial action performed by Tektronix and determined no further cleanup activities are necessary. The proposed action is consistent with Oregon Revised Statutes (ORS) 465.200 through 465.455 and Oregon Administrative Rules (OAR) Chapter 340, Division 122, Sections 010 to 115. Based on this information, DEQ has concluded that no further action is required at the Building 02 Area with the condition residential use is restricted.

### **List of Attachments**

Attachment 1 - Vicinity Map  
Attachment 2 - Site Plan  
Attachment 3 - Shallow and Intermediate Groundwater Gradients, 2012  
Attachment 4 - Lot 7 / Building 02 External Site Features  
Attachment 5 - Push-Probe and Well Sampling Locations  
Attachment 6 - TCE in Groundwater: Shallow, Intermediate, Deep  
Attachment 7 - VOC Concentrations in Groundwater  
Attachment 8 - TCE and MNA Parameter in Groundwater, 2011-2012

### **References**

RCRA. Part B Permit number ORD 009020231. Effective July 25, 1990.

Maul Foster and Alongi. Tektronix Lot 7 / Building 02 RCRA Facility Assessment Summary Final Report. August 19, 1999.

Maul Foster and Alongi. Preliminary Scoping Document for Remedial Investigation. 2000.

DEQ. Consent Order ECSR-NWR-01-13. Effective March 29, 2002.

Landau Associates. Remedial Investigation Work Plan, Tektronix, Inc., Beaverton, Oregon. February 7, 2003.



Landau Associates. Human Health Risk Assessment, Tektronix, Inc., Beaverton, Oregon. August 17, 2006.

Landau Associates. Remedial Investigation Report, Tektronix, Inc., Beaverton, Oregon. March 23, 2007.

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DEQ. Record of Decision, Selected Remedial Action for Tektronix, Inc., Evaluation Area1, Beaverton, Oregon ECSI #167. July 2009.

Landau Associates. Performance Monitoring and Contingency Plan for Monitored Natural Attenuation, Tektronix, Inc., Beaverton, Oregon. August 5, 2012.

Landau Associates. Monitored Natural Attenuation Results, Tektronix, Inc., Beaverton, Oregon February 13, 2013.

## **ATTACHMENTS**