

## AIR QUALITY

### (Taken from Appendix F of the Tualatin Soil and Water Conservation District's Long Range Business Plan for 2011-2015)

#### Description of Resource Concern

Air is one of the most basic human needs, although we might not think about it often. Perhaps we take air for granted because it's always there, and our bodies use it all the time without our even thinking about it. We really don't have to remind ourselves to inhale any more than we have to remind our hearts to beat. Some pollutants we can see, such as dust and smoke, or smell, such as odorous compounds. There are many others though that we cannot see or smell. In any case, even if we don't pay attention to our breathing, we must pay attention to the air we breathe and how it could potentially affect our daily lives.

Problems associated with air quality issues range from nuisances to health impacts to changes to the earth's atmosphere. The ability to view some of the region's majestic Cascade peaks, such as Mt. Hood and Mt. Saint Helens, is also important to residents, and requires good visibility be maintained.

The Tualatin River Watershed's air quality is an important factor in the overall health of the watershed. Air quality in the Tualatin River Watershed is monitored and regulated as part of the entire Portland Air Quality Management Area. The air quality within the watershed cannot exceed National Ambient Air Quality Standards as defined by the Environment Protection Agency.

Agricultural activities can be sources of air emissions that impact the Tualatin River Watershed's air quality. Specifically, agricultural activities can produce emissions of particulate matter, ammonia, volatile organic compounds (VOCs), oxides of nitrogen ( $\text{NO}_x$ ), odorous sulfur compounds, carbon dioxide, methane, and nitrous oxide ( $\text{N}_2\text{O}$ ). Air contaminants that are emitted locally can result in effects that are felt locally, regionally, and even globally.

Particulate matter can be emitted directly, such as dust and smoke, or formed by chemical reactions in the atmosphere from emissions of ammonia,  $\text{NO}_x$ , and VOCs. Particles can cause nuisances to neighbors by depositing on surfaces and impeding visibility. Very small particles can cause health impacts by interfering with respiratory system function. High concentrations of particulates can also cause safety issues by hindering local visibility, such as when smoke blocks the vision of drivers. Additionally, particulates in the air can impact meteorology and the atmosphere by serving as nuclei for droplet formation and either absorbing or reflecting solar energy. Ground-level ozone is formed by chemical reactions between VOCs and  $\text{NO}_x$  in the atmosphere, especially during times of high pressure and sunlight, such as we experience during the summer months. Although ozone in the upper atmosphere is beneficial, ground-level ozone can have serious impacts to human health and is a component of smog, which decreases visibility. Odors can obviously cause nuisance issues with neighbors. Agricultural emissions of odorous VOCs, odorous sulfur compounds, and ammonia can all contribute to objectionable odors. Greenhouse gases, such as carbon dioxide, methane, and nitrous oxide are an increasing concern due to their ability to impact atmospheric processes and result in climate change effects.

As awareness and understanding of air emissions and air quality issues increases, greater scrutiny of the agricultural contribution to these emissions is also increasing. Agricultural producers face a growing array of regulations, including some related to air quality. Producers are concerned with possible effects from pollution on their family members and neighbors, the environment, and the

health and productivity of livestock. In addition to these concerns, residents are concerned that odors and emissions may affect property values.

Recently, there have been efforts by the Oregon Legislature to address air quality issues at a local level. In 2007, Senate Bill 235 created the Dairy Air Quality Task Force to study the air emissions from Oregon dairy operations and evaluate options for reducing those emissions taking into account a number of potentially competing factors. In 2009, Senate Bill 528 was adopted by the Oregon Legislature. This Bill reduces the number of acres Willamette Valley grass seed growers can burn. Grass seed and cereal grain growers in the Willamette Valley burn their fields to control weed, pest, and disease contaminants; enhance seed yields; meet seed quality standards; stimulate plant production; and remove waste residues.

The growing body of research related to agricultural air quality is showing that there is not any one conservation practice that can solve air quality issues in all situations. Rather, the use of a combination of technologies combined with good management and a focus on site-specific factors could significantly reduce agricultural air emissions.

Air quality is an increasing concern. In the future, growth and demand and a greater interaction of rural and urban populations will shine a brighter light on agriculture's contribution to air emissions. We must take the time now to research practices and establish education programs to help landowners address air quality proactively.

## **Highlights of Accomplishments**

Conservation plans approved by the District board include conservation practices related to air quality issues. For example, a landowner's Pest Management practice may include the installation of low-drift nozzles to his or her spray equipment to prevent drift of pesticides. A second example is a landowner installing a compost facility to improve manure management and therefore reduce odor problems. A final example is a landowner planting trees to sequester carbon dioxide and provide a windbreak for deposition and dispersion of particulates and odorous compounds. In Washington County, all dairies have a current Comprehensive Nutrient Management Plan (CNMP), which includes components aimed at improving air quality.

## **Desired Conditions**

- Air meets air quality standards set by federal and state agencies
- Farmers and forest operators use practices that minimize to the greatest extent, discharge of air pollutants, particularly those toxic to humans, plants, fish and animals
- Producers who have used burning have developed alternate methods not requiring burning

## **Goals**

By end of 2015, have a demonstrated increase in:

- the number of conservation practices installed to address air quality issues,
- the number of producers following good smoke management practices when burning is conducted, and
- the number of producers that include consideration of air quality issues in their daily management.

## Strategies and Actions

**Table 1. Timeline of Desired Conditions and Actions for Energy Conservation and Greenhouse Gas Reduction.**

Benchmark	Timeline	Actions
Baseline data collection and identification of priority areas and practices	Dec 2011	<ul style="list-style-type: none"> <li>▪ Utilize air quality data from DEQ and EPA to establish baseline.</li> <li>▪ Create an air quality committee to identify priority areas throughout the county.</li> <li>▪ Create a list of conservation practices related to air quality that would be best suited to addressing the problem.</li> </ul>
Include air quality plan as a required element in all conservation plans	Dec 2012	<ul style="list-style-type: none"> <li>▪ Train staff on including air quality as an element of the conservation planning process.</li> <li>▪ Outreach to landowners within priority areas.</li> <li>▪ Include an air quality element in all conservation plans, not just the ones completed in priority areas.</li> <li>▪ Utilize analysis tools/models from NRCS and other partners.</li> <li>▪ Complete plans for 30% of the farms within the priority areas.</li> <li>▪ Emphasize conservation practices to improve air quality, including composting facilities, manure storage facilities, manure transfer, windbreak/shelterbreak establishment, and others.</li> <li>▪ Encourage owners of odor-producing facilities to implement practices to decrease potential nuisance impacts and meet all applicable state and local regulations.</li> </ul>
Conservation practices implemented	Dec 2013	<ul style="list-style-type: none"> <li>▪ Continue outreach.</li> <li>▪ Complete plans for 40% of the farms within the priority areas.</li> <li>▪ Follow-up with farms with conservation plans to identify how many air quality-related conservation practices were implemented.</li> <li>▪ Advocate for implementation of practices that address good air quality.</li> </ul>
Provide education and advice to landowners		<ul style="list-style-type: none"> <li>▪ Urge farmers and foresters to use practices that more effectively manage air emissions.</li> <li>▪ Encourage alternatives to burning.</li> </ul>

**Key partners necessary to achieve the desired conditions include:**

- Natural Resources Conservation Service
- Producers/landowners
- Oregon Department of Agriculture
- Oregon Department of Environmental Quality
- Environmental Protection Agency
- Municipalities

**Measurements**

- Number of conservation practices implemented
- Producer survey to identify implementation of good smoke management practices
- Producer survey to identify consideration of air quality issues in the management of agricultural activities