

Carcinogenic VOC's – Vancouver's 25-Year History

Tyler Clary

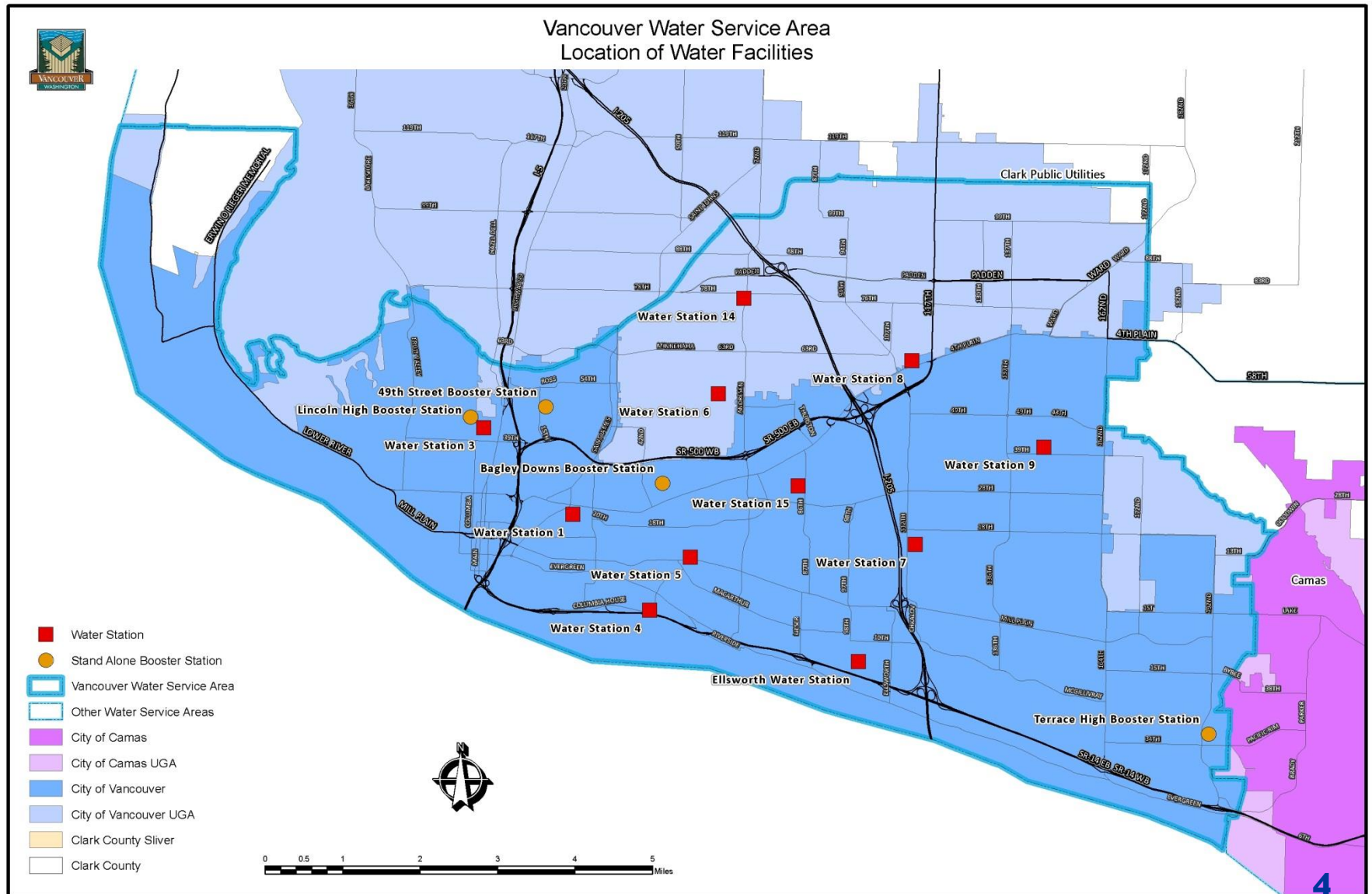
City of Vancouver



System Overview

- 4th Largest Utility in Washington
- Service area of 72-square-miles serving about 230,000 people
- 40 wells (depth range 100 ft to 1065 ft) from 3 aquifers
 - Orchards Aquifer
 - Troutdale Aquifer
 - Sand and Gravel Aquifer
- 987 miles of water distribution
- 9.8 billion gallons per year
- 70,000 customers

City of Vancouver Water Facilities/Service Area







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Chemical found in Vancouver water

By ANNE DONELSON

Correspondent, *The Oregonian*

VANCOUVER, Wash. — Varying levels of the contaminant tetrachloroethylene — which federal investigators call a possible cancer-causing agent — have been found in city wells that supply drinking water to the south-central area of Vancouver.

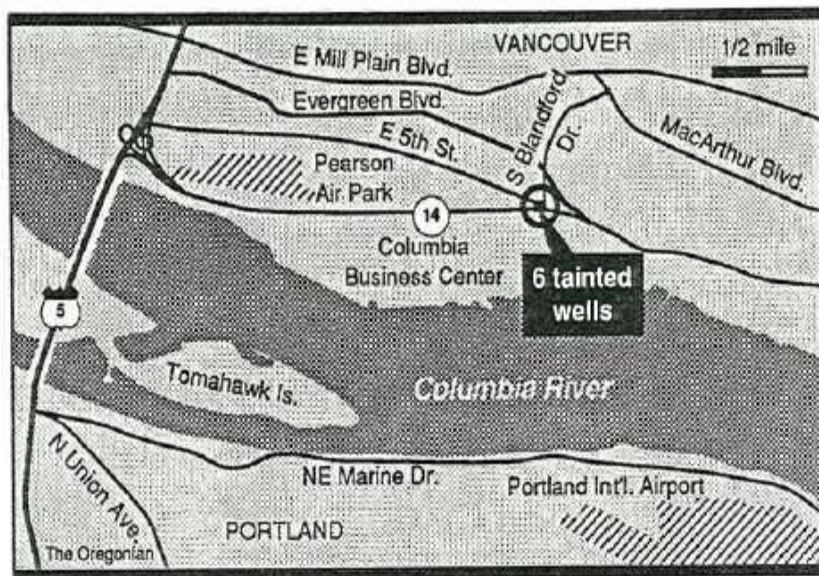
State and city tests reveal the compound, commonly referred to as PCE, is present in the six wells of the well field at Blandford Drive and Washington 14, about a half-mile east of Pearson Air Park. Test results were negative in the other 30 wells in the city's municipal water supply system.

The tests began last spring, but results were not made public. Two of the wells with the lowest concentration of PCE still are being used regularly; the other four are being used for backup supplies.

"There's no reason or regulation to announce (the tests results) if we don't exceed safe drinking water standards," said City Engineer Victor Ehrlich. "There is no reason for alarm. These are very low levels."

Tetrachloroethylene is a degreaser and cleaning solvent often used in dry cleaning and printing establishments. Based on animal research, the U.S. Environmental Protection Agency has identified PCE as a possible cancer-causing agent.

A toxicologist from the state



Department of Social and Health Services told City Council members at a workshop Monday that the levels in Vancouver's water supply do not pose a threat to the population.

Using the figure of 10 parts per billion of PCE, Roseanne Lorenzara said if one million residents drank two liters of water per day for 70 years there would be an additional 16 cases of cancer.

Federal safety standards have not yet been set on the compound, but the EPA is expected to announce standards in April.

"The presence of the compound is not a major threat, but it needs to be addressed and eliminated," said Tom Barton, director of environ-

mental health for the Southwest Washington Health District.

Bill Litke, head of the drinking water section at the Department of Social and Health Services, said he didn't think there was "an immediate health problem" in Vancouver.

Tests of the city's water for PCE vary widely. Three samples analyzed by the state in March, May and October uncovered levels ranging from 7.8 parts per billion to 10.1 parts per billion.

Subsequent tests performed by the city revealed four wells with levels ranging from 4.1 parts per billion to 19.4 parts per billion. However, tests in January showed only three and four parts per billion.

The EPA is expected to issue a maximum PCE standard that could range anywhere from five parts per billion to 20 parts per billion, Ehrlich said.

If the federal standard turns out to be lower than the level present in the city's water system, Vancouver could be faced with some expensive alternatives for getting rid of the chemical.

Tetrachloroethylene evaporates easily, and some areas use aeration to dispose of the contaminant, Barton said.

However, that process is expensive, as would be abandoning the well field and relocating some of the city's water storage facilities.

"We'd like to avoid that and find out where things are coming from," Ehrlich said.

In 1988, the city tested for a variety of organic compounds regulated by the EPA, including trichloroethylene, or TCE. That compound along with PCE was found in Milwaukie's water supply last year, prompting that city's officials to begin buying water from Portland's Bull Run reservoir.

The presence of PCE in Vancouver's water has prompted a request to the Vancouver City Council for a \$75,000 study to determine the source of the contamination. If the study points to particular businesses or industries in the area, they could be responsible for costs of the cleanup, Ehrlich said.

WS 4 History

- PCE found in water in 1988 at 14 ppb
- Investigation began and consultant hired
- Concentration continued to climb, 4 of 6 wells shutdown early 1989
- Wellfield shutdown Oct. 1989
- New projects initiated to get water where needed
- Treatment system construction 1991 – 1992
- Listed as Superfund site in 1992

EPA Action



CLARK COUNTY

Community
news and
features

EPA to give up efforts to track down wellfield polluters

Budget cuts force the federal agency to rethink their plans to find the source of cancer-causing chemicals at Vancouver's Blandford water station and Waterworks Park

By SHIRLEEN HOLT
Correspondent, The Oregonian

VANCOUVER — Federal chemical detectives have abandoned efforts to find the sources of cancer-causing chemicals that tainted two Vancouver municipal wellfields.

Although the Blandford water station remains on the national Superfund list and Waterworks Park is still proposed for that list, Environmental Protection Agency officials say federal budget cutbacks have forced them to "reprioritize" their efforts.

Regional site manager Debbie Yamamoto said Vancouver's problem is less urgent now that the city is treating the contaminated water through newly

erected air strippers.

"Is there still a source out there that needs to be cleaned up? That's the thing that's on hold," Yamamoto said. She has been reassigned to a toxic waste site in Tacoma.

The city was banking on the EPA to pinpoint the sources of the contamination and force the guilty parties to pay some of the \$6.5 million it cost to build and operate the treatment plants.

Now utility officials must decide whether to pursue the matter on their own. "You have to look at the cost effectiveness of that," public works director John Ostrowski said Thursday.

The EPA's decision comes as no surprise to the agency's critics, who have complained that the Superfund is a

bloated bureaucracy that spends a lot of time accomplishing little.

Although Ostrowski is more diplomatic, he concedes that agency is bogged down in procedure.

"The plan has gone awry here," Ostrowski said.

After three years studying Blandford and one year at Waterworks Park, the EPA has been unable to find the culprits.

Investigators suspected that separate dry cleaners improperly disposed solvents that eventually seeped into the aquifer near the stations, lacing the groundwater with tetrachloroethylene, or PCE.

Officials have never confirmed

whether the defunct Griffie's Cleaners was responsible for contaminating Blandford's water.

Testing around Waterworks Park also was inconclusive. Although a dry cleaning business on Fourth Plain Boulevard is suspected, Yamamoto said the PCE could have come from one of many dry cleaners in the area that have since closed shop.

The EPA originally anticipated cleaning up the sites. Officials now say that the city's ongoing treatment system may be the most efficient method of ridding the PCE, which they believe has sunk to the bottom of the aquifer.

The Blandford station resumed operations in early 1992, three years after it was shut down because levels of PCE

exceeded 100 parts per billion.

The water is now pumped through two aeration towers, which evaporate the compound until the water meets the allowable standard of 5 parts per billion or less.

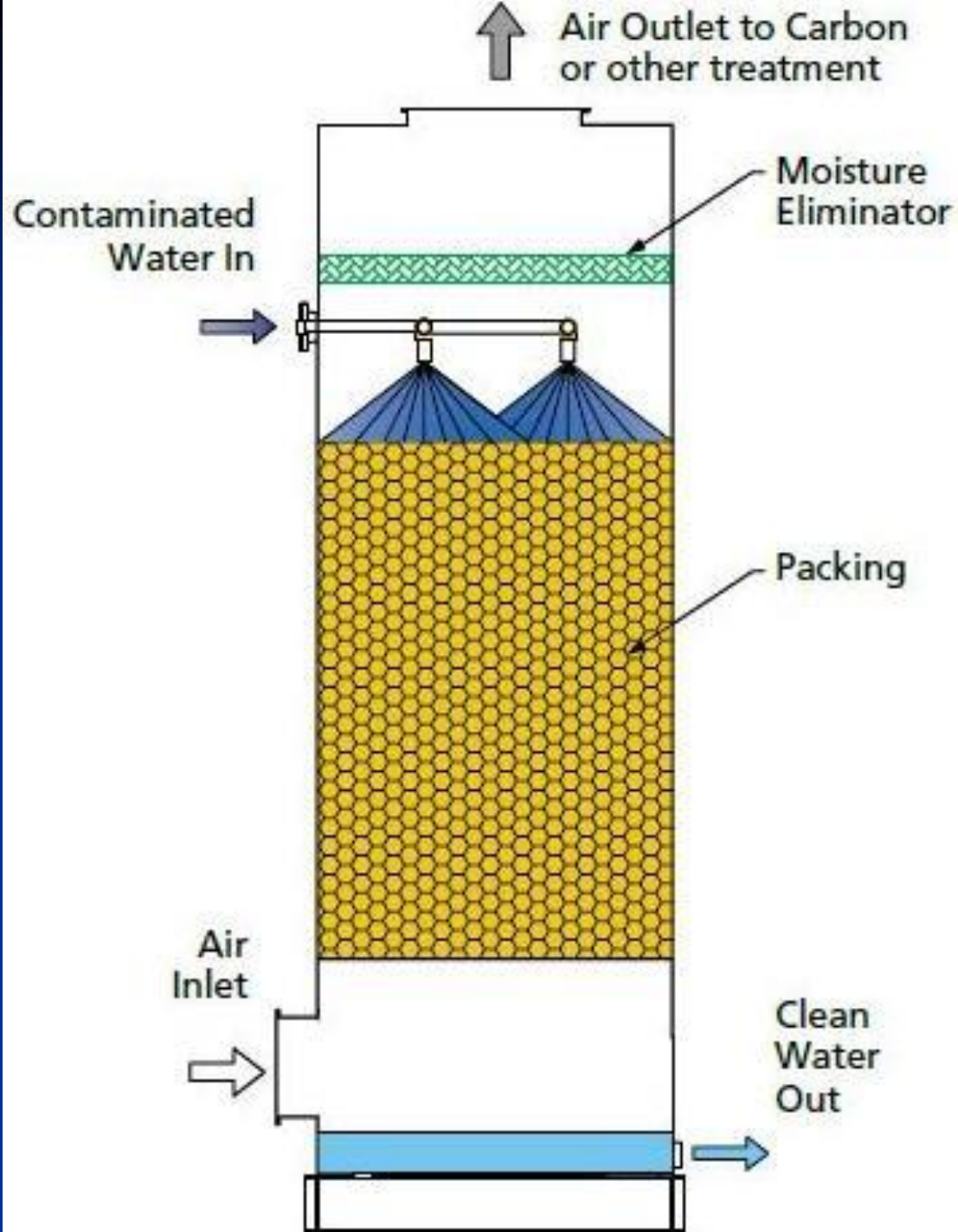
The city erected five air strippers at Waterworks Park, its largest station, even though PCE levels in the reservoir hovered around 2 parts per billion.

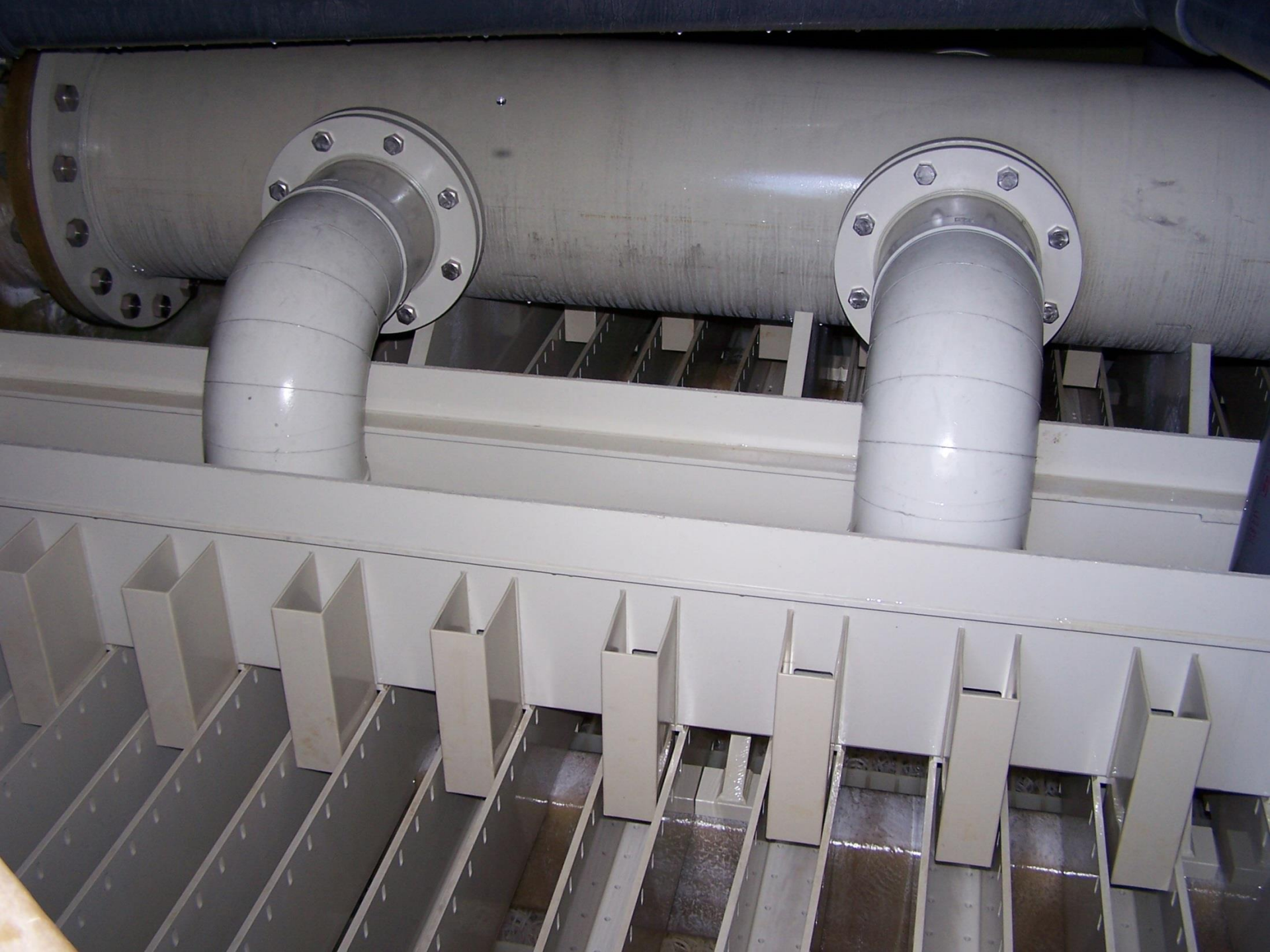
(To give it a perspective, engineer John Rundquist said 1 part per billion is about as significant as "your first step on a walk to the moon.")

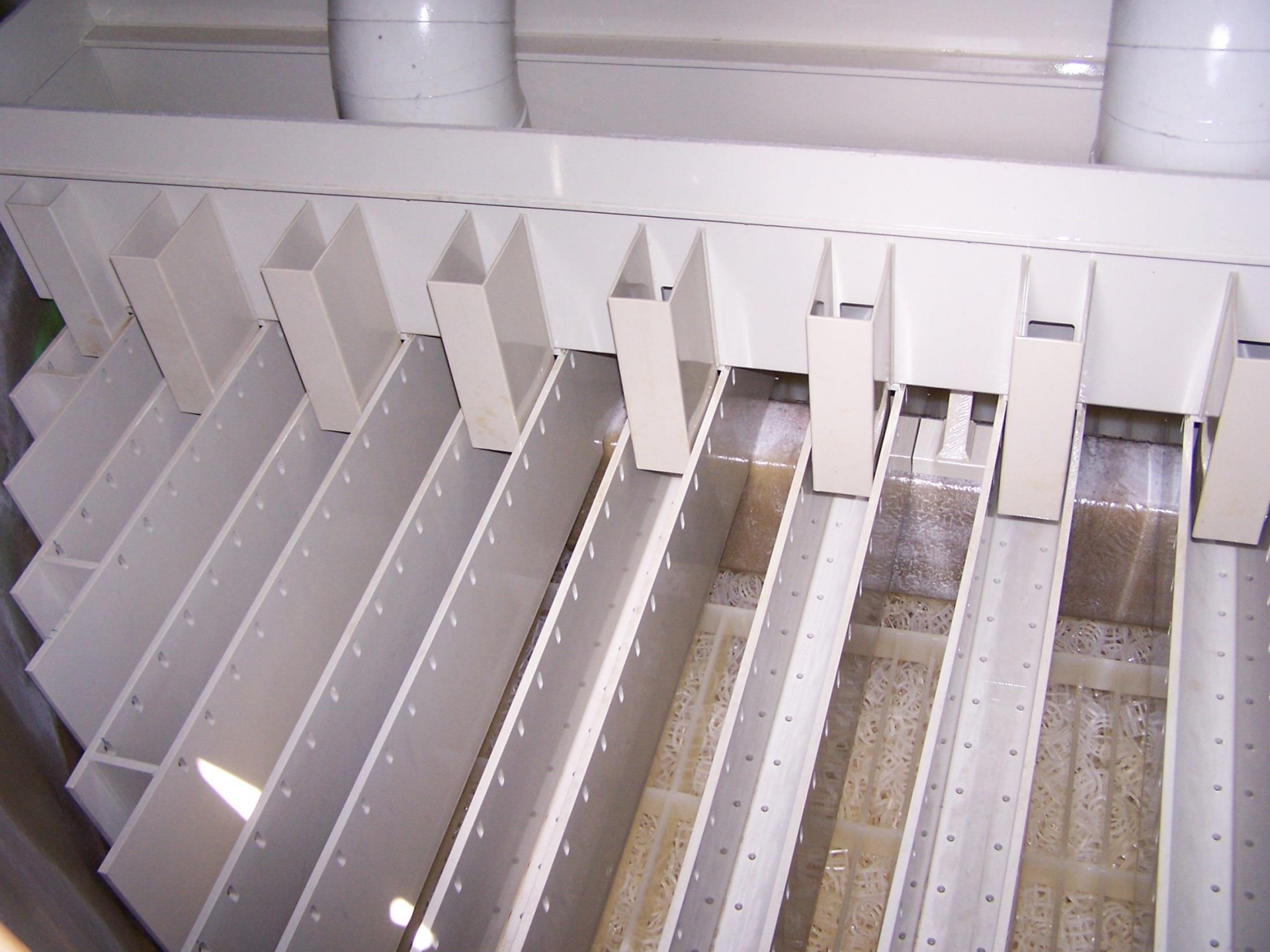
With the argument they'd rather be safe than sorry, officials opted to build the Waterworks towers now to avoid a possibly debilitating shutdown in the future.

- EPA studied and in 1993 said no source identified
- City's consultant identified as two dry cleaners









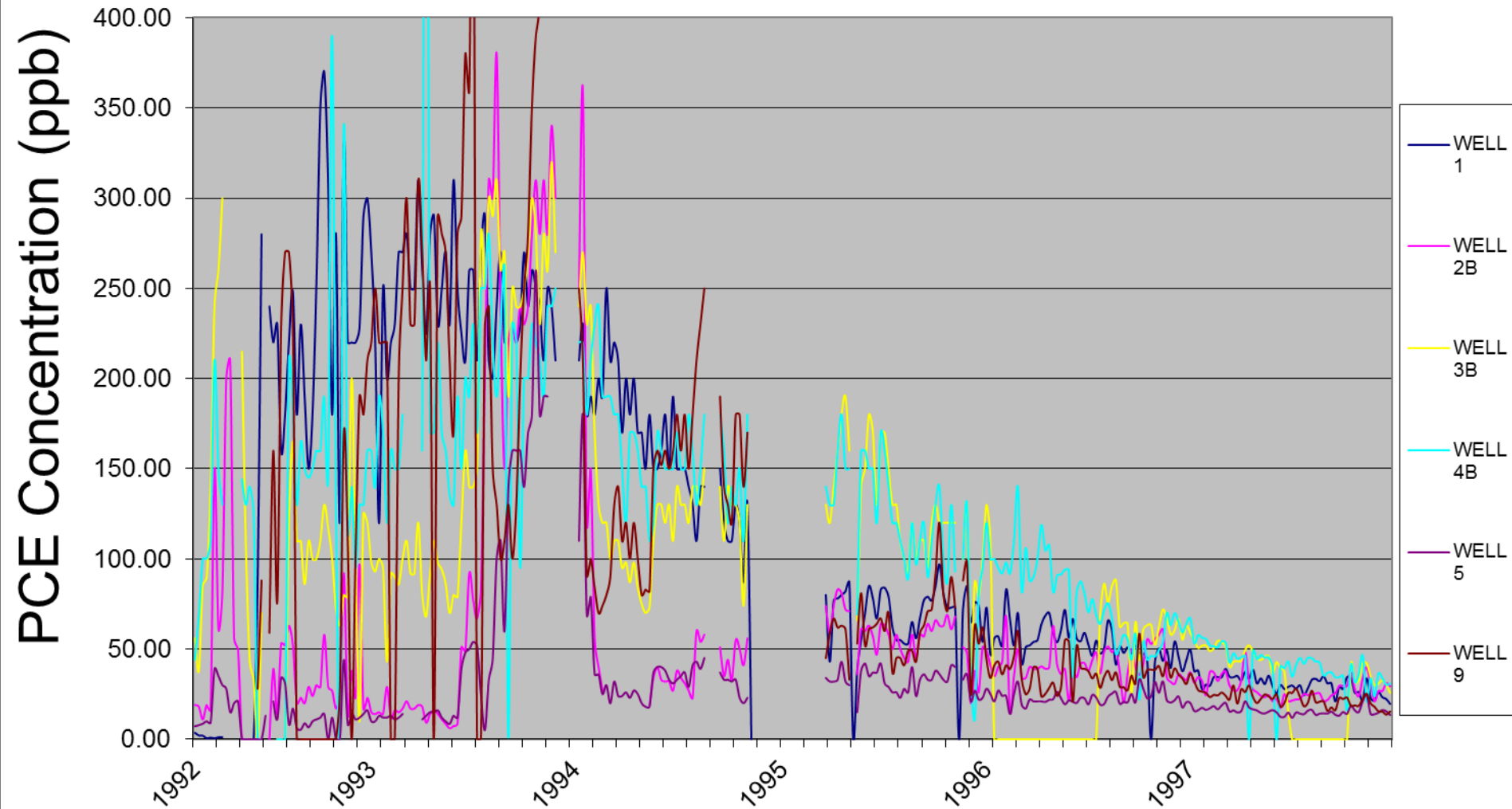


WS 4 History

- Treatment system inadequate in 1992 when concentrations spiked to >300 ppb
- Went from parallel to series operations
- Concentrations dropped and went back to parallel operation 2001
- Only two wells operated
- Needed to operate additional wells
- Years of convincing paid off

Water Station 4

PCE Levels 1992 - 1997



Lawsuit Fun

- 1994 City filed lawsuit with two dry cleaners identified as source
- 1997 - 1998 settled for \$1.4 Million
- 1999 City identified insurance carriers for the city from 1968 – 1986 and settled for \$4.1 Million



GAC Units

- 4 radial vapor phase units containing 1,600 lbs each Granular Activated Carbon
- Contract for removal, transport, regeneration and return of carbon 3 times/yr
- Carbon reused



GAC Units

- Big Expense
- Lack of Performance
 - typical removal of 5 - 10 lbs PCE per 100 lbs of GAC
 - COV achieving PCE removal 0.7 lbs per 100 lbs GAC
- Worked with SWCAA to eliminate Carbon in 2009
- Lawsuit for Carbon Regeneration

WS I History

- 1989 PCE detected in well supply (concentration 0 – 7 ppb)
- 40% of water supply
- City acted conservatively and installed treatment
- Treatment system operational 1993



WS 1 History

- EPA studied for 1 year with no source identified
- Likely a dry cleaner
- WDOH retroactively paid for treatment
- Current PCE concentration of 1 ppb



GAC Units

- Five 9,100 # GAC Units
- GAC replacement Every 20 years at \$90,000
- \$300/lb of PCE to remove from airstream



GAC Units

- Uncontrolled emissions far below the permit limit of 400 lbs/yr
- Uncontrolled emissions of 27 lbs/yr
- Removed GAC in 2004

Where's the Maintenance

- More equipment, but small amount of maintenance
- Fan belts replace 1 time per year
- Demister issues
- Screen on air inlets clean 3 times per year
- No internal cleaning required



Questions/Discussion

