COUNTY COUNCIL
COUNTY OF MAUI
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793
www.MauiCounty.us

January 25, 2018

Mr. Anders Lyons, Chair
Board of Water Supply
c/o Department of Water Supply
County of Maui
Wailuku, Hawaii 96793

Dear Mr. Lyons:

SUBJECT: **WELLHEAD PROTECTION OVERLAY DISTRICT** (WR-18)

At its meeting of January 24, 2018, the Water Resources Committee discussed the attached proposed bill entitled "A BILL FOR AN ORDINANCE AMENDING TITLE 19, MAUI COUNTY CODE, TO ESTABLISH A WELLHEAD PROTECTION OVERLAY DISTRICT." The purpose of the proposed bill is to 1) protect the public's health, welfare, and safety by minimizing the risks of contamination of aquifers; 2) preserve and protect existing and potential drinking water sources; 3) implement land use policies consistent with the Maui County General Plan and Community Plans; and 4) restrict and prohibit land uses that are incompatible with groundwater protection.

Also attached is a copy of testimony received from Mr. Robert Whittier, State Department of Health ("DOH"), Safe Drinking Water Branch, relating to the DOH's support of the proposed bill.

May I please request your review and comment of the proposed bill. The Water Resources Committee intends to schedule the matter for discussion at its meeting on March 14, 2018. Therefore, may I further request you transmit your comments no later than **Tuesday, March 6, 2018**, to meet internal posting deadlines.

Should you have any questions, please contact me or the Comm[illegible] taff (Shelly Espeleta at 270-7134, or Stacey Vinoray at 270-8006).

Sincerely,

ALIKA ATAY, Chair
Water Resources Committee

Attachments

wr:ltr:018a01:ske

3/19/14 DRAFT

ORDINANCE NO. _____

BILL NO. _____ (2014)

A BILL FOR AN ORDINANCE AMENDING TITLE 19, MAUI COUNTY CODE, TO ESTABLISH A WELLHEAD PROTECTION OVERLAY DISTRICT

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Title 19, Maui County Code, is amended by adding a new chapter to be appropriately designated and to read as follows:

"**CHAPTER 19.94**

WELLHEAD PROTECTION OVERLAY DISTRICT

Sections:

19.94.010 Purpose and intent. Maui County recognizes that many residents rely on groundwater for their safe drinking water supply, and that certain land uses may contaminate groundwater sources. To ensure the protection of these drinking water sources, this ordinance establishes a zoning overlay district to be known as the Wellhead

Protection Overlay District ("WPOD"). The purpose and intent of the WPOD is to:

A. Protect the public's health, welfare, and safety by minimizing the risks of contamination of aquifers;

B. Preserve and protect existing and potential drinking water sources;

C. Implement land use policies consistent with the Maui County General Plan and Community Plans; and

D. Restrict and prohibit land uses that are incompatible with groundwater protection.

19.94.020 Definitions. The following definitions shall apply to this chapter. Terms not defined below shall have the meanings set forth in section 19.04.040 of this code, unless the context clearly indicates a different meaning:

"Confined animal feeding operation" means a lot or facility (other than an aquatic animal production facility) where animals will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period, and where crops, vegetation forage growth, or post harvest residues are not sustained in the normal growing season over any portion of the lot or facility. Pasture operations are not confined animal feeding operations.

"Contamination" means an impairment of water quality by one or more of the regulated substances listed in Appendix A attached hereto.

"Dump" means a lawfully operated and privately owned refuse disposal site.

"Hazardous material" means substances that are identified as hazardous wastes by the U.S. Environmental Protection Agency set forth in 40 CFR Part 261 Subpart D or identified as a hazardous substance designated by the U.S. Environmental Protection Agency pursuant to 40 CFR part 302.

"Integrated Pest Management" means a decision-making process that considers cultural, mechanical, biological and chemical controls of pests such as insects or rodents. Control mechanisms are selected as each situation warrants. Where chemical control is indicated, specific pest populations are targeted for treatment when they are most vulnerable rather than a general pesticide application.

"Landfill" means any sanitary landfill maintained and operated by the County.

"Primary Containment Facility" means a tank, pit, container, pipe or vessel containing a liquid or chemical that is not a secondary containment facility.

"Public Water System" as per the administrative rules of the State of Hawaii Department of Health (HAR 11-20-2), means a water system which provides water for human consumption, through pipes or other constructed conveyances if the system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of any 12-month period. Such term includes: (1) any collection treatment, storage and distribution facility under control of the operator of such system, and (2) any collection or pretreatment storage facility not under such control which are used primarily in connection with such system.

"Regulated substances" means substances regulated under the National Drinking Water Regulations implementing the Safe Drinking Water Act or under the Rules Relating to Public Water Systems pursuant to Hawaii Administrative Rules Title 11 Chapter 20 and listed in Appendix A, attached hereto and incorporated herein by reference and may be amended in the same manner as any part of this chapter.

"Release" means any unplanned or unpermitted discharge, leak, or spill of a potential contaminant including a hazardous material.

"Secondary Containment Facility" means a second tank, catchment pit, pipe, or vessel that limits and contains liquid or chemical leaking or leaching from a primary containment area.

"Sewage sludge" means any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, industrial process, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant.

"Time of Travel" ("TOT") distance means the distance that groundwater will travel in a specified time. This distance is generally a function of the permeability and slope of the aquifer.

"Wellhead protection area" means the surface and subsurface area surrounding a water well or well field that supplies a public water system, through which contaminants are reasonably likely to move toward and reach the water well or well field.

"Wellhead protection overlay district" (WPOD) means the zoning district consisting of the wellhead protection areas as identified on the maps entitled "Wellhead Protection Overlay District Zones", dated June 4, 2013, on file in the Office of the County Clerk with certified copies being placed on file in the Department of Planning and the Department of Water Supply.

19.94.030 Applicability. This ordinance shall apply to wellhead protection overlay district zones as defined herein for Department of Water Supply wells. Nonconforming uses as defined in

section 19.04.040 are subject to the provisions of section 19.500.110 of this code.

19.94.040 Wellhead protection overlay district zones and maps. WPOD zones are delineated by the University of Hawaii Department of Geology and Geophysics utilizing a fixed distance for Zone A nearest to the well, and TOT distance criteria for Zones B and C using the United States Geological Survey three-dimensional numerical groundwater model MODFLOW followed by a particle tracking program MODPATH. Zone B is intended to designate a conservative estimate of the area that may contribute bacteria and viruses to the wellhead. A two-year TOT criterion is based on survival times for bacteria and viruses in soil and groundwater. Zone C is based on a ten-year TOT to allow sufficient time to implement management and remedial measures to mitigate contamination from accidental contaminant spills and other causes.

A. The WPOD zones are superimposed on all current zoning districts and identified on the maps entitled "Wellhead Protection Overlay District Zones", dated June 4, 2013, on file in the Office of the County Clerk with certified copies being placed on file in the Department of Planning and the Department of Water Supply. Said Wellhead Protection Overlay District zone maps shall be deemed to be incorporated herein by reference, and may be amended in the same manner as any part of this chapter.

B. The WPOD zones are designated as follows:

1. ZONE A - 50 feet direct chemical contamination zone. Zone A is defined as the fixed 50-foot radius around each well. The purpose of this zone is to provide protection from vandalism, tampering, and other threats at a well site.

2. ZONE B - Indirect microbial contamination zone. Zone B consists of the surface area overlying the portion of an aquifer that contributes water to the well within two years..

3. ZONE C - Indirect chemical contamination zone. Zone C consists of the surface area overlying the portion of an aquifer that contributes water to the well within ten years.

19.94.050 Regulations for Zone A. Permitted uses: Necessary public utilities/facilities including the construction, maintenance, repair, and enlargement of drinking water supply-related facilities including but not limited to wells, pipelines, aqueducts, and tunnels.

19.94.060 Regulations for Zone B.

A. Permitted uses: All uses permitted in the underlying zoning districts, unless required to obtain a wellhead protection permit pursuant to subsection B below, or prohibited in subsection C below.

B. Permit required. The following uses in Zone B shall require a wellhead protection permit issued by the director of Water Supply pursuant to section 19.94.080.

1. Commercial automobile body/repair shops.

2. Car washes.
3. Cement/concrete plants.
4. Gas stations.
5. Fleet/trucking/bus terminals.
6. Dry cleaners.
7. Irrigated crops using soil fumigants (>50 acres) or pesticides rated by the U.S. Environmental Protection Agency as having high leachability potential.
8. Commercial machine shops.
9. Commercial wood preserving/treating facilities.
10. Confined animal feeding operations.
11. Commercial equipment maintenance/fueling areas.
12. Hospitals.
13. Parking lots/malls (>50 spaces).
14. Waste transfer/recycling stations.
15. All non-residential facilities involving collection, handling, manufacture, use, storage, transfer or disposal of more than 55 gallons of petroleum products or more than 55 gallons for any other regulated substance as defined herein.
16. Subdivisions that create three (3) or more residential or residential mixed use developable lots.

C. Prohibited uses. The following uses are prohibited within Zone B.
1. New cesspools.
2. Commercial electrical/electronic manufacturing facilities that utilize regulated substances as defined herein.
3. Mortuaries/graveyards.
4. Golf courses.
5. Commercial metal plating/finishing/fabricating facilities that utilize regulated substances as defined herein.
6. Commercial chemical processing/storage facilities.
7. Plastics/synthetic production facilities that utilize regulated substances as defined herein.
8. Commercial junk/scrap/salvage yards.
9. Mines.
10. Landfills/dumps.
11. Injection wells/dry wells/sumps on non-residential properties.
12. Irrigation with reclaimed wastewater classes R2 and R3.
13. Sewage sludge land applications.
14. Commercial slaughterhouses.
15. Wastewater percolation ponds.

19.94.070 Regulations for Zone C.

A. Permitted uses: All uses permitted in the underlying zoning districts, unless required to obtain a wellhead protection permit pursuant to subsection B below, or prohibited in subsection C below.

B. Permit required. The following uses in Zone C shall require a wellhead protection permit issued by the director of Water Supply pursuant to section 19.94.080.

1. Commercial automobile body/repair shops.
2. Gas stations.
3. Fleet/trucking/bus terminals.
4. Dry cleaners.
5. Golf courses.
6. Commercial machine shops.
7. Commercial wood preserving/treating facilities.
8. Confined animal feeding operations.
9. Commercial equipment maintenance/fueling areas.
10. All nonresidential facilities involving collection, handling, manufacture, use, storage, transfer or disposal of more than 55 gallons of petroleum products or more than 10 gallons of any other regulated substance as defined herein.
11. Subdivisions that create three (3) or more developable residential lots, including residential/mixed use lots.

C. Prohibited uses. The following uses are prohibited within Zone C:

1. New cesspools.
2. Commercial electrical/electronic manufacturing facilities that utilize regulated substances as defined herein.
3. Commercial chemical processing/storage facilities.
4. Commercial plastics/synthetic production facilities that utilize regulated substances as defined herein
5. Commercial junk/scrap/salvage yards.
6. Commercial metal plating/finishing/fabricating facilities that utilize regulated substances as defined herein.
7. Mines.
8. Landfills/dumps.
9. Injection wells/dry wells/sumps on non-residential properties.
10. Wastewater percolation ponds.

19.94.080 Wellhead protection permits.

A. Wellhead protection permit applications shall be submitted to the director of Water Supply, and shall include:

1. The name, address, and phone number of the applicant who will be responsible for implementation of best management practices;
2. Verification of property ownership; authorization by all property owners if the applicant is not the sole owner of the subject property.
3. The tax map key of the project site;
4. A plot plan showing the project location on the tax map key parcel;

5. A description of the proposed use, including names and quantities of any regulated substances collected, handled, manufactured, used, stored, transferred or disposed of at the project site;

6. A Best Management Plan addressing all activities subject to the Wellhead Protection Permit;

7. Additional information as may be requested by the director of Water Supply.

B. Permit processing.

1. Upon receipt of a complete application, the director of Water Supply shall approve or deny the application pursuant to the requirements of this chapter, and may impose conditions upon the proposed use to ensure that the purpose and intent of this chapter are met. If a complete application does not meet the requirements of this chapter, it shall be denied.

2. Initial permits shall be valid for a period of up to five (5) years. Subsequent permit renewals and permit amendments may be granted by the director of Water Supply for longer duration. In reviewing applications for renewals, the director of Water Supply shall require evidence of compliance with applicable best management practices and any other permit conditions.

3. All permits and renewals shall contain a provision for inspection at reasonable times and upon presentation of appropriate credentials.

C. Revocation and Appeal. Any wellhead protection permit may be revoked at any time and/or may not be renewed by the director of Water Supply if the permit terms and conditions have been violated or if the requirements of this chapter have not been met. Appeals of permit denials, revocations, non-renewals or alleging errors shall be heard and determined by the board of variances and appeals pursuant to chapter 19.520 of this code.

19.94.090 Best Management Practices. The following standards shall apply to uses in Zones B and C of any WPOD.

A. Any non-residential facility involving the collection, handling, manufacture, use, storage, transfer or disposal of more than 55 gallons of petroleum products or more than 10 gallons of any regulated substance as defined herein, must have a secondary containment system which shall be easily inspected and whose purpose is to intercept any leak or release from the primary containment vessel or structure.

B. Confined animal facilities shall meet the minimum requirements for operating a confined animal facility set forth in Department of Health "Guidelines for Livestock Waste Management dated January 19, 2010" as may be amended.

C. The irrigation of crops shall follow Integrated Pest Management in accordance with U.S. Department of Agriculture Natural Resources Conservation Service Technical Guide dated 1989, as may be amended.

D. Subdivisions that create three (3) or more residential or residential mixed use developable lots in unsewered areas resulting in septic systems that serve more than one residential unit per acre shall install aerobic treatment units or alternative treatment units achieving equal or higher level of wastewater treatment.

E. Parking lots shall be maintained on a yearly basis, including cleaning catch basins, and sweeping and sealing cracks. Runoff from parking lots should be diverted to storm water drains.

F. Waste transfer/recycling stations shall have an operating manual to insure that only clean, marketable recyclables are collected. Storage of residuals shall be accomplished to prevent spillage and leaking.

G. Golf course development shall meet best management practices for use of nutrients and pesticides as set forth in "Golf Course Management Measure", Hawaii's Coastal Nonpoint Pollution Control Program Management Plan, dated June 1996, as may be amended.

H. Construction activities shall be in accordance with chapter 20.08 of this code and these standards:

1. There shall be a designated person on site during operating hours who shall be responsible for supervising the use, storage, and handling of hazardous material and who shall take appropriate mitigating actions necessary in the event of fire or spill.

2. Hazardous materials left on site when the site is unsupervised must be inaccessible to the public. Locked storage sheds, locked fencing, locked fuel tanks on construction vehicles, or other techniques may be used if they will preclude access.

3. Construction vehicles and stationary equipment that are found to be leaking fuel, hydraulic fluid, and/or other hazardous materials shall be removed from the site and from any wellhead protection zone. The vehicle or equipment may be repaired in place, provided the leakage is completely contained.

4. Hazardous materials shall not be allowed to enter stormwater systems.

19.94.100 Design guidelines. A. The following design guidelines shall apply to subdivisions that create three (3) or more residential or mixed use developable lots.

1. Proposed development and uses should be located as far from the wellhead as feasible.

2. Storm-water infiltration basins should be located outside the WPOD where feasible.

3. Active parks and schools should implement Integrated Pest Management.

4. If development or use is proposed on property which is partially within a WPOD, the proposed development or use should be located to the maximum extent feasible on the portion of the property that is outside the WPOD

19.94.110 Liability. Nothing in this ordinance shall be construed to imply that the County of Maui has accepted any of an

owner/developer's liability if a permitted facility or use contaminates groundwater in any aquifer.

19.94.120 Interpretation of District Boundaries.

A. If parts of a parcel lie within one or more of the delineated zones of the WPOD, the parts shall be governed by the restrictions applicable to the zone in which the part of the property is located.

B. Where the boundary between two WPOD zones passes through a facility, the entire facility shall be considered to be in the more restrictive zone.

C. Where the facility, or portion thereof, is overlapped by delineated zones of the WPODs of different wells or wellfields, the stricter zone(s) shall apply.

19.94.130 Enforcement. Any violation of this chapter shall be enforced pursuant to chapter 19.530 of this code, and through revocation or non-renewal as prescribed herein.

19.94.140 Administrative Rules. The Planning director and the director of Water Supply may adopt administrative rules regarding the administration of this chapter, pursuant to chapter 91, Hawaii Revised Statutes.

19.94.150 Severability. Should any section or provision of this ordinance be declared invalid, such decision shall not affect the validity of the ordinance as a whole or any other part thereof. A determination that any portion or provision of this overlay protection district is invalid shall not invalidate any permit previously issued thereunder.

SECTION 2. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM
AND LEGALITY:

EDWARD S. KUSHI, JR.
First Deputy Corporation Counsel
S:\ALL\ESK\Ords\Title 19, Chapter 19.24 Wellhead Protection Overlay District.wpd

Appendix A. REGULATED SUBSTANCES

CONTAMINANT	CHEMICAL TYPE	SOURCE OF CONTAMINANT	CASRN
1,1,1,2-tetrachloroethane	Organic chemical	Industrial chemical used in the production of other substances	630-20-6
1,1,1-Trichloroethane	Organic chemical	Metal degreasing sites and other factories	71-55-6
1,1,2-Trichloroethane	Organic chemical	Industrial chemical factories	79-00-5
1,1-Dichloroethylene (DCE)	Organic chemical	Discharge from industrial chemical factories	75-35-4
1,2 Dibromo-3-chloropropane (DBCP)	Organic chemical	Soil fumigant, banned	96-12-8
1,2,3-Trichloropropane (TCP)	Synthetic chemical	Industrial chemical used in paint manufacture	96-18-4
1,2,4-Trichlorobenzene	Organic chemical	Textile finishing factories	120-82-1
1,2-Dichloroethane	Organic chemical	Discharge from industrial chemical factories	107-06-2
1,2-Dichloropropane	Organic chemical	Discharge from industrial chemical factories	78-87-5
2,4,5-TP (Silvex)	Synthetic chemical	Residue of banned herbicide	93-72-1
2,4-D	Synthetic chemical	Herbicide on row crops	94-75-7
Acrylamide	Organic chemical	Added to water during sewage/wastewater treatment	
Alachlor	Synthetic chemical	Herbicide on row crops	15972-60-8
Antimony	Inorganic chemical	Discharge from petroleum refineries, fire retardants, ceramics, electronics, solder	7440-36-0
Arsenic	Inorganic chemical	Runoff from orchards, glass & electronics production wastes	7440-38-2
Asbestos fiber>10 microm.	Inorganic chemical		
Atrazine	Synthetic chemical	Herbicide	912-24-9
Barium	Inorganic chemical	Drilling wastes, metal refineries	7440-39-3
Benzene	Organic chemical	Factory discharge, leaching from gas storage tanks and landfills	71-43-2
Benzo(a)pyrene	Synthetic chemical	Leaching from lining of water storage tanks and landfills	50-32-8
Beryllium	Inorganic chemical	Metal refineries, coal burning factories, electrical and defense industry	7440-41-7
Beta particles and photon emitters	Radionuclide		
Bromate		Byproduct of drinking water disinfection	
Bromodichloromethane	Trihalomethane		
Bromoform	Trihalomethane		
Cadmium	Inorganic chemical	Corrosion of galvanized pipes, discharge from metal refineries, runoff from waste batteries and paints	7440-43-9
Carbofuran	Synthetic chemical	Soil fumigant	1563-66-2
Carbon tetrachloride	Organic chemical	Discharge from chemical plants and other industry	56-23-5
Chlordane	Organic chemical	Residue of banned termiticide	57-74-9
Chlorite		Byproduct of drinking water	

		disinfection	
Chlorobenzene	Organic chemical	Discharge from chemical and agricultural chemical factories	
Chloroform	Synthetic chemical		
Chromium	Inorganic chemical	Discharge from steel and pulp mills	7440-47-3
cis-1,2-Dichloroethane	Organic chemical	Discharge from industrial chemical factories, solvent for resins and fats, photography, photocopying, cosmetics, drugs, and as a fumigant for grains and orchards	
cis-1,2-Dichloroethylene	Organic chemical	Discharge from industrial chemical factories	156-59-2
Coliform	Microbe		
Copper	Inorganic chemical		
Coxsackieviruses	Enterovirus	Corrosion of household plumbing	
Cryptosporidium	Microorganism	Human and animal fecal waste	
Cyanide	Inorganic chemical	Discharge from steel/metal factories, plastic and fertilizer factories	
Dalapon	Organic chemical	Herbicide on right of way	75-99-0
Di(2-ethylhexyl)adipate	Organic chemical	Discharge from chemical factories	103-23-1
Di(2-ethylhexyl)phthalate	Organic chemical	Discharge from rubber & chemical factories	117-81-7
Dibromochloromethane	Trihalomethane		
Dichloromethane	Organic chemical	Discharge from drug & chemical factories	75-09-2
Dinoseb	Organic chemical	Herbicide used on soybeans & vegetables	88-85-7
Dioxin (2,3,7,8-TCDD)	Synthetic chemical	Incineration of waste, discharge from chemical factories	1746-01-6
Diquat	Organic chemical	Herbicide	85-00-7
Endothall	Organic chemical	Herbicide	145-73-3
Endrin	Organic chemical	Banned insecticide	72-20-8
Epichlorohydrin	Synthetic chemical	Discharge from industrial chemical factories, impurity of some water treatment chemicals	
Ethelynedibromide (EDB)	Synthetic chemical	Discharge from petroleum refineries	106-93-4
Ethylbenzene	Synthetic chemical	Discharge from petroleum refineries	100-41-4
Fluoride	Inorganic chemical	Water additive, discharge from fertilizer and aluminum factories	16984-48-8
Giardia lamblia	Microorganism	Human and animal fecal waste	
Glyphosate	Synthetic chemical	Herbicide	1071-53-6
Gross alpha particle activity	Radionuclide		
HAA5 (Haloacetic acids)	Haloacetic acids	Byproduct of drinking water disinfection	
Heptachlor	Synthetic chemical	Residue of banned termiticide	76-44-8
Heptachlor epoxide	Organic chemical	Breakdown of heptachlor	1024-57-3
Heterotrophic Plate Count (HPC)	Microorganism	HPC measures a range of bacterial that are naturally present in the environment	
Hexachlorobenzene	Organic chemical	Discharge from metal refineries and agricultural chemical factories	118-74-1
Hexachlorocyclipentadiene	Organic chemical	Discharge from chemical factories	77-47-4

Inorganic Mercury	Inorganic chemical	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands	
Lead	Inorganic chemical	Corrosion of household plumbing	
Legionella	Microorganism	Found naturally in water, multiplies in heating systems	
Lindane	Organic chemical	Insecticide used on cattle, lumber, gardens	58-89-9
Mercury (inorganic)		Discharge from refineries, factories. Runoff from landfills and croplands	7439-97-6
Methoxychlor	Organic chemical	Insecticide used on fruits, vegetables, alfalfa, livestock	72-43-5
Monochlorobenzene			108-90-7
Naphthalene	Synthetic hydrocarbon	Manufacturing dyes, explosives, plastics, and lubricants.	
Nitrate (Nitrogen)	Inorganic chemical	Fertilizer use, septic tanks, sewage	14797-55-8
Nitrite (Nitrogen)	Inorganic chemical	Fertilizer use, septic tanks, sewage	
o-Dichlorobenzene	Organic chemical	Discharge from industrial chemical factories	95-50-1
Oxamyl (Vydate)	Organic chemical	Insecticide on apples, potatoes, tomatoes	3135-22-0
p-Dichlorobenzene	Organic chemical	Discharge from industrial chemical factories	106-46-7
Pentachlorophenol	Organic chemical	Discharge from wood-preserving	87-86-5
Picloram	Organic chemical	Herbicide	1918-02-1
Polychlorinated biphenyls	Organic chemical	Landfills, waste chemicals	1336-36-3
Radium 226, Radium 228 (combined)	Radionuclide		
Selenium	Inorganic chemical	Petroleum and metal refineries, mines	7882-49-2
Simazine	Organic chemical	Herbicide	122-34-9
Styrene	Organic chemical	Rubber and plastic factories, landfills	100-42-5
Tetrachloroethylene	Organic chemical	Factories and drycleaners	127-18-4
Thallium	Inorganic chemical	Ore processing, electronics, glass and drug factories	4770-28-0
Toluene	Organic chemical	Petroleum factories	108-88-3
Total Coliforms (decal coliform, E. coli)	Microorganism		
Total Trihalomethanes	Organic chemical	Byproduct of drinking water disinfection	
Toxaphene	Organic chemical	Insecticide used on cattle & cotton	8001-35-2
trans-1,2-Dichloroethylene	Organic chemical	Discharge from industrial chemical factories	156-60-5
Trichloroethylene (TCE)	Organic chemical	Metal degreasing sites and other factories	79-01-6
Turbidity	Microorganism	Human and animal fecal waste	
Uranium	radionuclide		
Vinyl chloride	Hydrocarbon	Leaching from PVC pipes, discharge from plastic factories	75-01-4
Viruses (enteric)	Microorganism	Human and animal fecal waste	
Xylenes	Organic chemical	Petroleum and chemical factories	1330-20-7

Appendix B: U.S. ENVIRONMENTAL PROTECTION AGENCY LIST OF HIGH-LEACHABILITY CHEMICALS THAT ARE PESTICIDES OF NATIONAL CONCERN

Common Name	Brand/Other Name
Alachlor	
Acephate	
Acetochlor	Surpass, Fultime,Topnotch
Acifluorfen	
Aldicarb	Temik
Atrazine	Aatrex
Bentazon	Basagran
Azinphos-methyl	Guthion, azinphosmethyl, azinphos
Azoxystrobin	Azoxystrobine, Heritage, Amistar, Quadris, Bankit
Bensulfuron methyl	
Bispyribac-sodium	
Bromacil	Krovar, Hyvar
Carbaryl	Carbaryl
Chloropicrin	PS and nitrochloroform
Chlorothalonil	Bravo, Daconil, tetrachloroisophthalonitrile, Daconil, Celeste, Bronco, Agronil, Aminil
Chlorsulfuron	
Clomazone	Dimethazone
Cycloate	Dimethazone
Dacthal	Dacthal
2,4-D, 2-ethylhexyl ester	
2,4-D, diethanolamine salt	
2,4-D, dimethylamine salt	
2,4-D, isooctyl ester	
2,4-DP-P, dimethylamine salt (dichlorprop-P, dimethylamine salt)	
Dazomet	Mylon; Basamid, Thiazone; Mylone; Tiazon; DMTT; Dimethylformocarbothialdine; Carbothialdin; Basamide; Nefusan
Diazinon	Diethoxy-[(2-isopropyl-6-methyl-4-pyrimidinyl)oxy]-thioxophosphorane
Dicamba, diglycolamine salt	
Dicamba, dimethylamine salt	
Dicamba	Dicamba
Dichlobenil	
Dichloran	
Diflufenzopyr, sodium salt	
Dimethenamid-P	Frontier Herbicide, Dimethenamid-P ((*S*)-isomer)[1]
Dimethoate	*O,O*-dimethyl *S*-methylcarbamoylmethylphosphorodithioate Phosphorodithioic acid, *O,O*-Dimethyl *S*-(2-(methylamino)-2-oxoethylyl)ester
Dinotefuran	*RS*)-1-methyl-2-nitro-3-[(tetrahydro-3-furanyl) methyl] guanidine; MTI-446
Diquatdibromide	1,1'-Ethylene-2,2'-bipyridyldiylium dibromide
Dithiopyr	
Diuron	Diuron, Karmex,Krovar
Endothall, dipotassium salt	
Endothall, mono (N,N-dimethyl alkylamine) salt	
EPTC	
Ethofumesate	
Ethoprop	
Fenoxycarb	Varikill, Insegar, Logic
Fludioxonil	
Flutolanil	
Fosetyl-Al (aluminum tris)	
Halosulfuron-methyl	
Hexazinone	Hexazinone, Pronone, Velpar
Imazamox, ammonium salt	
Imazapic, ammonium salt	
Imazethapyr, ammonium salt	
Imidacloprid	
Iprodione	Glycophene, Promidione
Isoxaben	Benzamizole, Flexidor, Gallery, X-Pand, Prolan
Lindane	Agrox, Kemal Guard, Lindane

Common Name	Brand/Other Name
Linuron	Linex, Lorox
Malathion	2-(dimethoxyphosphinothioylthio) butanedioic acid diethyl ester, Malathion, Carbofos, Maldison, Mercaptothion, Ortho malathion
Mefenoxam	
Metaldehyde	2,4,6,8-tetramethyl-1,3,5,7-tetraoxocanemetacetaldehyde
Metalaxyl	Allegiance, Apron, Gaucho, Raxil, Ridomil, Rival, Subdue
Methiocarb	Mercaptodimethur, Mesurol
Methomyl	Bluestreak, Deosect, Lannate, Mesomile, Methomex, Nudrin
Methyl isothiocyanate	MITC
Methyl parathion	E605
Metolachlor	Drexel, Parallel, Bicep, Dual, Cinch, Lexar, Medal
(S)-Metolachlor	Dual, Pimagram, Bicep, CGA-24705, Pennant
Metribuzin	Axium, Metribuzin, Sencor
Napropamide	
Nitrapyrin	
Oryzalin	
Oxydemeton-methyl	Methylmercaptophos oxide
Penoxsulam	
Phorate	Thimet (trademark)
Picloram	Tordon, Grazon, Pathway
Piperonylbutoxide	
Prometon	Enforcer, Pramitol, Turf King
Prometryn	
Propanil	Propanide
Propyzamide	
Pyrazon	
Rimsulfuron	
Siduron	
Simazine	Pramitol, Princep, Simazine
Sulfometuron-methyl	
Tebuthiuron	Brulan; Brush Bullet; EL-103; Graslan; Perflan; Herbec; Herbic; Reclaim, Spike, Sprakel
Terrazole	
Thiamethoxam	
Thiobencarb	
Thiophanate methyl	
Triallate	
Triclopyr, butoxyethyl ester	
Triclopyr, triethylamine salt	
Uniconizole-P	
Vinclozolin	Ronilan, Curalan, Vorlan, Touche, Vinclozoline

Oral Testimony to the Maui County Council, Water Resources Committee

Re: Maui Department of Water Supply Wellhead Protection Overlay District (WR-18)

Testimony given by Robert Whittier, HDOH Source Water Protection Geologist

Date: January 24, 2018

Good morning Chair Atay and members.

This testimony is submitted to present the Hawaii Department of Health's (DOH) position on the Wellhead Protection Overly District (WHPOD) ordinance proposed by the Maui Department of Water Supply (MDWS). We would like to make four (4) points:

1. DOH supports Maui County's proposed Wellhead Protection Overlay District ordinance;
2. DOH believes that the County is the proper level for such an ordinance and it will not conflict with or be superseded by State regulations;
3. Such an ordinance is needed to fully protect drinking water wells from contamination; and
4. Numerical modeling done at the State level is the optimum method to delineate the Wellhead Protection Overlay Districts.

Point 1 - One of the many functions of DOH is to ensure that public drinking water sources are free from contamination. The State Wellhead Protection Program (WHPP) is one of the approaches used by DOH to ensure that contaminant free drinking water is delivered to the public. As such DOH supports this ordinance as a critical component of the State WHPP.

Point 2 - The development of the WHPPs commonly falls to the local government and the water system operator. Local governments frequently implement WHPPs using land use tools. For example Pennsylvania, Wisconsin, Utah, and Nebraska delegate wellhead protection to county and municipal governments and list zoning as a management tool. In Hawaii, delegating Wellhead Protection implementation to the county governments is even more logical since, unlike the other states, Hawaii's aquifers do not cross county boundaries.

Point 3 - The current State and Federal laws have made great strides in preventing groundwater contamination and in improving groundwater quality. However, weaknesses such as the rate of new chemical development exceeding our ability to assess their health risks results in regulatory gaps. Having knowledge of activities occurring within well capture zones will enable Maui County to more fully assess contaminant risk and take actions to mitigate that risk.

Point 4 - To properly protect drinking water wells from contamination the path that water takes to the well must be estimated. The USGS MODFLOW and MODPATH modeling codes, are recognized as the optimum approach for delineating well capture zones. The zones are not exact since uncertainty is an inherent characteristic of modeling. The approach to dealing with uncertainty is to continually review and test the models. DOH does this through collaborations with the University of Hawaii on a wide variety of groundwater quality and modeling projects.

In summary, DOH supports the Maui WHPOD ordinance as a proactive measure to protect the drinking water supplies for Maui. This ordinance is needed to ensure that high quality of drinking water continues to be delivered to the residents by the Maui Department of Water Supply. This ordinance is in addition to and does not conflict with State and Federal efforts intended to protect groundwater.