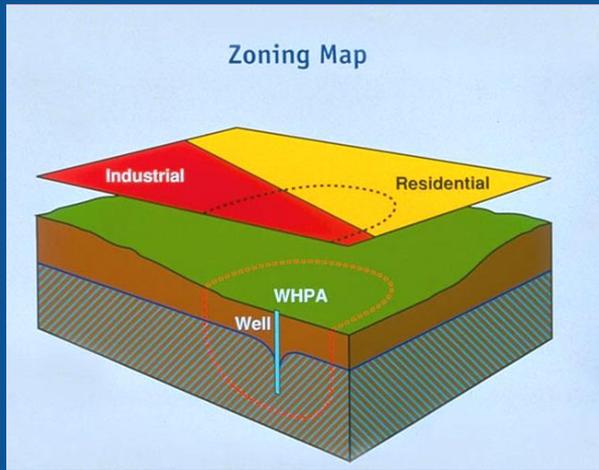


CESSPOOL-TO-SEPTIC SYSTEM CONVERSION FINANCIAL INCENTIVES AND BEST MANAGEMENT PRACTICES FOR GROUNDWATER PROTECTION IN MAUI COUNTY



Maui County Department of Water Supply

COMPREHENSIVE SOURCE PROTECTION STRATEGY



Wellhead Protection Zoning: Restrict new high risk uses from locating in wellhead protection areas



IT TAKES A VERY SMALL AMOUNT OF CHEMICALS TO POLLUTE THOUSANDS OF GALLONS OF DRINKING WATER

READ THE LABEL FIRST
for proper use, storage and disposal

Or substitute a less hazardous product. The Department of Water Supply has a list of alternatives

Protect Your Ground Water Because -
By Water All Things Find Life

Maui County Department of Water Supply
Tel: 244-8550 www.mauiwater.org



BMPs:

- Structural, operational
- Land use agreements, easements
- Public education



Well Siting:

- Source water assessment, site selection
- Preference to sites of low vulnerability from PCAs
- Protection at earliest time possible

BEST MANAGEMENT PRACTICES

Preventive measures = more cost-effective solutions for maintaining water quality than implementing treatment or finding an alternative source for reliable and safe drinking water.

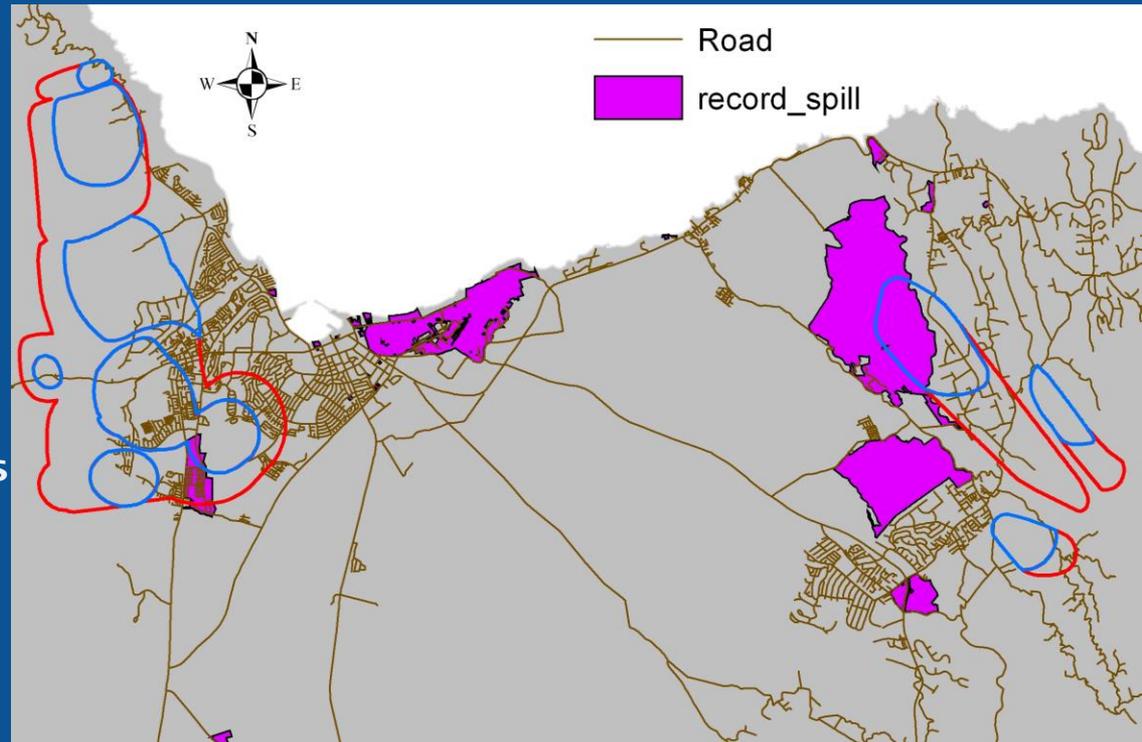


- Reduced environmental risk/liability
- Minimizes potential cleanup costs

LAND USE & GROUNDWATER

VERY HIGH RISK

- Cesspools: high-density >1/acre
- Hazardous waste generators
- Gas stations
- Chemical/oil processing/storage
- Dry cleaners processing
- Metal plating/finishing/fabricating
- Plastics/synthetic fabricators
- Airports – maintenance fueling areas
- Landfills/dumps/historic dumps
- Wastewater treatment plants
- Injection wells/dry wells/sumps
- Leaking underground storage tanks
- Sugar cane/pineapple cultivation
- Improperly abandoned wells
- Wood treatment facilities
- Pesticide/herbicide mixing, loading sites
- Power plants
- Illegal activities/unauthorized dumping
- Crops using soil fumigants
- Underground injection of commercial/industrial discharges



- 70% of Maui's drinking water = groundwater.
- Leaks or spills to soils from common land use activities can seep into groundwater

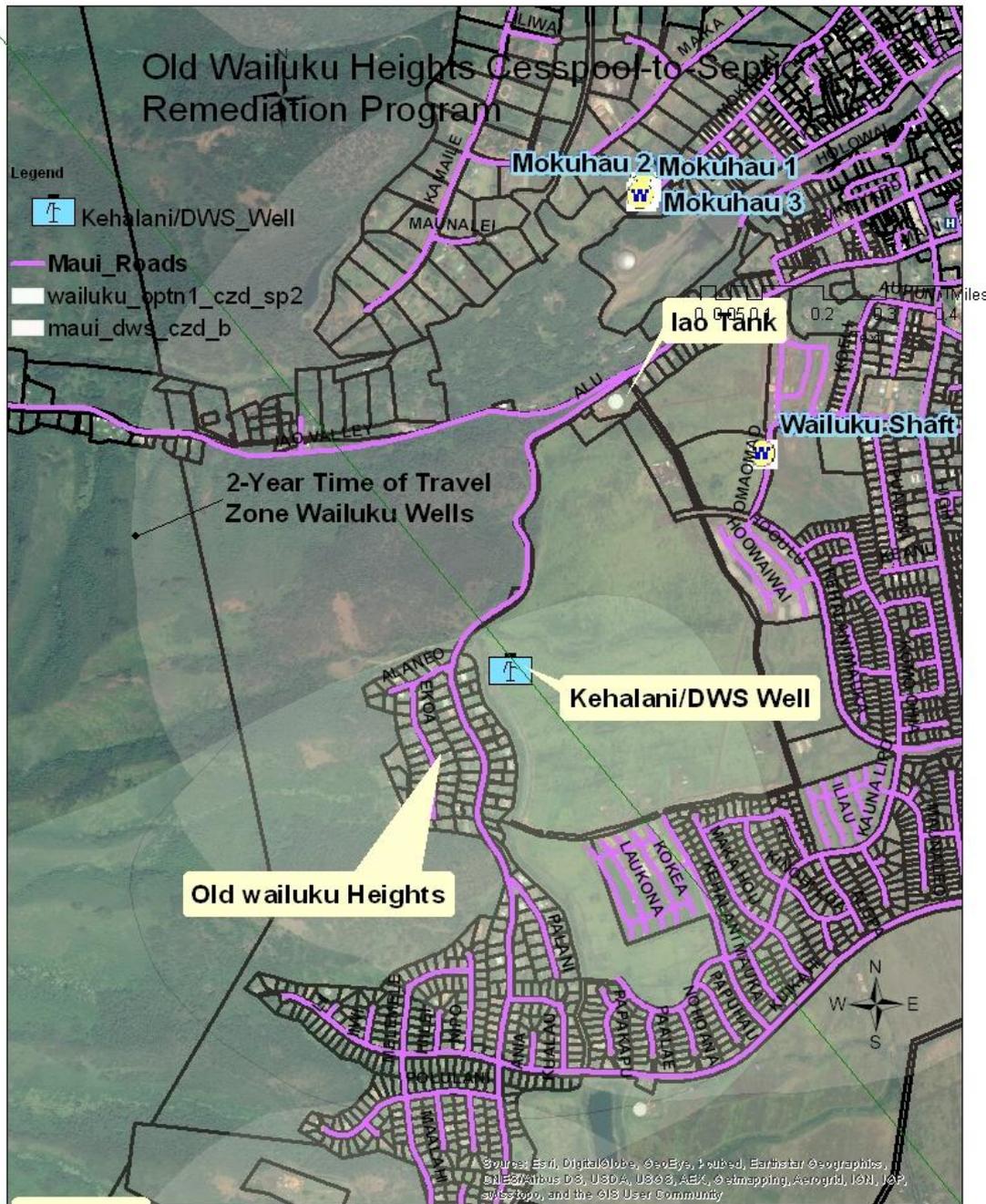


Figure 1

SOURCE PROTECTION FINANCIAL INCENTIVES

Cesspool Remediation Program

reduces contaminant load to DWS systems

100% grants for engineering report and cesspool to septic system conversion within well capture zones

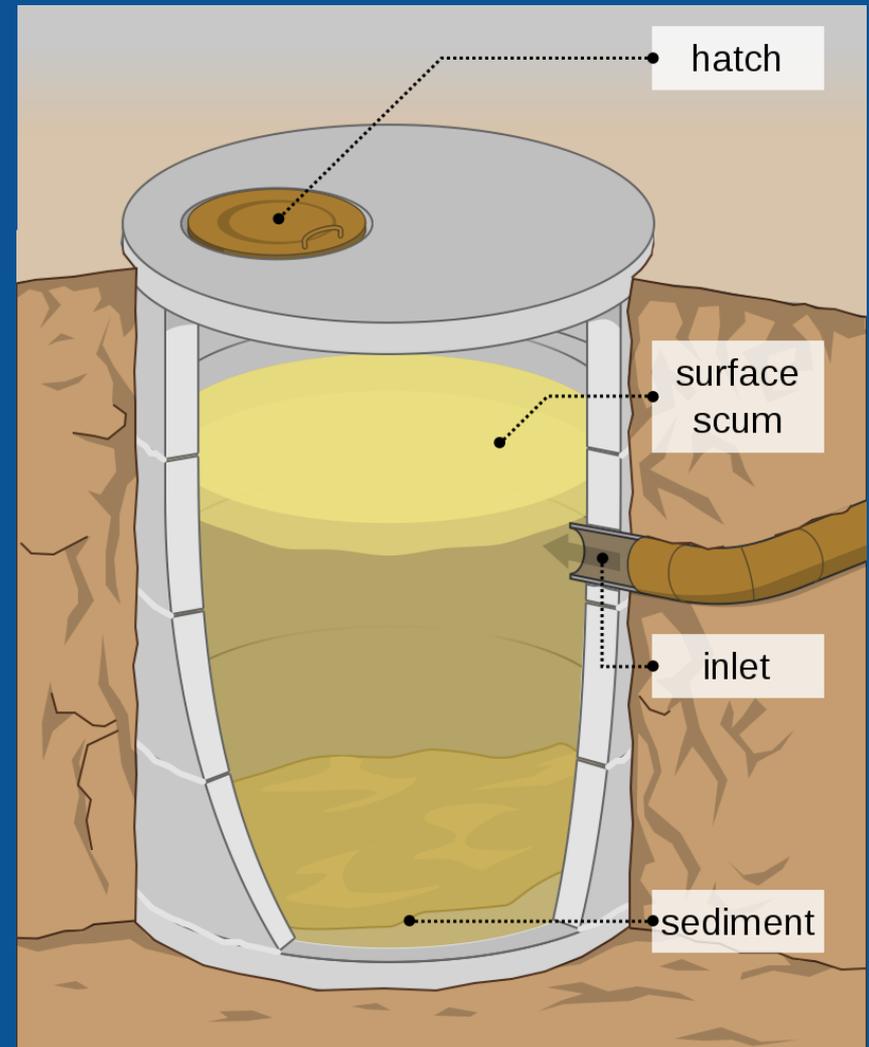
Cesspools account for 77% of released sewage effluent in one O'ahu study, with the majority reaching groundwater.

Pathogens: Concern within 2-year time of travel zone

Nitrates:

- 96% of OSDS nitrogen released coming from cesspool.

- OSDS that receive some treatment can reduce typical nitrogen concentration by over 100%.



FUNDING DETAILS

- \$632,000
- EPA / DOH Grant
- Hawai'i Drinking Water State Revolving Fund
- Maui First County in State of Hawai`i to Implement Cesspool-to-Septic System Conversion
- October 2014 – September 2015

POTENTIAL COSTS

Expense Item	Cost (\$)	Required? (Y/N)
1) Feasibility Assessment	100	N
2) Locate Cesspool Camera Scoping	300	N
3) Engineering Report/Plan	2,800	Y
4) Excavation/Pumping/Septic System Assembly	22,000	Y
5) Soil/Grass Sprigs (Stolens)/Seeds	400	N
TOTAL POTENTIAL COSTS	25,600	
TOTAL REQUIRED COSTS	24,800	

WORKFLOW PROCESS

1) GIS query of potential upgrades within wellhead modeled 2-year capture zone



2) Assessment, door-to-door canvassing/outreach information/letters



3) Right of entry/Liability Waivers



4) Engineering Plan/Report bids and selection



5) Excavator bids and selection



6) Pre-groundbreaking meeting with excavator and resident



7) Excavation, installation, remediate landscape

PRIORITIZATION: METRIC DESCRIPTION

- 1. Cesspool/Acre: 1 cesspool/0.5 acre = 125 points;
2 cesspool/0.5 acres = 250 points**
- 2. Distance from Well: 0-1500 feet = 25 points per
100 foot distance moving from 0 feet (375 points)
to 1500 feet (0 points)**
- 3. Person Load Per Cesspool: 5 people = 250 points,
or 50 points per person**
- 4. Years since pumped: 50 years = 250 points, 0
years = 0 point, 10 years = 50 points**

OBSTACLES TO SIGNING-UP FOR 100% GRANT

- **Annual maintenance**
- **Will destroy yard**
- **Tenant will be inconvenienced**
- **Illegal non-conforming conditions**
- **I don't think I'm polluting wells!**

LOCATING CESSPOOL - CAMERA SCOPING



TREE AND VEGETATION REMOVAL AND RELOCATION



PROJECT INTERRUPTIONS



LIMITED ACCESS



Video link from laptop

BEFORE



TIGHT SPACE CLOSE TO STRUCTURES



ENCROACHING ON NEIGHBORS



SEPTIC TANK INSTALLATION



CESSPOOL PUMPING



INSTALLATION COMPLETE



PROJECT TALLY

Approximately 100 properties within 2-year time-of-travel wellhead capture zones analyzed for program compatibility

19 engineering reports

18 cesspools to septic system projects planned/converted

2 Haiku septic system projects planned/converted

3 Waikapu septic system projects planned/converted

13 Old Wailuku Heights systems planned/converted

LESSONS LEARNED

UPGRADE ELEMENT	LESSON
DOH EXPECTATIONS CLEAR	Understand what DOH expects and how they can flex to support program needs
CANDIDATE OUTREACH	Outreach information comprehensive
CONTRACTOR SELECTION	Experienced, explicit task definitions, multiple bids
CANDIDATE/ DWS EXPECTATIONS	Clearly defined, Liability Waiver, limitations on services provided
EXCAVATOR/DWS/CANDIDATE MEET	Pre-excavation meeting plan/expectations
INFORMATION MANAGEMENT	Rigorous spreadsheet tracking, hard and soft copy filing
CUSTOMER SATISFACTION FOLLOW-UP	Check back to monitor success at time intervals 1) immediately following installation; 2) 6 months to 1-year to monitor functionality of septic system and soil settling of excavation

FUTURE PROGRAM CONSIDERATIONS

- Streamline and reduce services offered
- Reduce staff time and increase contractor/owner interface
- Potential use of DOH tax rebate incentive program to reduce costs

MAHALO

**COUNTY OF MAUI
DEPT. OF WATER SUPPLY**

WATER RESOURCES & PLANNING