

# CESSPOOL CONVERSION WORKING GROUP (CCWG)

## Main Working Group

### Meeting Notes

**Date:** March 28<sup>th</sup>, 2019

**Time:** 9:00am- 12:00pm

**Place:** DOH Kinau Hale Building 3<sup>rd</sup> Floor Director's Conference Room

#### **Members Present:**

William Kucharski  
Stuart Coleman  
Sina Pruder  
Kawika Winter  
Darren Lerner  
Representative Nicole Lowen  
Eric Nakagawa  
Ted Bohlen  
Jason Kagimoto  
Lani Fernandez  
David Albright

#### **Members Not Present:**

Bruce Anderson  
Erica Perez  
Senator Kalani English  
Lori Kahikina  
Ken Hiraki

#### **Presenters:**

Robert Whittier  
Michael Mezzacapo  
Jade Delevaux

#### **Facilitation Support:**

Chrisitn Reynolds  
Kayla Saunders

**Meeting Summary:** During this meeting the group was updated on the status of three cesspool-related legislative bills still alive in the 2019 session including HB551, SB696, and HB1170. Support is needed from the working group as hearings are scheduled at legislature. The group should also begin planning for the 2020 legislative session. The group was also updated on the process of procuring contractors for finance and technology. An EPA report will be reviewed before the finance RFP scope is re-discussed by the finance sub-group, and the technology RFP is awaiting the potential additional of a pilot project depending on the fate of HB1170. The group reviewed the additional One World One Water project scope and agreed that they will be responsible for coordination and consolidating information to keep the overall process consistent. UH's Water Resource Research Center will assist with research and the One World One Water scope will be adjusted accordingly. The timeline of One World One Water's scope will be dependent on the passage of HB551 and SB696 but will be amended as needed.

The bulk of this meeting's content consisted of an overview of cesspool regulations in other states, a presentation by Department of Health's Robert Whittier, a presentation by Jade Delevaux of University of Hawaii, and a scope overview by Darren Lerner and Michael Mezzacapo on the state funded sewage contamination study. Plume disbursement, public hot spots, critical habitats, and nutrient level monitoring were discussed and overall previous research suggests that we can demonstrate indications of cesspool pollution in groundwater and nearshore waters but the degree of harm or risk is not currently well quantified.

**Approval of January Meeting Minutes:**

Minutes emailed ahead of time but approval postponed until all members review.

**Status of Legislature Bills HB551, SB696 and HB1170:**

Sina Pruder: Three bills related to the Cesspool Conversion Working Group are still alive in legislature:

- I. House Bill 551: Extends lapse date for UH research funding until June 2020.
- II. Senate Bill 696: Extends the lapse dates for funds appropriated for the cesspool study and the completion of the conversion plan.  
Nicole Lowen: There is space for additional appropriation.
- III. House Bill 1170: Establishes and funds a pilot project to demonstrate new toilet and sewage treatment technologies.

Kawika Winter: Is there any political opposition to these bills?

Sina Pruder and others: No.

**Update on RFP Process for Procuring Contractors:**

Christin Reynolds: Discussions on the process and sequencing details of the RFPs will be held later, a sub-group meeting for Finance will be held later to discuss their RFP.

Sina Pruder: We are not required for the bidding process to go through the Chapter 103D process. A draft copy of the Technology RFP is available for members to review. We will be revising the Finance RFP based on the report EPA has provided and the Finance subgroup will decide whether an RFP is still necessary to fill any finance research gaps. The Technology RFP scope does not include developing a pilot project and testing wastewater technologies but we should potentially add this (per House Bill 1170) to prevent having to write two separate RFPs.

Question by Nicole Lowen: Based on Department of Health's testimony, I thought we changed HB1170 so that it doesn't go to the working group?

Question by Darren Lerner: Is there an appropriation attached to HB1170?

Response by Nicole Lowen: It's a blank amount.

Sina Pruder: We will handle it separately, but it is tied into the technology piece because Department of Health is tasked with solicitation and contracting. It doesn't say anything about a working group assisting on guidance, so it is something we need to discuss further. This could be incorporated into the scope for the technology working group and we could potentially prevent having to develop two separate contracts.

Question by Darren Lerner: Should faculty be applying or competing for any of these RFPs or is that a conflict of interest since we are allowed to review it beforehand?

Response by Ted Bohlen: This seems a bit close to me, you might recuse yourself from voting.

Question by Stuart Coleman: How does the recent update or report from the EPA change the finance group RFP scope?

Christin Reynolds response: The finance sub-group meeting will go through any edits in detail and any decisions will be brought back to the main working group for vetting.

Question by Eric Nakagawa: Can you make an overview schedule?

Response by Christin Reynolds: We have a detailed schedule already but we have not shared it yet because we're waiting on the legislative bill that might extend the project timeframe. Once a decision is made on that bill we will finalize the schedule and send it to the group.

**Other State's Conversion Regulations:**

Christin Reynolds: Overview of New Jersey's conversion program.

Question by Kawika Winter: What year were these regulations developed and how relevant is this in the context of new technologies?

Response by Michael Mezzacapo: Could be 2012?

Response by Christin Reynolds: They are all within the past 10 years, a summary of all of these with more details will be shared later.

Christin Reynolds: Overview of Rhode Island's conversion program, this is a good example since it's a coastal environment like Hawaii.

Question by Ted Bohlen: How do they measure nitrogen removal?

Response by Christin Reynolds: The system is rated to remove 19mg/ L.

William Kucharski: This is for discharge.

Sina Pruder: 19mg/ L is based on NSF standards, this pertains to NSF-245 and not NSF-40 because NSF-40 does not remove nitrogen but NSF-245 does at a 2% reduction rate.

Question by Ted Bohlen: Is this something we can require in upgrades?

Response by Sina Pruder: We require the installation of NSF-245 units where there is discharge directly into groundwater. If there is no 3-foot separation then we require all new systems to be NSF-245 compliant.

Question by Darren Lerner: What is the average density and where do we fit into that spectrum in Hawaii? Do we exceed or are we below the average? What is the distance to coastlines or fresh water sources?

Sina Pruder: It would be interesting to know what the basis is of the 19mg/L regulation, why was that a shared target? Is it because they were going to impact near-shore water?

Question by Nicole Lowen: Does anyone know what the advanced system is and what we allow or permit in Hawaii?

Response by Sina Pruder: This might be part of Stoneybrook's research, it is a septic tank that goes to a leach field with sand substrate and wood chips and a recirculating pump that goes through a system that allows for treatment. We need to determine if we can do away with the recirculating pump because of the arduous maintenance that would require for homeowners. There are passive systems being researched and piloted on the East Coast.

Christin Reynolds: Prioritization is based on proximity.

Question by Eric Nakagawa: Can you include research on who is responsible for whether or not they meet regulations and what the enforcement of operation and maintenance is? Who is responsible for annual sampling? When not in compliance, who is responsible for purchasing it?

Question by Stuart Coleman: Costs range from \$2,000 to \$4,000?

Response by Christin Reynolds: It could be lateral cost, but needs further research.

Christin Reynolds: Overview of New York's conversion program, which also has a 19mg/L nitrogen regulation.

Question by Eric Nakagawa: Can we research if the grant provides 50-100% of funding?

Question by Nicole Lowen: And who is providing the funds?

Question by William Kucharski: Referring to base flow- is that groundwater flow or flow from all systems?

Response by Christin Reynolds: I'm assuming its groundwater flow.

Sina Pruder: If you look at the numbers, this area is probably a good place to study because of the high number of cesspools they have.

Question by Ted Bohlen: How many people per capita?

Response by Michael Mezzacapo: On Long Island there are 7.8 million.

Question by Nicole Lowen: Are there other states with cesspool conversion programs? Why were these states chosen for research?

Response by Christin Reynolds: Wastewater experts recommended researching these locations, and we've tried to focus on states with high groundwater tables and coastal areas. Florida is on the list as well but didn't make today's presentation.

Sina Pruder: Florida has spent millions on assessing technologies that can be used in addressing water quality issues.

Question by Kawika Winter: We should request to review states with coral reef ecosystems.

Response by Christin Reynolds: We will find more information on that.

**Big Picture Research Questions:**

- What load of nitrogen and phosphorous is being released?
- Does the plume disperse or collect in a bay or inlet?
- Are there public recreation hot spots?
- Are there critical habitat areas offshore?
- Do the levels of nutrients harm critical habitats?

**Research Questions and Presentations:**

Robert Whittier research overview:

- i. Background: Source Water Protection Program Geologist who evaluates zones of drinking water sources.
- ii. Statewide Onsite Sewage Disposal System (OSDS)
  - Health and environmental risk studies.
  - Completed an inventory of cesspools, which account for 80% of statewide OSDSs.
  - Reviewed OSDSs by contaminant load and location and effluent and nutrient loads.
  - Each individual system was given a risk score with the goal of identifying OSDS that pose the greatest potential for harm. Factors include OSDS type, soil, proximity to sensitive waters, and groundwater nitrate loading.
  - The assumed effluent discharge rate was then applied to a groundwater model that studied the groundwater nitrate concentrations from leachate.
    - Results are important information for identifying drinking water concerns and streams or shorelines that are most susceptible to impacts.
- iii. *Impacts to public health and drinking water:* Potential risks include pathogens, nitrate (which is difficult to remove and toxic to infants, the max concentrate is 10mg/L), pharmaceuticals and other non-regulated contaminants (although there is not a great understanding on the transportation of these constituents in wastewater).
  - Hawaiian Paradise Park: Considered a Priority 2 Area, has a high-density of OSDS, primary constituents include wastewater indicator bacteria and nitrate/ phosphate concentrations.

- Impact on the environment: The mass flux of nitrate is very high while dilution keeps the concentration low.

Question by Eric Nakagawa: Some sites right next to each other are 'yes' and then 'no', why?

Response by Robert Whittier: Groundwater systems are complex with several impact variables to consider.

Question by William Kucharski: Did model results match any detected nitrate concentrations?

Response by Robert Whittier: Yes.

- Upcountry Maui (early 2017): Elevated levels of nitrate in one sample up to 8.9mg/L. Elevated groundwater nitrate is attributed to OSDS. Proximity of groundwater nitrate to high densities of OSDS. Enrichment in the nitrogen-15 isotope (a wastewater indicator). Trace detections of pharmaceuticals.
- iv. *Impacts to nearshore water quality for recreation or nearshore water quality for habitats and reef:* Current or planned studies in progress include the Water Resource Research Center Nearshore Sewage Pollution Study (mandated by 2018 legislature) which will include a statewide survey of sewage pollution indicators. Celia Smith from the Marine Botany Department is the principal investigator for this project.
  - Indicators of nearshore sewage pollution: Elevated nutrients in nearshore groundwater discharge. Submarine groundwater discharge enriched in nitrogen-15 isotope. Algal enriched in nitrogen-15.
  - Multiple studies find a correlation between onshore OSDS/ cesspools and coastal indicators of sewage pollution (example: West Hawaii, Waimanalo).
  - Inlets and bays result in convergent groundwater flows.
- v. *Public recreation hotspots:* Kahaluu, Oahu is a Priority 1 Area with very high wastewater indicator bacteria after storm events. Sampling has been completed here along with drone thermal imaging to identify groundwater seeps and a strong correlation was discovered between OSDS, nutrient enrichment, and nitrogen-15 isotope enrichment.

Question by Nicole Lowen: Are we asking about the negative impacts to public recreation hotspots, or is it focused on what the impact is to resources at public recreation hotspots?

Response by Christin Reynolds: We're asking if it's not safe for the public.

Nicole Lowen: Could the beach park restrooms be causing the contamination?

William Kucharski: Kualoa Beach Park is an area of concern but the study there came out as inconclusive.

Kawika Winter: All state parks had to convert and upgrade systems.

- vi. *Alternatives available for conversion and the cost of these conversions:* The Onsite Wastewater Treatment Survey and Assessment is a survey of onsite sewage treatment alternatives that included descriptions, design considerations, costs, and more. An investigation of cesspool upgrade alternatives for Upcountry Maui reviews a cost/ benefit analysis of reducing nitrate concentrations.
- vii. We can demonstrate indications of cesspool pollution in the groundwater and nearshore waters but the degree of harm or risk is not well quantified at this time. Research is underway to better define nearshore sewage.

Question by Eric Nakagawa: For Upcountry Maui are those actual treatment wells?

Response by Robert Whittier: The majority are certified drinking wells.

Question by Eric Nakagawa: The diagram showed a range of various colors, is 10mg/L the maximum? We just saw research from other states with much higher concentrations. In the public eye when we provide alternatives they will criticize if our levels are much lower.

Nicole Lowen: One is directly tested at the septic site and one is at the groundwater level.

Eric Nakagawa: That's why I asked if these are the actual wells that are being tested? Denitrification and dilution are natural processes. Concern with the wells comes from if they are below the standard of drinking water, then how do you justify changes? Unless we say it's a mandate.

Sina Pruder: Analysis and calculation must be done on how you can lower levels where it will not even be close to drinking water maximum limits.

Eric Nakagawa: The 19mg/L should be the level at the discharge point, results will be to reduce the level a certain percentage, if regulations are allowing it are we trying to say that we are helping minimize our environmental impact?

Ted Bohlen: Conclusions of the report say that there are elevated levels that are under 10 but they are still elevated- that's a concern- there are concentrations of cesspools in the area so it needs investigating.

David Albright: As you continue to have contaminants for cesspools, one thing to consider is the mass of nitrogen going into groundwater. Concentrations will rise as you continue to have massive loadings. Wells might meet levels now but overtime concentrations will increase.

Robert Whittier: Groundwater flow will help to reach steady-state conditions.

Question by William Kucharski: For flow and diffusion, were you (Robert Whittier) able to put in diffusion rates or did you have an assumption of groundwater flow?

Response by Robert Whittier: It's taken from USGS studies with dispersion included, but cesspools are non-point sources.

Question by William Kucharski: There is a difference between human impacts and ecological impacts on coral systems, there was a mixing study conducted in Hilo where concentrations of nitrogen and dissolved oxygen were taken. Did you take other measurements at these sites other than nitrogen?

Response by Robert Whittier: We have additional water quality standard data (pH, D.O., etc.).

Jade Delevaux research overview:

- i. Background: Has studied ridge to reef management in islands; her recent 2018 study located coral reefs vulnerable to land-based nutrients and linked them to priority areas to manage for nutrient mitigation.

Question by William Kucharski: For future protection, did you come up with any discharge limits or loads for protection?

Response by Jade Delevaux: Yes, when we calibrate models for each site there are different community structures in each site and certain fish respond differently. We can use that information to predict significant changes in the community, each unique to the location. There is no 'catch-all' application.

Question by Ted Bohlen: Given that, what should this working group do to make some conclusions about what else needs to be studied and how to take your information and move it forward to conclusions of where we need to work on land-based impacts and where we don't?

Response by Jade Delevaux: GIS and remote sensing in models comes into play because they allow for the characterization of areas and identifying how things behave differently in various places. We can identify the impacts and trace them back to land.

Kawika Winter: When it comes to the environmental impacts of cesspools, prioritization should focus on low-flow areas.

Darren Lerner/ Michael Mezzacapo scope presentation:

- i. Research will be in coordination with the working group and will review both human health and environmental impacts.

### **One World One Water Scope Review:**

Overview by Sina Pruder: One World One Water will help with facilitation, organization of data, and the drafting of final reports and the conversion plan. Darren and Michael from UH will assist with items to reduce the research responsibilities of One World One Water.

Darren Lerner: UH Sea Grant can take the bulk share of the highlighted points on the list and contribute or work with One World One Water and others as needed.

Question by Eric Nakagawa: Are Darren Lerner and Michael Mezzacapo contractors?

Response by Darren Lerner: There are already funds appropriated by legislature to UH, so no we are not contractors. Additional scope items do not receive funds from Department of Health they are already funded.

Stuart Coleman: I suggest in keeping consistent we continue having One World One Water coordinate.

Darren Lerner: Michael Mezzacapo will assist with 3.1-3.3; 4.1, and 5.2 of the scope to take the load off of One World One Water.

Question by Sina Pruder: Should members vote today or at the next meeting?

Question by William Kucharski: \$37,000 in these tasks, will this be removed from the One World One Water scope or not? What are we voting on?

Response by Eric Nakagawa: We're determining if we keep it in their scope or remove it, even with the assistance of Darren and Michael One World One Water is still compiling everything overall for consistency. Perhaps we reduce the funding but not remove it completely.

Eric Nakagawa: Sina Pruder should talk to One World One Water to figure out the level of service required for each item to figure out new numbers.

Question by William Kucharski: Is this based on T&M or fixed?

Response by Eric Nakagawa: It's a fixed price per deliverable.

William Kucharski: If it was T&M we could just adjust the time allotted to the project on an hourly basis.

Sina Pruder: They've only charged what they have done, we will develop a contract based on the deliverables needed.

William Kucharski: It will be hard to develop a fixed price if we have an indefinite delivery with an unknown meeting schedule.

Sina Pruder: Pay will be based on deliverables provided.

Question by Ted Bohlen: Can we exceed these funds, or not without an amendment?

William Kucharski: There is no time included and it's a fixed price for the activity (all or nothing).

Eric Nakagawa: We can adjust according to what comes up over the time period.

William Kucharski: We can adjust or modify the price overtime based on tasks.

Ted Bohlen: The contract should accept change orders. I suggest a motion to incorporate the work of the WRRC into the Department of Health/ One World One Water scope so that it can be brought back to the committee for review.

Sina Pruder: The contract is flexible so it will not be stuck on these unit items and can be modified overtime based on needs, payments are based on invoicing of work completed.

Ted Bohlen: Proposes motion that the board approves of Department of Health moving forward with the One World One Water contract, reflecting that Water Resource Research Center (WRRC) will assist with the items highlighted and that Department of Health will create appropriate contracts to allow change-orders. Motion should include items 3.1, 3.2, 3.3, 4.1, 5.2 with Darren and Michael's (WRRC) assistance.

Eric Nakagawa: Seconded.

All say "aye" (9-0). No opposed, no abstains.

**Next Steps:**

Christin Reynolds: In April we will need subcommittee meetings to further review pilot studies for the technology subgroup and a scope for the data and prioritization subgroup. I will develop a schedule for how to approach the data and prioritization scope drafting. The finance group will meet to go over the existing work that has been done on available financing and discuss next steps.

Christin Reynolds: The next main group meeting will be in May.

Ted Bohlen: Nicole Lowen indicated that she wants the group to speed up the pace and would like to see an interim report due in the next legislative session.

Stuart Coleman: We need to make sure that we have bills ready for next session and also support the bills moving through right now. Nicole Lowen wants us to make sure that we have recommendations provided by the next session.

Christin Reynolds: Nicole is asking for us to provide some sort of progress and for us to flag and share any key finding.

Question by Eric Nakagawa: Should we make a fact sheet from each subgroup of research findings?

Ted Bohlen: There is a status report of progress due at the end of the year from each subgroup.

Christin Reynolds: This is in the scope and required.

Sina Pruder: Technically this is only required if SB696 does not pass since it would extend the preliminary report for another year.

Ted Bohlen: Nicole is looking at what we can do by the end of this year for an interim report.

Kawika Winter: It's important to note that it was suggested in a previous meeting that there were no scientific studies relating to septic systems and coral reef health- but the studies shown today show a strong correlation.

Question by Ted Bohlen: Where was this noted?

Response by Kawika Winter: It was mentioned in our last main group meeting.

**Meeting Adjourned:** 12:03pm

**Next Meeting:** April for subgroups. May for main group. Dates TBD.