Greater Monterey County Integrated Regional Water Management Program
Regional Water Management Group Meeting

January 15, 2020
Monterey Bay National Marine Sanctuary Office, Monterey, CA

RWMG Entity Attendees:
Horacio Amezquita – San Jerardo Cooperative, Inc.
Shandy Carroll – Monterey County Agricultural Commissioner's Office
Beth Febus – Big Sur Land Trust
Bridget Hoover – Monterey Bay National Marine Sanctuary
Pam Krone – Monterey Bay National Marine Sanctuary
Karen McBride – Rural Community Assistance Corporation (RCAC)
Zane Mortensen – Rural Community Assistance Corporation (RCAC)
John Olson – California State University Monterey Bay (CSUMB)
Paul Robins – Resource Conservation District of Monterey County
Eric Tynan – Castroville Community Services District
Yohana Vargas – Monterey One Water

Non-RWMG Attendees:
Alan Arvin – California Marine Sanctuary Foundation
Cesar Garcia Lopez – Community Water Center
Maureen Hamilton – Monterey Peninsula Water District
John Hunt – UC Davis
Susan Robinson – Greater Monterey County IRWM Program Director

Meeting Minutes

1. Brief Introductions.

2. Announcement: New RCAC Representative. Karen McBride announced that she will be retiring end of February. Zane Mortensen will take her place as the Rural Community Assistance Corporation's Regional Water Management Group (RWMG) representative. Zane introduced himself as a Rural Development Specialist at RCAC. He is a recent graduate of CSUMB.

3. Monterey Peninsula IRWM Region's Round 1 Proposed Projects: Maureen Hamilton, with the Monterey Peninsula Water Management District, provided an overview of the projects that the Monterey Peninsula region submitted for the Round 1 IRWM Implementation Grant application (Round 1 applications were due December 20th). She began with a brief overview of the Monterey Peninsula RWMG membership, which grew from seven members in January 2018 to 17 members by December 2018.

Monterey Peninsula's most critical water resource need is water supply, due to severe constraints on their two main water supply sources: the Carmel River water supply is under a cease and desist order, and the Seaside Groundwater Basin is an adjudicated basin. The Region was unable to submit water supply projects in the Round 1 application, however, due to a requirement in the Prop 1 IRWM Implementation Grant Proposal Solicitation Package (PSP) that prohibited the submittal of "compliance obligation projects." The Department of Water Resources has since amended the PSP to allow for compliance obligation projects; however, it was too late for the Monterey Peninsula RWMG to develop water supply project applications in time for Round 1.

Maureen described the process by which the RWMG selected projects for Round 1. They wound up putting four projects forward in their application. These included:

1. **Coe Avenue Recycled Water Distribution Pipeline – Marina Coast Water District (MCWD):** In 2018-2019, as part of the Regional Urban Water Augmentation Project (RUWAP), MCWD participated in the construction of a recycled water trunk main extending from the regional Wastewater Treatment Plant southward to the Monterey Peninsula. The proposed project will construct a distribution main from the water trunk main, allowing for the delivery of recycled water to a relatively large cluster of existing water customers in the Coe Avenue area. The project has the following benefits - Water Supply: The project increases the use of recycled water by providing advanced-treated wastewater to irrigation customers in Seaside who currently irrigate with potable supplies. Water supplies in the Salinas Valley Basin benefit from reduced groundwater pumping. Water Quality: Treating and beneficially reusing polluted source water from ag and urban stormwater runoff helps to minimize pollutants in stormwater discharges. Climate Change: Recycled water is a reliable water source that will not be impacted by more frequent/intense droughts. Regional Communication and Cooperation: By linking the region's water resources and coordinating use to maximize benefit, the project will help participants to move beyond a history of litigation and foster increased future collaboration among stakeholders.

2. **Del Monte Manor Drainage Improvements Project – City of Seaside:** This project is a retrofit of an existing open space that will integrate Low Impact Development (LID) features to provide flood control, improve water quality, and provide a recreation space for this severely disadvantaged community (SDAC). The design includes bio-retention facilities, a series of horizontal infiltration chambers, new storm drain routing, and educational signage. Project benefits include: flood protection, water quality and aquatic habitat improvements by capturing and treating runoff that would otherwise flow to the Monterey Bay National Marine Sanctuary (MBNMS), climate change benefits by promoting groundwater recharge and thereby improving the aquifer's resilience against saltwater intrusion, and community education. This project was the highest ranking project in the region's Storm Water Resource Plan.

3. **Ramona Avenue Stormwater Runoff Infiltration Project – City of Monterey:** The project entails installation of tree box filtration and dry wells at four locations in the City of Monterey Casanova-Oak Knoll neighborhood. The project will provide stormwater infiltration to 74% of the surface flow area. The primary focus of this design is the capture, treatment and infiltration of small, more frequent storm events. Project benefits include: Water quality and habitat improvements by infiltrating street runoff that would otherwise flow to Laguna Grande Lake and eventually the MBNMS, climate change benefits by promoting groundwater recharge and thereby improving the aquifer's resilience against saltwater intrusion, and flood protection for minor storm events in this DAC neighborhood.

4. **West End Stormwater Management Improvements – Sand City:** Catalina Street in Sand City experiences localized flooding during moderate and heavy storms. Flooding has resulted in property damage to homes and businesses within the West End District. The project will retrofit Catalina Street, an existing minor collector street, to integrate LID features, address flooding, urban runoff, and water quality to benefit this DAC. LID strategies include: bioretention features and curb extensions at intersections to capture runoff; horizontal infiltration chambers; permeable pavement in parking and sidewalk areas; new storm drain infrastructure and routing; and abandonment of existing storm drain lines. The curb extensions at intersections will provide improved pedestrian and ADA access throughout the street corridor. The project is part of a deliberate process to engage the community to identify important goals and objectives for the West End District. Project benefits include water quality and habitat improvements via LID treatment of urban runoff, water supply benefits via increased groundwater recharge, flood protection, and education and outreach.

The total grant request was about $2.3 million. Horacio Amezquita asked how the Region planned to replace water that was being pulled out of the Carmel River. Maureen described the Pure Water Monterey project, which purifies wastewater and stormwater to drinking water standards. The advance-treated water will be injected into the groundwater basin and then CalAm will pull it out for water supply (indirect potable reuse). This will provide replacement for one-third of the District's water supply needs. In addition, Maureen reported that CalAm's desalination facility has obtained most of its required approvals.

4. Overview of Current Water Resources-related Research at CSUMB: John Olson, Assistant Professor of Freshwater Ecology in the Department of Applied Environmental Science at California State University Monterey Bay (CSUMB), provided an overview of current water resources-related research at CSUMB. Research is being conducted by UROC students (University Research Opportunities program for undergraduate students), as part of CSUMB classes, as capstone projects, by interns, by second-year graduate students as part of an advanced watershed science and policy class (Environmental Science 660), and as master's thesis projects (2-3 year research). Research that John is involved in includes biological assessment of perennial streams (including Salinas River Arundo project and assessment following the Soberanes Fire) and non-perennial streams; monitoring species of concern using environmental DNA and models; and environmental monitoring and modeling (including water chemistry modeling, hydrology, and monitoring for microplastics).

There are 25-30 students in John's lab, which is called the "Watershed Environments and Ecology Lab." The primary funding sources are BLM, EPA, and the State and Regional Water Boards. John briefly described the general process of bioassessment. A landscape or stream without stress ("reference") is used as a basis of comparison with a similar landscape or stream that is impacted ("nonreference"). They compare invertebrates (fish or algae) between the reference and nonreference landscapes. If there's a water quality problem, the biology will reflect that. John described three different projects that he and his students have conducted recently:

1. **Salinas River Arundo Project:** This research looks at the effects of invasive arundo grass removal on stream ecology in the Salinas River. The project includes five sites from Gonzales to Chualar, comparing conditions before and after eradication of *Arundo donax*. The site in Gonzales had arundo removed in 2014 (part of the Resource Conservation District's eradication program); the middle site had arundo being removed at the time of the study (2019); and the Chualar site has not had arundo removed. The plan is to survey these sites in 2019 for aquatic invertebrates and adult invertebrates offsite, then come back and compare results in 2022. The team followed the Surface Water Ambient Monitoring Program protocol (standard operating procedure for freshwater bioassessment). Comparing the arundo to the no-arundo sites, they found a much greater diversity of invertebrates at the no-arundo site: when arundo is removed, diversity recovers. The lack of diversity at arundo sites could be because arundo constricts flow and makes the river run deeper and faster, or because arundo creates a more homogenous habitat, or possibly because the leaf litter is not as palatable (or due to other impacts on the river).

2. **Microplastics in Urban and Agricultural Watersheds:** Microplastics are small particles or plastic fragments less than 5 millimeters. Microplastics are problematic in the environment. A MBNMS study found microplastics to be distributed throughout the water column and in filter-feeding species such as pelagic red crabs. Urban and marine sources of microplastics are well documented; agricultural sources are relatively less studied. The purpose of this study was to estimate quantities of microplastics originating from agricultural and urban watersheds, to compare different types of microplastics (fragment, fiber, etc.) and polymer types (e.g. polyethylene, polyvinyl chloride), and to identify microplastic chemical composition using attenuated total reflectance (ATR) with Fourier transform infrared (FT-IR) spectroscopy.

   The study looked at three urban sites and three agricultural sites. John described field methods. Inorganic particles were classified into "forms" (e.g., fiber, film, fragment, foam, pellet) using a dissecting microscope. The spectrometer was used to identify the chemical makeup of the particles, and the samples were then analyzed against Macroplastic bank samples.

   Results: They found the concentration of microplastics coming from urban areas to be much higher (three times more plastic per sample than in agricultural areas); however, the *load* of microplastics was found to be higher at the agricultural sites. They concluded that the major source of microplastics being contributed to the Monterey Bay may be agriculture, due to the dominance of agricultural land in Monterey Bay watersheds. They found plastic forms to be dominated by fibers at both the ag and urban sites. John Hunt asked what the original source of fibers might be in agricultural areas. John Olsen responded that it is likely atmospheric deposition, or coming off clothes. As for polymer types, 63% of the samples were too small to be assessed; of the remaining, almost 20% were not matched to any

known library polymer, 16% were PBAs, and 1.5% were LDPE. Urban microplastics were mainly comprised of PBA (used, for example, for coating the inside of pipes), where agricultural microplastics were unmatched. Finally, John discussed the need for some method improvements, including net rinsing (noting that blanks accounted for 25% of the microplastics detected).

3. **Stream Nutrients and Farming Practices:** This project aims to statistically relate stream nutrient concentrations to farming practices. Which practices lead to lower stream nutrient concentrations? The study looks at farming practices from 2017-2019 Irrigated Lands Regulatory Program data, and nutrient data from the Community Monitoring Program and USGS. The first task has been to fix the watersheds, which they are still working on – hence there are no results yet to share. They did find that the higher the response from farmers regarding use of a certain best practice (evaluating crop fertilizer needs), the lower the concentration of total nitrogen in streams.

Karen McBride commented that some of the disadvantaged communities she works with have greywater bypass systems to keep wastewater away from their private wells, diverting the greywater to ditches, gardens, etc. She wondered whether that practice might be contributing nutrients. She and John agreed to discuss this further. Eric Tynan mentioned that the Castroville Community Services District is installing bioswales to treat municipal storm water and wastewater from Moss Landing to Moro Cojo (of potential interest to John's students?). John invited RWMG members and other participants to contact him if they have ideas for research projects that CSUMB students can participate in. John can be reached at joolson@csumb.edu.

5. Healthy Soils Program: Pilot Projects: Pam Krone, Agriculture Water Quality Coordinator at the Monterey Bay National Marine Sanctuary, gave an overview of two pilot projects that the Monterey Bay Sanctuary has been conducting with grant funds from the California Dept Food and Ag Healthy Soils Program. Pam noted that oceans act as a planetary heat sink, storing over 80% of excess heat energy from global warming. This in turn is increasing ocean temperatures. Storing carbon dioxide in soils can help the ocean. Healthy Soils incentive programs allow farmers to learn about management practices to store carbon. This program is the first in the nation to tie soil management practices with carbon sequestration in soils.

Healthy soils promote carbon sequestration, increase organic matter in soils, increase water retention in soils, reduce runoff, increase biodiversity, and improve plant yield. Pam listed several healthy soils management practices (such as reduced tillage, cover crops, mulching, compost, hedgerow planting, nutrient management, buffer strips, field borders, etc.). Healthy soils management practices applied to just 10% of California's rangeland has the potential to offset all residential greenhouse gas emissions produced in California.

Pam described pilot projects at two small ranches (Fiesta Farm and Monkeyflower Farm) implementing ranch conservation practices, and one vegetable farm (Triple M Farm) implementing crop conservation practices. Results from the MBNMS's testing showed a 1% increase in soil organic matter with added compost – which is a big increase! However, they also saw increased soil organic matter in the control sites, which may be attributed to the fact that ranchers were implementing other best management practices on those fields. John Hunt asked how deep in the soil they sampled, and Pam replied 8 inches.

Pam noted that the ocean holds 50 times as much carbon as the atmosphere; however, the ocean's capacity to store carbon is slowing. Carbon uptake by the ocean is temperature and pH dependent. At higher temperatures, less carbon dioxide can be stored (and ocean temperatures are rising). The oceans are also becoming more acidic, further reducing the ocean's capacity to store carbon. Acidification of the ocean negatively affects shellfish. Climate change is altering marine ecosystems, including altering food web dynamics and lowering biodiversity. Primary production has decreased by 6% since the early 1980s, with more production lost at higher latitudes. We have already witnessed mass mortality events (e.g., Cassin's Auklet mass die-off in 2013-2015).

Carbon is stored in soil when compost and other amendments are added, and by root structures. Roots release carbon compounds. Carbon is released from the soil when the soil is disturbed through physical or chemical processes. Practices can also increase aboveground carbon storage in plants. John Hunt asked why tilling decreases the amount of carbon stored in soil. Pam responded that tilling breaks the structure of the soil,

allowing less room for oxygen. Horacio asked whether conventional vs. organic farming practices result in more carbon loss from the soil. Pam responded yes, but carbon can still be added in conventional farming by adding compost and cover crops, or by trying "conservation tillage" which picks up the soil and turns it over, less disturbance to the soil structure.

Pam concluded by encouraging participants to buy from farms and ranches that use healthy soils practices, and to implement these practices in their own gardens. She invited everyone to attend a Science of Healthy Soils workshop on January 28th at Moss Landing Marine Labs.

6. Other Business: Susan noted the value that these Regional Water Management Group meetings continue to provide in bringing everyone together on a regular basis but asked, given the lack of IRWM-specific business (e.g., Planning Grant, Storm Water Resource Plan, Implementation Grant round), should the RWMG meet quarterly instead of monthly, moving forward? Eric Tynan suggested to keep with the monthly schedule, but cancel if there is no business. Bridget Hoover suggested having conference calls occasionally, but John Hunt stressed the value in meeting in person. Karen McBride emphasized the importance of all of the different organizations coming together, educating each other, sharing, collaborating, and complementing the work that each of the organizations is doing. She added that there is a lot of grant money out there to do collaborative work. Susan asked the RWMG if they would be interested in her announcing new grant opportunities as they are released, as she had done previously when the RWMG was first formed; they said yes! After some discussion, it was decided that the RWMG should begin meeting bi-monthly, unless there is need to meet on a monthly basis.

Bridget made a request to RWMG members for their annual contributions to support Susan's position as IRWM Program Coordinator.

John Hunt announced that the Storm Water Resource Plan (SWRP) team had been asked by Supervisor Adams's office (prompted by Sarah Hardgrave) to present SWRP projects to the Board of Supervisors. John intends to present both SWRP and IRWM projects, calling attention to the millions of dollars that are being brought into the county for implementation projects, made possible through the IRWM program. The presentation is currently scheduled for the March 17, 2020 board meeting.

The next RWMG meeting will be held on March 18, 2020, 1:30PM – 3:30PM, location TBD.