

CALIFORNIA WASTEWATER CLIMATE CHANGE GROUP

Steering Committee and General Membership Meeting

March 17, 2008

Sacramento Regional Wastewater Treatment Plant

Agenda – Steering Committee

➤ 11:45 AM – 12:30 PM

- Introductions/Sign-in sheet
- Meeting Purpose
- CWCCG Update
- Discussion Items
 - Local Govt. Municipal Operations WW Protocol
 - Proposal to form Steering Committee Core Group
 - New/additional Scope of Work
 - Public distribution of White Paper
- Action Items & Next Steps

Meeting Purpose

- Local Govt. Municipal Operations WW Protocol
 - Vote on CWCCG's role
 - Provide direction to CH2M HILL
- Proposal to form Steering Committee Core Group
 - Vote on proposal
 - Select Core Group
- New/additional Scope of Work
 - Vote on proposed SOW
 - Review CH2M HILL and CWCCG budget status
- Public distribution of White Paper
 - Vote on procedure

Agenda – General Membership

➤ 12:30 – 3:30 PM

- Lunch
- Introductions
- Meeting Purpose
- CWCCG Update
 - Regulatory activities
 - Today's Steering Committee meeting
- Discussion Items
 - Protocol Development
- Action Items & Next Steps

Meeting Purpose

- Update General Membership on recent regulatory and AB-32 WW Protocol development
- Present “next steps” for Protocol development
 - Receive feedback from members on approach

CWCCG Update

- 1/29/08 – CCAR & CWCCG Meeting
 - CCAR agreed CWCCG should draft Protocol
 - agreement to 2-year Protocol development, pending ARB acceptance
- 2/27/08 – ARB, CCAR & CWCCG Meeting
 - ARB agreed to 2-year timeline
 - CCAR & ARB invited CWCCG to draft Local Govt. Municipal Operations WW Protocol
 - Special District CWCCG members expressed desire to be included in Local Govt. Protocols process
- 3/11/08 – ARB, CCAR & Local Govts for Sustainability (ICLIE) workshop
 - CCAR & ICLIE could not guarantee including Special Districts
 - CCAR will consider Special Districts
 - If Special Districts allowed, CCAR will consider inviting them to Working Group
 - Special Districts welcomed to publicly participate
 - CWCCG members TCSD/Jon Elam and City of L.A./Gretchen Hardison are members of the Working Group; City of Palo Alto also involved
- Other announcements for the Steering Committee?

Steering Committee Discussion Items



Local Govt. Municipal Operations WW Protocol

- Action Item – Vote Required:
 - Does the CWCCG want to accept the invitation from CCAR & ARB to draft the wastewater element of the Local Government Municipal Operations Protocols?
 - Draft protocol due to CCAR May 16, 2008
 - IPCC/USEPA—Simplest/Top-down Method
 - USEPA Approach with NACWA's Updated Default Values
 - If so, does CWCCG Steering Committee want CH2M HILL to develop this protocol?

Proposal to form Steering Committee Core Group

- Directs and manages CH2M HILL's week-to-week activities and contract issues (i.e. invoicing, additional meetings, etc.)
- Streamline administrative decisions
- CH2M HILL's agreement currently authorizes BACWA Air Committee Chair as the primary contact

- Action Item – Vote Required:
 - Does CWCCG Steering Committee want to initiate a Core Group?
 - If so, which members should be nominated?
 - One member from each regional WW association—i.e. BACWA, SCAP & CVCWA?
 - One representative from N. Cal and one from S. Cal?
 - Chair of each WW association?
 - Other proposals?
 - Alternate Core Group members also recommended

New/Additional Scope of Work

- GHG Protocol Discussion Paper (Task 1)
 - On budget – complete!
- Protocol Development approach—original SOW vs. White Paper
 - Statewide Estimate Development?
 - Local Govt WW Municipal Operations protocol & other differences
 - \$10-15K
- Additional meetings and correspondance w/ CWCCG, CCAR and ARB
 - 8 meetings scoped, 7 meetings complete (-\$3K - 4K)
 - additional budget for future meetings needed
 - telephone calls w/ individual members
 - individual conversations vs weekly or bi-weekly conference calls
 - document calls for invoices
 - email to Steering Committee or General Membership as needed
 - \$50K recommended (\$45K spent past year)
- WERF study has extended project duration
- Literature search for other four GHGs: CO₂, hydrofluorocarbons, perfluorocarbons, & sulfur hexafluoride
 - \$5-10K
- CH₄ and CO₂ source-testing

Project Status

Project Number

359610

Project Name

BACWA GHG

Project Manager

SANDOVAL, JAMES

User entry cells

Top Task	Sub Task	Task Name	Cost Category	Revenue Terms		Revenue Terms	
				Budget	TAB PJTD	PJTD Total	Current Variance
GG							
	GG	Adjustments: Events + RR	Labor Expense		\$0.00	\$496.63	(\$496.63)
					\$496.63		
	GG.01	LITERATURE SEARCH	Labor Expense	\$12,020.00	\$12,447.00	\$12,447.00	(\$427.00)
					\$0.00		
	GG.02	DEV. EST. METHODS	Labor Expense	\$18,260.00	\$130.00	\$130.00	\$18,130.00
					\$0.00		
	GG.03	DEV.STATEWIDE EST.	Labor Expense	\$4,860.00	\$315.00	\$315.00	\$4,545.00
					\$0.00		
	GG.04	MTGS: STEERING COMM	Labor Expense	\$33,705.00	\$23,727.00	\$26,174.19	\$7,530.81
					\$2,447.19		
	GG.05	MTGS: ARB & CCAR	Labor Expense	\$8,545.00	\$16,942.00	\$19,451.12	(\$10,906.12)
					\$2,509.12		
	GG.06	PREPARE FINAL REPORT	Labor Expense	\$14,700.00	\$0.00	\$0.00	\$14,700.00
					\$0.00		
	GG.07	INDUSTRY COMM	Labor Expense	\$6,100.00	\$2,972.00	\$2,978.11	\$3,121.89
					\$6.11		
	GG.08	LITERATURE SEARCH	Labor Expense	\$5,000.00	\$710.00	\$713.50	\$4,286.50
					\$3.50		
Total				\$103,190.00	\$62,705.55	\$62,705.55	\$40,484.45
Total Labor				\$103,190.00	\$57,243.00		
Total Expenses				\$0.00	\$5,462.55		

CWCCG Budget

- | | |
|--------------------------|-----------|
| ➤ CWCCG budget | \$134,000 |
| ➤ CH2M HILL contract | \$103,000 |
| ➤ CWCCG remaining budget | \$31,000 |
| ➤ Approx cost new SOW | \$75,000 |
| ➤ CWCCG need for 2008/09 | \$50,000 |
-
- Action Item – Vote Required:
 - Increase CWCCG budget for 2008/09?
 - Request proposal from CH2M HILL for new SOW?

Public Distribution of White Paper

- Requests for copies are coming from the public and other consultants
- Discussion: is there any reason to limit the distribution of the White Paper?
- Action Item – Vote Required:
 - Unlimited vs. limited email distribution?
 - Distribution through one vs. multiple sources?

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 - Public distribution of White Paper
- WERF study
- Other announcements?

California Wastewater Treatment Plant GHG Emissions Protocols

- AB-32 WW Protocols to be developed
 - Local Governments Municipal Operations Wastewater Protocol
 - Wastewater Industry Protocol
- Approach
- Schedule

Wastewater Treatment Plant GHG Emissions Reporting Protocol

- Outlined in the Protocol White Paper:
 - Focus on CH₄ and N₂O emissions
 - Multiple methodologies to estimate GHG emissions
 - ~~Flexibility based on plant size and operations~~
 - Option 1: IPCC/USEPA—Simplest/Top-down Method
 - Option 2: USEPA Approach with NACWA's Updated Default Values
 - **Local Govt. Municipal Operations WW Protocol**
 - **5 months**
 - Option 3: Mass Balance Approach with New Emission Factors (from WERF study)
 - Option 4: Site-specific source testing and modeling (from WERF study)
 - **Wastewater Industry Protocol**
 - **2 years**

APPROACH - Local Govt. Municipal Operations WW Protocol

- Given short timeline, utilize IPCC framework as “interim” wastewater treatment protocol
 - CCAR and ARB have no required framework
 - IPCC is “Open Source” document
 - Plan to integrate:
 - California related background/introduction
 - Decision tree that directs users to appropriate sections of:
 - IPCC
 - USEPA WW Treatment Methodology
 - NACWA’s updated emissions estimates (Option 2)
 - CCAR General or Power & Utility Protocol
 - direct & indirect emissions for non-WW treatment activities

SCHEDULE - Local Govt. Municipal Operations WW Protocol

Task	Duration	Due Date
CH2M HILL develop draft Protocol	6-weeks	May 1, 2008
CWCCG Steering Committee review & CH2M HILL finalize draft	2-weeks	May 16, 2008
CCAR Stakeholder Review Process	1-month	June 16, 2008
CH2M HILL revise Protocol, CWCCG review, & resubmit to CCAR	2-weeks	June 30, 2008
CCAR Board Approval	3-weeks	July 18, 2008
ARB approval	1-2 months	August 2008

APPROACH

Wastewater Industry Protocol

- Develop Options 3 & 4
 - WERF study
 - focusing on N₂O
 - developing an emissions inventory from a range of WWTPs
 - Activated Sludge Model-Nitrogen, Hiatt & Grady
 - developing and perfecting field procedures for site-specific testing
- Integrate with Local Govt. WW Protocol
 - yields a four option approach – from general top-down approach to source-specific bottom-up approach
 - expand decision tree to include Options 3 & 4
 - includes a matrix of emission coefficients from a range of WWTPs
 - ultimately replaces Local Govt. WW Protocol

Methane – CH₄

- *Option 1: IPCC/USEPA*
- *Option 2: NACWA's Updated Default Values*
- **Option 3: Complete Emissions Inventory/Sampling-based Approach**
 - anaerobic plants, or those with potentially high CH₄ emissions
 - consists of source testing and modeling of anaerobic and fugitive sources

Nitrous Oxide – N₂O

- *Option 1: IPCC/USEPA*
- *Option 2: NACWA's Updated Default Values*
- **Option 3: Mass Balance Approach with New Emission Factors**
 - new Hiatt & Grady model:
 - used to develop general emissions factors for different classes of WWTPs based on size and treatment schemes
 - estimate emissions using general emission factor that most closely represents a WWTP's operations
 - requires in-field testing at a range of WWTPs to calibrate the model
- **Option 4: Model and Source Test**
 - provides WWTPs with site-specific emissions estimate
 - WWTP will conduct source testing at their site
 - field procedures perfected during WERF study will be included in Protocol
 - input results into the model to develop a more accurate estimate of N₂O emissions from their facility

APPROACH

Wastewater Industry Protocol

- Following slides provide breakdown of:
 - emissions definitions
 - various treatment plant phases & expected GHG emissions
 - recommended protocol
- Serves as the basis of the Protocol development

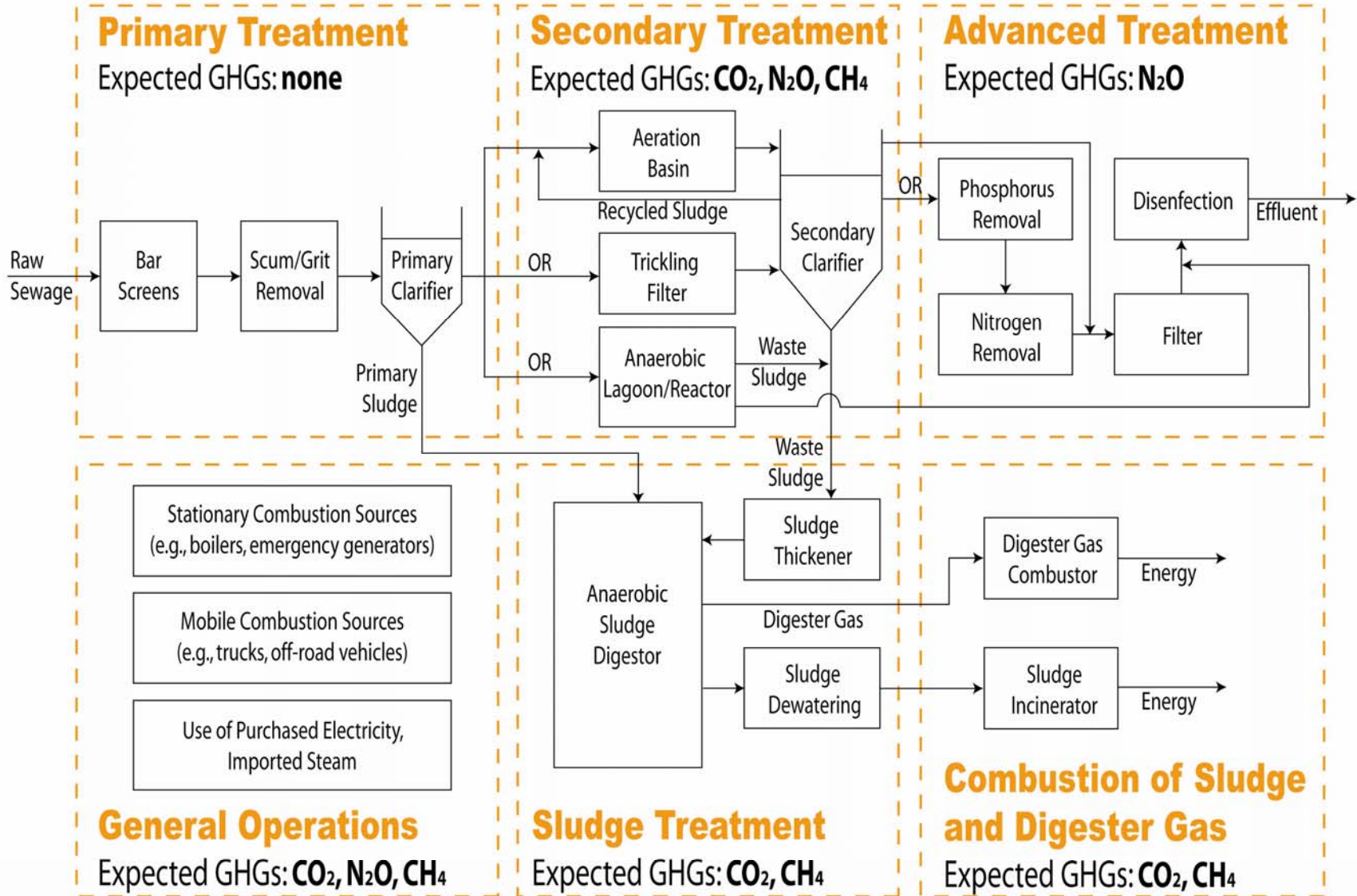
Key Definitions

<i>Direct emissions / Source 1 in CARB terminology</i>	Emissions from sources that are owned or controlled by the reporting organization.
<i>Indirect emissions / Source 2 in CARB terminology</i>	Emissions that are a consequence of the actions of a reporting entity but are produced by sources owned or controlled by another entity.
<i>Fugitive emissions</i>	Intentional and unintentional releases of GHG emissions from joints, seals, gaskets, etc.
<i>De minimus emissions</i>	A quantity of GHG emissions from a combination of sources and/or gases which, when summed, are considered insignificant.
<i>Biogenic emissions</i>	Produced by the actions of living organisms; carbon-neutral emissions.

Option 1	USEPA Approach/IPCC Approach
Option 2	USEPA Approach with updated default values
Option 3	CH ₄ - Complete emissions inventory/sampling-based approach N ₂ O - Mass balance approach with new emission factors
Option 4	CH ₄ - Model and source test

Expected GHG Sources	Expected GHGs	Emission Type	Recommended Reporting Protocol
Primary Treatment:			
Grit removal	none expected		
Primary clarifier	none expected		
Secondary Treatment:			
Aeration basin	CO ₂ (biogenic), N ₂ O	Direct	Option 3: Mass balance with new emission factors
Trickling filter	CO ₂ (biogenic), N ₂ O	Direct	Option 3: Mass balance with new emission factors
Anaerobic lagoons/reactors	CO ₂ (biogenic), CH ₄	Direct	Option 3: Complete emissions inventory/sampling-based approach
Secondary clarifier	none expected		
Advanced Treatment:			
Nitrogen removal (nitrification/denitrification)	N ₂ O	Direct	Option 3: Mass balance with new emission factors & Option 4: Source test
Phosphorus removal	none expected		
Filter	none expected		
Disinfection	none expected		
Effluent Discharge	N ₂ O	Indirect	Option 3: Mass balance with new emission factors

Expected GHG Sources	Expected GHGs	Emission Type	Recommended Reporting Protocol
Sludge Treatment:			
Anaerobic sludge digester	CO ₂ (biogenic), CH ₄	Fugitive & De minimus	Option 3: Complete emissions inventory/sampling-based approach
Sludge dewatering	CH ₄	Fugitive & De minimus	Option 3: Complete emissions inventory/sampling-based approach
Combustion of Sludge/Digester Gas:			
Incineration of sludge	CO ₂ (biogenic)	Direct	Option 3: Mass balance with new emission factors
Combustion of digester gas (e.g., open/closed flairs, cogen)	CO ₂ (biogenic)	Direct	Option 3: Mass balance with new emission factors
Incomplete combustion of digester gas	CH ₄	Direct	Option 3: Complete emissions inventory/sampling-based approach
General Operations:			
Stationary combustion sources (e.g., boilers, emergency generators)	CO ₂ , N ₂ O, CH ₄	Direct	CCAR General & CCAR Power and Utility
Mobile combustion sources (e.g., trucks, off-road vehicles)	CO ₂ , N ₂ O, CH ₄	Direct	CCAR General & CCAR Power and Utility
Purchased electricity, imported steam	CO ₂	Indirect	CCAR General



SCHEDULE

Wastewater Industry Protocol

Task	Duration	Due Date
WERF WWTP emissions data collection – 3-quarters	10-months	January 2009
Modeling using 3-quarters of WERF data	1-month	February 2009
WERF WWTP emissions data collection – 4 th quarter; model update	3-months	April 2009
CH2M HILL develop draft Protocol	3-months	June 2009
CWCCG Steering Committee review & CH2M HILL finalize draft	2-weeks	July 2009
CCAR Stakeholder Review Process	1-month	November 2009
CH2M HILL revise Protocol, CWCCG review, & resubmit to CCAR	2-weeks	December 2009
CCAR Board Approval	1-month	January 2010
ARB approval	2-months	March 2010

Action Items & Next Steps

