



WORKING PAPER
to provide ongoing documentation of
"OVERVIEW, STRATEGY AND ACTIONS"
FOR THE STAKEHOLDER WORKGROUP:

regarding the
State Water Resources Control Board
DRAFT CONCEPTS FOR A PROPOSED STATEWIDE ORDER
FOR COMPOSTING FACILITIES

*[CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FROM IMPLEMENTATION
OF CALIFORNIA CODE OF REGULATIONS, TITLE 27]*

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Introduction

Purpose

This "**ACP Water Board Waiver Working Paper**" is to be used to collaborate and share ACP leadership and member's perspectives and action steps relative to the "California State Water Board: Proposed Statewide Order for Composting Facilities." It is an "evergreen" document and to be used to collaborate both internally as well as specifically with other Statewide compost councils & coalitions (esp. California Organics Recycling Council (CORC), <http://www.crra.com/corc>, and California Compost Coalition (CCC), <http://californiacompostcoalition.org>) in addition with Calrecycle and the State Water Board itself.

Background

On August 31st and September 1st, 2011, Informal Staff Workshops were given to share and received feedback on "Concepts for a Statewide Waiver of Waste Discharge Requirements with Conditions for Compost Facilities" at IEUA, Chino, CA and CalEPA, Sacramento, CA (See document titled "**Draft Concepts for a Statewide Order for Composting Facilities.pdf**"). The Water Board representative, Roger Mitchell, shared the following elements relative to the Concepts for a Statewide Waiver (see complete presentation titled "**Informal Stakeholder Workshop Presentation.pps**"):¹

- Role of Water Boards
- Water quality and composting facilities
- Goals of a statewide order
- Eligible wastes, prohibited wastes, exempt wastes
- Water Quality Protection Measures (WQPMs)
 - Pads (impervious services)
 - Berms (water runoff control rims)
 - Ponds (basins to catch and evaporate or treat runoff)
- Water Quality Protection Areas (WQPAs)
- Waste types
- WQPM Tiers
- Other Requirements – and request for input
- Processes for Enrollment
- Fees – and request for input
- Next Steps & Schedule, esp. Stakeholder Workgroup (September 28th and October 27th)

This working paper is designed to represent our collaborative intentions and recommendations, and steps into the proposed Stakeholder Workgroup.

¹ **State Water Board Contact:** Roger Mitchell, 858-467-2724, composting@waterboards.ca.gov

Composter Perspectives

We have divided the compost producer perspectives on these "Concepts for a Proposed Statewide Order for Composting Facilities" initially into three broad areas:

- Our collective interpretation of these concepts for the Proposed Order
- Additional questions that we have about the Concepts
- Our explicit intentions regarding developing next steps with the State Water Resources Control Board staff on this issue

Interpretation

Our interpretation of this regulation, in general, looks as if landfill Water Quality Protection Measures (WQPM's) have been applied to compost production facilities. Three main WQPM's proposed in the Draft Concept, are all capital, material and land intensive.² Preliminary estimates provided by the Calrecycle staff state that these rules to increase the cost of compost from \$100,000's to over \$5 million per facility, depending on the size and flow through. This is due to the proposed need to construct extensive water impervious

- Pads - for the three tiers of compost material and pads are outlined in the proposed waiver
- Berms - to limit and direct any runoff water, and
- Ponds - to capture and let evaporate (or treat) any runoff water

But the main question is, are these really needed to protect water quality? According to Paul Relis, Former Waste Board Member - *"Yes, I think we need to press the SWRCB for clarity on this point. As Dr. Crohn suggests composting is a completely different animal with much cleaner feedstocks and an above ground relatively brief treatment process with predictable environmental performance outcomes."*

As stated by ACP's Science Advisor, Dr. David Crohn, UC Riverside & UC Cooperative Extension, there are many significant differences between landfills and compost production operations. We've paraphrased and included some of them here:

- Type of Material: Landfills contain many non-organic materials (synthetic, inorganic, etc.) that are not found in compost operations. These materials, and impacted by the unique chemistry of landfills, will end up in the landfill leachates, rendering them significantly more toxic than is found in any *potential* compost runoff.
- Oxygen Levels: Landfills are anaerobic (without air/oxygen) and therefore become appreciably more acidic than aerobic compost piles. These acids will leach out (solubilize) many more synthetic & naturally occurring, organic and inorganic compounds than will ever exist in compost production operations.
- Water Management: Water *is intensively managed* in compost piles in order to create a balance between having enough water for the microbes to biologically digest the material, and yet still remain aerobic. When rain events add additional water to compost operations, water input is scaled back. Whereas no such adjustments are, or can be, made at landfills. Compost piles are notoriously capable of absorbing large quantities of water, and this must be taken into account, and possibly used, when developing compost production specific WQPMs. Water

² A copy of the Calrecycle cost analysis will likely be available soon.

management of the process is the key issue. Do composters produce excess water, enough to migrate into an aquifer or contaminate a well?

- **Holding Times:** Compost is held temporarily (typically 30-60 days) while wastes in landfills are held in perpetuity. When rain events add additional water to these different operations, the short holding times and movement allow for effective, real-time water management in compost operations, vs. ongoing water accumulation in landfill operations.
- **Material Use:** Compost products are a beneficial reuse of high organic content, and biologically active, biologically derived material. It has been proven to greatly improve both water infiltration into soils along with greatly enhanced water holding capacity of soils. Whereas the material in landfills provides no such beneficial use. For this reason, the use of compost to enhance water conservation and water quality can be taken into account, and *used as part of a unique WQMP*, when regulating compost production facilities vs. landfill operations for these water quality control parameters. On this point the issue may be that are we better off from a water quality standpoint with more composting facilities than fewer.

Beginning Recommendations:

- **Composting Operations Out of Compliance:** There have been bad composting operations that may have or are causing problems-but typically in the regulatory world of CalRecycle and the LEA's these facilities would become the focus of enforcement actions against the operator. The LEA or SWRCB through the RWCQB could issue a cease and desist order and levy fines should there be contamination by an operation.

For these reasons, and more, we believe that it will be possible to create WQPMs that are:

1. unique to compost production facilities,
2. cost effective for both capital and operating expenses and
3. exceed the water quality goals of the Water Board.

Questions Addressed

Informal Workshop participants had the following questions (and more not recorded here), and got the following answers (in Southern California). Other questions and extended or alternative answers will be included in this table as we progress. As the Q&A builds, we may likely put the questions into topic categories:

Questions	Answers
<p>Informal Workshop</p> <p>1. Is there data that runoff (leachate, discharges) from compost facilities has been a serious water quality issue, and how bad a problem it is?</p>	<p>No. There is no accumulated data as to the severity and the scope of the problem in California. However, compost facilities are regulated as other industrial dischargers. And leachates from compost piles, during the compost phase <i>do</i> contain known water pollutants (salts and nutrients), and regulating potential discharges are focus of this Statewide Waiver.</p>
<p>2. Is there a map of specific properties relative to the HVAs (Hydrogeologically</p>	<p>There is, however, this information will be made more available to composters for</p>

Vulnerable Areas)?	regulatory purposes moving forward.
3. What percent of food waste in the compost will cause the feedstock to be treated as "food waste"?	Any amount of food waste, greater than 0%, will cause the entire load, or pile, to be treated as "food waste" for the purposes of this regulation.

A key question for ACP, posed by Paul Relis:

If BMP practices could demonstrate a high probability that our operations could avoid contamination then a combination of BMP and monitoring and enforcement could perhaps be an alternative to the specified pad standards. To be sure there should be some site-specific analysis to suggest what level of pad, if any, is appropriate. Can ACP and its members demonstrate that the risks that drive the pad standards proposed by the SWRCB staff are excessive based on experience. Do we or can we develop data at facilities that suggest that groundwater percolation is much less in fact than suggested by SWRCB staff?

Intentions

Our intentions for communicating these compost producer perspectives, questions and recommendations (overview → strategy → actions), as well as putting them into practice with the State Water Board, is to both achieve the water quality objectives of the State, *while at the same time*, expand the quality and quantity of compost used to build healthy soil in California. We believe that *we can do this by developing Water Quality Protection Measures (WQPM) that are unique, flexible and specifically geared to compost production facilities.*

Next Steps

The notes from the Stakeholder Workgroup meeting in Riverside, CA on September 27, 2011 (see Appendix) state that the next steps after that meeting are:

- **Definitions Comments** – The Water Board would like to receive specific definitional comments and recommendations from the Stakeholders.
- **Collaborating** – The Water Board intends to collaborate with all Stakeholders to draft the best WQPM's to both protect the water environment, as well as keep the compost industry viable and growing.
- **Proposed WQPMs** – The Water Board explicitly solicited new, draft, alternative WQPMs to what is in the Draft Concepts, based on addressing, and resolving the issues discussed at this working group
- **Research** – Further research was not explicitly discussed, however, there was universal agreement that the more explicit data that is available (either specifically related to compost operations or already available about soils and water pollution retention and movement into the aquifers) should be the basis of crafting WQPMs. Do industry participants feel that certain data is missing? If so, how and when will we define the data, and closing the gap on the missing data?
- **Further Discussions** – Ongoing discussions between the meetings between the industry Stakeholders and the Water Board is *strongly encouraged*
- **Next Working Group** – The next working group meetings (again both North and South) will be the last week in October (but dates have not been set yet). More meetings are possible, if we defined the explicit need to continue the collaboration.

The immediate next steps to continue the collaborative process of the Stakeholder Workgroup for October 2011 will include:

- Make Recommendations on Further Research
- Providing More Articulated Definitional Recommendations
- Start Providing Alternative WQPM Recommendations

Research Recommendations

As stated above, while research was not explicitly discussed, there is a constant need for data and information that will inform the crafting of the Statewide Order. Also, because all research flows from unanswered, or "open" questions, we have put this first here so that there is an ongoing definition and discussion of the level of questions that need to be addressed. We intend to put the *questions addressed*, in this working paper in the preceding section.

For the purposes of clarity, we are dividing the research questions into three levels of availability of the answers to the question or concern. Also, it is put first here in the Next Steps, to support clear collaboration within the Stakeholder Workgroup around unknown issues relative to arriving at a workable resolution for the purposes of the Statewide Order. This is included here as part of this process in order to provide clarity and an internal process for addressing unknowns between the Stakeholder Workgroup and the Water Board.

1. **Open Questions:** Questions that can be answered from available knowledge by either composters, scientists on the Stakeholder Workgroup or Water Board Staff. Once addressed, they will then be put into the "Questions Addressed" section of this Working Paper (to the extent to which we capture them).
2. **Secondary Research:** research to find answers to open questions from existing knowledge and references, *in the literature, or from expert people on the subject*; to be performed by an assigned Stakeholder Workgroup member or Water Board Staff.
3. **Primary Research:** research of open questions, where sufficient secondary research has been performed to determine that a satisfactory answer is not available in the literature or from experts, and that to find satisfactory or acceptable answers, will require performing actual laboratory or field research by a qualified scientist or science team.

If questions can not be answered by a Stakeholder Workgroup member or Water Board Staff, then they will need to be assigned to someone for secondary research. Key questions for which there are not satisfactory answers in the literature, then the determination if primary research will need to be performed, and with sufficient time allowed for its performance and funded by the appropriate parties.

There may not be universal agreement that a question is necessary or satisfactory for the purposes of this Statewide Order. By this we mean:

1. **Necessary:** Is the answer to this question truly necessary for writing and implementing the Statewide Order? If not, then, for the purposes of this process it may remain an "open question."
2. **Satisfactory:** Has the question addressed to the satisfaction of the Stakeholder Workgroup? Does someone need to perform some secondary research on this open question, or is primary research required?

The adjudication of whether questions are necessary and/or satisfactorily addressed or answered, is part of the collaborative process, and likely have to be taken up by the Water Board of Directors themselves, if agreement is not reached within and between the Stakeholder Workgroup and the Water Board staff. We do not look for this to happen, since this is a much more cumbersome and time consuming process and we explicitly would like to resolve all *necessary questions* within the context of the Stakeholder Workgroup process with Water Board Staff.

The following list and discussion of Open Questions, Secondary Research and Primary Research is *not* exhaustive, but just a beginning list that we are capturing here in this Working Paper as of this "Last Update" date (in the header).

Open Questions

To reiterate, "Open Questions" are questions that can be answered from available knowledge by either composters, scientists on the Stakeholder Workgroup or Water Board Staff. Once addressed, they will then be put into the "Questions Addressed" section of this Working Paper (to the extent to which we capture them), thus providing a record of the answered questions.

Current Open Questions are:

- **Data Supporting Concern from Compost Facilities:** Is there data that runoff (leachate, discharges) from compost facilities has been a serious water quality issue, and how bad a problem it is?
 - This question was answered in the negative under "Questions Answered" above. However, the Water Board did provide data (on the website, at: http://www.waterboards.ca.gov/water_issues/programs/compost/docs/leachate_runoff.pdf). Yet, this data does not provide clear information that groundwater basins have been *actually* affected by constituents of concern arising from compost facilities. So this remains an "open question" by the compost industry participants, until such time that his data/information is located.
 - Also, is this a necessary question to answer for the purposes of crafting the Statewide Order? The compost industry participants believe that this is a very important question, since it goes to the heart of purpose for this Statewide Order and the type of WQPMs.
 - Does the Water Board feel that this is a necessary question? And if not, why not? We need to get clarification on this.

Secondary Research

To reiterate, "Secondary Research" is research to find answers to open questions from existing knowledge and references, *in the literature, or from expert people on the subject*, to be performed by an assigned Stakeholder Workgroup member or Water Board Staff.

Secondary Research that is needed is:

- **Permeability Testing:** What tests are used for soil, high humic material containing soils, compost and mulch covered soils, composted amended soils, compost piles, covered surfaces (with various types of covers/layers/pad materials)? Also, how is permeability measured relative to height of water over the surface (esp. relative to ponding or pooling) vs. water running over a surface of a giving slope (positive drainage)? How is permeability affected/related to soil type and organic content of the soil? (Note that compost facilities will naturally have high carbon containing earth, and there is significant evidence that these constituents will greatly lower ground surface permeability. This information would go to the heart of how compost treated soils may be sufficient to provide a necessary barrier to ground water during any rain event.
- **Permeability and Ponding:** What level of gravity pressure, from surface ponding on material storage or working (transporting/moving equipment) surfaces will affect the ability of water and constituents of concern to begin migrating into the groundwater?
- **Retention Ponds:** How does the retention pond permeability relate to working surface permeability? What is basis of the proposed tiers of these pond liners and how does it relate to the method of permeability testing?
- **Constituents of Concern and Binding:** There is known variable binding of constituents of concern to organic material in soil surfaces (e.g. phosphorous to inorganic particles). What are the various migration tendencies (rates) of various constituents of concern through the soil profile during a rain event?

- **Pile Mixing:** What is the effect of mixing piles with active and finished compost to lessen the leachate potentially produced from those piles? Can this information be included in WQPM for piles?

Primary Research

To reiterate, "Primary Research" is research of open questions, where sufficient secondary research has been performed to determine that a satisfactory answer is not available in the literature or from experts, and that to find satisfactory or acceptable answers, will require performing actual laboratory or field research by a qualified scientist or science team.

Primary Research that is needed is:

- **Compost Pile Saturation:** Can we develop a method for assessing the potential for rainfall to saturate piles to an extent that significant leaching occurs? Will a pile ever get saturated enough so that water actually passes through the pile to the ground surface? Does all water go on the surface of the piles and run off onto working surfaces, rather than through the pile, even in a 25 year/24 hour rain event?
- **Permeability of soils:** What is the actual permeability of soils with dried humic material, and other/alternative "pad construction materials?" What is the relationship of compaction of these surfaces, especially with working surfaces with heavy equipment on them? Will any appreciable water infiltrate, or will they run off and what soil gets moist evaporate rather than water going down into the soil?
- **Drying Saturated Piles:** What are the acceptable practices for drying saturated material after a rain event? How can this be used as part of the WQPM at compost sites, and be promulgated as part of the Statewide Order?

Definition Recommendations

We make the following definition recommendations. Additions and deletions to the definitions are shown in color and strike through, respectively.

- **"Compost Feedstock"** (and "compostable organic material") is synonymous with eligible wastes under the concepts for the proposed statewide order for composting facilities, used in the production of compost. It is any compostable organic material that is used as a primary ingredient to a compost operation. These can include:
 - Animal Carcasses
 - Biosolids
 - Compostable Municipal Solid Waste (MSW)
 - Food Scraps
 - Manure
 - Vegetative Waste
- **"Constituents of Concern"** are those water soluble compounds or suspended materials found in organic material leachate. It includes inorganic and organic salts, soluble organic chemicals, and suspended particles. Whether particular constituents of concern (especially organic salts) will ever actually percolate through a permeable ground surface layer into a potentially affected groundwater basin (aquifer) must be demonstrated for specific soil profiles.
- **"Feedstock Processing"** is the area of a compost facility that engages in "chipping and grinding" of the compost feedstock, especially for vegetative waste. Other compost feedstock material may be processed in other ways.
- **"Food Waste Scraps"** means discards or residuals derived from pre- and post-processed plants and animals (excluding those ~~wastes~~ **by-products** generated at rendering facilities) for the explicit creation of foods for human and/or animal consumption. This includes, but may not be limited to, those foods and scraps processed or produced at restaurants, hospitals, food distributors, schools, and residences.
- **"Leaching Reduction Ratio"** - Refers to a measurement of management practices that measures the degree (ratio) to which various compostable organic materials piles, or management units, can reduce the amount of leaching of constituents of concern through proper management (feedstock mixtures, particle size and moisture content) of the pile.
- **Management Units** - sections of a compost facility that have a separate and distinct compost operational function, and, therefore, different WQPMs according to the risk of contaminants of concern from that function
- **"Onsite Management Units"** are designated areas (square yards and/or acres) that are used for one or more of the following main compost operational functions
 1. Feedstock Processing - Feedstock processing units will be exempt from this General Order for green waste only, and will apply for each designated unit and subunit. Activities include: receiving, size reduction, and blending of the compost feedstock
 2. Composting & Curing - includes the active composting and curing at the facility and may include windrows, static piles or some other composting technology.
 3. Post Composting - includes the screening of finished compost and the stockpiling of compost ready for sale and removal from the site.

4. Removal & Cleaning - means the areas of the site where compost is picked up and where equipment is washed. These could be two separate management units.

5. Equipment Working Surfaces - are the areas of ground surfaces where equipment is either placed or driven to process all piles from compost feedstock delivery, pick up and parking, organics Processing (chipping, grinding, screening) and various pile movement and maintenance.

- **Organic Salts** - are salts composed of the light elements (especially carbon, nitrogen, oxygen, hydrogen) vs. inorganic salts composed of the heavy elements (especially metals of various types, e.g. Mg, Ca, Hg, Cu, Fe, etc.). Much of the salt load in active compost is organic and, therefore, transitory. Organic salts decompose in water, serving as substrate for denitrifying organisms. This process occurs in compost piles. Total salinity, an important constituent of concern, may be reduced as organic salts decompose removing nitrate.
- **Pile Water Retention** - the amount of water held in a compost pile after a rain event and before it becomes saturated and reaches the surface underneath the pile.
- **Pile Drying** - measuring the moisture content of a compost pile, and the degree to which it can absorb rainwater, before it becomes saturated and reaches the surface underneath the pile.
- **Soil Compaction** - Measuring the degree to which working surfaces are compressed, from heavy equipment, and determining their degree of compaction and also their permeability.
- **Soil Hydrophobicity** - occurs when organic acids enter soils and dry forming a waxy coating. Even sandy soils can strongly resist downward water movement under such conditions. Soil hydrophobicity is known to greatly change the permeability of all soil types.
- **Water Quality Protection Measure (WQPM)** - management activities and structures (e.g. low permeability ground level pile and working surfaces, perimeter berms to control runoff, catchment ponds to collect rainfall runoff, etc.) that have been demonstrated to protect groundwater quality from constituents of concern. A WQPM is not the same as a "best management practice" (BMP) which is a practice that is "believed" to protect groundwater quality, but has not been demonstrated at a given site to do so.

New/Alternative WQPM Recommendations

Various methods can apply to different ground surface areas of the compost operation as recommended in "Composting and Groundwater".³ These can be segregated into "units" on the compost facility site.

Onsite Management Units

- **Designate "Onsite Management Units":** As per "Composting and Groundwater"³, divide each compost facility property, via an appropriate *plot map*, into the following "manage unit operations categories." Definitions of these units are proposed above.
 1. Feedstock Processing
 - a. Receiving

³ "Composting and Groundwater - Crohn.pdf" a letter dated Oct. 5, 2011, to the Roger Mitchell, Statewide Order Project Lead, Engineering Geologist, State Water Board - Division of Water Quality

- b. Size reduction
- c. Blending
- 2. Composting & Curing
 - a. Active composting
 - b. Curing
- 3. Post Composting
 - a. Screening
 - b. Stockpiling
- 4. Removal & Cleaning
 - a. Discharge
 - b. Washing
- 5. Equipment Surfaces
 - a. Delivery, pick up and parking
 - b. Organics Processing (chipping, grinding, screening)
 - c. Pile Movement and maintenance

WQPMs for Specific Management Units

The following conditions will hold for various designated management units:

- 1) Ground surfaces next to compostable material piles are most likely to contact runoff water (from the piles and working surfaces), and rainwater rarely, if ever, will reach the ground surface underneath a compost pile,
 - 2) Chipping, grinding and screening activity areas are "Exempt" under the proposed Statewide Order, since these activities are exempt, and
 - 3) Equipment surfaces will have the greatest exposure to potential rainwater infiltration,
- Therefore, the WQPMs should be written distinctly for each of the management units of a compost facility. Thus, the purpose of this section is to propose WQPMs for the specific management units.

- **Feedstock Processing** - For green material only, this is an exempt activity on this unit for the activities of receiving, size reduction (chipping and grinding) and blending (with other green material). For other organic material, specific WQPMs will apply based on the particular processing technology used.
- **Composting & Curing** - The ground surfaces underneath all types of compost piles do not require any special treatment as long as piles are < 60% moisture. This holds for active composting and curing, and that a 25 year, 24 hour rain event can be absorbed by, or runoff the pile surface.
- **Post Composting** - As with composting and curing, screened compost screening and stockpile ground surfaces underneath them can be demonstrated to be protected from 25 year, 24 hour rain events and not require any special treatment.
- **Removal & Cleaning** - removal of compost (discharge) from the site, leaves an exposed surface, and will need to be treated as an "equipment working surface" if left for more than 48 hours.
- **Equipment Working Surfaces** - are exposed to rain water and will have to be sloped (> x%) and have a permeability (hydraulic conductivity) commensurate with the Tiered system proposed in the order. 1×10^{-5} cm/sec or less to 1×10^{-7} cm/sec or less.

Pile Construction & Orientation

- Use compost piles to control both runoff and infiltration:

- **Runoff** can be collected by orienting piles parallel to graded surfaces.
- **Diversions** can be constructed as appropriate to reduce the concentration times of flows so that they can be removed promptly. (Prompt removal will greatly reduce the leaching potential on compost sites.)
- **Enforcement** - one enforcement approach might be to determine a leaching reduction ratio.

Specific Steps at the Workgroup Meetings (October 2011):

- Water Board:
 - Continue the Collaborative Process
- Submit New Recommendations:
 - Research Recommendations
 - Definitional Recommendations
 - New WQPM Recommendations
- Pathway to Implement WQPMs
 - Strengths and Limitations of Alternative/New WQPMs
 - Research is absolutely needed
 - Process for continued progress

Appendix

Stakeholder Pre-meeting (9/22/11)

A Conference Call with folks on the beginning General Order Workgroup were:
Bob Conway (LACSD), Kevin Barnes (City of Bakersfield), Dan Noble (ACP), Craig Kolodge
(Summit Erosion Control), David Crohn (UCR/UCCE), Britt Faucette (Filtrexx), Neil Edgar
(CCC)

During Conference Call we attempted to break our topics up into three general topic areas
of 1) General Overview, 2) Strategy and 3) Tactics.

General Overview

1. Blanket Regulation: This new General Order will put a blanket regulation for all compost facilities throughout California. This proposed "one-size-fits-all," greatly expands the umbrella of the water quality regulations on compost facilities. Any discharges to surface waters of process waters would trigger an NPDES permit, in addition to the new General Order requirements. If all water is kept on site, the General Order is designed to take care of that, while protecting the aquifers that underlie each compost facility site from, mainly, salts and nutrients not wanted in the aquifer. One standard applied statewide is inappropriate.
2. Current Situation: Some compost facilities (especially biosolids composters in affected watersheds, as well as some green composters in sensitive basins within certain negatively impacted Regional Water Quality Control Board jurisdictions) have already been subject to WDRs (water discharge requirements) relative to their specific sites, and already have some experience dealing with some of the proposed WQPMs in the proposed General Order. ("General Order" once implemented, will supersede and negate the need for WDRs, though in many cases, will be much the same as existing WDRs, and in most cases, likely, will be more stringent.)
3. Proposed Costs: the vast majority of compost facilities in the state would now be subject to major increases in construction costs related to upgrading their facilities to create: impermeable **pads**, perimeter **berms** and retention **ponds**. Calrecycle's preliminary estimates state that a 1,000 tpd facility would have to spend and additional ~ \$5,000,000 to come into compliance with the new general order.⁴ This is in addition to the average \$5,000/year permitting cost per facility estimated (required?) by this new General Order.
4. Permitting Costs: The Water Board is looking to get a total of \$500,000/year for permitting fees from the compost producers (as per their presentation). Why is this important? What is the basis for this?
5. Food Waste Definition: Water Board states that any amount of food scraps (in a green material pile) will be treated as if it's 100% food scraps. This is inconsistent with both the Air Board and Calrecycle definitions.
6. Status Quo vs. General Order: Status quo has been workable for the compost industry as a whole. What's wrong with keeping it the same if water quality has not

⁴ This number will need to be updated with more data from Calrecycle as of this writing.

- been shown to deteriorate or be deteriorating as a result of current industry practices? Data on water quality deterioration by the compost producers has not been presented so far by the water board.
7. Title 14 & Title 27: The Calrecycle Title 14 (esp. Chap. 3.1- **Compostable Materials Handling Operations and Facilities Regulatory Requirements**) regulating compost facilities certainly applies, but does not supersede Title 27. In fact, in Title 14 it says, " all compostable materials handling activities shall obtain a Compostable Materials Handling Facility Permit pursuant to the requirements of Title 27, California Code of Regulations, Division 2, Subdivision 1, Chapter 4, Subchapter 1 and Subchapter 3, Articles 1, 2, 3 and 3.1 (commencing with section 21450) prior to commencing operations." " *SWRCB-- Water Quality Monitoring and Response Programs for Solid Waste Management Units Sections 20380-20435*"
 8. Waste Management Units vs. Land Treatment Unit: For the purposes of this General Order, they are classifying compost facilities as a "Waste Management Unit". We would like to consider the possibility of being classified as a "Land Treatment Unit", or better a treatment facility (new classification?), (Subsection 20250 it states: "Land treatment units (**LTUs**) are not required to comply with the requirements of ¶(b). Dischargers who treat or dispose of wastes in LTUs shall demonstrate, prior to application of the waste, that *waste can be completely degraded, transformed, or immobilized in the treatment zone.*"). This may provide a new pathway within existing regulations, to provide for a special definition and situation for compost production facilities. While it may be hard for compost facilities to qualify as a LTU, maybe there is a "third" definition, an "organics processing facility" that is neither a WMU, or an LTU... but something in between or altogether different.
 9. Chip & Grind Facilities: Are not regulated under this General Order. Why? And shouldn't there be a level playing field on this for all processed organic material?
 10. Clay Layers vs. Evapo-transpiration (ET) Layer: Research shows (by Sandia Laboratories, <http://www.sandia.gov/caps/ALCD.htm>), relative to their Alternative Landfill Covers Demonstration where "*Performance of the covers was based on their ability to minimize the movement of water through each profile. In other words, the cover with the lowest flux was deemed the best performer while the cover that yields the highest flux was the worst performer.*" The ET Cover (a layer of soil that absorbs water and gives it back up to the atmosphere, rather than a "seal"). The compost facility soils may already be of this ET layer type. *This can be tested and determined as part of an alternative WQPM.* (The Subtitle D cover, clay, had a 1.39mm/year average flux, while the ED Cover had a 0.05 mm/year average flux, i.e. only 3% of the flux of the "impervious surface!" This should be taken into account in the WQPMs.
 11. Water Board Awareness and Use of Compost Stormwater BMPs: The Water Board regulators are generally not aware that compost is an acceptable BMP for controlling stormwater runoff and erosion control and sediment control treatment. They need to have extensive scientific and engineering information and seminars on the role that compost already plays in sustainable watershed management. The most current and up-to-date source and compendium on this subject is "**The Sustainable Site: The Design Manual for Green Infrastructure and Low Impact Development**", published by Forester Research, see www.thesustainable.com, by the foremost experts in the U.S. on this subject. The goal is to make each compost production facility a sustainable site, using as many compost-based BMPs (*available on-site with no additional manufacturing or shipping*) to control and mitigate any potential water pollution issues at that site.

12. HVA Proximity: The Hydrogeologically Vulnerable Areas (HVA) cause a facility to move from move up a tier of stringency in the exact WQPM's in this General Order. However, *local site maps are not currently available*. How can the General Order be effectively implemented without this information being readily available? When will it become available, and how for both compost producers and local regulators?
13. Upgrading pads under the current draft concepts: If a composter handles only green waste at first, and constructs a 1' thick Tier One pad, but then later wants to add food waste, building a 2' thick Tier Two pad could be necessary (depending on the HVA location map). However, the Tier Two pad permeability is an order of magnitude more stringent than that of Tier One, so the composter can't just "add on" another 1' to upgrade the pad. Rather, they would have to either add the whole 2' of Tier Two pad material, or they would have to have overbuilt their Tier One pad with a higher grade of material in anticipation of the upgrade. There should be a way to make this all more consistent and smooth for facility upgrades?

Strategy:

- Address All Alternative Possibilities:
 - Caution: WQPM's that we offer could become a "trap"... from suggested alternatives (on a menu of options) to required list that must all be implemented. Must make sure this doesn't occur.
 - Any way we can allow for more time to work with the Water Board on creating a workable General Order we should do. After 2 years of doing nothing, they now seem to put the compost producers on a very aggressive implementation plan. To get the General Order moving in a mutually beneficial direction (or intention above), we need to work with Water Board, especially to educate them about compost-based stormwater and surface water protection BMPs, as well as flexibility of applying them at each site.
 - The "Draft Concepts..." in this General Order seem like draconian measures for worst case scenarios. They represent extraordinary measures. We need sufficient time to work with the Water Board to get it right, and workable, not based on some arbitrary schedule.
 - Title 27 "waste management units" (WMU) vs. "land treatment units" (LTU) is case where regulations don't require liners. Is the water board staff aware of these questions? Are we interpreting incorrectly? How are the proposed rules consistent, or inconsistent with these? An optimistic approach would be to work with Staff to include Compost Facility as more appropriate for the LTU vs. the WMU definitions.⁵
 - Status quo has been workable for the industry as a whole. What's wrong with keeping it the same if water quality has not been shown to deteriorate?

⁵ The definitions from Title 27 (<http://www.calrecycle.ca.gov/laws/regulations/title27/ch2.htm#Article1>) for LTU is: " **Land treatment unit**" (SWRCB) means a waste management unit (Unit) at which liquid and solid waste is discharged to, or incorporated into, soil for degradation, transformation, or immobilization within the treatment zone. Such Units are disposal Units if the waste will remain after closure. [Note: see also the definition of "waste management unit" and section 20090(f).] and for WMU is: "**Waste management unit**" or "**Unit**" (SWRCB) (the latter capitalized or in quotes at the beginning of a sentence) means an area of land, or a portion of a waste management facility, at which waste is discharged. The term includes containment features and ancillary features for precipitation and drainage control and for monitoring."

- Why does the Water Board want to get \$500,000/year in fees from composters? Why not \$50K/year or some other number?
- Bring in Chip and Grind Facilities: As they may be a "LTU" as well. How can we help to make this happen?
- Need HVA site data in place, and accessible to compost producers, prior to implementation.
- Help Craft More Flexible and Site Specific WQPMs:
 - **Create a menu of choices**... get assurance from staff, don't make it a whole list to check off. Determine how to test the alternatives....
 - **Create Onsite Units (or zones):** chip & grind (feedstock), active (modest threat) and finished (non-threat). Build on the "Unit" concept that's already in Title 27.
 - **Berms generally not a problem** - Inexpensive, can be soil and/or compost, correct?
 - **Linings should be ET Layer type** vs. Clay Layer (unless owner wants something more impervious); can either WMU's or LTUs "skip a liner" if they demonstrate that they don't leak water and follow up with a soil pore liquid sample?
 - **"Ponds" should be sized based on local factors such as:**
 - Average rainfall
 - Depth to groundwater
 - Amount of compost being processed
 - Water management practices
 - Type of layer ET vs. Impervious layer
 - Piezometer measurements, on site, of water flow down into the aquifer.
 - Compost being used as a treatment channel for effluent water (water quality differences where they exist).
 - **Develop a tiered approach** - Would it be possible to develop a tiered approach based on rainfall, soil type and permeability, proximity of wells and depth of groundwater, feed stocks and scale of the operation. But does scale necessarily suggest a greater impact?

Tactics:

- **Proactive Education & Information** - take a proactive & "California green" business orientation and education with the Water Boards
- **Address & Exhaust Alternative Possibilities** - step by step from the strategy section
- **HVA's proximity** must be in place prior to implementation.
- **Piezometers can be used:** as in agricultural water quality monitoring, to look at how much water actually goes down ... how much goes into the aquifer if any. (How easy or difficult is it to make a map of a site using piezometer measurements?)
- **Craft WQPMs based on Site specific characteristics:**
 - Berms, Pads and Ponds, based on
 - Rain, compost, water management, layer type, piezometer measurements, compost uses on site, aquifer depth
- **Tiers:** above can be adjusted and changes made in tier placement

- **Data:** what data between active compost vs. feedstock and finished compost needs to still be collective to verify the new WQPMs
- **Divide the permit/site (zones on the facility):** chip & grind (feedstock), active (modest threat) and finished (non-threat)
- **Berms:** Allow for the use of compost berms, and other material (as per US EPA Menu of Stormwater BMPs:
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=119)
- **Piles vs. Ponds:** Build compost piles in a way that captures water into the pile, rather than running off; make this a WQPM in lieu of "ponds". This assumes it's below a threshold of the piles washing away, themselves... needs to be determined.
- **Ponds:** Create options (local based on size) as per current practices with adjustments for on site water retention and ET, and depth of aquifer
- **Protect surface water...** stormwater managed on site... most facilities can handle this using current BMPs (as per www.thesustainable.com).

Specific Steps at the Workgroup Meetings (9/27, 9/28):

- Water Board Explanation:
 - Explain their authority, in a very clear way (why their doing what their doing... what regulations they're attempting to satisfy, and why there are taking the particular approach
 - Review *all* "Alternate Possibilities" (above)
- Old Subtitle D Clay Liners:
 - Are a mistake (as shown in the Sandia Laboratories Research, <http://www.sandia.gov/caps/ALCD.htm>)
 - ET layers are 97% better than clay liners
- Pathway to Craft More Flexible and Site Specific WQPMs
 - Begin above tactics
 - Go for least cost for maximum results
 - Create process for verification

Notes - Stakeholder Workgroup Meeting, Riverside (9/27/11)

9/27/11

To: Water Board Statewide Order Workgroup,

From: Dan Noble, ACP ED & Reg Consultant to IEDA

RE: Notes from the Stakeholder Workgroup Meeting, Riverside, CA, 9-12 noon

- **Why:** I just wanted to provide the briefest of notes to appraise folks about some of the topics that were discussed at this mornings Stakeholder Workgroup meeting in Riverside, CA
- **What:** “Stakeholder Workgroup Meeting: Concepts for a Statewide Order for Composting Facilities”
- **Where:** Regional Water Quality Control Board, Santa Ana Office, 3737 Main Street, Riverside, CA 92501, 5th Floor Conference Room
- **Disclaimer:** These notes are not “official” and certainly not complete. They are an indicator of some of the main points that I perceived and heard and felt were important. They may serve as both a background, and jump-off point, to share for further discussion and collaboration between the compost industry, the Water Board, Calrecycle and other stakeholders (especially environmental activists which didn’t seem to be represented, so far, on this Workgroup). Wording this more clearly is both possible and desirable, as well as eliminating any errors of omission. Many more points need to be made, and hopefully will be brought up in the other Workgroup session in the North, and the ongoing Workgroup process.

Attendees (incomplete list of those in the room, no one the phone is listed here):

- Water Board: Roger Mitchell, Lisa Babcock
- Calrecycle: Gerald Beruman, Brian Stalker, Jennifer Wallin, Danielle Aslam
- ACP & IEDA Supporting Members: Dan Noble (ACP-ED, Reg Consult), Chuck Tobin (Burrtec), Bob Conway (LACSD), Matt Rayl (Serrano Creek Soils)
- Other Composters (including ACP Basic Members): Renee Robertson (City of San Diego, Miramar Greenery), Michael Hardy (Calbiomass), Mary Matava, (El Corazon Composting, Agri-Service, Inc), Rosalia Rojo (City of Los Angeles)
- Other Professionals: Dr. David Crohn, (UCR/UCCE; ACP Science Advisor)

{with apologies to the folks I left off!}

Topics Addressed:

Scope & Terminology

Discussion of why/how the Water Board has the authority to regulate compost facilities under Title 27 (which is clearly referenced within Title 14 Waste management facility statutes). Also, it was made clear that this regulation only concerns discharge of excess facility water (mostly stormwater falling on the facility site) to land surfaces which can impact groundwater basins, (vs. discharge to surface waters; which triggers the necessity of NPDES permits, not covered in this Statewide Order.)

- **Definition of “Waste”** – There was much discussion of the term “waste” within the context of both the marketplace, the political definitions as well as from a regulatory perspective. We came to the perspective that “waste”, for the purposes of this regulatory process are “constituents of concern” (esp. salts, nutrients, bacteria,

metals) that are known to arise from water saturated compost feedstocks, piles and/or finished compost. This isn't to say the compost is itself a "waste", however, the feedstocks have been classified as such, as well as the "leachate" from compost processes can either be a "waste", or better, a "pollutant to surface and groundwater." There is recognition, if not explicit data, that "wastes" that come from compost piles will be different from wastes coming from other facilities (e.g. landfills, other production facilities, etc.) These definitions can be explicitly stipulated in final documents to assure clarity of the Order.

- **Defining Constituents of Concerns as it relates to the compost process** – while there is some general agreement of the general "constituents of concern" from saturated compost processes. Specific data where it exists, and referred to by the Water Board for the purposes of drafting this Statewide Order, can be found on the Water Board website. Roger Wilkins will send out the exact URL for this data. There was acknowledgement that the more we know about both the chemistry and the fate of these chemicals, the more accurately we can craft WQPMs (Water Quality Protection Measures) to address the potential pollutants (waste discharges to groundwater).
- **Definition of "Organics"** – While many in the room were using the term organics residuals, or "compostable organic matter," the term organics is not defined in the Draft Concepts. However, all of the feedstocks to compost facilities were defined in the Draft Concepts, (though we didn't get into details for those definitions during this meeting). Save to say the word "contains" as in "contains food waste" is too general (i.e. does "contains" = 1% or 50% or 99%?). This is not clear, and needs to be clarified for the purposes of defining management practices at the facility.
- **Definitions and Dollars** – Composters expressed that definitions are not just academic, scientific or legalistic, but are the basis upon which facilities will have to invest in designing and building specific WQPMs. This can *run from the thousands to millions of dollars at each facility*, and therefore is critically important to both the crafting and the implementation of this Statewide Order to every facility owner and operator.
- **Spectrum of Management Unit Definitions from WMU and LTU** – We pointed out that while the compost facilities are generally classified as Waste Management Units (WMU's under Title 27), both the feedstocks (green material, biosolids, manure) as well as the finished material (finished compost) can be applied to land under the "Land Treatment Unit" portion of Title 27. If the material starts out as an LTU material, and ends up as an LTU material, why isn't a compost facility an LTU rather than a WMU? Shouldn't it be regulated as an LTU rather than a WMU? What differences would this mean for the WQPMs? We still need to further clarify this point (see discussion of "Units" below).
- **Units/Categories of the Compost Process** – It was brought up that compost operations are already divided and managed in segregated "units" at each facility, including at least the five areas of:
 - Raw feedstocks (green material, food waste, biosolids and manure) or some mixture of these
 - Chipped, ground or shredded feedstock material
 - Active compost piles (static, windrows, aerated, etc.)
 - Finished Compost
 - Under piles vs. surface area for movement and transport (by equipment) (so called "pads" under piles and working surfaces).

The questions include: Do each of these units produce the same or different “constituents of concern”? Can each of these units be managed differently based on the potential to pollute? Can these be part of the WQPMs? This needs to be worked through.

- **Concept and Operational Use of Management Units** – According to the Water Board representatives, the concept of management units is well known and well understood by Water Board regulators. This concept can likely be used in crafting WQPMs for compost facilities... but the Water Board needs industry’s guidance and recommendations on this, moving forward.
- **Matrix of compost stages, materials and threats** – It was recommended that possibly we could craft a matrix of the composting materials handling stages, the various material types and the various site specific and unit specific threats to groundwater contamination, and craft the WQPMs accordingly. The Water Board was open to considering this option with explicit recommendations from industry representatives.
- **Distinction between BMPs and WQPMs** - We learned that the Water Board is endeavoring to make an explicit distinction between BMPs (best management practices) that are “believed” to produce water quality enhancements vs. WQPMs (water quality protection measures) which are “known” or “demonstrated” to protect the water environment (in this case, ground water aquifers). That is way WQPMs are used rather than BMPs in this Order (if I’m understanding this correctly).
- **Chip & Grind Facilities** – Why are chip & grind facilities not regulated if three of the four compost facility operations are the same as chip & grind facilities and compost applications? We did not work though a solution to this, save to say that these two facility operations are defined differentially in the various CalEPA regulations (*by all agencies*, Air, Water and Solids/Calrecycle). The industry representatives stressed that this *needs to be resolved by all CalEPA agencies* to benefit *both* the industry *and* the environment, and create a level playing field within the organics recycling industry (i.e. for *both* composted *and* non-composted organic materials).
- **Definitions Comments** - Water Board representatives explicitly solicited specific definitional recommendations that will help clarify the Draft Order and process moving forward.

Pond Requirements

There was a desire to start with the pond requirements, rather than the pad requirements, as per the agenda.

- **“One Size Fits All”?** – The Order, while applying across the state, there is recognition by the Water Board, that different sites will need to be treated differently relative to pollution threat which is based on (at least):
 - Liquid – amount of water used, rainfall and runoff (both through and around piles)?
 - Grade – what is the slope of the management surface(s)?
 - Permeability – what is the permeability of the surfaces over the aquifer?
 - Material type – both feedstock and stage in the organics management process
- **Management Units** – If differences between the compost management units is defined (we need specific data for this, still!), then it is possible to define both pads and ponds based on the above “threats to groundwater quality” that are specific for, and to, those units.

- **Operational measures vs. capital intensive measures:** If we can develop operational measures that take advantage of the retention and treatment characteristics of compost operations, materials and products to *treat* constituents of concern *on-site*, it may be possible to craft a set of WQPMs that are specific to compost operations and materials (that are unique, compared to any other industrial facility) and to control and improve water quality, on site. The industry needs to *make specific proposals to the Water Board for consideration about what these are and should be.*

Pad Requirements

We did not discuss pad requirements at any length, save to say that we may need to discuss different pads for different units. As well as to incorporate or find new data like the Sandia Lab research on landfill covers that applies specifically to pads where plant material (i.e. for evapotranspiration) is not being used. This still needs to be worked through with more detail and data.

Regulatory and Workgroup Framework

1. **What discretion does a regional board have?** Site specific WDR? Do they have that latitude? Regional Boards have broad discretion in statute to craft unique local requirements at each facility. The General Order “will be used as a reference,” to help simplify the regulatory process for compost facilities, provide guidance to the Regional Water Board regulators, and create a more “level playing field” for composters around the state.
2. **Existing or proposed... WDR?** What happens to existing facility of a WDR?
 - Existing WDR - will remain under Regional Boards, continue... unless Regional Board decides otherwise, and can be subject to new review
 - Existing facilities without WDR - State board will “knock on their door”.. subject to State Requirements... issue the permit for the Statewide Order.
 - New facility - same as existing that does not have a WDR (from operator’s perspective) have discretion under state General Order, or negotiate something with the Regional Board.
3. **Stakeholder Workgroup** – can the Stakeholder Workgroup be formed to continue working with the Water Board both now and into the future? The goal is that this should, and can, be the case (our current understanding). This likely needs to be defined more specifically as to what the collaboration looks like both during the Statewide Order drafting, acceptance and its implementation.

Next Steps:

- **Definitions Comments** – The Water Board would like to receive specific definitional comments and recommendations from the Stakeholders.
- **Collaborating** – The Water Board intends to collaborate with all Stakeholders to draft the best WQPM’s to both protect the water environment, as well as keep the compost industry viable and growing.
- **Proposed WQPMs** – The Water Board explicitly solicited new, draft, alternative WQPMs to what is in the Draft Concepts, based on addressing, and resolving the issues discussed at this working group
- **Research** – Further research was not explicitly discussed, however, there was universal agreement that the more explicit data that is available (either specifically related to compost operations or already available about soils and water pollution retention and movement into the aquifers) should be the basis of crafting WQPMs.

Do industry participants feel that certain data is missing? If so, how and when will we define the data, and closing the gap on the missing data?

- **Further Discussions** – Ongoing discussions between the meetings between the industry Stakeholders and the Water Board is *strongly encouraged*
- **Next Working Group** – The next working group meetings (again both North and South) will be the last week in October (but dates have not been set yet). More meetings are possible, if we defined the explicit need to continue the collaboration.