CV-SALTS Subcommittee Meeting

Central Valley BMP Subcommittee
When: Wednesday, May 25\textsuperscript{th} from 11:00 to 12:30 PM
Location: Conference Call only
Conference #: (218) 339-4600 Participant Code: 927571#

Agenda

1. Welcome and Introductions
2. Review and make changes to the draft Management Practice Evaluation Document (attached)
   a. Discuss processing and screening tool
   b. Review questions for Executive Conference Call
   c. Seek approval with edits due after pilot testing with several practices
3. FREP Proposal Update – Parry/Rene
5. Next Meeting/Call June _____ at ________
The Management Practice Subcommittee’s (Subcommittee) charter is to assist CV-SALTS to improve salt and nitrate management through industry and community management practices, identifying, characterizing and screening the management alternatives to improve implementation and monitoring of results. This document is part of the Management Practice Document Review developed in 2010 and 2011. This approach and process draw from others used to review stormwater\(^1\) and water conservation practice and criteria.\(^2\)

1 Management Practice Review Approach
At the recommendation of the CV-SALTS Committees or in accordance with the sector schedule below the Subcommittee will evaluate a management practices in accordance with the following process and standards. These will be used to screen management practices for inclusion in a “toolbox” of Management Practices or actions (BMPs) which have been vetted in the CV-SALTS process to assist others in reducing salinity and nitrate. This “toolbox” would provide a range of options and their documented effectiveness or expected reductions. These practices provide early implementation opportunities and the basis for planning and implementation to meet the requirements that will be identified in the Basin Plan Amendment and support new technology and innovative practices.

1.1 Products
A brief description of the products of the Subcommittees efforts are described in the following sections.

1.1.1 Screening Tool
The Subcommittee will use the enclosed procedure/checklist and standards to evaluate the presence of adequate evidence and information to characterize the validity of BMP’s for Salt components and nitrates. This screening tool will be developed for recommendation and approval by May 2011. The purpose of the screening tool and standards are to assist in the review and of the scientific and monitoring documentation, not to perform that assessment or certify a practice for purposes other than evaluated. The use of the screening tool requires that the Subcommittee (or help available to it) be able to understand the information provided in its nomination, not necessarily be experts in the scientific area or the region it is being applied. The tool will result in practices added to the toolbox.

\(^1\) International Stormwater BMP Database Performance evaluation
http://www.bmpdatabase.org/MonitoringEval.htm#PerformanceEval

1.1.2 Toolbox of Practices
Over the coming two years the Subcommittee will through the processes identified with volunteers and technical support (including a pilot effort or contract) review and evaluate management practices that reduce salt constituents and nitrates of relevance to the Central Valley. Initially the toolbox may be simple electronic documents for each practice reviewed with supporting materials. Later, as the number and diversity of practices develop, this compendium of practices will likely need to become more sophisticated to allow search and easier implementation. Much discussion of the use of the toolbox and the practices in such a regulatory setting took place among the Subcommittee members.

The Subcommittee identified the best use of the toolbox as a source of documented and validated practices that regulated entities could use to develop their management plans for Salinity and Nitrate for both voluntary action and Regional Board consideration as part of the permittees plan or other regulatory programs.

A factsheet or summary technical document should be prepared for practices accepted into the toolbox so that potential users can evaluate the use of the practice easily. The Subcommittee however wants to insure that users of the toolbox understand the need for each user to evaluate any practice for their own facility or crop. Additionally, regulatory programs and permits should not inappropriately default to the toolbox as being a required practice for any specific facility or location, unless it clearly fits the applicability because of the inability of either CV-SALTS or the staff to determine all factors related to practice use.

2 Process
The process for new or developing practices and validated practices are different in their requirements and efforts. Each process is described in summary below (additional details to be described by the subcommittee). After nomination or call for practices by industry the practices will be evaluated with the screening tool for acceptance in the “toolbox” as a salt and/or nitrate management practice. The Subcommittee may recommend to the Executive Committee they be included in the “toolbox” as a management practice or action if they are found to be effective. They should be accepted if they are an improved or advanced practice for a given process and situation above a baseline or standard practice conducted before management for salt constituents was encouraged or required through any program or regulation. Or the Subcommittee can request further information, request technical support from the Technical Committee or experts available to the Subcommittee or they may reject the practice as not having adequate demonstration information or not being appropriate in the Central Valley Region.
The Diagram below illustrates the process.

The Subcommittee will likely request support from the Technical Project Manager or contract for support or consulting entities to evaluate areas where they believe additional review would support the practice or improve their evaluation of the documentation. The Subcommittee may also request grant projects or other efforts that may assist in these efforts for Pilot Implementation and revision.

2.1 Sector Review Schedule

The Pilot Salt and Nitrate Source Implementation Study identified sources of salt and each primary or significant source of salt shown in the report will be scheduled for review. Sources (industries or communities) which have prepared Best Management Practice documents will be reviewed in priority to other sources. The Subcommittee will establish the final schedule for review of practices and technologies in each sector, at a pace that is manageable but which reviews all significant sources alternatives prior to the implementation plan development. As processes are reviewed, the commonly used technologies or methodologies will be reviewed for consistent assumptions and effectiveness; such as managing nutrients to agronomic loading rates.

<table>
<thead>
<tr>
<th>Source</th>
<th>Preliminary Date</th>
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<tbody>
<tr>
<td>1. Pilot Implementation candidates</td>
<td>August 2011</td>
</tr>
<tr>
<td>2. Surface Irrigation and Drinking Water</td>
<td>October 2011</td>
</tr>
<tr>
<td>3. Groundwater Drinking and Irrigation Water</td>
<td>October 2011</td>
</tr>
<tr>
<td>4. Irrigated agriculture/Fertilizer</td>
<td>January 2012</td>
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2.2 Conflicts
Because the Management Practice Committee has an active role in the review or approval of practices. Members of the committee proposing practices will recuse themselves from discussion on practices they are presenting for review, or where they have a material financial or business interest.

2.3 Pilot Scope of Work
To continue developing the screening tool and toolbox the Committee will prepare a scope of work to do an initial pilot implementation of practices in several different areas or types. This will begin reviews and help improve the screening tool and toolbox as well as document the cost for the review process.

3 Practice Types
To simplify review and inclusion in the “toolbox” the management practices have been separated into three types: validated practices, new or developing practices and indirect or policy practices. All types of practices may be included in the toolbox if they meet the standards provided in section 4.0 as screened in the tool. Each type of practice represents a different stage or expectation for the documentation and analysis. Additionally, practice types may characterize single practices or set of practices which address salt constituents, nitrate or both. There may be additional types of practices or practice subtypes developed in the future. Validated practices are intended to be a “high bar” for completely validate practices with regard to management of salt and nitrate. Most other practices will fall into the developing category, no less valuable but requiring more evaluation and monitoring.

3.1 Validated Practices
Management practices which are established and can provide information shown in Attachment 1 (to be developed by the Subcommittee) should be submitted under the validated practices category. The standards (described in Section 4) for effectiveness and broadly demonstrated field implementation should be thoroughly met through any variety of documentation including scientific studies, university research, trade research publications and monitoring or other verifiable basis. These practices will allow the greatest implementation flexibility and lowest monitoring requirements. Attachment 1 will provide the information and evaluation framework and formats for information to be submitted. The result will be a compendium of information concerning the practice or action that makes it amenable to implementation (toolbox).
Management Practices which have been evaluated by other Best Management Practice programs may be submitted with less documentation in the formats provided in Attachment 1.

3.2 New or Developing Practices
Many management practices to address salt and nitrate are new or are still being developed, demonstrated or validated. The identification of a practice as new or developing should not detract from its perceived effectiveness or value, but only indicates its status of implementation and review. New or developing practices will not have all documentation under the standards section and will not generally have monitoring necessary for full validation. When practices characterized as new or developing it may be anticipated that additional monitoring or information may need to be provided by implementing industries or communities for it to be considered a fully validated practice.

3.3 Indirect or Policy Practices
Another grouping of practices includes practices which are deemed appropriate or necessary, but may or may not directly impact salt or nitrates in the environment and for which quantification other than broad societal estimates is not reliable. For these practices inclusion in the “toolbox” will be based on industry recommendations or regulatory requirements or where they are a clear adjunct to other actions. Examples of such actions and practices may include public outreach and awareness for urban and rural water users and wastewater dischargers or economic incentives through rate structures and other means to reduce salt and nitrate that could become released to the environment. Because there may be no reliable way to measure salt and nitrate reductions of their status cost effectiveness may be impossible to determine.

4 Standards
Screening of practices to include in the toolbox requires the review of practices for effectiveness in reducing salt and nitrate in the system. If possible, practice may be demonstrated as superior to general current practices for salt and nitrate. General practice is defined as the unregulated or unimproved baseline in order that industries that previously or voluntarily reduced salt or nitrate are not penalized for such leadership. The demonstration of Best Practices may be highly situational or not be able to be determined until implemented in several locations. The Subcommittee shall further develop the screening standards to provide additional detail as needed and may prepare subdocuments for various types of practices. The Screening tool uses the following standards as documented by the proposer of the practice for screening.

4.1 Technical Effectiveness – does it work?
Demonstrating technical effectiveness is critical for a management practice to be implemented and accepted by industry or communities. Evidence of technical effectiveness is demonstrated by lab, pilot and demonstration studies and evaluation of the studies. Does the documentation indicates strongly that the practice removes, destroys, manages or otherwise reduce any negative impacts to beneficial uses associated with its presence and assist with compliance or improvement of the waters of the valley.

4.2 Implementability – can it be used broadly?
Implementability includes both feasibility as well as broad applicability. In most cases, satisfactory implementability is demonstrated by documentation by the use of the management
practice by a significant portion of the sector and considers other issues related to cost and efficiency covered in other sections.

4.3 Cost effectiveness – is it economic to implement today?
Cost effectiveness is critical to being an effective best practice. Low efficiency costly practices are not likely to be broadly implemented. High value practices will likely be implemented with minimal regulatory requirements. The assessment of effectiveness related to cost is not always a simple as dollars per ton of salt or pound of nitrate, often it is the cost to implement, operate and maintain the practices as well as the availability of a technically trained workforce to implement the practice. Additionally, this may vary across industry and across regions. The cost effectiveness should strive to take into account all benefits to the entity implementing the practice as well as direct and indirect cost of implementation. In other words not just the technology but the impacts on quality of the product or preparation or disposal of wastes and other potential cross media impacts. These costs should evaluate life cycle benefits and costs of implementations and societal and environmental benefits and costs.

4.4 Monitoring – proving it works?
Both the ability to monitor as well as the length and breadth of the monitoring history will be reviewed as a part of screening. Monitoring during the implementation stage may be greater in developing practices than fully validated practices have already completed it.

4.5 Other Regulatory or Non-Regulatory Approvals
CV-SALTS may be able to defer to prior decisions made by Regional Water Quality Control Boards (Regional Water Board) and State Water resources control Board (State Water Board) collectively Waterboards, industrial societies and accreditation groups for validation. Where appropriate this should be done to reduce the cost and delays associated with duplication of validation.

5 Management Practice Toolbox
The Subcommittee will establish and update a list of management practices for each sector in the form of a toolbox which are known to the Subcommittee. The toolbox will change as more information is reviewed and may also be used to track management practices, alternatives and technologies. The list will be maintained by the Subcommittee and Central Valley Salinity Coalition (CVSC). The toolbox will be available on the cvsalinity.org website and track the status of evaluation and verification or monitoring. The Preliminary list of practices is shown as Attachment 2, this list will be updated or replaced as the toolbox is develop by Subcommittee efforts.

In evaluating management practices the Subcommittee should also look for management practices that while achieving other goals of the management practice are actually detrimental to the management of salt and nitrate or the environment (cross-media impacts). These should be identified and any impact quantified if possible.

6 CV-SALTS Management Practice or Technology Presentations
Technologies appropriate for presentation to CV-SALTS Technical Committee or Executive Committee are technologies and approaches that have been reviewed in accordance with the process set forth
above and found to merit wider application. Presentation opportunities are limited to available meeting time and may take several months to schedule. Technologies warranting presentation should normally be validated or have had several pilot deployments with monitoring data to demonstrate effectiveness. Exceptions may be granted by the Subcommittee for alternatives and technologies that show special promise or that are strongly recommended by an Executive Committee member.

Vendors or technology proponents who wish to have their salt and nitrate alternatives or technologies evaluated for presentation should contact the Central Valley Salinity Coalition or the Executive Committee Chair.

7 Additional Recommendations and Questions for Consideration

The Subcommittee recommends the CV-SALTS committees should consider the following recommendations and questions:

Recommendations

1. We recommend the Technical Committee discuss the level of expertise needed to review the practices and make recommendations where that expertise is available to CV-SALTS.
2. We recommend CV-SALTS consider who should best implement this effort, from a technical and management or policy approach. Should it be contracted or done by all volunteers or with the support of technical staff, and if so what funding and support is available from the State/Regional Board or industry?
3. We recommend the Executive Committee and Regional Water Board determine what information is ultimately needed from this process for the Basin Plan amendment and how will the results be integrated into the Basin Plan or supplemental documents.
4. We recommend that CV-SALTS and the Regional Board determine how the “toolbox” practices should be used by the Regional Board and its programs?

Questions

5. If an entity commits to implement a specific management practice with a documented efficiency will they be held to achieve that reduction? What if the basin plan counts of that reduction for salt management or balance?
6. What accounting methods are needed for the implementations management practices and what credits or other allowances will be provided to those who have implemented the management practices or committed to do so?
Attachment 1

This attachment provides information on the review of Management Practices for inclusion in the CV-SALTS “toolbox” for reductions in salt and nitrate that are significant to the Central Valley.

Screening Tool Checklist Process

The Subcommittee will use the evaluation framework process in Section 2 and standards in Section 4 to review management practice documentation.

1. Industry nomination or source section request
2. Formatting for screening tool by nominator or tech support
3. Preliminary Assessment of submitted data by Subcommittee (see below)
4. Detailed/Expert Review based on preliminary assessment, if needed
5. Science Review, if needed
6. Subcommittee Recommendations and actions
7. Toolbox update
8. Practice Implementation
   8.1 Operations and Maintenance
   8.2 Monitoring
   8.3 Reporting
   8.4 Continuous improvement

This is also shown in the figure in Section 2.

Screening Tool Check Evaluation Framework

The nomination of the practice will require some standardization of information on the Management Practices. This effort is of value for both review of the practices as well as for management of the toolbox and future implementation and effects to overall salinity management in the Central Valley.

The subcommittee may wish to more completely develop the requirements in this section to identify the fulfillment of the standards in section 4.0. Several of the sections were included in the Best Management Practices Guideline developed in early 2010. This check list would be completed by the Subcommittee members. And while the checklist asks questions should a practice be obvious or self evident due to common knowledge or understanding to be effective it may be recommended with less rigorous review or scientific study.

1. Title, does it adequately describe the practice?
2. Description, is the description complete and well documented?
3. Constituent salt or nutrient managed are identified in adequate detail and well documented as to the practices control of the constituent or constituents?
4. Applicability, does the practice documentation describe the breadth and limitations of the applicability of the practice, by area, soil type, media or other conditions or limits.

5. Effects, results, and cross media benefits or impacts are documented by accepted standards, science or research, or monitoring that is adequately free from bias or otherwise reliable?

6. Effectiveness calculation or narrative discussion is included to allow the development of estimates of the benefits of implementation and costs.

7. Studies and research (compendium format) are attached or referenced and available.

8. Implementation monitoring has been completed or will be required as an entity implements the practice?

9. Critical factors to efficiency listed or explained to allow users to determine monitoring or implementation criteria.

10. Implementation costs are documented including costs per unit reduction and variability, where possible.

11. Other Regulatory approvals – have other regulatory or similar processes approved, endorsed or accepted the practices appropriately to allow inclusion in the toolbox?

12. Improved or advanced practice – does the documentation support the premise that this practice is better than the status quo, an improved or superior practice above the baseline?

The Subcommittee recommends further develop the following checklist based on evaluation of several BMP’s.
Attachment 2

A very preliminary list of potential management practices, actions, efforts and alternatives to manage salt and nitrate is listed below. Additional notes, questions and areas for discussion are briefly described. This list was compiled from brainstorming, web research and other sources. No attempt at screening or evaluation was conducted. This list should be replaced with the Toolbox developed by the Subcommittee and update as required.

1. Irrigation efficiency/reduce irrigation – Would reduce salt from imported or evapotranspiration of groundwater
2. Tailwater reuse/drainage recirculation – reduced discharged salt may increase
3. Growing salt tolerant crops – reduces imported water and maintains some production
4. Evaporation ponds, solar evaporators – isolates the salt
5. Land disposal and retirement uses land to store salt and retired
6. Biologic and filtration drainage treatment systems to remove salt and selenium
7. Enhanced evaporation systems – Isolate salts for management
8. Salt separation and utilization – fractionate and create products
9. Drain water and brackish water desalination- isolates salt for management
10. Detergent reformulation - source control
11. Industrial biomass and brine management – isolates salts and potentially reuses salts
12. Plasma converter – creates fuel and products
13. Reduce imported feed for CAFO’s – reduces salt import from feedsources
14. Reduce seepage from conveyance - reduces dissolution of salt from soils
15. Industrial salt source reduction/reuse – reduces salts for production
16. Increase export of salt containing products - exports salt unless salt is brought in to produce products
17. Increase salt export in surface water leaving the region, San Joaquin River and State Water Project- export of salts could be hampered by toxic constituents and flow required
18. Increase outdoor landscape irrigation efficiency – reduces imported water and groundwater use with salts
19. Increase indoor water use efficiency – reduces imported water and groundwater use with salts
20. Reduce water softening need or shift to ocean disposal of brine – reduces salt from residential indoor plumbing
21. Water preconditioning, lime softening and management at water plant – reduces softening need and salt related to softeners
22. Salt collection and landfill disposal – Disposal and removal from basins
23. Increase salt discharge at EBMUD – ocean discharge and removal from basins
24. Salt collection and treatment (ocean qualified brine) for ocean discharge – ocean discharge and removal from basins
25. Deep well injection for storage and recovery of salts – Removal of salt from basins, with recovery when economic
26. Various source controls - Reduce salt imported and discharged
27. Legislation to require any new industrial use of salt to use salt produced in “salt surplus” areas of the state, as public policy to reduce transportation and minimize import
28. Tax imported salt and credit salt that is produced from salt surplus areas and exported.
29. Sell the salt to the melting polar ice cap areas to help offset the dilution of ocean water with melting ice
30. Concentrate and market to Canada, Toronto alone uses 150,000 tones of salt annually, or trade them for low TDS water.
31. Digestion and co-digestion of wastes containing salt – Concentrates salt for removal
32. Credit or offset program, cap and trade programs to geographically or temporally shift salts

This list likely should be converted to a matrix by type of management effort, application and result

**Salt Reuse Opportunities**

**Nutrient or Flavor**
baking, breakfast cereals, butter and cheese, canning, cattle blocks, flour mixes, heat tablets, isotonic solutions, livestock feeds, oleomargarine, pickles, potash substitute, salted nuts, table salt, spices and flavoring

**Preservative**
cheese making, cucumber salting, fish bait curing, fish curing, hay preserving, hide curing, meat curing, sausage

**Food Processing Material**
blanching seafood & vegetables, chicken de-boning, crabmeat pickling, egg preservative, fish striking agent, gravity separation, oyster shucking, wine stabilization, yeast processing

**Chemical Manufacturing**
Calcium hypochlorite, Chlorine dioxide, Sodium chlorate, Sodium flusilicate, Sodium hypochlorite, Sodium Perchlorate

**Freezing Point Depressant**
coal antifreeze, highway de-icing, ice cream making, ice manufacture, iron ore antifreeze, refrigerating brines, refrigerating cars

**Metallurgical Processing**
chloride roasting, drawing lubricant, foam killer, heat treating baths, iron ore cementation, metallurgical flux, mill scale remover, molten metal cover, rare metal refining, sink and float baths

**Miscellaneous Processing**
artificial seawater, coal briquettes, dehydrating agent, dye processing, dyestuff carrier, electrolytic milling, emulsion breaker, etching aluminum foil, herbicides, ion exchange regeneration, leather tanning, rubber coagulant, soap salting-out agent, soil stabilizer, starch manufacture, synthetic leather manufacture, textile dyeing, tile glazing, water softening, weed killing, well drilling fluids.

**Soda Ash - Na₂CO₃**
abrasives, adhesives, batteries, ceramics, cleansers, cosmetics, degreasers, dyes, explosives, fats and oils, fertilizers, fire extinguishers, inhibitors, insecticides, leather, metal fluxes, ore refining, paint removers, paper, petroleum, pigments, soap, textiles, water softeners

**Sodium - Na**
bactericides, case hardening, cosmetics, detergents, dye fixation, dyes, flour conditioning, fumigation, heat transfer, ore refining, organic synthesis, paints, pharmaceuticals, photography, pigments, plating salts, pulp
bleaching, starch conversion, tetraethyl lead, textile bleaching, titanium metal, zirconium metal

**Sodium Sulphate - Na₂SO₄**
ceramics, detergents, dyes, explosives, fertilizers, metal fluxes, paper, pharmaceuticals, photography, pigments, plating salts, rubber, soap, textiles

**Business or Enterprise Model to Combine Alternative Technologies or Processes**
WEF Manual of Practice No. 34

The Latest Methods for

Nutrient Removal

From Wastewater

This manual provides comprehensive information on biological and chemical methods for nitrogen and phosphorus removal from wastewater. This resource covers environmental and regulatory issues and provides an integrated approach for combined nitrogen and phosphorus removal, including details on ammonia and dewatering liquor treatment. Natural treatment systems are also discussed in this definitive guide.

- Hard cover, 664 pages
- Order No. W100060
- Member Price $115.00
- List Price $130.00

“This is one of the first books that ... holistically describes how engineers approach nutrient removal,” said Bruce Johnson, task force chair for the Manual of Practice. The book details the best tools available for approaching nutrient removal for a comprehensive and complete strategy, he added. “I think it’s applicable to everyone who wants to really understand how nutrient removal [is accomplished] — whether it’s a utility trying to optimize its plant, an engineer trying to figure out the best approach to designing a facility, or a student trying to understand the basics behind nutrient removal,” he said.

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**Nutrients**

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<tr>
<th>Product</th>
<th>Member</th>
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<td>$115</td>
<td>$130</td>
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<tr>
<td>Biological Nutrient Removal (BNR) Operation in Wastewater Treatment Plants, MOP 29</td>
<td>$110</td>
<td>$125</td>
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