LOS OSOS GROUNDWATER BASIN, BASIN MANAGEMENT COMMITTEE

NOTICE OF MEETING

NOTICE IS HEREBY GIVEN that the Los Osos Groundwater Basin, Basin Management Committee Board of Directors will hold a **Board Meeting** at **1:30 P.M.** on **Wednesday, February 17, 2016** at the South Bay Community Center, 2180 Palisades Ave, Los Osos, CA, 93402**.**

Directors: Agenda items are numbered for identification purposes only and may not necessarily be considered in numerical order.

NOTE: The Basin Management Committee reserves the right to limit each speaker to three (3) minutes per subject or topic. In compliance with the Americans with Disabilities Act, all possible accommodations will be made for individuals with disabilities so they may attend and participate in meetings.

BASIN MANAGEMENT COMMITTEE BOARD OF DIRECTORS AGENDA
Wednesday, February 17, 2016

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL**

4. **BOARD MEMBER COMMENTS.** Board members may make comments or communicate with other directors, staff, or the public regarding non-agenda topics.

5. **CONSENT AGENDA**

   The following routine items listed below are scheduled for consideration as a group. Each item is recommended for approval unless noted and may be approved in their entirety by one motion. Any member of the public who wishes to comment on any Consent Agenda item may do so at this time. Consent items generally require no discussion. However, any Director may request that any item be withdrawn from the Consent Agenda and moved to the "Action Items" portion of the Agenda to permit discussion or to change the recommended course of action. The Board may approve the remainder of the Consent Agenda on one motion.

   a. **Approval of Minutes from January 5, 2015 Meeting.**

6. **EXECUTIVE DIRECTOR'S REPORT**

7. **ACTION ITEMS**

   a. **Review and Approve Proposal for Hydrogeologic Services**

      Recommendation: Review and approve the proposed scope and fee for hydrogeologic services for calendar year 2016, to be provided by Cleath Harris Geologists, in an amount not to exceed $60,920.

b. Recommendation for Proposed Basin Boundary Modification Request For Los Osos Groundwater Basin

Recommendation: Authorize the Executive Director to submit a letter to the Department of Water Resources (DWR) supporting the County's proposed basin boundary modification request.

c. Administrative Draft – Los Osos Creek Discharge

Recommendation: Receive the report, staff presentation, and public comment, and place the item on a future agenda for detailed discussion.

8. PUBLIC COMMENTS ON ITEMS NOT APPEARING ON THE AGENDA

The Basin Management Committee will consider public comments on items not appearing on the agenda and within the subject matter jurisdiction of the Basin Management Committee. The Basin Management Committee cannot enter into a detailed discussion or take any action on any items presented during public comments at this time. Such items may only be referred to the Executive Director or other staff for administrative action or scheduled on a subsequent agenda for discussion. Persons wishing to speak on specific agenda items should do so at the time specified for those items. The presiding Chair shall limit public comments to three minutes.

9. ADJOURNMENT

BASIN MANAGEMENT COMMITTEE BOARD OF DIRECTORS
Item 5a - DRAFT Minutes of the Meeting of January 5, 2016

AGENDA ITEM	DISCUSSION OR ACTION
1. CALL TO ORDER **2. PLEDGE OF ALLEGIANCE** **3. ROLL CALL**	Marshall Ochylski, serving as the Chair, called the meeting to order at 1:30 p.m. and led the Pledge of Allegiance. Ray Dienzo, acting Clerk, called roll to begin the meeting. Alternate Director Harry, Director Zimmer, Director Ochylski,, and Director Gibson were present.
4. BOARD MEMBER COMMENTS	Chair Ochylski commented that the committee is still in the organizational stage; why the budget and rules and regulations are on the agenda.
5. CONSENT AGENDA **5a. APPROVAL OF MINUTES FROM DECEMBER 14, 2015** **5b. SUBMIT JUDGEMENT TO DWR PURSUANT TO SGMA** **5c. SOLICIT "REQUEST FOR QUALIFICATIONS"**	<u>Public comment</u> Patrick McGibney stated that the minutes for the previous meeting were missing a request by Mr. Wimer for issues to be added to the agenda; requested a summary of all public comments to be included in all future minutes. Keith Wimer requested that the board reserve judgement which may require a request for an extension to meet concerns before the request is submitted; the Sierra Club would like to present their concerns in more detail at the next meeting. Bill Moylen stated concern over seawater intrusion; proposed oversight of the water drawing of water purveyors. Lynette Tornatzky stated concern over further delay of the recommendations of the board. Richard Margetson stated concern over the action minutes; public comments should be included for those who were not able to attend. In the process of reviewing the previous meeting minutes, a typo was discovered and corrected from "mission station" to "mission statement" in a public comment made by Mr. Barrow. **A motion was made by Director Gibson to approve the consent agenda. The motion was seconded by Alternate Director Harry and carried with the following vote:** **Ayes: Directors Zimmer, Gibson, Ochylski, Alternate Harry** **Nays: None** **Abstain: None** **Absent: None**
6. EXECTUIVE SUMMARY	Rob Miller, executive director, gave a brief summary of the executive report to the committee which included the nature of the committee, potential online outreach, the preparation of the 2015 annual report, basin yield, as well as metrics and contingency planning. <u>Public comment</u> Keith Wimer expressed concern was expressed over the lack of detailed meeting minutes. Karen Vendette commented on more effective advertising and publicity; the possibility of video recording and broadcasting on local television. Chuck Cesena stated more detailed minutes; need for video since meeting is at 1:30pm Emily Miggens commented on the lack of diversity in the committee; inquired about outside input to the committee Patrick McGibney commented on alternative funding to be used for video recording and increased outreach.

6. EXECUTIVE SUMARY CONT.	Linde Owen commented on the existing budget for audio recording; requested a volunteer to provide proper video recording equipment. Lynette Tornatzky commented to the lack of diversity in the committee and attendees; increase outreach to multiple political views. Richard Margetson commented that he does not see the committee as political; requests more detailed meeting minutes. Ben DiFatta commented that the committee needs more public input. **Board discussed that more detailed recording of written minutes for action items. Also requested Executive Director to look at costs of videoing meetings.**
ACTION ITEMS **7a. ADOPTION OF REGULAR MEETING SCHEDULE**	The Basin Management Committee discussed the scheduling of a regular meeting time **A motion was made by Director Gibson to hold regular meetings on the third Wednesday of each month at 1:30 p.m. Seconded by Alternate Director Harry** **Ayes: Directors, Gibson, Zimmer, Harry, Ochylski** **Nays: None** **Abstain: None** **Absent: None**
7b. ADOPTION OF BASIN MANAGEMENT RULES AND REGULATIONS AS PROPOSED	An overview of the draft rules and regulations of the Basin Management Committee was reviewed. Minor typos were corrected. Public Comment Keith Wimer responded to the chair's request for more participation with the public; the process is formalized; requested more information regarding the process of public comment. Lynette Tornatzky commented on article 4 about meetings; stated it should be at the library if the meeting is open to the public; there should be more outreach and notice for the community. Emily Miggins suggested encouraging local science professionals to attend. Richard Margetson suggested the committee post flyers on the intersection of Palisades and Los Osos valley road. **A motion was made by Director Gibson to approve the rules and regulations with a modification to 8.6.2.2.2 to give power to the discretion of the chair, as well as to 8.4 to clarify posting requirements. The motion was seconded by Alternate Director Harry** **Ayes: Directors Gibson, Zimmer, Ochylski, Harry** **Nays: None** **Abstain: None** **Absent: None**

7c. APPROVE FUNDING PLAN SCHEDULE AND CONSULTANT SELECTION PROCESS	Requesting authority to approve a consultant. Potential source of funding from a zone of benefit under the San Luis Obispo County Flood Control District. Mail ballot vote would require a 2/3 majority vote to pass. The schedule of the mail ballot to be dictated by statutes and constraints. The ballot vote may be as early as August 2016 and as late as May 2017. The recommended schedule will be finished in May 2017, while the expedited schedule would finish for the August 2016 deadline. Public comment Jeff Edwards stated concerns over capital tax to fund administrative costs; expressed dissent on sole sourcing for this project; suggested full alternatives analysis. Keith Wimer suggested the committee put as much money into conservation as possible. Bill Moylen commented to affirm Mr. Wimer; focus on hot water recycling. Karen Vendette commented to affirm recommendation of waiting till 2017 to assure it is done well. Richard Margetson inquired about method not requiring a 2/3 majority. **Motion was made by Director Gibson to approve funding plan and consultant selection process. The motion was seconded by Director Zimmer.** **Ayes: Directors Gibson, Ochylski, Zimmer, Harry** **Nays: None** **Abstain: None** **Absent: None**
7d. ADOPTION OF BASIN MANAGEMENT COMMITTEE ANNUAL BUDGET	The committee discussed the reoccurring cost of seawater intrusion, wastewater monitoring, water levels, rain fall, contingency planning, metrics, startup costs, aren't set up for sampling. Grant writing and focused consultant work. Total budget of $314,000. Public comment-- Jeff Edwards commented on the in-kind money; county could fund their involvement without this committee. Keith Wimer commented that the county should have available funds for their efforts without funding from the committee; put money into conservation right away instead of getting additional funding Emily Miggens suggested it would be worthwhile doing a look at what other communities and water districts are doing for similar issues; need to get more aggressive in conservation measures. Patrick McGibney commented on condition 5 and conservation as a part of the budget; have to show you're serious about the basin. Lynette Tornatzky commented on the 5 million dollars coming from just the prohibition zone; spread cost to all users. Deanna Miller commented on the similarity of outdoor and indoor water conservation. Bill Wyman suggested shoe string funding for committee efforts. **A motion was made by Director Gibson to adopt the budget for the basin committee. The motion was seconded by Alternate Director Harry** **Ayes: Directors Gibson, Ochylski, Harry, Zimmer** **Nays: None** **Abstain: None** **Absent: None**

8. PUBLIC COMMENTS ON ITEMS NOT APPEARING ON THE AGENDA	Jeff Edwards commented on future agenda items; discharge in Los Osos; treating effluent; getting rid of water inefficient toilets, showers, and installing water recyclers. Keith Wimer commented that $5 million is counterproductive for conservation; reduction of use in population. Chuck Cesena. commented on the expansion of the minutes; wants the meetings to be video recorded. Lynette Tornatzky commented on the entity of Michael and associates report. Deanna Miller commented to agree with Chuck Cesena that the community needs to be involved; need to do more education and make efforts clear and measurable goals. Patrick McGibney commented to reiterate this is not a political forum; inquired if the conservation is a part of the 5 million; as well as clarification of the definition of sustainability. Karen Vendette commented that we need more wells for monitoring; monitor private wells to understand aquifer. Richard Margetson commented that the acre feet involved in conservation does not have anything to do with seawater intrusion; wanted to pressure the County to go to the Coastal Commission and say there is a flaw in allowing dry land farmers to use recycled water.
9. ADJOURNMENT	

TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **February 12, 2015**

SUBJECT: **Item 6 – Executive Director's Report**

Recommendations

Staff recommends that the Committee receive and file the report, and provide staff with any direction for future discussions.

Discussion

As the Committee prepares for its third meeting, a number of importation formational issues have been finalized. This report was prepared to summarize administrative matters not covered in other agenda items and also to provide a general update on staff activities.

Public Information and Process

The County continues to maintain a webpage for key Committee documents including agenda packages and audio recordings of the meetings. The website can be reached at this link:

http://www.slocountywater.org/site/Water%20Resources/LosOsos/

Alternatively, click on "Los Osos Basin Management Committee" on the lower right corner of the home page at www.slocountywater.org. Interested parties can also subscribe to an email list on the web site for future notifications.

As requested in the January, 2016 meeting, staff has confirmed the estimated cost to provide video recordings of the meetings. Assuming a 2 to 3 hour meeting, the cost for AGP to provide video services is estimated at $500 to $600. Staff will continue to post audio recordings of the meetings unless directed by the Committee to do otherwise.

Feedback on Sierra Club Questions

A Sierra Club representative recently submitted 16 questions and requested input and feedback. Many of the issues raised in the list will be discussed in more detail in the coming months as the first annual report is prepared for the Committee. In the section that follows, each question is restated, along with a response from staff.

1. How do you intend to comply with the Governor's order with an allocation only 2% below 2013 production levels?

Response: The purveyors are currently complying with the governor's order, and they intend to reduce production below the allocation indicated in the Judgment in order to remain in compliance. The allocation does not relieve the parties from the burden of addressing new regulations, or imply that worsening conditions in the basin can be ignored. The purveyors pumped 1,006 acre-ft from the basin in 2015, which represents a reduction of 32% compared with 2013.

2. What happens if the infrastructure programs don't stop seawater intrusion? What is the plan to stop seawater intrusion then and how long will it take to implement it?

Response: Section 3.1 of the Judgment requires the parties to evaluate the effectiveness of the Plan periodically, and implement additional measures as necessary to mitigate seawater intrusion. An example of such measures could include further mandatory reduction in pumping, similar to the Water Shortage Contingency Plan adopted by the LOCSD in 2014. This approach could be implemented more quickly than the construction of additional infrastructure improvements. The effectiveness of the Plan will be discussed in detail each year during the preparation of the Annual Report as required in Section 5.8.3.

3. What happens if Broderson leach fields don't take all the water they are supposed to or cause salt build up in the Basin or destabilize soil downhill and have to be cut back?

Response: Given the importance of Broderson for maintaining water levels in Zone C, reductions in the discharge of recycled water would require the implementation of other mitigation measures such as alternative recharge methods, mandatory reductions in pumping, early implementation of Basin Plan programs B and D, or other methods as determined by the BMC.

4. What happens if seawater intrusion starts in the upper aquifer?

Response: While there is no evidence of intrusion in Zone C, the Annual Report will include a discussion of monitoring data and any evident threats to the upper aquifer. In the event seawater intrusion is detected the BMC will determine how to best address the issue. Mitigations could include reduced pumping near the coast or an overall reduction in pumping.

5. What happens if the recycled water is too high in salts for a viable recycled water program?

Response: The County plans to implement salt management protocols to minimize the increment of salt that is added. The County anticipates acceptable levels of salt for Broderson discharge, urban reuse, and ag production. In the unlikely event salt levels become elevated, advanced treatment for a portion of the recycled water may have to be considered.

6. What are your specific reasons for eliminating low water use landscaping, greywater reuse, and rainwater catchment from your conservation program (did you do a detailed cost analysis factoring what it would cost for desalination and imported water?)

Response: The BMC has adopted an initial budget for 2016 that includes conservation planning, with the intent of addressing additional outdoor programs. At the time the Basin Plan was prepared, the installation of greywater systems and septic tank repurposing were encouraged but left to the discretion of individual owners. Significant public information has been provided by the County on this issue issue (see link http://www.slocounty.ca.gov/PW/LOWWP/Sewer_Lateral_Connections_and_Septic_System_Decommissioning.htm), though the BMC has not specifically engaged in the current discussion. The scope and approach of a basin-wide outdoor program will be pursued as part of the allocated budget and may be included in future community funding efforts.

7. Why not use the EPA Climate Change estimates of yield for the Basin? Although the EPA scenario was a so---called "worse case," it assumes average annual rainfall of 11.8 inches, which is not unreasonable given the four---year drought that's resulted in an average closer to 8 inches. Why isn't it advisable to err on the side of caution with this Basin?

Response: The climate change analysis included a wide range of models and estimates, many of which had a small impact on basin yield. As noted in the question, the worst case model predicted a long term reduction in rainfall, along with the accompanying reduction in recharge and yield. The parties intend to respond to actual, measured basin conditions over time, with the intent of stopping and reversing seawater intrusion. If basin recharge drops due to decreased rainfall, additional Basin Plan measures beyond programs A and C may be required, along with mandatory reductions in pumping.

8. Why do you set no time---specific objectives for implementing programs and seeing measurable improvements in Basin conditions?

Response: Chapter 16 of the Basin Plan includes specific timelines for program implementation. Figure 37 further predicts trend lines for the recovery of both the water level metric and the chloride metric. Given the complexities of the funding, permitting, and construction process, these schedules will be updated annually during the preparation of the Annual Report.

9. Why do you not discuss and provide back up plans?

Response: The preparation and periodic modification of contingency plans, including the consideration of actions based on measured basin conditions, will be addressed along with the Annual Report process.

10. Could shifting funding of LOWWP recycled water and conservation programs to Basin Plan funding delay full implementation of those programs?

Response: While the details of this issue have not been discussed at a BMC meeting, it is clear that time is of the essence for these programs. While the source of revenue may be reallocated for these programs, it should not delay implementation.

11. How much of the Basin's total capacity has been contaminated by seawater since the 1970s?

Response: An estimate of the historical and current freshwater storage within the basin will be made as part of the Annual Report preparation. Estimates were also provided in Section 5.10 of the Basin Plan.

12. Shouldn't the Basin monitoring reports include an estimate and update of total storage capacity above sea level to help gauge the health and resilience of the Basin (capacity to withstand droughts and climate change).

Response: Yes, the various monitoring efforts will be consolidated as part of the annual reporting process, including storage capacity estimates.

13. If the "sustainable yield" is 2400 AFY according to the model, and you pump at 2400 AFY, when does modeling indicate seawater intrusion will stop (how many years in the future) and where will it stop?

Response: Section 5.6.5 of the Basin Plan addresses the methodology used for determining the sustainable yield. In order for chlorides to remain below 250 mg/l, the seawater front must be kept to the west of all operating wells. The estimated location of the front is shown in Figure 38 and labeled with a Basin Yield Metric of 100%. However, the purveyors intend to meet the objective of the Basin Plan described in Chapter 14, and limit extractions from the Basin to no more than 80% of the modeled sustainable yield. This approach is expected to push the seawater front back to the west as shown in Figure 38.

14. Shouldn't "sustainable yield" be redefined to reverse seawater intrusion in Zone D, stop it in Zone E, and not cause salt buildup in the internal parts of the Basin. Why define it in a way that allows an undesirable condition, and then recommend a 20% reduction in estimated sustainable yields to prevent that? Why not define it in a way that avoids harm to begin with?

Response: The sustainable yield is modeled to provide the maximum water supply that continues to meet health department requirements with respect to chlorides. This approach would stop the seawater front and allow the purveyors to continue providing an acceptable drinking water supply. That being said, the Basin Plan adopts a more conservative approach, and clearly assembles programs to limit production to 80% of the basin yield. Figure 38 depicts the expected results from the Basin Plan's approach, including a reversal of seawater intrusion. It should be noted that such a reversal is predicted in both Zones D and E.

15. If the 20% is needed to redefine “sustainable yield” as a true sustainable yield, doesn’t this mean there is no margin of safety to account for modeling error? How much is the uncertainty, and why were uncertainties not analyzed and uncertainty values stated as recommended in the 2009 peer review?

Response: The most effective protection against uncertainty is the monitoring of physical parameters over time, along with adaptive management and contingency planning. Section 6.4 of the Basin Plan describes the sources of uncertainty. As the BMC develops contingency plans, the issues of model uncertainty will be addressed in terms of responses to physical basin conditions.

16. Does the water level metric for Zone E stop seawater intrusion in that aquifer? What is the danger of abandoning Zone E to seawater intrusion? Can’t seawater intrusion “upcone” into Zone D accelerating seawater intrusion there?

Response: As indicated above, the objective is to reverse seawater intrusion in both Zones D and E.

<u>San Luis Obispo County - the Growth Management Ordinance process</u>
On May 17, 2016 the Board of Supervisors will be considering a revision to the Growth Management Ordinance to extend the expiration date for development allocations from June 30, 2016 to June 30, 2019. The planner for this process is Jo Manson with the Department of Planning and Building. We recently updated Ms. Manson on the status of the Basin Plan and the court-approved Judgment. We also provided a link to the BMC website for future follow up.

<u>Update on Grant Funding Efforts</u>
In the January meeting, the BMC authorized staff to release a Request for Qualifications to consultants with substantial experience in grants. Three proposals have been received from the following firms, and staff is currently evaluating the submissions for action at the March BMC meeting.

- Water Systems Consulting
- Gutierrez Consultants
- Provost and Prichard

<u>Update on Zone of Benefit Proposal Process</u>
Staff has prepared a draft Request for Proposals (RFP) for the following two broad tasks:

1. Preliminary Analysis of Options for and Scope of Funding Basin Plan programs – This task will be performed at a conceptual level and will focus on alternatives.
2. Financing of Administrative Costs (and other costs deemed appropriate) – This task will be taken to a more detailed level, and will include a discussion special versus general benefits, assessment methodologies, and special tax options.

Pending counsel review of the final RFP, a consultant will be recommended to the Committee at the March meeting.

TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **February 12, 2016**

SUBJECT: **Item 7a – Review and Approve Proposal for Hydrogeologic Services**

Recommendation

Staff recommends that the Committee review and approve the proposed scope and fee for hydrogeologic services for calendar year 2016, to be provided by Cleath Harris Geologists, in an amount not to exceed $60,920.

Discussion

In the January, 2016 meeting, the Committee approved a working budget for calendar year 2015. The budget included the following three line items that relate to groundwater monitoring:

1. Semi annual seawater intrusion monitoring: $12,000
2. Annual report – not including Year 1 costs: $30,000
3. Annual report – Year 1 costs: $14,000

Total: $56,000

In addition, a contingency of $28,600 was included in the total budget. It should be noted that the County of San Luis Obispo is required to perform significant monitoring as part of the wastewater project, which is not included in the above budget, or in the scope of this agenda item. Staff solicited two written proposal from Cleath Harris Geologists to perform the work contemplated in the above three budget items. The proposals are attached for Committee review, and they were separated into two work scope items for consideration, including one proposal for the preparation of the 2015 Annual Report, and another for supplemental monitoring in 2016. The latter proposal includes semi-annual seawater intrusion monitoring. While the Committee may choose to consider the proposals separately, staff is recommending that both be approved concurrently, and if approved, a single contract would be prepared for the work. The cost of sampling and lab work was higher than anticipated, and therefore approximately $5,000 will be required from the budget contingency to cover the cost.

Financial Considerations

The draft Committee budget for calendar year 2016 includes a specific line item for the proposed work as described above. Approximately $5,000 will be required from the budget contingency line item to fully fund the required services.

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71 Zaca Lane, Suite 140
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(805) 543-1413

February 8, 2016

Los Osos Basin Management Committee
c/o Mr. Rob Miller, P.E.
Wallace Group
612 Clarion Court
San Luis Obispo, CA 93402

SUBJECT: Proposal to Prepare 2015 Annual Report for the Los Osos Groundwater Basin.

Dear Mr. Miller:

Cleath-Harris Geologists (CHG) proposes to provide hydrogeologic services related to preparing the 2015 Annual Report for the Los Osos Groundwater Basin. This proposal presents a scope of work, schedule, and the estimated costs for these services.

Scope of Work

- Obtain and consolidate available historical groundwater level and quality data, for Groundwater Monitoring Program network wells, into an electronic database.

- Prepare the 2015 Annual Report for the Groundwater Monitoring Program. The report will include data reporting for the period from January 1 through December 31, 2015. Content for the report shall be prepared in accordance with Basin Plan section 7.6.2, and shall also include a map and discussion of the available analytical results of hexavalent chromium testing in the Los Osos groundwater basin.

- Provide a draft report for Basin Management Committee (BMC) review, and a final report that incorporates BMC comments.

- Assist the BMC with contingency planning for actions in the event of basin infrastructure project delays or other issues, as needed.

Schedule

The draft report will require approximately 3-4 months to complete. The final report would be available approximately 3-4 weeks following receipt of BMC comments.

Fees and Conditions

CHG proposed to perform the above scope of work on an hourly rate plus expenses basis in accordance with the attached terms of fees and conditions and the hourly rate schedule listed below. The estimated cost for hydrogeologic services is estimated at $30,000.

SCHEDULE OF HOURLY RATES

Principal Hydrogeologist	$ 150
Senior Hydrogeologist	$ 140
Project Geologist	$ 120
Staff Geologist Level II	$ 100
Staff Geologist Level I	$ 90

EXPENSES

Mileage $0.60/mile
Other expenses at cost plus 10 percent handling.

If the herein described work scope, fees and conditions are acceptable, this proposal will serve as the basis for agreement.

Cleath-Harris Geologists, Inc.

Spencer J. Harris, Vice President

SCHEDULE OF FEES AND CONDITIONS

- Invoices will be submitted monthly. The invoice is due and payable upon receipt.

- In order to defray carrying charges resulting from delayed payments, simple interest at the rate of ten percent (10%) per annum (but not to exceed the maximum rate allowed by law) will be added to the unpaid balance of each invoice. The interest period shall commence 30 days after date of original invoice and shall terminate upon date of payment. Payments will be first credited to interest and then to principle. No interest charge would be added during the initial 30 day period following date of invoice.

- The fee for services will be based on current hourly rates for specific classifications and expenses. Hourly rates and expenses included in the attached schedule are reevaluated on January 1 and July 1 of each year.

- Documents including tracings, maps, and other original documents as instruments of service are and shall remain properties of the consultant except where by law or precedent these documents become public property.

- If any portion of the work is terminated by the client, then the provisions of this Schedule of Fees and Conditions in regard to compensation and payment shall apply insofar as possible to that portion of the work not terminated or abandoned. If said termination occurs prior to completion of any phase of the project, the fee for services performed during such phase shall be based on the consultant's reasonable estimate of the portion of such phase completed prior to said termination, plus a reasonable amount to reimburse consultant for termination costs.

- If either party becomes involved in litigation arising out of this contract or the performance thereof, the court in such litigation shall award reasonable costs and expenses, including attorney's fees, to the party justly entitled thereto. In awarding attorney's fees the court shall not be bound by any court fee schedule, but shall, if it is in the interest of justice to do so, award the full amount of costs, expenses, and attorney's fees paid or incurred in good faith.

- All of the terms, conditions and provisions hereof shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns, provided, however, that no assignment of the contract shall be made without written consent of the parties to the agreement.

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February 8, 2016

Los Osos Basin Management Committee
c/o Mr. Rob Miller, P.E.
Wallace Group
612 Clarion Court
San Luis Obispo, CA 93402

SUBJECT: Proposal for Basin Plan Groundwater Monitoring in 2016 for the Los Osos Groundwater Basin.

Dear Mr. Miller:

Cleath-Harris Geologists (CHG) proposes to provide hydrogeologic services related to groundwater monitoring in 2016 for the Los Osos groundwater basin. This proposal describes existing monitoring data collection and presents a scope of work, schedule, and the estimated costs for hydrogeologic services to complete the Basin Plan monitoring program recommendations, including semi-annual seawater intrusion monitoring.

Background

The groundwater monitoring program in Chapter 7 of the Basin Plan includes 73 locations within the basin. All 73 locations are proposed to be monitored for water level elevation in April and October (semi-annually), including eight (8) locations which would be equipped with pressure transducers programmed for daily automated water level measurements. A total of 22 monitoring locations are proposed for general mineral water quality constituent monitoring in October (annually), including two (2) locations with added analyses for constituents of emerging concern (CECs). The semi-annual schedule for seawater intrusion monitoring will also continue, which adds a groundwater monitoring event in April 2016 to the Basin Plan monitoring program.

There are two existing, ongoing monitoring programs that overlap with the Basin Plan monitoring program: the San Luis Obispo County Water Level Monitoring Program and the Los Osos Water Recycling Facility Baseline Groundwater Monitoring Program. A third monitoring program, the Los Osos Groundwater Basin Lower Aquifer Monitoring Program (also known as the seawater intrusion monitoring program), was performed in 2014 and 2015 and will be incorporated into the Basin Plan monitoring program for 2016. Collectively, the two existing monitoring programs and the 2016 Basin Plan monitoring program will complete the recommended groundwater monitoring program described in Chapter 7 of the Basin Plan, with semi-annual seawater intrusion monitoring. Tables attached to this proposal present the distribution of groundwater monitoring data collection among the three monitoring programs.

Scope of Work

CHG will perform the following tasks under the 2016 Basin Plan groundwater monitoring program, per the attached tables.

- Conduct/coordinate semi-annual water level monitoring in April and October at the following wells: FW1, FW7, FW18, FW26, UA3, UA8, UA9, UA13, UA14, UA15, LA4, LA9, LA10, LA11, LA12, LA15, LA18, LA20, LA23, LA25, LA28, and LA30.
- Provide and install dedicated pressure transducer equipment for water level measurements, with quarterly data downloading, at the following wells FW6, FW10, FW27, UA4, UA10, LA7, LA13, and LA27. Also provide and install one barometric pressure recorder.
- Conduct/coordinate groundwater sampling in April 2016 from the following wells for general mineral analyses: LA8, LA9, LA10, LA11, LA12, LA15, LA18, LA20, LA22, and two mixed aquifer wells which have been sampled during prior seawater intrusion monitoring events.
- Conduct/coordinate groundwater sampling in October 2016 from the following wells for general mineral analyses: FW26, UA3, UA9, UA13, LA8, LA9, LA10, LA11, LA12, LA15, LA18, LA20, LA22, LA23, LA28, and two mixed aquifer wells which have been sampled during prior seawater intrusion monitoring events.
- Conduct groundwater sampling in October 2016 from the following wells for CEC's analyses: FW6 and FW26, include two equipment blanks and one travel blank.
- Analytical results and water level data will be added into the electronic database for inclusion in the 2016 Annual Report.

Deliverables

Tables with results of water level and water quality monitoring will be provided upon completion of the April and October 2016 monitoring events. Data interpretation and reporting is not included in this scope of work, but will be performed during 2016 Annual Report preparations.

Work To be Performed by Others

Private well access permitting: There are 23 private wells proposed for inclusion into the monitoring program. Thirteen (13) of these wells are already part of existing monitoring programs. Access and/or data release agreements need to be obtained for these 23 private wells. CHG will assist in compiling well owner information and providing available contact information. Contacts and permitting would be performed by an appropriate representative of the Basin Management Committee per the Basin Plan.

Wellhead elevation survey: Reference point elevations for most of the monitoring network wells are from older surveys that can be converted to the current datum. Approximately 19 well locations do not have surveyed elevations. CHG will assist in compiling existing survey data and identifying and locating wells with no existing survey. The wellhead elevation survey, including historical data review, datum conversion and final recommendation for which wells to survey, would be performed by a licensed land surveyor per the Basin Plan.

Repair Well FW7: This monitoring well was damaged and buried during tree removal operations for the Broderson site leach field. Attempted relocation and repair of this well is recommended. CHG would assist directing contractor to the approximate surface location.

Schedule

The scope of work would be completed per the Basin Plan monitoring schedule (April and October monitoring), pending timely work by others as identified above.

Fees and Conditions

CHG proposed to perform the above scope of work on an hourly rate plus expenses basis in accordance with the attached terms of fees and conditions and the hourly rate schedule listed below. The estimated cost for dedicated transducer equipment and CECs sampling equipment is estimated at $5,600. Laboratory analytical services costs are estimated at $9,720. The cost for hydrogeologic services related to water level monitoring, groundwater sampling, transducer installations and downloading, and CHG assistance with work to be performed by others as described above is estimated at $15,600. The total cost for the supplemental monitoring scope of work is estimated at **$30,920**. This estimated cost does not include the permitting, land surveying, or recommended well repair work to be performed by others.

SCHEDULE OF HOURLY RATES

Principal Hydrogeologist	$ 150
Senior Hydrogeologist	$ 140
Project Geologist	$ 120
Staff Geologist Level II	$ 100
Staff Geologist Level I	$ 90

EXPENSES

Mileage $0.60/mile
Other expenses at cost plus 10 percent handling.

If the herein described work scope, fees and conditions are acceptable, this proposal will serve as the basis for agreement.

Cleath-Harris Geologists, Inc.

Spencer J. Harris, Vice President

SCHEDULE OF FEES AND CONDITIONS

- Invoices will be submitted monthly. The invoice is due and payable upon receipt.

- In order to defray carrying charges resulting from delayed payments, simple interest at the rate of ten percent (10%) per annum (but not to exceed the maximum rate allowed by law) will be added to the unpaid balance of each invoice. The interest period shall commence 30 days after date of original invoice and shall terminate upon date of payment. Payments will be first credited to interest and then to principle. No interest charge would be added during the initial 30 day period following date of invoice.

- The fee for services will be based on current hourly rates for specific classifications and expenses. Hourly rates and expenses included in the attached schedule are reevaluated on January 1 and July 1 of each year.

- Documents including tracings, maps, and other original documents as instruments of service are and shall remain properties of the consultant except where by law or precedent these documents become public property.

- If any portion of the work is terminated by the client, then the provisions of this Schedule of Fees and Conditions in regard to compensation and payment shall apply insofar as possible to that portion of the work not terminated or abandoned. If said termination occurs prior to completion of any phase of the project, the fee for services performed during such phase shall be based on the consultant's reasonable estimate of the portion of such phase completed prior to said termination, plus a reasonable amount to reimburse consultant for termination costs.

- If either party becomes involved in litigation arising out of this contract or the performance thereof, the court in such litigation shall award reasonable costs and expenses, including attorney's fees, to the party justly entitled thereto. In awarding attorney's fees the court shall not be bound by any court fee schedule, but shall, if it is in the interest of justice to do so, award the full amount of costs, expenses, and attorney's fees paid or incurred in good faith.

- All of the terms, conditions and provisions hereof shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns, provided, however, that no assignment of the contract shall be made without written consent of the parties to the agreement.

Los Osos Basin Plan
Monitoring Well Network
FIRST WATER

Program Well ID	Well Owner	Basin Plan Monitoring Code	County Water Level Program	LOWRF Baseline Groundwater Monitoring Program	**2016 Basin Plan Monitoring Program**
FW1	PRIVATE	L			**L**
FW2	LOCSD	L, G		L, G	
FW3	LOCSD	L		L	
FW4	LOCSD	L		L	
FW5	LOCSD	L		L	
FW6	LOCSD	TL, G, CEC		G	**TL, CEC**
FW7	LOCSD	L			**L**
FW8	LOCSD	L		L	
FW9	LOCSD	L		L	
FW10	LOCSD	TL, G		G	**TL**
FW11	LOCSD	L		L	
FW12	LOCSD	L		L	
FW13	LOCSD	L		L	
FW14	PRIVATE	L		L	
FW15	LOCSD	L, G		L,G	
FW16	LOCSD	L		L	
FW17	LOCSD	L, G		L,G	
FW18	SLCUSD	L			**L**
FW19	LOCSD	L		L	
FW20	LOCSD	L, G		L, G	
FW21	LOCSD	L		L	
FW22	PRIVATE	L, G		L, G	
FW23	PRIVATE	L		L	
FW24	PRIVATE	L	L		
FW25	PRIVATE	L	L		
FW26	PRIVATE	L, G, CEC			**L, G, CEC**
FW27	PRIVATE	TL			**TL**
FW28	PRIVATE	L, G	L		

L = WATER LEVEL
G = GENERAL MINERAL
CEC = CONSTITUENTS OF EMERGING CONCERN
TL = TRANSDUCER WATER LEVEL

LOCSD = Los Osos Community Services District
SLCUSD = San Luis Coastal Unified School District

Los Osos Basin Plan
Monitoring Well Network
UPPER AQUIFER

Program Well ID	Well Owner	Basin Plan Monitoring Code	County Water Level Program	LOWRF Baseline Groundwater Monitoring Program	**2016 Basin Plan Monitoring Program**
UA2	SLO CO.	L	L		
UA3	GSWC	L, G			**L, G**
UA4	S&T	TL			**TL**
UA5	LOCSD	L		L	
UA6	SLO CO.	L	L		
UA7	SLO CO.	L	L		
UA8	LOCSD	L			**L**
UA9	GSWC	L, G			**L, G**
UA10	LOCSD	TL			**TL**
UA11	PRIVATE	L		L	
UA12	LOCSD	L		L	
UA13	LOCSD	L, G			**L, G**
UA14	PRIVATE	L			**L**
UA15	PRIVATE	L			**L**

L = WATER LEVEL
G = GENERAL MINERAL
TL = TRANSDUCER WATER LEVEL

LOCSD = Los Osos Community Services District
SLO CO = San Luis Obispo County
GSWC = Golden State Water Company
S&T = S&T Mutual Water Company

Los Osos Basin Plan
Monitoring Well Network
LOWER AQUIFER

Program Well ID	Well Owner	Basin Plan Monitoring Code	County Water Level Program	**2016 Basin Plan Monitoring Program**
LA2	SLO CO.	L	L	
LA3	SLO CO.	L	L	
LA4	PRIVATE	L, GL		**L, GL**
LA5	S&T	L	L	
LA6	GSWC	L , G[1]	L	
LA7	PRIVATE	TL		**TL**
LA8	S&T	L, G		**L , G**
LA9	GSWC	L		**L, G[2]**
LA10	GSWC	L, G		**L , G**
LA11	SLO CO.	L, G		**L , G**
LA12	LOCSD	L, G		**L , G**
LA13	LOCSD	TL		**TL**
LA14	SLO CO.	L	L	
LA15	LOCSD	L, G		**L , G**
LA16	PRIVATE	L	L	
LA17	SLO CO.	L	L	
LA18	LOCSD	L, G		**L , G**
LA19	SLO CO.	L	L	
LA20	GSWC	L, G		**L , G**
LA21	LOCSD	L	L	
LA22	LOCSD	L	L	**G[2]**
LA23	PRIVATE	L, G		**L, G**
LA24	PRIVATE	L	L	
LA25	PRIVATE	L		**L**
LA26	PRIVATE	L	L	
LA27	PRIVATE	TL		**TL**
LA28	PRIVATE	L, G		**L, G**
LA29	PRIVATE	L	L	
LA30	PRIVATE	L, G		**L**

18K9[3]	LOCSD	NA		**G**
13M2[3]	PRIVATE	NA		**G**

L = WATER LEVEL
G = GENERAL MINERAL
GL = GEOPHYSICAL LOG
TL = TRANSDUCER WATER LEVEL

LOCSD = Los Osos Community Services District
SLO CO = San Luis Obispo County
GSWC = Golden State Water Company
S&T = S&T Mutual Water Company

NOTES:

1 - Remove G from LA6 - out of service.

2 - Add G to LA9 and LA22

3 - No assigned Program ID; State Well ID listed

Well IDs with both April and October water quality monitoring in Italics

TO: **Los Osos Basin Management Committee**

FROM: **Carolyn Berg, County Senior Water Resources Engineer**

DATE: **February 11, 2016**

SUBJECT: **Action Item #7b – Recommendation for Proposed Basin Boundary Modification Request For Los Osos Groundwater Basin**

Recommendations

Authorize the Executive Director to submit a letter to the Department of Water Resources (DWR) supporting the County's proposed basin boundary modification request.

Discussion

On December 14, 2015, the BMC took action to request that the County submit a notice of intent to explore a basin boundary modification for the Los Osos Groundwater Basin. On January 5, 2016, the County Board of Supervisors directed staff to submit an initial notification of intent to explore a boundary modification for the Los Osos Groundwater Basin to DWR[1], and to coordinate with basin users to develop a boundary modification request in accordance with the DWR Boundary Regulations. On January 12, 2016, County staff submitted the initial notification to DWR and initiated notice and consultation efforts consistent with the DWR Boundary Regulations[2] (described below).

On January 26, 2016, County staff held a public workshop to describe the regulations, public process, and proposed modification request. County staff solicited public comments on the draft technical memorandum through February 12, 2016. This process has identified two issues:

1. Subsequent to the workshop, DWR staff provided initial comments that indicated that the proposed modified boundary could potentially create a new groundwater basin in the eastern valley area. DWR noted that with all basin boundary subdivision modifications, DWR will take the time to determine if a new basin will or will not be formed.
2. The updated technical information shows slight differences in boundaries from what was adopted as the Plan Area in the final court order. In order to address this difference, County staff recommends an approach to request that DWR consider the scientific external boundary modification request, with two exceptions noted aligning boundaries to the Plan Area adopted in the final court order (see Figure 1).

Proposed Boundary Modification Request

The County contracted Cleath-Harris Geologists Inc. to develop a technical memorandum with the necessary justification, as required by the DWR Boundary Regulations, to support a potential scientific boundary modification request. The technical memorandum and related boundary

[1] Code of Regulations §343.9 (a) Within 15 days of a local agency's decision to explore boundary modification, the relevant local agency shall notify the Department by written notice of its interest in exploring a boundary modification and make general information about its process publicly available by posting relevant information to the local agency's Internet Web site or by other suitable means. The initial notification shall include a brief description and preliminary map of the proposed boundary modification.

[2] Code of Regulations §344.4 Each request for boundary modification shall include information demonstrating that the requesting agency consulted with affected agencies and affected systems including, but not limited to, the following:… (c) Information regarding the nature of consultation, including copies of correspondence with affected agencies and affected systems and any other persons or entities consulted, as appropriate. (d) A summary of all public meetings at which the proposed boundary modification was discussed or considered by the requesting agency, including copies of any meeting agendas or minutes, if prepared, and any notices published. (e) A copy of all comments regarding the proposed boundary modification received by the requesting agency and a summary of any responses made by the requesting agency.

modification materials are available at: http://www.slocountywater.org/site/Water%20Resources/SGMA/ The following is an overview statement of the proposed scientific external boundary modification request:

> *The proposed Los Osos Valley groundwater basin is bounded on the north by Park Ridge, on the south by the Irish Hills, on the west by the Pacific Ocean, and on the east by Warden Lake. In general hydrogeologic terms, the proposed lateral basin boundary is the onshore extent of the contiguous area overlying the principal aquifers, with at least one pre-Holocene aquifer present. The proposed bottom of the basin is the base of permeable sediments, which is defined by the contiguous base of the stacked principal aquifers within the lateral basin boundary.*
>
> County staff recommends that DWR consider this scientific external modification request, with exceptions noted within the context of the boundaries consistent with the final court order (see Figure 1).

Financial Considerations

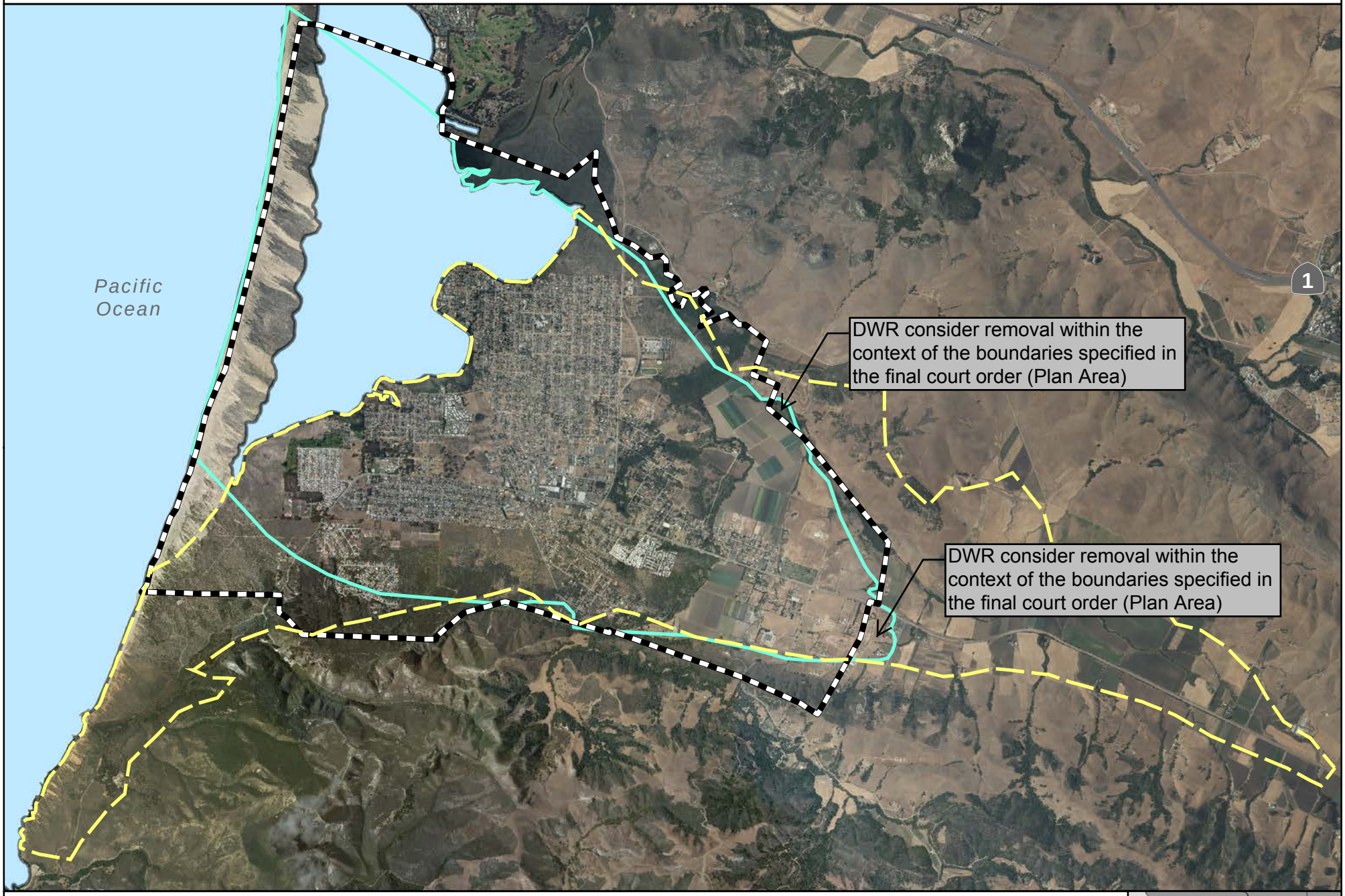
Costs associated with submittal of this initial notification to DWR and engagement with Basin users are within the Flood Control District's FY 2015-16 budget. The parties to the Basin Management Committee, Golden State Water Company, Los Osos Community Services District, and S&T Mutual Water Company, adopted their Annual Budget on January 5, 2016 that includes a line item for the related technical memorandum.

Results

Authorizing the Executive Director to submit a letter of support to the DWR will provide support for the County's proposed boundary modification request and approach to align the DWR Bulletin 118 basin boundary with best available scientific data within the context of the boundaries consistent with the final court order.

Attachments: Figure 1. Los Osos Groundwater Basin Boundary Comparison

Draft Los Osos Groundwater Basin Boundary Comparison Map



TO: **Los Osos Basin Management Committee**

FROM: **Rob Miller, Interim Executive Director**

DATE: **February 12, 2016**

SUBJECT: **Item 7c – Administrative Draft – Los Osos Creek Discharge**

Recommendation

Staff recommends that the Committee receive the report, staff presentation, and public comment, and place the item on a future agenda for detailed discussion.

Discussion

Prior to the formation of the BMC, the purveyors retained MKN & Associates to review the feasibility and conceptual cost of a seasonal discharge of recycled water into Los Osos Creek. Cleath Harris Geologists had previously determined that such a discharge could result in increased basin yield if recycled water was used for this purpose in lieu of irrigating agriculture that is currently fallow or dry farmed. The scope of the study (attached) includes the following items:

1. Review environmental and permitting issues, and make initial contact with staff at key resource agencies
2. Provide a summary of permit requirements and constraints
3. Review available information for potential recycled water creek discharges with regard to RWQCB permitting requirements, meet with RWQCB and District staff, and summarize the estimated NPDES permit requirements
4. Perform a cost benefit analysis, which includes developing discharge scenarios, preliminary infrastructure requirements and relative planning-level cost opinions for comparison of alternatives

Staff elected to advance the administrative draft to the Committee in advance of completing the section in the report reserved for formal recommendations and next steps. After receiving Committee questions and input, the report will be finalized.

Financial Considerations

The report contains conceptual, comparative cost estimates, but there are no BMC budget implications at this time.

MKN & Associates
PO BOX 1604
Arroyo Grande, CA 93421
T 805.904.6530

Administrative Draft Technical Memorandum

To: Rob Miller, PE
District Engineer
Los Osos Community Services District

From: Eileen Shields, PE
Michael K. Nunley, PE

Date: 2/5/2016

Re: Los Osos Creek Discharge Study

INTRODUCTION

Michael K. Nunley & Associates (MKN) was retained by the Los Osos Community Services District (LOCSD or "District"), Golden State Water Company (GSWC), S&T Mutual Water Company, and San Luis Obispo County (collectively referred to hereafter as "the Los Osos water purveyors") to evaluate the potential to discharge recycled water to Los Osos Creek. The scope of services for the Creek Discharge Study includes the following tasks:

- Review environmental and permitting issues, make initial contact with staff at key resource agencies, and provide a summary of permit requirements and constraints;
- Review available information for potential recycled water creek discharges with regard to RWQCB permitting requirements, meet with RWQCB and District staff, and summarize the estimated NPDES permit requirements; and
- Perform a cost benefit analysis, which includes developing discharge scenarios, preliminary infrastructure requirements and relative planning-level cost opinions for comparison of alternatives.

OVERVIEW

The Los Osos water purveyors are evaluating the potential to discharge recycled water to Los Osos Creek. The Los Osos Water Recycling Facility (LOWRF) is currently under construction and anticipated to begin operation in March 2016. The plant is designed to produce tertiary treated wastewater and the effluent will be discharged and reused through a variety of methods, including percolation at leachfields, urban irrigation for schools and parks, and agricultural irrigation in and around the community.

Discharge of recycled water into Los Osos Creek is an opportunity that could directly benefit potable water supplies. Stream seepage from Los Osos Creek is one of the primary sources of recharge to the Los Osos Valley Groundwater Basin (Cleath-Harris Geologists, Inc., 2014. Recycled Water Discharges to Los Osos Creek, March 18, 2014). In a study by Cleath-Harris Geologists, Inc. (CHG), the planned recycled water uses were reviewed to determine possible benefit of redirecting flow to Los Osos Creek. It was concluded that the only two sources of recycled water that should be considered for creek discharge are Broderson leach field flows and agricultural reuse flows. The scenarios were modeled hydraulically, and the results indicated that shifting water from Broderson leach field to Los Osos Creek decreases basin yield. The greatest potential benefit to purveyor wells would occur when reallocating recycled water from new crop agricultural reuse to Los Osos Creek discharge.

The Updated Basin Plan for the Los Osos Groundwater Basin (January 2015) defines the Water Reinvestment Program for the community that includes recycled water management. Table 1 summarizes the recycled water uses for the community listed in the water reinvestment program.

Table 1 Water Reinvestment Program (Updated Basin Plan for Los Osos Groundwater Basin, January 2015)

Potential Use	Current Conditions (AFY)	Buildout (AFY)
Broderson Leach Field	448	448
Bayridge Estates Leach Field	33	33
Urban Reuse	63	63
Sea Pines Golf Course	40	40
Los Osos Valley Memorial Park	50	50
Agricultural Reuse	146	486
Total	780	1,120

For this study, it is assumed that the water for agricultural reuse and the Los Osos Valley Memorial Park can be reallocated for creek discharge. The Los Osos Valley Memorial Park is not yet under contract to receive recycled water. The Updated Basin Plan for the Los Osos Groundwater Basin (January 2015) summarizes the California Coastal Commission permit conditions, including Condition No. 97, which indicates total agricultural reuse shall not be less than 10% of the total treated effluent. The minimum amount of water estimated to be available for creek discharge is equal to the amounts previously shown for agricultural reuse (146 AFY) and the Los Osos Valley Memorial Park (50 AFY) minus 10% of the total amount of treated effluent under current conditions (78 AFY), or 118 AFY. The maximum amount of water available for creek discharge is estimated to be 536 AFY, by adding the amounts shown for agricultural reuse and the memorial park at buildout conditions.

DISCHARGE PERMITTING

For regulatory purposes, discharges in California can generally be divided into the discharge of pollutants to surface waters (i.e., rivers, creeks, streams, lakes, ocean, etc.) or discharges to land (discharges that affect groundwater). The proposed discharge to Los Osos Creek is a discharge to an inland surface water that is considered a water of the United States, therefore it will be regulated by a permit issued under the National Pollutant Discharge Elimination System (NPDES) program under the Clean Water Act.

Because of the intent to recharge the aquifer, the project is also subject to groundwater replenishment reuse regulations contained in Title 22 of the California Code of Regulations (CCR). A project with the planned use of recycled municipal wastewater that is operated for the purpose of replenishing a groundwater basin designated in the Water Quality Control Plan for use as a source of municipal and domestic supply is, by definition, considered a Groundwater Replenishment Reuse Project (GRRP) per CCR Title 22 (§60301.390). However, many discharges to surface waters percolate into the ground and eventually come in contact with groundwater basins that are (at some point) a source of municipal or domestic drinking water supply. Based on discussions with State Water Resources Control Board Department of Drinking Water (DDW) staff, the distinction for a GRRP can be made by determination of the travel time from the point of discharge to the point of extraction for municipal or domestic supply. If a sufficient boundary from existing and potential future municipal or domestic drinking water wells is established and proven to DDW through tracer studies and hydraulic modeling of the groundwater basin, the project may be qualify as a discharge, rather than a GRRP. Based on discussions with DDW staff, if the boundary between the discharge and any existing drinking water wells is at least two to five years travel time, and an ordinance were established to restrict future potable water wells from being installed within the boundary, then the project would not be considered a GRRP.

The NPDES and GRRP requirements are summarized below.

NPDES Requirements

The potential National Pollutant Discharge Elimination System (NPDES) permitting requirements for the project were reviewed by MKN's subconsultant, Larry Walker and Associates (LWA), and described in the memorandum, *Regulatory Requirements Associated with Creek Discharge*, dated October 1, 2015 (Attachment A). This section provides a brief summary.

The proposed discharge is to an inland surface water that is considered a water of the U.S., therefore it will be regulated by a permit issued under the NPDES program under the Clean Water Act. NPDES permits regulate surface water by assigning numerical effluent and receiving water limits, water quality monitoring, reporting requirements, and other provisions with the purpose of protecting beneficial uses of the receiving water. These permit elements are described in more detail in Attachment A.

Effluent limits are either technology-based or water quality-based. Since the treated water quality is not available, as the LOWRF is not yet completed or producing recycled water, the potential technology-based effluent limits were estimated by review of the existing waste discharge requirements (WDRs) for the LOWRF and the NPDES permits for three similar plants. Other factors that may influence the effluent limits include the environmental sensitivity of Morro Bay Estuary, where the creek terminates, and groundwater recharge beneficial reuse.

Water quality standards are selected by the Regional Water Quality Control Board (RWQCB) based on beneficial uses assigned to the receiving water in the Region's Basin Plan. The beneficial uses assigned to Los Osos Creek are summarized in Table 2.

Table 2 Beneficial Uses for Los Osos Creek and applicable Water Quality Standards

Beneficial Uses for Los Osos Creek	**Water Quality Standards**
MUN, AGR, GWR, REC_1, REC_2, WILD, COLD, WARM, MIGR, SPWN, RARE, FRESH, COMM	Central Coast Basin Plan Drinking Water Standards (T22) CA Toxics Rule Thermal Plan TMDLs

Specific factors that could affect which constituents receive effluent limits include Total Maximum Daily Loads (TMDLs), salts control for groundwater recharge, and environmental sensitivity of the receiving water (pertaining to endangered species).

TMDLs

Three TMDLs have been adopted that contain targets for portions of Los Osos Creek, which is a Federal 303(d) listed impaired water body. Table 3 summarized the TMDLs and the anticipated impacts on the potential NPDES requirements.

Table 3 TMDLs for Los Osos Creek

TMDLs for Los Osos Creek	**Targets**	**Potential impact NPDES requirements**
2004 Nutrients	Nitrate in Warden Creek - 10 mg/L as N	Effluent limits may include nitrogen species, orthophosphorus LOWRF designed for max 10 mg/L Total Nitrogen
2003 Pathogens	Total Coliform - 200 MPN/100 mL mean and 400 MPN/100 mL max	LOWRF designed for Title 22 (2.2 mean and 23 max)
2003 Sediment	Dry Season: 96% of samples <= 5 NTU	Monitoring for turbidity in receiving water

Salts Control

The Basin Plan does not currently establish specific water quality objectives for salts in Los Osos Creek or the Los Osos Creek Basin (although the Regional Board may establish them in the future), and no effluent limits for salts were issued in the 2011 Los Osos WDR. However, if the LOWRF discharges to the Upper or Upper Central reaches of Los Osos Creek, it is likely that the Regional Board will assign numeric effluent limits for one or more salt constituents to protect groundwater beneficial uses. These limits are generally met through source control or other source management strategies defined in a Salt and Nutrient Management Plan.

The *Basin Plan for the Los Osos Groundwater Basin* (January 2015) includes a section discussing Salt and Nutrient Management Plans. Sea water intrusion is an issue in the lower aquifer of the groundwater basin, which affects the perception of fresh water quality with regard to salts. The Title 22 secondary maximum contaminant levels (MCLs) for total dissolved solids (TDS) include a recommended level of 500 mg/L, upper level of 1000 mg/L, and a short-term maximum level of 1500 mg/L.

Environmental Sensitivity of Receiving Waters

Discharges to Los Osos Creek may be subject to regulations associated with the presence of sensitive habitat and species. Morro Bay is one of only 28 estuaries nationwide that have been designated as "estuaries of national significance" and supports more than two dozen endangered species. Los Osos Creek terminates in the Los Osos Bay Estuary, which feeds Morro Bay. Oysters are commercially farmed in Morro Bay by the Morro Bay Oyster Company and the Grassy Bar Oyster Company. Morro Bay is designated Critical Habitat for federally listed California red-legged frog and steelhead trout (South Central California Coast Distinct Population Segment).

The California State Coastal Conservancy has been awarded a grant to protect in perpetuity 81.7 acres on lower Los Osos Creek in the Morro Bay watershed (the Los Osos Creek Wetland Conservation Project). The parcel abuts Morro Bay estuary and is comprised of 64.6 acres of nationally decreasing palustrine wetlands, including 0.5 miles of designated critical habitat for the federally threatened South-Central California Coast steelhead trout and 9 acres of critical habitat for the federally endangered Tidewater goby. Morro Bay was designated as an estuary of national significance because it is a relatively intact lagoon and wetland environment, and supports the most significant wetland system on the coast of Central California.

An assessment by a local, experienced biologist and consultation with Fish and Wildlife and other resource agencies is recommended to review potential environmental sensitivity issues and mitigation measures.

Estimating Effluent Limits

A Waste Discharge Requirements (WDR) permit was issued for the LOWRF in 2011 Order No. R3-2011-0001) which contained effluent limits for settleable solids, BOD, suspended solids, and total nitrogen (as N), as shown in Table 4. Additional constituents will receive effluent limits in a NPDES permit.

Table 4 Summary of Effluent Limits in 2011 WDR permit

Constituent	Units	Monthly Average (30-day)	Daily Maximum
Settleable Solids	mg/L	0.1	0.5
BOD, 5-day	mg/L	60	100
Suspended Solids	mg/L	60	100
Total Nitrogen (as N)	mg/L	7	10

The following three recent NPDES permits from Region 3 were reviewed, chosen for their potential to shed light on permitting practices in Region 3:

- 2014 San Luis Obispo Water Resource Recovery Facility, (Order No. R3-2014-0033, NPDES No. CA0049224), (2014 SLO Permit)
- 2012 California Men's Colony Wastewater Treatment Plant, (Order No. R3-2012-0027, NPDES No. CA0047856), (2012 CMC Permit)
- 2012 Waste Discharge Requirements for the City of Lompoc Regional Wastewater Reclamation Plant (Order No. R3-2011-0211, NPDES No. CA0048127), (2011 Lompoc Permit)[1].

These permits contain water quality-based effluent limits for similar tertiary treatment facilities discharging to creeks. These effluent limits are shown in Table 5, and are in addition to technology-based effluent limits for BOD, TSS, Oil & Grease, settleable solids, turbidity, pH, chlorine residual.

Table 5 Summary of Effluent Limits in Similar NPDES Permits

Constituent	Units	2014 SLO Permit	2012 CMC Permit	2011 Lompoc Permit
Chlorodibromomethane	µg/L	0.40 monthly, 1.0 daily	0.40 monthly, 0.80 daily	--
Dichlorobromomethane	µg/L	0.56 monthly, 1.0 daily	0.56 monthly, 0.88 daily	--
n-Nitrosodimethylamine	µg/L	0.00069 monthly, 0.0014 daily	--	--
Dissolved oxygen	mg/L	4 instant	>2.0 instant	--
Bis(2-ethylhexyl) phthalate	µg/L	--	1.8 monthly, 3.6 daily	1.8 monthly
Aluminum	mg/L	--	--	1.0 monthly
Copper	µg/L	--	7.5 monthly, 17 daily	--
Acute Toxicity	% survival	No toxicity	Text	Text
Chronic Toxicity	TUc	No toxicity	No toxicity	1.0 daily
Total Coliform	MPN/100mL	2.2, 23, 240 (Title 22)	2.2, 23, 240 (Title 22)	200, 400
Un-ionized Ammonia	mg/L	--	--	0.025 weekly
Nitrate-N	mg/L	10 monthly	--	10 daily
Nitrite-N	mg/L	--	1.0 daily	--
Total Nitrogen	mg/L	--	10 daily	--
Orthophosphorus	mg/L	--	Narrative median	--
Sulfate	mg/L	--	125 daily	--
TDS	mg/L	--	--	1100
Sodium	mg/L	--	--	270
Chloride	mg/L	--	--	250
Boron	mg/L	--	--	--

[1] While the Lompoc facility is located in Santa Barbara County, it is indicative of current NPDES permitting policy for the Central Coast Region.

A number of factors affect the value assigned as an effluent limit to constituents with reasonable potential, or other reasons to receive one. Following the State Implementation Plan (SIP) method, effluent limits are calculated from the water quality standards, with adjustment for effluent dataset variability, required monitoring frequency, and dilution (where available). Some water quality standards for metals are dependent on water hardness. Harder water results in higher water quality standards for those metals, which in turn results in higher (i.e., less stringent) effluent limits. As discharge is only planned during periods of no flow in the creek, no dilution will be available.

NPDES monitoring and reporting requirements are summarized in Attachment A. Monitoring requirements include influent, effluent, effluent toxicity in receiving water, and receiving water. Groundwater and biosolids monitoring may also be required. NPDES permits require self-monitoring reports (SMRs) to be submitted using the State Water Board's California Integrated Water Quality System (CIWQS) website on a specified schedule, generally monthly, quarterly, semi-annual, and annual SMRs.

Other Considerations

Several regulatory actions at either the state or federal level are anticipated in the near future that may affect permit requirements or the regulatory burden associated with creek discharge, including the Biological Integrity Assessment Implementation Plan, Nutrient Policy for inland surface water, and the Toxicity Policy. These are discussed further in Attachment A.

GRRP Requirements

Hydraulic modeling and a detailed well survey will be required to determine whether this project may be categorized as a Groundwater Reuse Replenishment Project (GRRP). If so, the project NPDES permit would incorporate Title 22 requirements for GRRPs. Based on discussions with State Water Resources Control Board, Department of Drinking Water (DDW) staff, the project would be considered a GRRP if the travel time between the point of discharge and any existing or potential future domestic or municipal drinking water supply wells is less than two to five years. If this is the case, the permitting would consist of NPDES requirements and continued groundwater monitoring to help ensure the discharge is not impacting potable water wells.

GRRPs are regulated by the State Water Resources Control Board, DDW based on CCR Title 22. GRRPs are generally divided into two categories based on the mode of application, surface or subsurface application of the recharge water. "Surface Application" means the application of recharge water to a spreading area (§60301.850). The regulations define "Subsurface Application" as any other means of recharge (§60301.840). While the typical spreading area for a GRRP is a large percolation basin area, the Los Osos Creek bed could be considered a spreading area based on the regulatory definition:

> §60301.810 "Spreading Area" means a natural or constructed impoundment with a depth equal to or less than its widest surface dimension used by a GRRP to replenish a groundwater basin with recharge water infiltrating and percolating through a zone that, in the absence of a GRRP, would be an unsaturated zone.

The potential project would utilize a natural impoundment (Low Osos Creek bed) with a flow depth less than the widest surface, where water would percolate through a zone that without the GRRP would be unsaturated. To ensure that potential recharge waters are not lost to the ocean, the GRRP would only be utilized during the dry season when natural creek flow is not present. The determination of the GRRP application type (surface or subsurface) has been discussed with DDW staff, but will ultimately need to be reviewed and approved by DDW through a Title 22 Engineering Report.

The GRRP regulations require substantial testing, modeling, reporting and development of operating and monitoring plans prior to operating a GRRP. The groundwater basin, proposed recycled water treatment processes, and proposed diluent water must be thoroughly studied and demonstrated to DDW as meeting the regulatory requirements through reports prior to approval and operation.

A plan, approved by DDW, is required describing the steps to provide an alternative source of drinking water supply to all users of a producing drinking water well that is determined to be impacted as a result of the GRRP's operation. The impact is defined as either violating state or federal drinking water standard, has been degraded and is no longer safe source of drinking water as determined by DDW, or has received water that fails to meet pathogenic microorganism requirements. Alternatively, the plan can consist of steps to implement DDW-approved treatment of the producing drinking water well.

The recycled water used for GRRPs must receive treatment that achieves at least a 12/10/10 pathogenic microorganism control (12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction). A credit towards these reduction requirements may be granted for each month retained underground. The virus log reduction credit varies depending on the type of method used to estimate the retention time to the nearest downgradient drinking water well.

Recycled water used for GRRPs must also meet the following water quality requirements:

- a total nitrogen concentration of less than 10 mg/L,
- MCLs for other inorganic compounds (Table 64431-A),
- MCLs for radiouclide chemicals (Tables 64442 and 64443),
- MCLs for Organic chemicals (Table 6444-A),
- MCLs for Disinfection byproducts (Table 64533-A), and
- Notification levels for lead and copper.

Each month, the GRRP must calculate the running monthly average (RMA) recycled water contribution (RWC) based on the total volume of recycled municipal wastewater and credited diluent water for the preceding 120 months. Diluent water sources must be reviewed and approved by DDW. For GRRPs in operation less than 120 months, calculation of the RMA RWC shall commence after 30 months of operation based on the total volumes from the preceding months (60320.116). The initial RWC shall not exceed 0.20 and the treatment processes must reliably achieve a TOC concentration in the water reaching the aquifer no greater than 0.5 mg/L divided by the RMA RWC. After discharge, additional treatment occurs by flow of water through the soil column of the unsaturated zone. Soil-Aquifer Treatment (SAT) provides filtration and various chemical and biological processes and will reduce ammonia, suspended solids, pathogenic organisms, and organic materials. GRRP regulations require that SAT must be regularly assessed through the monitoring of TOC.

CEQA AND RESOURCE AGENCY PERMITTING

A preliminary review of the environmental permitting steps for the potential project was conducted by MKN's subconsultant, John F Rickenbach Consulting (JFR), and summarized in a report included as Attachment B.

The County has land use permitting authority and must comply with coastal permitting regulations (Title 23, Coastal Zone Land Use Ordinance). Based on a preliminary review, the project would be subject to a Coastal Development Permit, most likely in the form of a Minor Use Permit, subject to final confirmation by County staff. Minor Use Permit applications are filed with County Planning Department and are processed through an environmental determination, approval by the Planning Director, subject to an administrative hearing, and potentially appealable to the Board of Supervisors. A Minor Use Permit is typically not appealable to the Coastal Commission, although Coastal staff have opined that what they consider to be "major public works projects" are potentially appealable; Coastal did not determine whether this would be the case for this project, pending review of more detailed project information. In any event, County permitting for the project should be coordinated with Coastal staff as appropriate.

The environmental determination would be made under the requirements of the California Environmental Quality Act (CEQA). The project may be considered appropriate for a Mitigated Negative Declaration, although County staff (or other lead agency) would make the final determination for the CEQA documentation. Generally, an Environmental Impact Report (EIR) is required only if there is expected to be significant and unmitigatable impacts, substantial public

controversy over the project, or if there is a desire to consider project alternatives. Key environmental issues are summarized further in Attachment B.

Technical studies needed to support the County's Minor Use Permit that are likely to be required for the project include the following (with additional discussion in Attachment B):

- Biological and Jurisdictional Waters Assessment – involves consultation with a certified wetland biologist to determine potential encroachment of wetlands or jurisdictional waters of the US or State of California (U.S. Army Corps of Engineers, California Department of Fish and Wildlife, Regional Water Quality Control Board)
- Focused Special-Status Species Surveys
- Biological Assessment
- Habitat Mitigation and Monitoring Plan (if needed)
- Cultural Resources Assessment
- Soils Hazards Assessment
- Air Quality Evaluation

The results of these studies may reveal additional regulatory resource agency permitting required for the project. If as a result of the Jurisdictional Waters Assessment, it is determined that no jurisdictional waters or wetlands are present, no permitting will be required relative to Section 404 and 401 of the Clean Water Act. However, if the biologist preparing the assessment determines there is any question of jurisdiction, the District is advised to consult with the ACOE, CDFW, and RWQCB to determine whether or not any or all of those agencies will take jurisdiction relative to potential permitting.

PROJECT ALTERNATIVES

Treatment

MKN investigated alternatives for meeting the anticipated water quality requirements for the project. If the project is categorized as a discharge and not a GRRP, it is anticipated that the LOWRF treated effluent will meet the water quality requirements.

If the project is determined to be a GRRP, additional treatment and, in some cases, the use of diluent water may be required to meet the GRRP regulations, specifically for TOC reduction. Considering that California is currently experiencing an extended drought, innovative treatment trains for indirect or direct potable reuse may develop in the near future, although it is likely that a significant demonstration period would be required for regulatory and general acceptance. For the purposes of this study, only treatment alternatives that are currently in use for GRRPs were considered. Each alternative assumes initial treatment of the municipal wastewater through the LOWRF, which includes primary treatment, secondary nitrification and partial denitrification through oxidation ditches, filtration with cloth disk filters, and ultraviolet (UV) disinfection, producing tertiary treated recycled water (Figure1). It is assumed that a side stream for the GRRP would be taken downstream of the tertiary filters and UV disinfection system and upstream of chlorine injection.

To date, the full-scale treatment system approved by permitting agencies and implemented in California for indirect potable reuse projects has been 'full advanced treatment', which consists of microfiltration (MF), reverse osmosis (RO) and an advanced oxidation process (AOP). Full advanced treatment using MF/RO/AOP has been considered the "gold standard" and is described in the regulations under the advanced treatment criteria for a GRRP using subsurface application. However, a number of issues limit the feasibility of constructing and operating a MF/RO/AOP project, including high capital and operating costs, high energy requirements, and the production of a concentrated brine stream, which requires disposal (typically through an ocean outfall). Because of these reasons, various ozone-based processes are gaining popularity.

Ozone followed by biologically activated carbon filters (BAC) will reduce TOC concentrations and provide additional pathogenic microorganism control. When compared to MF/RO/AOP, these systems have the advantages of lower

capital and operating cost and no brine production. Disadvantages include a shorter operating history, potential formation of disinfection byproducts, bromate and N-nitrosodimethylamine (NDMA) through ozonation, relatively limited TOC reduction, and the inability to reduce total dissolved solids. The potential for byproducts formed during ozonation can be mitigated in various ways, and are often reduced sufficiently through the BAC. The TOC reduction potential is estimated to be 30 to 40% (*Potable Reuse Treatment Trains throughout the World*, Gerrity, Pecson, Trussell, and Trussell, www.trusselltech.com/downloads/publications, accessed November 19, 2015). Assuming a range of TOC in the LOWRF treated effluent of 6 to 8 mg/L, it may be reduced to between 4 and 6 mg/L through an ozone/BAC system. Soil-aquifer treatment (SAT) is expected to further reduce TOC concentrations through biological degradation. The ability to reduce TOC concentrations through SAT and the treatment capacity varies widely from project to project and depends on several components, including travel time, soil type, and soil biology. It is possible that the SAT will provide sufficient treatment to reduce TOC concentrations that, with diluent water and at lower flow rates, additional treatment will not be required. Hydraulic modeling, an evaluation of travel times and the SAT capacity will be required to determine treatment and diluent water requirements. For the purposes of this feasibility study, it is estimated SAT will reduce TOC concentrations by 50%. The water for a GRRP using surface application must meet a TOC limit of 0.5 mg/L divided by the RMA RWC. Therefore, it is assumed GRRP Alternative 1, using an ozone/BAC system, will require diluent water to meet water quality regulations.

At this time, the requirement for salts control is anticipated to be defined by the secondary MCL for TDS (1000 mg/L maximum) and it is assumed that the LOWRF treated effluent will meet this requirement, with some source control as needed. If, after operation of the LOWRF, it appears the TDS requirement will be difficult to achieve, a MF/RO system would be required.

Diluent Water

MKN reviewed two potential sources of diluent water for the project: seasonal Los Osos Creek water that percolates the aquifer and groundwater. The local groundwater basin is the only source of water for the community of Los Osos. After rapid growth in the 1970s and 1980s, groundwater extractions exceeded the sustainable yield of the basin (Updated Basin Plan for the Los Osos Groundwater Basin, January 2015). Seawater intrusion is a serious concern for the community and the Los Osos Basin Plan describes programs aimed to halt seawater intrusion through water conservation and new infrastructure. Assuming an ozone/BAC treatment system, we estimate the GRRP will require a significant contribution of diluent water, creating a ratio of recycled water to diluent water of approximately 1 to 9 (RWC of 0.08 – 0.125). Because of the potential for seawater intrusion, groundwater as a source of diluent water for a GRRP was not explored further.

Los Osos Creek runs seasonally and past studies have shown significant percolation potential in the upper and upper central reaches, up to 10 cubic feet per second (cfs) (CHG, 2014, ibid). Seasonal creek flow percolating the aquifer could be credited as diluent water if the quality and quantity of the water are defined and meet the regulatory requirements.

The County has a stream gauge in the Creek near Los Osos Valley Road. To estimate the amount of flow percolating through the creek bed, an additional stream gauge would be installed upstream of the proposed project outfall. The difference in the volumes measured between the gauges could be used to estimate the aquifer recharge. The method for determining the volume must be submitted to DDW for review and approval.

The source of diluent water must be approved by DDW. The regulations require a source water evaluation and define specific water quality criteria (§60320.114). Diluent water cannot exceed primary maximum contaminant levels (MCLs), or notification levels defined for drinking water. Since the creek water has been historically used to recharge the basin, it is anticipated that it will not be required to meet secondary MCL upper limits, as described in the regulations. Specific monitoring for nitrate and nitrite is also described, with the limit at the MCL.

Project Alternative Discharge Scenarios

The discharge permitting review indicates two potential permitting scenarios for the project:

1. The project is categorized as a discharge: This may occur if hydraulic modeling and a detailed well survey reveals the discharge is a minimum of two to five years away from any municipal or domestic water supply wells, and a boundary is established to exclude installation of any future municipal or domestic water supply wells within two to five years hydraulic travel time from the point of discharge.
2. The project is categorized as a GRRP: This would occur if hydraulic modeling and a detailed well survey reveals the discharge is within two to five years from municipal or domestic water supply wells, and/or the Client does not wish to establish a boundary excluding installation of any future municipal or domestic water supply wells within two to five years hydraulic travel time from the point of discharge.

If the project is categorized as a discharge, it is assumed no additional treatment beyond the LOWRF will be required.

Two main GRRP alternatives were evaluated. Both GRRP alternatives assume disinfected tertiary recycled water from LOWRF. At this time, it is assumed space is available at or near the LOWRF for the additional treatment required for the project, but this would need to be confirmed. GRRP Alternative 1 involves adding ozonation and a BAC system and utilizing the seasonal runoff in the creek as diluent water to meet the RWC and TOC requirements. GRRP Alternative 2 uses a MF/RO/AOP system and no diluent water.

In either permitting scenario (discharge or GRRP), the project would include a recycled water pumping station and pipeline from the LOWRF to the creek, discharging 100 – 200 feet upstream of the beginning of the upper central reach. The potential alignment is largely based on the County's planned recycled water main for agricultural irrigation and is approximately 9,000 linear feet (Figure 2). The main assumptions for the project alternatives assessment are summarized in Table 6.

Table 6 Main assumptions for alternatives assessment

	Unit	Range	Assumed value
Total available discharge days (Dry season, Apr 15 – Oct 15)	days/year	NA	185
Initial available recycled water for creek discharge	AFY		118
Buildout available recycled water for creek discharge	AFY		536
Maximum percolation capacity of the creek (CHG, 2014)	cfs gpm	NA	10 4489
LOWRF treated effluent TOC concentration	mg/L	6 - 8	7
Ozone and BAC TOC reduction	%	30 - 40	40
SAT TOC reduction	%	20 – 80	50

Cleath Harris Geologists estimated the volume of water percolating the aquifer from Los Osos Creek at 610 AFY (CHG, 2014, ibid). This value undoubtedly changes year to year, depending on precipitation levels. However, 600 AFY was used in this study to evaluate the diluent source water potential of the creek for Alternative 1. Unless this value is largely underestimated, the amount of available creek water is limiting the amount of recycled water that can

be applied under Alternative 1. No diluent water will be required for Alternative 2. Therefore the recycled water volume for Alternative 2 is based on the estimated volumes available for the project. Tables 7 and 8 summarize the estimated recycled water and diluent water volumes under initial and buildout conditions, respectively.

The estimated required RWC is calculated by dividing the TOC limit (0.5 mg/L) by the estimated recycled water TOC concentration.

$$RWC_{req} = \frac{TOC\ Limit}{RW\ TOC}$$

GRRP Alternative 1 assumes a LOWRF treated effluent TOC concentration of 7 mg/L, 40% reduction of the TOC through the ozone/BAC system, and an additional 50% reduction of TOC through SAT. Ozone/BAC systems are relatively new and testing and demonstration projects are ongoing. It is possible that higher removal rates could be achieved. The actual LOWRF treated effluent TOC concentration may also vary. For these reasons, we recommend assuming additional capacity in the preliminary design to provide for future flexibility.

Table 7 Estimated Recycled Water and Diluent Water Volumes for GRRP Alternative 1 (Ozone + BAC Treatment with Creek Water Diluent)

Phase	Recycled Water TOC (mg/L)	Recycled Water TOC after SAT (mg/L)	GRRP TOC limit (mg/L)	RWC	Available Recycled Water Volume (AFY)	Diluent Water Volume (AFY)	Potential Discharge Volume (AFY) (Diluent water volume x RWC)	Design Recycled Water Creek Discharge Volume (AFY)
Initial	4	2	0.5	0.25	118	600	150	118
Buildout	4	2	0.5	0.25	536	600	150	150

Table 8 Estimated Available and Recovered Recycled Water Volumes for GRRP Alternative 2 (MF/RO/AOP Treatment, No Diluent Water)

Phase	Recycled Water TOC (mg/L)	Recycled Water TOC after SAT (mg/L)	GRRP TOC limit (mg/L)	RWC	Available Recycled Water Volume (AFY)	MF/RO Treatment Combined Recovery Rate (%)	Recycled Water Recovered after MF/RO (AFY)	Design Recycled Water Creek Discharge Volume (AFY)
Initial	0.5	0.25	0.5	1.00	118	0.63	74	74
Buildout	0.5	0.25	0.5	1.00	536	0.63	338	338

INFRASTRUCTURE REQUIREMENTS

MKN developed preliminary infrastructure requirements for the purposes of reviewing the feasibility of alternatives for the two project permitting scenarios (discharge or GRRP), including the two GRRP alternatives. Each project alternative assumes disinfected tertiary recycled water from LOWRF and additional facilities at the WRF for the creek

discharge project. Each alternative will require a recycled water pump station and pipeline dedicated for creek discharge, a creek outfall with erosion protection, a stream gauge upstream of the outfall, and at least two monitoring wells (per DDW requirements). The two GRRP alternatives will also require additional treatment, although they vary in the form of additional treatment, the recycled water flow rate, and therefore, the recycled water pump station size and recycled water pipeline size. As described above, the treatment for GRRP Alternative 1 results in a higher TOC concentration, so it requires diluent water to meet the GRRP TOC limit. The alternative assumes the seasonal creek flow will serve as the diluent water, and the available creek flow volume percolating the aquifer limits the recycled water volume for the project.

The treatment for GRRP Alternative 2 (MF/RO/AOP) is anticipated to be able to meet the GRRP TOC limits, so the project recycled water flow rate is based on the available recycled water for the project. In addition to the project components mentioned above, GRRP Alternative 2 will require concentrated brine disposal. Brine is a liquid waste with concentrated dissolved solids that results from the reverse osmosis process. It can either be hauled for disposal or pumped to an ocean outfall. Typically, coastal communities discharge brine to an ocean outfall. However, the feasibility of permitting and installing a new ocean outfall is unknown. Both brine disposal options carry significant economic and environmental challenges and would require further investigation to determine the various requirements and potential costs. The potential route for a brine discharge pipeline is difficult to estimate at this stage of the project. For the purposes of developing a comparative analysis, this feasibility study assumes a brine pipeline constructed to the existing City of Morro Bay / Cayucos Sanitary District Wastewater Treatment Plant ocean outfall (approximately 8.2 miles from the LOWRF site). At this point in the project, this brine disposal scenario is the most predictable to analyze for cost estimation and planning purposes, when compared to installing a new ocean outfall or hauling brine for disposal. If this alternative is investigated further, several issues would need to be addressed, including and not limited to, capacity of the existing ocean outfall, potential future planned uses for the existing ocean outfall, coordination for operations and cost sharing with the City of Morro Bay and Cayucos Sanitary District, and permitting requirements.

The assumed design criteria for the two alternatives are summarized in Tables 9, 10, and 11. The design criteria are not intended to be a preliminary design, but are offered as a basis for the cost-benefit assessment. In general, it is assumed redundancy requirements for treatment components will be waived since an alternative discharge is available. However, we have assumed redundancy at the recycled water pump station would be desired to allow at least 1 standby pump.

Table 9 Discharge Alternative (Project is not a GRRP) Assumed Design Criteria for Feasibility Study

Project Component/Criteria	**Assumed Design Criteria**
Recycled water available (annual)	
Initial	118 AFY
Buildout	536 AFY
Recycled water benefit (annual)	
Initial	118 AFY
Buildout	536 AFY
LOWRF treated effluent total nitrogen (TN) concentration	10 mg/L
Recycled water pump station	
Peak flow rate (initial)	500 gpm
Peak flow rate (buildout)	1000 gpm
Pump flow rate (each)	500 gpm
Configuration (initial)	2 pumps, 1 duty/1 standby
Configuration (buildout)	3 pumps, 2 duty/1 standby
Minimum horsepower (each pump)	10 hp
Recycled water pipeline	
Diameter	12 inch
Length	9,000 LF

Velocity at design flow (initial) Velocity at design flow (buildout)	1.5 fps 3 fps
Note: The recycled water pump station design flow rate allows for discharge of 118 AFY over 54 days at 500 gpm, 24 hrs/day and discharge of 536 AFY over 122 days at 1000 gpm, 24 hrs/day	

Table 10 GRRP Alternative 1 Assumed Design Criteria for Feasibility Study

Project Component/Criteria	**Assumed Design Criteria**
Recycled water available (annual) Initial Buildout	 118 AFY 536 AFY
Recycled water benefit (annual) Initial Buildout	 118 AFY 150 AFY
Diluent water available (annual)	600 AFY
LOWRF treated effluent TOC concentration	7 mg/L
LOWRF treated effluent total nitrogen (TN) concentration	10 mg/L
Ozone + BAC Treatment equipment design flow rate	300 gpm
Recycled water pump station Peak flow rate Configuration Minimum horsepower (each pump)	 300 gpm 2 Pumps, 1 duty/1 standby 10 hp
Recycled water pipeline Diameter Length Velocity at design flow	 8 inch 9,000 LF 2 fps
Note: The recycled water pump station design flow rate allows for discharge of 118 AFY over 89 days at 300 gpm, 24 hrs/day and discharge of 150 AFY over 113 days at 300 gpm, 24 hrs/day.	

Table 11 GRRP Alternative 2 Assumed Design Criteria for Feasibility Study

Project Component/Criteria	**Assumed Design Criteria**
MF/RO/AOP Treatment equipment MF Recovery RO Recovery Initial Design Flow Buildout Design Flow	 95% 70% 0.7 MGD 1.4 MGD
Recycled water available (annual) Initial Buildout	 118 AFY 536 AFY
Recycled water benefit (annual) Initial Buildout	 78 AFY 356 AFY
LOWRF treated effluent TOC concentration	7 mg/L
LOWRF treated effluent total nitrogen (TN) concentration	10 mg/L
Recycled water pump station	

Peak flow rate (initial)	325 gpm
Peak flow rate (buildout)	650 gpm
Pump flow rate (each)	325 gpm
Configuration (initial)	2 pumps, 1 duty/1 standby
Configuration (buildout)	3 pumps, 2 duty/1 standby
Minimum horsepower (each pump)	15 hp
Recycled water pipeline	
Diameter	8 inch
Length	9,000 LF
Velocity at design flow (initial)	2 fps
Velocity at design flow (buildout)	4 fps
Brine disposal pump station	
Peak flow rate (initial)	200 gpm
Peak flow rate (buildout)	400 gpm
Pump flow rate (each)	200 gpm
Configuration (initial)	2 pumps, 1 duty/1 standby
Configuration (buildout)	3 pumps, 2 duty/1 standby
Minimum horsepower (each pump)	15 hp
Brine disposal pipeline	
Diameter	10 inch
Length	43,500 LF
Velocity at design flow (initial)	1 fps
Velocity at design flow (buildout)	2 fps
Note: The recycled water pump station design flow rate allows for discharge of 74 AFY over 56 days at 300 gpm, 24 hrs/day and discharge of 338 AFY over 127 days at 600 gpm, 24 hrs/day.	

COMPARATIVE COST-BENEFIT ANALYSIS

MKN prepared a planning-level, comparative cost-benefit analysis to review the estimated costs and benefits of the conceptual alternatives. Major project components were identified in the section above to evaluate relative construction costs for both alternatives. This evaluation does not identify the total costs for each alternative, but attempts to establish a comparative framework for analysis of the alternatives under consideration.

The main project components included in the comparative cost analysis are described in Tables 9 through 11 above. The discharge alternative (not a GRRP) includes a recycled water pump station and recycled water pipeline. Both GRRP alternatives include a treatment system, recycled water pump station, and recycled water pipeline. GRRP Alternative 2 also includes a brine disposal pump station and pipeline, and is divided into two construction phases based on the assumed initial and buildout flow rates. GRRP Alternative 2, Phase 1 consists of one MF/RO/AOP treatment train, the recycled water pump station and pipeline, and the brine disposal pump station and pipeline. GRRP Alternative 2, Phase 2 adds a second MF/RO/AOP train, one additional recycled water pump, and one additional brine disposal pump.

Site piping, electrical and instrumentation costs were assumed to be a percentage of the equipment costs, at 15 percent, 10 percent and 10 percent, respectively.

Engineering and administration costs and a project contingency were each assumed to be 30 percent of the construction cost subtotal (total of 60%) for each alternative.

The costs for a recycled water outfall at Los Osos creek, stream gauge and monitoring wells (as required by DDW) are assumed to be the same for each alternative and were not included in this comparative cost analysis.

Costs for planning, land acquisition, environmental mitigation, permitting, testing, monitoring, and reporting are not included.

Escalation: The project construction costs were escalated to the mid-point of construction assuming inflation of two percent per year, compounded annually, and a timeframe of ten years for GRRP Alternative 1 and initial phase (Phase 1) of GRRP Alternative 2, and fifteen years for the buildout phase (Phase 2) of GRRP Alternative 2.

The annual debt service was estimated assuming historical State Revolving Fund (SRF) financing terms of 20 years at 2% interest.

Summaries of the comparative cost-benefit analysis are provided for the discharge alternative and the GRRP alternatives separately in Table 12 and Table 13.

Table 12 Summary of Comparative Cost-Benefit Analysis for Discharge Alternative

	Discharge Alternative, Phase 1	**Discharge Alternative, Phase 2**
Construction Costs ($MM)		
Recycled Water Pump Station	0.28	0.04
Recycled Water Pipeline	1.35	0.00
Site piping (15% of equipment)	0.25	0.006
Electrical (10% of equipment)	0.17	0.004
Instrumentation (10% of equipment)	0.17	0.004
SubTotal Construction Costs ($MM)	**2.22**	**0.05**
Engineering & Administration (30%)	0.66	0.02
Construction Contingency (30%)	0.66	0.02
Total Construction Costs (Phase 1) ($MM)	**3.54**	**0.08**
Escalation (2% per year, 10 yr, 15yr)	22%	35%
Construction Cost Present Worth ($MM)	**4.32**	**0.11**
Construction Cost Present Worth (Phases 1 & 2)		**4.43**
Annual Costs ($MM/Yr)		
Annual debt service (20 yrs at 2%)	0.26	0.01
Annual debt service (20 yrs at 2%) (Phases 1 & 2)		0.27
Annual O&M costs	0.01	0.02
Total Annual Cost (SMM/Yr)	**0.27**	**0.29**
Cost per Acre-foot-per year Recycled Water		
Recycled Water Benefit (AFY)	118	536
Total Cost per AFY Recycled Water ($/AFY)	**$2,300**	**$500**

Notes:
This cost-benefit analysis is not representative of total project costs, but provides a relative cost-benefit comparison for the alternatives. Costs for planning, land acquisition, environmental mitigation, permitting, testing, monitoring, and reporting are not included. The costs for a recycled water outfall at Los Osos creek, stream gauge and monitoring wells (as required by DDW) are assumed to be the same for all of the alternatives and were not included.

Table 13 Summary of Comparative Cost-Benefit Analysis for GRRP Alternatives

	GRRP Alternative 1	GRRP Alternative 2, Ph 1	GRRP Alternative 2, Ph 2
Construction Costs ($MM)			
Recycled Water Treatment	1.40	9.00	9.00
Recycled Water Pump Station	0.28	0.32	0.06
Recycled Water Pipeline	1.26	1.26	-
Brine Disposal Pump Station	-	0.32	0.06
Brine Disposal Pipeline	-	7.83	-
Site piping (15% of equipment)	0.23	1.37	1.36
Electrical (10% of equipment)	0.15	0.93	0.92
Instrumentation (10% of equipment)	0.15	0.93	0.92
Subtotal Construction Costs ($MM)	**3.47**	**21.96**	**12.32**
Engineering & Administration (30%)	1.04	6.59	3.70
Construction Contingency (30%)	1.04	6.59	3.70
Total Construction Costs (Phase 1) ($MM)	**5.54**	**35.14**	**19.71**
Escalation (2% per year, 10 yr, 15yr)	22%	22%	35%
Construction Cost Present Worth ($MM)	**6.76**	**42.83**	**26.53**
Construction Cost Present Worth (Phases 1 & 2)			**69.36**
Annual Costs ($MM/Yr)			
Annual debt service (20 yrs at 2%)	0.41	2.62	1.62
Annual debt service (20 yrs at 2%) (Phases 1 & 2)			4.24
Annual O&M costs	0.09	0.22	0.41
Total Annual Cost (SMM/yr)	**0.50**	**2.84**	**4.65**
Cost per Acre-foot-per year Recycled Water			
Recycled Water Benefit (AFY)	118	78	356
Total Cost per AFY Recycled Water ($/AFY)	**$4,000**	**$36,000**	**$13,000**

Notes:

1. This cost-benefit analysis is not representative of total project costs, but provides a relative cost-benefit comparison for the alternatives. Costs for planning, land acquisition, environmental mitigation, permitting, testing, monitoring, and reporting are not included. The costs for a recycled water outfall at Los Osos creek, stream gauge and monitoring wells (as required by DDW) are assumed to be the same for all of the alternatives and were not included.

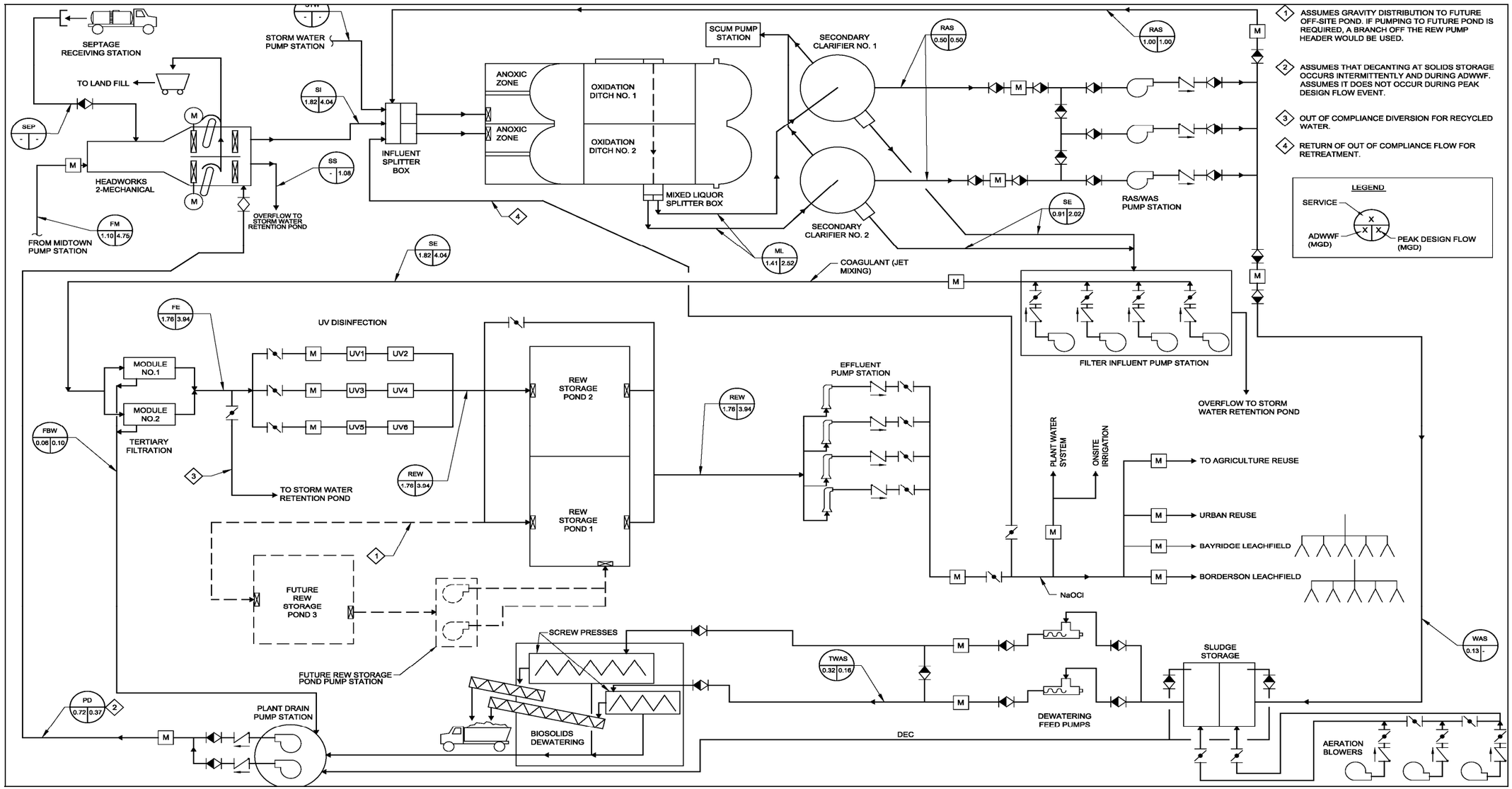
2. The assumed RO recovery rate for this feasibility study (70%) is conservative. The recovery rate could be as high as 90%, which would increase the recycled water benefit for GRRP Alternative 2 and decrease the total cost per AFY recycled water.

CONCLUSIONS AND RECOMMENDATIONS

Discussion of main conclusions, items to be reviewed further, and recommended next steps

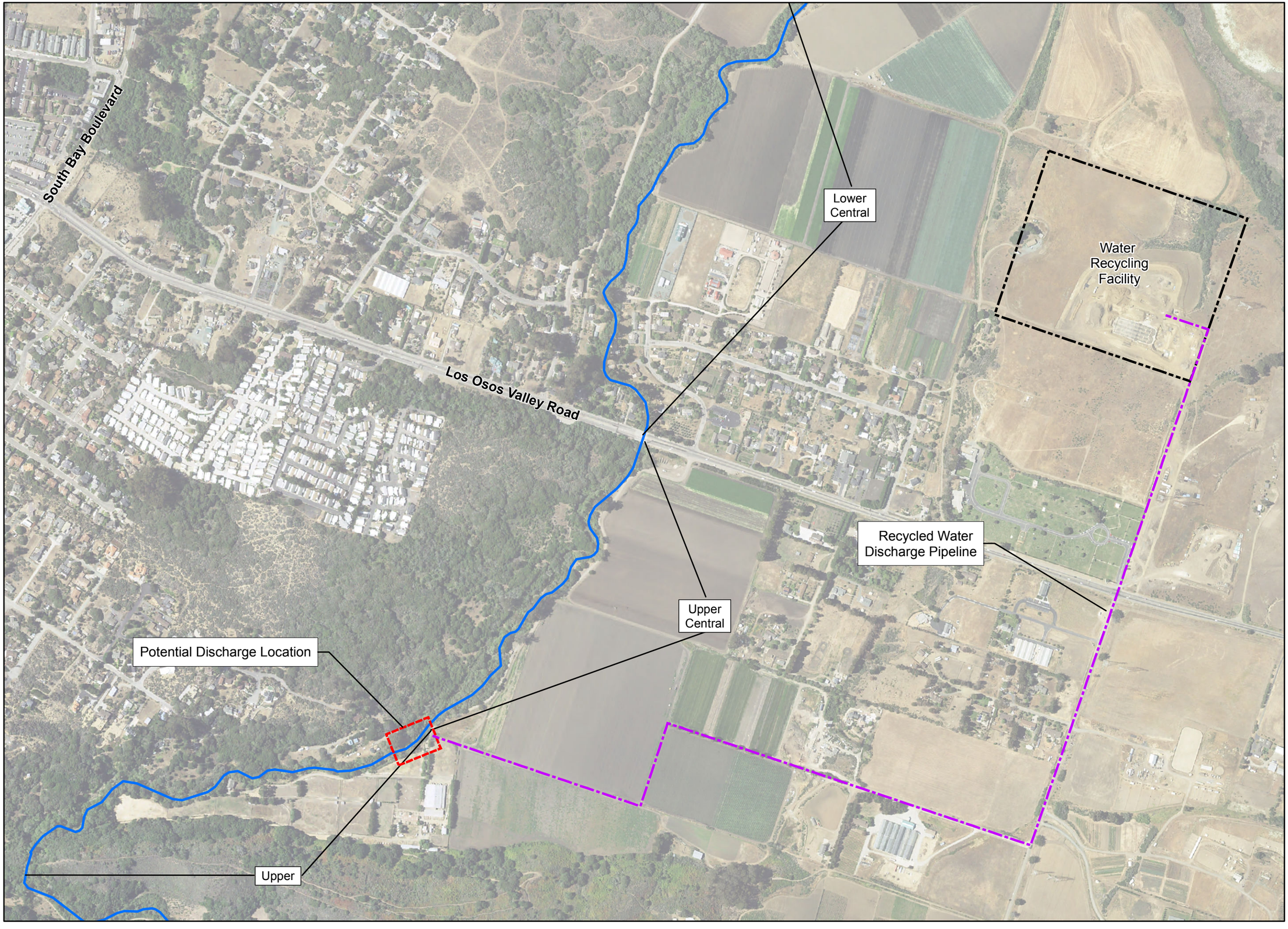
Pending review of Administrative Draft

FIGURES



PROCESS FLOW SCHEMATIC

FIGURE 1



Los Osos CSD Focused Creek Discharge Study

Figure 2: Recycled Water Discharge Pipeline

Legend

- Los Osos Creek
- Potential Alignment
- Potential Discharge Location

1 inch = 600 feet

0 300 600

WATER - WASTEWATER - REUSE

ATTACHMENT A

Memorandum

DATE: October 1, 2015

TO: Rob Miller, PE, District Engineer
Los Osos Community Services District

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SUBJECT: **Regulatory Requirements Associated with Creek Discharge**

INTRODUCTION AND SUMMARY

The County of San Luis Obispo is building the Los Osos Water Recycling Facility (LOWRF) to serve approximately 12,500 residents within the unincorporated community of Los Osos, residents who have been relying on septic systems for wastewater disposal. The LOWRF is currently under construction and anticipated to begin operation in March 2016. The facility is designed to produce 1.2 MGD of tertiary treated effluent which will be discharged and reused through a variety of methods, one of which could be discharge into one of two locations on the Los Osos Creek. Discharge to the creek would only occur during periods when there is no natural flow in the creek. There are four reaches of Los Osos Creek within the groundwater basin limits, described as the Upper, Upper Central, Lower Central, and Lower reach, as shown in Figure 1. The two potential surface water discharge points for the LOWRF are in the Upper and Upper Central reaches of Los Osos Creek.

Stream seepage from Los Osos Creek is one of the primary sources of recharge to the Los Osos Valley Groundwater basin.[1] Stream seepage rates providing groundwater recharge may be the highest in the Upper reach. The Upper Central reach contains some clay beds which may limit percolation. However, approximately two-thirds of the total average annual recharge from Los Osos Creek likely occurs in the Upper and Upper Central reaches.

For regulatory purposes, discharges in California can generally be divided into the discharge of pollutants to surface waters (i.e., rivers, creeks, streams, lakes, ocean, etc.) or discharges to land (discharges that affect groundwater). The proposed discharge is to an inland surface water that is

[1] Cleath-Harris Geologists, Inc., 2014. Recycled Water Discharges to Los Osos Creek. March 18, 2014

considered a water of the U.S., therefore it will be regulated by a permit issued under the National Pollutant Discharge Elimination System (NPDES) program under the Clean Water Act. Regulatory requirements appear to be similar regardless of whether the discharge is to the Upper reach or the Upper Central reach.

The primary elements associated with a NPDES permit (issued by the Central Coast Regional Water Quality Control Board (Regional Board)) include effluent limits, monitoring requirements, and reporting requirements. Effluent limits (and the pollutants which will receive them) may be difficult to determine before the LOWRF has begun discharging so that effluent water quality can be sampled and assessed. Typical effluent limits for treatment plants with similar treatment processes and receiving water conditions in Region 3 were reviewed to provide some idea of potential effluent limits. The constituents with water quality-based effluent limits in these permits included chlorination byproducts (chlorodibromomethane and dichlorobromomethane), some organics, nitrate as N or total nitrogen, some metals, toxicity, and coliform. Additional factors that may influence the effluent limits include environmental concerns regarding Morro Bay and the estuary, and the groundwater recharge beneficial use.

Elements of the NPDES permit and factors that may influence the requirements and provisions of the permit are described in this memorandum.

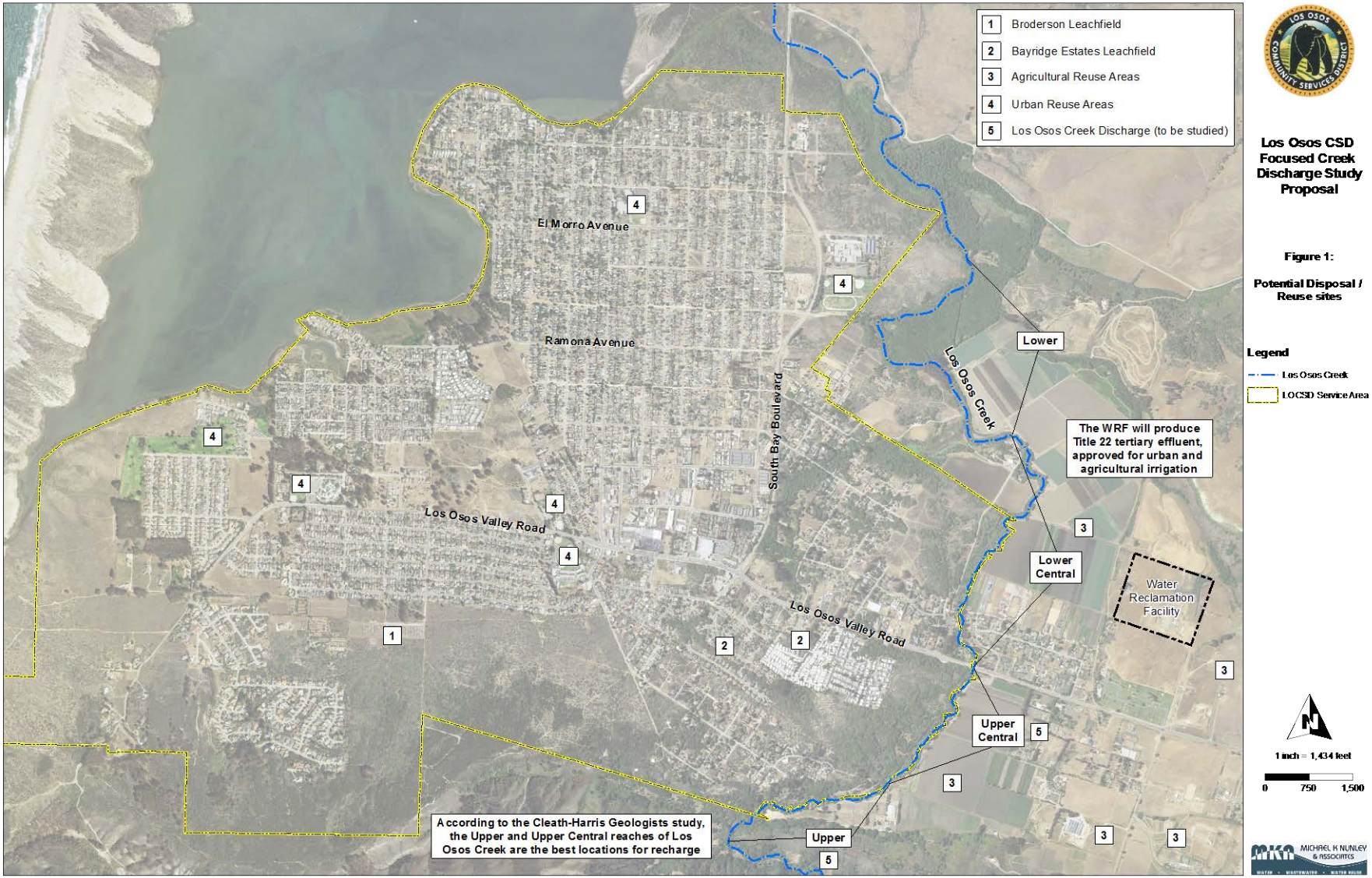


Figure 1. Map of Los Osos Creek Discharge Project Area

NPDES Permit Overview

The proposed discharge is to an inland surface water that is considered a water of the U.S., therefore it will be regulated by a permit issued under the NPDES program under the Clean Water Act. NPDES permits regulate surface water by assigning numerical effluent and receiving water limits, water quality monitoring, reporting requirements, and other provisions with the purpose of protecting beneficial uses of the receiving water. These permit elements are described in more detail in the following sections. Details regarding the process and information required to apply for an NPDES permit are provided in **Attachment 1**. NPDES permits are generally reissued every five years.

The effluent limits are either technology-based limits, which are determined by the type of treatment the plant is designed to provide, or water quality-based limits, which are established to protect beneficial uses of the receiving water. Water quality-based limits are determined by the process described in the State Implementation Plan (SIP)[2], which is known as the Reasonable Potential Analysis (RPA). This involves a comparison of the maximum detected concentrations for constituents in effluent and the receiving water with the lowest applicable water quality criteria. Before the RPA can be performed, effluent and receiving water data must be collected. In the case where a Total Maximum Daily Loads (TMDL) has assigned wasteload allocations for a surface water, or the surface water has been designated as impaired for a pollutant, or specific beneficial uses must be protected, the Regional Board will use Best Professional Judgment (BPJ) to determine which constituents will receive effluent limits. The numerical limits are calculated using the SIP process and are based on the water quality objectives and effluent quality. As discussed further below, because there is no effluent data for the LOWRF, it is difficult to predict actual effluent limits.

Monitoring for influent, effluent, effluent toxicity in receiving water, and receiving water will be required by the NPDES permit, although specific constituents and frequencies can vary. Groundwater monitoring may also be required at the Regional Board's discretion. Besides a standard suite of conventional and physical parameters, there will be monitoring requirements for constituents with effluent limits. In addition, monitoring will be required for all priority pollutants but on a less frequent basis than constituents with effluent limits.

Reporting requirements include self-monitoring reports (SMRs) of monitoring results, and sometimes other reports requested by the Regional Board. NPDES permits require approval by the USEPA, and serious violations pertaining to effluent limitation exceedances and failure to submit reports are subject to Mandatory Minimum Penalties (MMPs, e.g., $3000/violation) as described in the California Water Code Section 13385.

The selection of discharge location (the Upper or Upper Central reach) for the LOWRF discharge is unlikely to affect the requirements of the NPDES permit because the general conditions in the receiving water are very similar. Therefore, the location should be selected based on the greatest beneficial use. Stream seepage from Los Osos Creek is one of the primary sources of recharge to the Los Osos Valley Groundwater basin. Stream seepage rates appear to be the highest in the Upper reach. The Upper Central reach contains some clay beds which may limit percolation[3]. Therefore,

[2] 2005 Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

[3] Technical Memorandum Recycled Water Discharges to Los Osos Creek (Cleath-Harris Geologists, Inc., March 18, 2014.

discharge into the Upper reach may be preferable.

NPDES Effluent Limits

The constituents receiving water quality-based effluent limits in an NPDES permit are determined through an RPA, which compares maximum concentrations to the applicable water quality standards. The applicable water quality standards are selected by the Regional Board based on the beneficial uses assigned to the receiving water in the Region's Basin Plan. Total Maximum Daily Loads (TMDLs), developed for waterbodies impaired for certain pollutants (as determined by the 303(d) list[4]), and other factors can affect the assigned effluent limits. The beneficial uses that are applicable to Los Osos Creek, associated water quality objectives, and a summary of potential effluent limits are described below.

BENEFICIAL USES AND APPLICABLE WATER QUALITY OBJECTIVES

The water quality standards used in the RPA to determine which constituents require effluent limits are those which apply to the beneficial uses of the receiving water. The beneficial uses assigned to Los Osos Creek in the Region 3 Central Coast Basin Plan (Basin Plan) include MUN, AGR, GWR, REC1, REC2, WILD, COLD, WARM, MIGR, SPWN, RARE, FRESH, COMM. For instance, the MUN beneficial use (municipal and domestic supply) requires drinking water standards, and the GWR beneficial use (groundwater recharge) may require standards associated with salts and nutrients regulation (see Attachment 2 for definitions of all these beneficial uses).

The water quality standards that apply to the Los Osos Creek and the Los Osos Valley Groundwater Basin because of these beneficial uses are listed in Table 1.

Table 1. Sources of Applicable Water Quality Objectives

Regulatory Document	Los Osos Creek	Ground Water Basin
Region 3, Central Coast Basin Plan	Basin Plan	Basin Plan
Drinking water standards in Title 22 of the California Code of Regulations	Title 22	Title 22
California Toxics Rule	CTR	
Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California	Thermal Plan	
TMDLs that set targets and allocations for Los Osos Creek	TMDLs	

The beneficial uses assigned to Los Osos Creek and the applicable water quality standards are detailed in **Attachment 2.**

USEPA recently updated its national recommended water quality criteria for human health for 94 chemical pollutants to reflect newer scientific information and EPA policies, including updated fish consumption rates.[5] The new recommended criteria are significantly lower, in some cases, than the current criteria and higher, in some cases. In order for these new criteria to be implemented in NPDES permits in California, they would need to be incorporated into the CTR.

[4] Water Quality Control Policy for developing California's Clean Water Act Section 303(d) Listing Policy.

[5] The supporting technical information for each of the affected constituents is available on an interactive website table at http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhdraft.cfm.

Specific factors that could affect which constituents receive effluent limits, including TMDLs, salts control for groundwater recharge, and environmental sensitivity of the receiving water (pertaining to endangered species) are discussed below.

Total Maximum Daily Loads

Three TMDLs have been adopted that contain targets for portions of Los Osos Creek, which is a Federal 303(d) listed impaired water body:

- *2004 TMDL for Nutrients in Los Osos Creek, Warden Creek, and Warden Lake Wetland* (**Nutrient TMDL**)
- *2003 TMDL for Pathogens for Morro Bay and Chorro and Los Osos Creeks* (**Pathogen TMDL**)
- *2003 Morro Bay TMDL for Sediment (including Chorro Creek, Los Osos Creek and the Morro Bay Estuary)* (**Sediment TMDL**)

These TMDLs may affect the numeric effluent limits assigned in the NPDES permit, and are discussed in more detail below.

Nutrient TMDL

The Nutrient TMDL includes a target of 10 mg/L-N for nitrate in the Warden Creek branch of Los Osos Creek, which joins the Los Osos Creek branch downstream of the proposed discharge locations. Nitrate allocations of 10 mg/L-N were also assigned to each source identified in the 2004 Nutrient TMDL. However, the Upper and Upper Central reaches of Los Osos Creek do not appear to have nitrate targets in the Nutrient TMDL. Nevertheless, discharge to Los Osos Creek may result in effluent limits for one or more nitrogen species and may result in effluent limits for orthophosphorus (examples of effluent limits for nutrients in permits are included in Section 3).

The surface water objectives that currently govern expectations for nutrient concentrations are the narrative objective for biostimulatory substances, and the following drinking water objectives for nitrate and nitrite:

- Nitrate (as NO3): 45 mg/L (Basin Plan MUN and Title 22)
- Nitrate + Nitrite (as N): 10 mg/L (Title 22)
- Nitrite (as N): 1 mg/L (Title 22)

Objectives protecting the beneficial uses of groundwater from groundwater recharge through discharge to Los Osos Creek include the MUN objective for nitrate (10 mg/L nitrate-N). The 2011 Los Osos WDR includes numeric effluent limits for Total Nitrogen, as follows:

- 10 mg N/L (daily maximum),
- 7 mg N/L (30-day average).

The Los Osos Valley groundwater basin is identified in the Basin Plan, but is not assigned nitrate or total nitrogen objectives.

Pathogen TMDL

The Pathogen TMDL includes total coliform targets (200 MPN/100 mL geometric mean and 400 MPN/100 mL maximum) for Los Osos Creek. However, the LORWF is being designed to meet Title 22 bacteria objectives which are stricter than the Pathogen TMDL targets.

Discharge to Los Osos Creek will result in numeric effluent limits for pathogen indicators (i.e., bacteria). The Title 22 bacteria objectives are as follows:

- Total coliform: 2.2 MPN/100 mL (7-day median)

- No more than one sample shall exceed 23 MPN/100 mL in any 30-day period;
- No sample shall exceed 240 MPN/100 mL.

The 7-day median limit for total coliform bacteria is also equivalent to the Basin Plan MUN objective for groundwater. The Pathogen TMDL includes numeric targets for Los Osos Creek as follows:

- Fecal Coliform: 200 MPN/100mL (geometric mean over 30 days)
- No more than 10% of fecal coliform samples shall exceed 400 MPN/100mL over any 30-day period

It is unknown whether the Regional Board would apply all of the Title 22 standards for recycled water to creek discharges, or the Pathogen TMDL numeric targets for fecal coliform.

Sediment TMDL

The Sediment TMDL assigned numeric targets for turbidity (expressed as NTU) for Los Osos Creek, and allocations for sediment flux (expressed as annual loads) to classes of erosional features (including stream banks) and land uses in the Morro Bay watershed. It is possible that an increase in surface flow in Los Osos Creek (e.g. owing to additional discharge from the LORWF) could affect erosion of the stream banks.

The lower eight miles of the Los Osos Creek are an anadromous fish stream (primarily steelhead) and adjacent riparian areas are rich in wildlife. Environmental concerns include contamination and excessive siltation of both the creek and the bay by development or other adverse uses occurring too close to the creek and its tributaries.[6]

Salts Control for Groundwater Recharge

The Basin Plan does not currently establish specific water quality objectives for salts in Los Osos Creek or the Los Osos Creek Basin (although the Regional Board may establish them in the future), and no effluent limits for salts were issued in the 2011 Los Osos WDR. However, if the LOWRF discharges to the Upper or Upper Central reaches of Los Osos Creek, it is likely that the Regional Board will assign numeric effluent limits for one or more salt constituents to protect groundwater beneficial uses. These limits are generally met through source control or other source management strategies defined in a Salt and Nutrient Management Plan.

The *Basin Plan for the Los Osos Groundwater Basin* (January 2015) includes a section discussing Salt and Nutrient Management Plans (described below). Sea water intrusion is an issue in the lower aquifer of the groundwater basin, which affects the perception of fresh water quality with regard to salts. The Title 22 secondary maximum contaminant levels (MCLs) for total dissolved solids include a recommended level of 500 mg/L, upper level of 1000 mg/L, and a short-term maximum level of 1500 mg/L.

[6] Los Osos Community Plan (2015?), Chapter 4. Environmental Resources, Section 4.5.6.D. page 5. http://www.slocounty.ca.gov/Assets/PL/Area+Plans/LosOsos/6_Chapter+4_KB.pdf

Environmental Sensitivity of Receiving Waters

Discharges to Los Osos Creek may be subject to regulations associated with the presence of sensitive habitat and species. Morro Bay is one of only 28 estuaries nationwide that have been designated as "estuaries of national significance" and supports more than two dozen endangered species. Los Osos Creek terminates in the Los Osos Bay Estuary, which feeds Morro Bay. Oysters are commercially farmed in Morro Bay by the Morro Bay Oyster Company and the Grassy Bar Oyster Company. Morro Bay is designated Critical Habitat for federally listed California red-legged frog and steelhead trout (South Central California Coast Distinct Population Segment).

The California State Coastal Conservancy has been awarded a grant to protect in perpetuity 81.7 acres on lower Los Osos Creek in the Morro Bay watershed (the Los Osos Creek Wetland Conservation Project). The parcel abuts Morro Bay estuary and is comprised of 64.6 acres of nationally decreasing palustrine wetlands, including 0.5 miles of designated critical habitat for the federally threatened South-Central California Coast steelhead trout and 9 acres of critical habitat for the federally endangered Tidewater goby. Morro Bay was designated as an estuary of national significance because it is a relatively intact lagoon and wetland environment, and supports the most significant wetland system on the coast of Central California.

EFFLUENT LIMITS

A Waste Discharge Requirements (WDR) permit was issued for the LOWRF in 2011 (Order No. R3-2011-0001) which contained effluent limits for settleable solids, BOD, suspended solids, and total nitrogen (as N), as shown in Table 2. Additional constituents will receive effluent limits in a NPDES permit.

Table 2. Summary of Effluent Limits in 2011 WDR Permit

Constituent	Units	Monthly Average (30-day	Daily Maximum
Settleable Solids	mL/L	0.1	0.5
BOD, 5-Day	mg/L	60	100
Suspended Solids	mg/L	60	100
Total Nitrogen (as N)	mg/L	7	10

It is likely that in addition to the effluent limits in the current WDR, effluent limits will be assigned for salts and some priority pollutants (e.g., disinfection byproducts, metals, trace organics) but this will be dependent on the actual effluent quality. Effluent limits are frequently assigned to disinfection by-products (chlorodibromomethane and dichlorobromomethane), which are typically found in chlorinated effluent and receive effluent limits due to the MUN beneficial use designation. Metals such as copper can receive effluent limits where the receiving water hardness is low, since the criteria decreases with decreasing hardness making a criteria exceedance more likely. Nitrogen and salts limits are typically assigned based on and due to drinking water standards and groundwater beneficial uses.

As no effluent data from the LOWRF were available to perform a preliminary RPA and determine possible constituents requiring effluent limits, the following three recent NPDES permits from Region 3 were reviewed, chosen for their potential to shed light on permitting practices in Region 3:

- 2014 San Luis Obispo Water Resource Recovery Facility, (Order No. R3-2014-0033, NPDES No. CA0049224), (2014 SLO Permit)
- 2012 California Men's Colony Wastewater Treatment Plant, (Order No. R3-2012-0027, NPDES No. CA0047856), (2012 CMC Permit)
- 2012 Waste Discharge Requirements for the City of Lompoc Regional Wastewater Reclamation Plant (Order No. R3-2011-0211, NPDES No. CA0048127), (2011 Lompoc Permit)[7].

These permits contain water quality-based effluent limits for similar tertiary treatment facilities discharging to creeks. These effluent limits are shown in Table 3, and are in addition to technology-based effluent limits for BOD, TSS, Oil & Grease, settleable solids, turbidity, pH, chlorine residual.

Table 3. Summary of Effluent Limits in Similar NPDES Permits

Constituent	Units	2014 SLO Permit	2012 CMC Permit	2011 Lompoc Permit
Chlorodibromomethane	µg/L	0.40 monthly, 1.0 daily	0.40 monthly, 0.80 daily	--
Dichlorobromomethane	µg/L	0.56 monthly, 1.0 daily	0.56 monthly, 0.88 daily	--
n-Nitrosodi methylamine	µg/L	0.00069 monthly, 0.0014 daily	--	--
Dissolved oxygen	mg/L	4 instant	>2.0 instant	--
Bis(2-ethylhexyl) phthalate	µg/L	--	1.8 monthly, 3.6 daily	1.8 monthly
Aluminum	mg/L	--	--	1.0 monthly
Copper	µg/L	--	7.5 monthly, 17 daily	--
Acute Toxicity	% survival	No toxicity	Text	Text
Chronic Toxicity	TUc	No toxicity	No toxicity	1.0 daily
Total Coliform	MPN/100mL	2.2, 23, 240 (Title 22)	2.2, 23, 240 (Title 22)	200, 400
Un-ionized Ammonia	mg/L	--	--	0.025 weekly
Nitrate-N	mg/L	10 monthly	--	10 daily
Nitrite-N	mg/L	--	1.0 daily	--
Total Nitrogen	mg/L	--	10 daily	--
Orthophosphorus	mg/L	--	Narrative median	--
Sulfate	mg/L	--	125 daily	--
TDS	mg/L	--	--	1100
Sodium	mg/L	--	--	270
Chloride	mg/L	--	--	250
Boron	mg/L	--	--	--

[7] While the Lompoc facility is located in Santa Barbara County, it is indicative of current NPDES permitting policy for the Central Coast Region.

Factors Affecting Numeric Effluent Limits

A number of factors affect the value assigned as an effluent limit to constituents with reasonable potential, or other reasons to receive one. Following the SIP method, effluent limits are calculated from the water quality standards, with adjustment for effluent dataset variability, required monitoring frequency, and dilution (where available). Some water quality standards for metals are dependent on water hardness. Harder water results in higher water quality standards for those metals, which in turn results in higher (i.e., less stringent) effluent limits. As discharge is only planned during periods of no flow in the creek, no dilution will be available.

NPDES Monitoring Requirements

The three recent NPDES permits from Region 3 that were reviewed contain monitoring requirements for surface water discharges. Monitoring for influent, effluent, effluent toxicity in receiving water, and receiving water will be required. Groundwater and biosolids monitoring may also be required. Influent monitoring is for only a few physical and conventional parameters. Biosolids monitoring is required of treatment plants which produce and dispose of significant quantities of biosolids (treated sludge). The other potential monitoring requirements are summarized in Table 4, and the full lists are shown in Attachment 3.

Table 4. Summary of Monitoring Requirements in Similar Permits

Constituent	Potential Frequency
Effluent Monitoring	
Conventionals	Daily/Weekly/Monthly
Coliforms	5/week
Nutrient forms	Weekly/Monthly/Quarterly
Selected organics (determined by RPA)	Monthly/Quarterly
Salt ions	Monthly/Quarterly
Toxicity	Monthly/Quarterly/Annually
Selected metals (determined by RPA)	Monthly/Annually
CTR Pollutants[a]	Annually
Title 22 Pollutants[b]	Annually
Receiving Water Monitoring	
Physical/Conventionals	Weekly/Monthly/Quarterly
Salts ions	Monthly/Quarterly
Selected metals	Annually
Coliforms	Quarterly
Toxicity	Quarterly
Nitrogen forms	Monthly/Quarterly
Chlorophyll A	Monthly
Selected organics	Annually
CTR Pollutants[a]	Annually
Title 22 Pollutants[b]	Annually
Groundwater Monitoring	
Depth to groundwater	Quarterly/ 2 per year
Nitrogen forms	Quarterly/ 2 per year
Salts forms	Quarterly/ 2 per year
Chemical oxygen demand	Quarterly
Title 22 Pollutants[b]	2 per year

[a] The CTR priority pollutants are those listed by the California Toxics Rule at 40 CFR 131.38 (b) (1).

[b] The Title 22 pollutants are those for which primary Maximum Contaminant Levels (MCLs) have been established by the Department of Health Services and which are listed in Tables 64431-A and 64444-A of the California Code of Regulations, Title 22, Division 4, Chapter 15.

MONITORING TOXICITY IN EFFLUENT

Standard Requirements in Current Permits

The Whole Effluent Acute and Chronic Toxicity monitoring requirements involve testing effluent samples for toxicity to specific organisms, generally fathead minnows (*pimephales promelas*), water fleas (*Ceriodaphnia dubia*) and green algae (*selenastrum capricornutum*). The acute toxicity is tested by measuring the survival of fathead minnows (or other organism specified by the Regional Board) exposed to 96-hour continuous flow-through bioassays. The chronic toxicity is tested by measuring survival and growth of all three species (or others specified by the Regional Board) in various dilutions of effluent.

State Policy for Toxicity Assessment and Control (Toxicity Policy)

SWRCB Resolution 2005-0019 required revisions to the toxicity provisions in the SIP. In June 2010, the SWRCB released a draft "Policy for Whole Effluent Toxicity Assessment and Control" which included a new methodology for calculating toxicity (Test of Significant Toxicity, or TST) that had been described in a June 2010 document released by USEPA. Following public outreach and comments, peer review, and other steps, the SWRCB issued a revised draft policy in June 2012 that would promulgate new water quality objectives for toxicity for all inland surface waters, enclosed bays, and estuaries of the state. The new objectives would supercede the current toxicity control provisions in the SIP and all toxicity testing provisions in individual Basin Plans. The draft policy includes the following types of provisions:

- Numeric objectives for chronic and acute toxicity
- Chronic and acute toxicity limits
- Reasonable potential analysis and test species screening
- Accelerated monitoring and TRE implementation

The draft policy elicited significant concern from POTWs that discharge to inland waters. A partial list of POTW concerns follows.

Numeric Limits versus Triggers. Currently, most NPDES permits contain narrative objectives for toxicity and numeric triggers that prompt additional sampling and source investigation (e.g., Toxicity Reduction Evaluations, or TRE). This policy would result in numeric limits for toxicity, and dischargers would be considered to be in violation of their permits before there is a chance to determine the cause of the toxicity.

New Statistical Method for Defining Toxicity. The TST is a new probability-based method for calculating toxicity, based on a null hypothesis that a sample is toxic. Stakeholders have compared the performance of the TST and existing approaches (i.e., calculation of acute toxicity Toxic Units Acute (TUa) and Toxic Units Chronic (TUc)) using WET testing data. They argue that a high false positive error rate is inherent using the TST, and that use of the TST will lead to 303(d) listings for a high percentage of non-toxic waters.

Dischargers with no Dilution. Consideration of the true In-Stream Waste Concentration (IWC) is disallowed during the determination of "pass" or "fail" for dischargers that have no mixing zone or dilution credits.

Immediate Non-Compliance. The draft policy mandates that POTWs without dilution must produce effluent that is free of toxicity at all times. The draft policy includes a maximum daily

effluent limitation (MDEL) that would result in an effluent limitation violation as a result of a single sample exceedance.

Higher Costs of Individual Tests. The TST is highly sensitive to the variability of test organism survival in test and control water. Consequently, in order to avoid invalid "fail" results, dischargers may have to pay for an increased number of replicates during routine toxicity tests.

Acute Toxicity Tests. The draft policy creates potential that Permits will contain requirements to conduct acute toxicity tests in addition to (more sensitive) chronic toxicity tests.

Reasonable Potential. The draft policy stipulates that all POTWs with average daily flow above 1 MGD have reasonable potential to cause toxicity *by rule*.

This policy is still under development and the Central Coast is maintaining its practice of including narrative toxicity objectives in NPDES permits.

NPDES Reporting Requirements

NPDES permits require self-monitoring reports (SMRs) to be submitted using the State Water Board's California Integrated Water Quality System (CIWQS) Program website on a specified schedule. These are generally monthly, quarterly, semi-annual, and annual SMRs, which include the results of all monitoring activities. Other reports are sometimes required, which would include special studies, technical reports, and additional monitoring. If a Salt and Nutrient Management Plan (described below) is required for the groundwater recharge beneficial use, it would be included in the reporting requirements.

The permit renewal application, Report of Waste Discharge, is also considered a reporting requirement by the NPDES permit.

Salt and Nutrient Management Plans

In November 2008 the SWRCB adopted the Statewide Recycled Water Policy, which requires the development of regional or sub-regional salt and nutrient management plans (SNMPs) for groundwater basins in California by 2014 (with the potential for a two year extension if substantial progress towards development of a plan is being made). SNMPs will be adopted by Regional Boards as Basin Plan amendments. According to the state policy, SNMPs must include the following components:

- Basin/sub-basin wide monitoring plan
    - Assess groundwater quality, preferably by sampling existing wells
    - Focus on groundwater near large recycling and recharge projects and near water supply wells
    - Target where appropriate ground and surface water in areas of connectivity
- Annual monitoring for contaminants of emerging concern (CECs)
- Water recycling and stormwater recharge/use goals and objectives
- Salt and nutrient source identification, loading estimates, assimilative capacity, and fate and transport
- Implementation measures to manage salt and nutrient loading in the [groundwater] basin on a sustainable basis
- Antidegradation analysis

In Region 3, this SNMP requirement is being implemented by inclusion of provisions in WDRs or NDPES permits for facilities which use reclaimed water for irrigation. In the 2012 CMC Permit, *Section (a) Salt and Nutrient Management* (in the Best Management Practices and Pollution Minimization Program) describes in great detail required elements of a salt and nutrient management program specific to the facility, and then provides the option to alternatively satisfy the detailed requirements through participation in a regional salt and nutrient management plan.

Required elements of Central Coast SNMPs are detailed in a February 2014 document available on the Region 3 website.[8] Based on a September 13, 2013, Salt and Nutrient Management Plan Update (powerpoint presentation by the Region 3 Staff for the Central Coast Forum), a regional SNMP effort was tentatively underway for the Los Osos Valley. The 2015 *Basin Plan for the Los Osos Groundwater Basin* states "It is anticipated that the data needs of the salt and nutrient

[8] Informational Document: Salt and Nutrient Management Plan Development. February 2014. Available at http://www.waterboards.ca.gov/centralcoast/water_issues/programs/nutrient_mgmt/index.shtml.

management plan monitoring program will be met by the Groundwater Monitoring Program in this Basin Plan."

Because the LOWRF will involve a significant reclaimed water component, a requirement to either develop a facility-specific salt and nutrient management plan or to participate in a regional salt and nutrient management plan is a guaranteed element of the eventual permit. However, it is possible that by the time the LOWRF is operational, a regional SNMP might be underway in the Los Osos area and that some economy of effort could be achieved by participating in the regional planning effort with partner agencies.

Other Considerations

Several regulatory actions at either the state or federal level are anticipated in the near future that may affect permit requirements or the regulatory burden associated with creek discharge. The actions are briefly described below.

Biological Integrity Assessment Implementation Plan

Starting in 2010, the SWRCB has been engaged in technical and stakeholder processes to develop a consistent methodology for using bioassessment data (indices of biological integrity, or IBIs) for impairment listings and identification of controllable pollutants causing biological community impairment that can be addressed by TMDLs, waste discharge permits, and other regulations. The SWRCB will adopt standardized metrics and monitoring protocols, and adopt statewide *guidance* for Regional Boards to interpret the biological data for 303(d) listing purposes, TMDL development and permit writing.[9] The SWRCB is beginning by addressing benthic invertebrates in streams, but intends to consider other types of community indices, such as for microalgae.

The SWRCB has already proposed: (1) the metric that will be used to interpret bioassessment data for stream benthic invertebrates (the California Stream Condition Index, or CSCI), (2) a reference stream data set and methods for defining reference conditions, (3) a stressor-identification framework (Causal Assessment), and (4) at least one tool for causal assessment (CADDIS) proposed for use in assigning responsibility for benthic community impairment to one or more pollutants (such as sediment or nutrients) or non-chemical stressors (such as hydromodification). The framework for implementation is still being developed (for example, addressing controversial issues such as expectations for modified stream channels).

The implementation of the CSCI in the regulatory setting is controversial and has implications for dischargers to wadeable streams. The "stressor ID" process has been demonstrated in case studies and at least one TMDL in Region 4 (2013 Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impairments) to provide a rationale for stringent nutrient regulation. In the case of the Malibu TMDL, benthic invertebrate index data and Causal Assessment were used as a basis for revising POTW nutrient allocations significantly downward from those promulgated in a previous (2003) nutrient TMDL (new allocations were 1.0 mg /L TN and 0.1 mg /L TP during summer months).

Proposed Policy for Nutrients for Inland Surface Waters

The State Water Board is developing a nutrient policy for inland surface waters. The State Water Board intends to develop narrative nutrient objectives, with numeric guidance to translate the narrative objectives. This numeric guidance could include the "Nutrient Numeric Endpoint" (NNE) framework which establishes numeric endpoints based on the response of a water body to nutrient overenrichment (e.g. algal biomass, dissolved oxygen, etc.).

Disjunct but overlapping processes have been underway since 2006 to evaluate approaches for regulating nutrient discharges to four different classes of inland water bodies:

- Streams and Lakes
- Coastal estuaries

[9] The currently applicable background information, technical documents, and advisory group information is available at http://www.waterboards.ca.gov/plans_policies/biological_objective.shtml.

- San Francisco Estuary (SFE, includes Suisun Bay)
- Sacramento-San Joaquin Delta

Much of the technical foundation for establishment of NNEs for wadeable streams had been developed with SWRCB funding and oversight, but without stakeholder involvement, prior to June 2014. The NNE process for inland water bodies (other than those for the SFE and the Delta, which appear to be continuing on separate tracks) was recently "reset", and a formal stakeholder process for NNEs for inland waters (initially to address wadeable streams) began in June 2014.[10] The recent scientific work products produced by SCCWRP (expected for public release in August 2014) indicate that nutrient thresholds for wadeable streams derived using correlational approaches and statewide monitoring databases, if applied as effluent limits, would be unattainable without reverse osmosis. Consequently there is recognition that alternative regulatory pathways may be important for establishing NPDES permit limits for N and P for POTWs. This possibility is part of the discussion between dischargers and regulators in the newly formed "Inland Water NNE SAG". If offered in a formal framework, the alternative pathway may require dischargers to sponsor site-specific studies of nutrient responses in stream watersheds or conduct expensive modeling of the impacts on beneficial uses of management actions on watershed scales.

Although the current SWRCB website for the Nutrient Policy qualifies the *current process* as one that *excludes* enclosed bays and estuaries, much of the technical work to support NNE development for enclosed estuaries took place already through the California Estuarine Nutrient Numeric Endpoint Project[11] with the involvement of a technical team lead by SCCWRP, a regulatory advisory group ("STRTAG" comprised of SWRCB, Regional Board, USEPA and resource agency staff), and a Coastal Stakeholder Advisory Group (Coastal SAG) that had been meeting since 2009. The Coastal Estuary nutrient process appears to have been put on hold temporarily, and the SWRCB has prioritized development of an NNE policy for wadeable streams. However, as shown in the tentative schedule in Table 5, estuaries will be addressed in the Nutrient Policy in the next five years.

Table 4. Tentative Schedule for Nutrient Policy Development in California.*

Task	Science	Regulatory Amendments	
		Development	Adoption
Conceptual Approach	2014	2015	2017
Wadeable Streams	2014	2015	2017
Lakes	2014-2017	2017	2018
Estuaries and Non-wadeable Streams/Rivers	2014-2018	2018	2020

*Timelines for the SFE and Delta have not been determined.

[10] http://www.waterboards.ca.gov/plans_policies/nutrients.shtml

[11] https://californiaestuarinenneproject.shutterfly.com/

The Nutrient Policy creates significant regulatory uncertainty and risk for dischargers to wadeable streams. In addition, owing to potential application of new indicators of nutrient impairment in estuaries (such as new screening values for DO, pH, and benthic macroalgae or new IBIs for benthic infauna or sensitive fish), Morro Bay Estuary might become listed in the future for nutrient-related impairment. In that case, nutrient discharges to Los Osos Creek might be reevaluated in the context of their effect on the estuary downstream, unless the discharge can be shown to percolate prior to reaching the estuary.

As part of the recent NNE-related technical work described above, SCCWRP is proposing that thresholds for impairment for benthic algal biomass should be much lower than those applied during the early "test runs" of the Benthic Biomass Tool. Although the Upper and Upper Central reaches of Los Osos Creek are not currently on the 303(d) list for nutrient-related impairments, this status might change if monitoring data are screened using NNEs recommended by the SWRCB in the future.

State Policy on Bacteria

The SWRCB is proposing a statewide control program to protect recreational users from the effects of pathogens in California water bodies. The program would be adopted as amendments to both the Inland Surface Water, Enclosed Bays and Estuaries Plan and the California Ocean Plan. Significant proposed program elements may include: new water quality objectives for both fresh and marine waters based on the recently released (2012) USEPA recreational use criteria; a reference beach/natural source exclusion process and high flow exemptions; and revised beach notification requirements.

The USEPA's 2012 recreational water quality criteria recommends use of either enterococci and E. coli for freshwater and only enterococci for marine water. Recommended criteria are provided in Table 6.

Table 5. USEPA 2012 Recommended Recreational Use Standards for Bacteria.*

	Enteroccoci		E. coli	
	30-day geomean	**single sample threshold**	**30-day geomean**	**single sample threshold**
Marine	30-35 cfu/100 mL	110-130 cfu/mL	N/A	N/A
Fresh	30-35 cfu/100 mL	110-130 cfu/mL	100-126 cfu/mL	320-410 cfu/mL

*Ranges apply to different illness rates.

Preliminary considerations related to the discharge to Los Osos Creek are as follows:

- Bacteria limits for the discharge are equivalent to the Title 22 standards for recycled water, and are not governed by the (more lenient) current REC1 and REC2 Basin Plan objectives for fecal coliform. The Bacteria Policy does not set out to alter the Title 22 standards.
- Los Osos Creek is already subject to the bacteria targets in the Pathogen TMDL. However, the targets are for fecal coliform. The Bacteria Policy may replace fecal coliform with E. coli as the REC1 and REC2 indicator test organism. Depending on how the SWRCB implements the Bacteria Policy, the Pathogen TMDL might have to be reopened to revise the targets and allocations.

Water Rights

There may be regulatory implications associated with LOWRF discharge that increases surface flow in Los Osos Creek, regarding the expectation that effluent can be diverted from the stream later as capacity to reclaim water is developed. In other words, once additional flow has been put into the creek, it may be legally difficult to send it anywhere else. Under California Water Code Section 1211, changes in the discharge or use of treated wastewater that result in decreasing the flows in a portion of a watercourse must be approved by the SWRCB Division of Water Rights. Review of a "Change Petition" will be conducted pursuant to Water Code Section 1700 et seq. The petitioner must include sufficient information to demonstrate a reasonable likelihood that the proposed change will not injure any other legal user of water and must include information about measures to protect fish and wildlife. State and federal resource agencies will evaluate the Change Petition regarding impacts of the diversion on state or federally listed species or their habitat. The origin of the water to be diverted (foreign or natural) bears upon the legal analysis of water rights in Change Petitions. It may be advisable for the County to consider whether a water rights decision (i.e., conferring rights to the effluent) is necessary before commencing to discharge to the creek. The legal analysis of water rights will be more complicated if the facility influent represents a combination of extracted groundwater (i.e., from city wells) and imported water.

Challenges faced by the City of San Luis Obispo (SLO) in implementing their recycled water program serves as an example of this issue. As discussed above, SLO has dedicated a portion of its Water Reclamation Facility effluent to maintain a minimum flow of 2.5 cfs in San Luis Obispo Creek for in-stream beneficial uses, in-stream habitat uses in particular. This minimum dedicated discharge is included in SLO's Water Reuse Project's SWRCB 'Permit for Change in Place and Purpose of Use' and is a required term and condition of the Biological Opinion issued by NOAA Fisheries. SLO and several other agencies, including DFG and NMFS, have completed studies on the creek examining habitat and the abundance of federally threatened anadromous steelhead (*Oncorhynchus mykiss*). A study completed for SLO in 2004 as part of their Water Reuse Project found steelhead in greater abundance than was observed in previous surveys. The results of this study supported an increase in the dedication of a minimum discharge to San Luis Obispo Creek from 1.7 cfs to 2.5 cfs for in-stream beneficial uses, in-stream habitat uses in particular. Consequently, SLO cannot fully utilize the reclaimed water generated as part of the Water Reuse Project.

Attachment 1: Permit Application Procedures

Discharges to surface waters are regulated by permits issued under the National Pollutant Discharge Elimination System (NPDES) program while discharges of other types are permitted through Waste Discharge Requirements (WDR) under the Porter-Cologne Act. As authorized by the CWA, the NPDES program protects water quality by regulating point sources that discharge pollutants directly into the waters of the United States, such as a river, lake, or ocean.

An individual NPDES permit is a permit specifically tailored to an individual facility. After receipt of a complete application, the permitting authority develops a permit for a particular facility based on the information contained in the application (e.g., type of activity, nature of discharge, receiving water quality). The permitting authority issues the permit to the facility for an effective period not to exceed five years. The discharger must reapply at least 180 days prior to the expiration date. The Regional Boards issue most of the individual permits in California while the State Water Board issues general permits that apply statewide and individual permits on a few occasions.

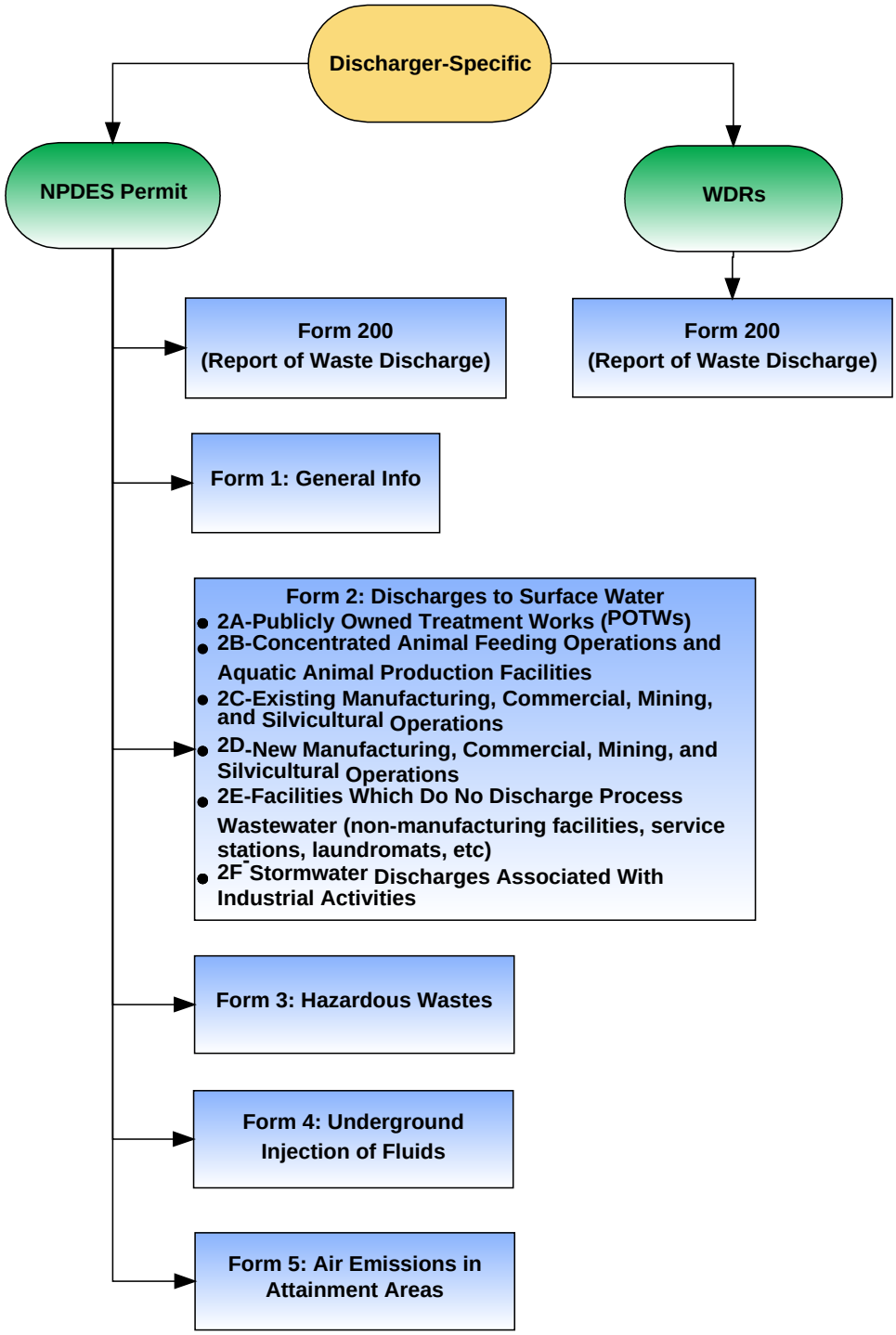
Required Information

Submittal of an ROWD begins the application process for both WDRs and NPDES permits.[12] A discharger applying for an NPDES permit must provide the following information in their ROWD:

- California Form 200;
- Site map identifying the surface water into which the discharge is proposed; and
- In addition, the discharger may be required to complete one or more of the following Federal NPDES permit application forms: Form 1, 2A, 2B, 2C, 2D, 2E, 2F, 2S, 3, 4, 5, Short Form A, and Standard Form A (see figure below). These forms can include additional requirements such as treatment process narratives, treatment process line drawings, effluent characterization monitoring results, effluent toxicity monitoring results, as well as others.

[12] California Regional Water Quality Control Board, Central Coast Region. *Wastewater Permitting* http://www.waterboards.ca.gov/centralcoast/publications_forms/forms/docs/form_200.pdf

"Which Forms Do I Need?"[13]



[13] California Regional Water Quality Control Board, Central Valley Region. "Do I Need a Permit-What Forms Do I Need?" *Water Boards*. Last updated 1/02/2013.

APPLICATION PROCESS

The process for application review and permit issuance by the Regional Water Board takes approximately six months, but may take longer depending upon the nature of the discharge. The typical steps to obtain an NPDES permit are:

i. File Form 200 and the appropriate federal NPDES application forms with the Regional Board. Anyone proposing to discharge must file a complete application at least 180 days before beginning the activity.

ii. Regional Board staff reviews the application for completeness and may request additional information.

iii. Once the application is determined to be complete, Regional Board staff forwards it to the US Environmental Protection Agency (USEPA) within 15 days. USEPA has 30 days to review the application for completeness and to request additional information from the discharger. After the request for additional information is met, USEPA has 30 days to forward comments to the Regional Board.

iv. Regional Board staff determines if they should issue the NPDES permit or prohibit the discharge. If a permit should be issued, Regional Board staff prepares a proposed permit and forwards a copy to USEPA for review.

v. USEPA review the application and has 30 days to object or submit comments to the Regional Board. USEPA may request an additional 60 days to review the proposed permit.

vi. Following USEPA's review, Regional Board staff prepares a "Notice of Public Hearing" and mails it to the discharger with instructions for circulation. Regional Board staff also mails the public notice and proposed permit to persons and public agencies with known interest in the project. Regional Board staff may modify the proposed permit prior to the public hearing based on comments received from the discharger and interested parties.

vii. The discharger must publish the notice for one day and submit proof of having complied with the instructions to the Regional Board within 15 days after the posting or publication.

viii. The Regional Board holds a public hearing with at least 30 day public notification. The Regional Board may adopt the proposed permit or modify it and adopt it at the public hearing by majority vote. USEPA has 10 days to object to the adopted permit, and the objection must be satisfied before the permit becomes effective.

Attachment 2: Beneficial Uses and Water Quality Standards

WATER QUALITY STANDARDS THAT PERTAIN TO CREEK DISCHARGE

Beneficial uses for inland surface waters in Region 3 are provided in Table 2-1 of the Basin Plan, and are tabulated below for Los Osos Creek. Although Los Osos Creek itself is not assigned the EST beneficial use (estuarine habitat), discharges to Los Osos Creek would be evaluated with respect to their potential downstream effects on Los Osos Creek Estuary.

Beneficial Uses Assigned to Los Osos Creek in the Region 3 Basin Plan

Use	Description
MUN	Municipal and Domestic Supply
AGR	Agricultural Supply
GWR	Ground Water Recharge
REC1	Water Contact Recreation
REC2	Non-Contact Water Recreation
WILD	Wildlife Habitat
COLD	Cold Freshwater Habitat
WARM	Warm Freshwater Habitat
MIGR	Migration of Aquatic Organisms
SPWN	Spawning, Reproduction, and/or Early Development (Fish)
RARE	Rare, Threatened, or Endangered Species
FRESH	Freshwater Replenishment
COMM	Commercial and Sport Fishing

The water quality standards that apply to the Los Osos Creek because of these beneficial uses are listed below.

California Toxics Rule (CTR) Criteria

Numeric criteria for several dozen "Priority Pollutants," that apply to all inland waters, enclosed bays, and estuaries in California, were promulgated by USEPA in 2000 in the CTR[14]. CTR criteria are divided into several categories reflecting water quality required to avoid (1) acute and chronic toxicity for aquatic organisms, and (2) human health impacts from consumption of water and/or aquatic organisms; separate aquatic life criteria were developed for freshwater (streams, lakes) and salt water (enclosed bays and estuaries). The categories of criteria in the CTR that pertain to *freshwater with the MUN use* are pertinent to discharges to Los Osos Creek and are as follows:

- Freshwater Aquatic Life: Acute (32 constituents)
- Freshwater Aquatic Life: Chronic (30 constituents)
- Human Health: Consumption of Water & Organisms (90 constituents)

[14] Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Rule Federal Register / Vol. 65, No. 97 / Thursday, May 18, 2000 / Rules and Regulations. Adding Section 131.38 to 40 CFR

CTR criteria are implemented using the procedures described in the 2005 Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, also known as the State Implementation Policy (SIP). The SIP addresses matters such as monitoring requirements, test procedures and other compliance determinations, compliance schedules, water effect ratios (WER), metal translators, dilution and mixing zones, and derivation of effluent limits.

Basin Plan Objectives

The Basin Plan assigns Title 22 drinking water standards to all surface waters with the MUN use. Consequently discharges to Los Osos Creek will be evaluated with regard to whether they cause exceedances of the Maximum Concentration Limits (MCLs) from Title 22 in receiving water. In addition, the Basin Plan assigns two other categories of objectives that are pertinent to discharges to the creek: (1) general objectives that apply to all inland waters and (2) specific objectives for several other beneficial uses (AGR, REC1, REC2, COLD, WARM, SPWN). These Basin Plan objectives are outlined below.

1. General Objectives

- Color (allowable change from natural)
- Narrative objectives (prohibiting nuisance or adverse effect on beneficial uses)
    - Taste and Odors, Floating material, Suspended matter, Settleable Material, Biostimulatory Substances, Suspended Sediment
    - Temperature (narrative applies only to inland surface water)
    - Toxicity
    - Pesticides (narrative, except that total OC pesticides must not be detectable)
- pH (allowable range)
- Dissolved oxygen (numeric limit)
- Unionized ammonia (numeric limit)
- Other organics (numeric limits for methylene blue activated substances, phenols, PCBs and phthalate esters)

2. Specific Objectives

Objectives for MUN

- pH (allowable range)
- Title 22 Primary and Secondary Maximum Concentration Limits (MCL)
- Phenol (numeric limit)

Objectives for AGR

- pH (allowable range)
- Dissolved oxygen (numeric limit)
- Irrigation Supply (numeric limits for 18 inorganics)
- Livestock Watering (numeric limits for 16 inorganics)

Objectives for REC1 and REC2

- pH (allowable range)
- Fecal coliform (numeric limits)

Objectives for COLD and WARM

- pH
- Dissolved oxygen (numeric limit)
- Temperature (allowable change from natural)
- Toxic metals (cadmium, chromium, copper, lead, mercury, nickel, zinc)

Objectives for SPWN

- Cadmium (numeric limit)
- Dissolved oxygen (numeric limit)

WATER QUALITY STANDARDS THAT PERTAIN TO GROUNDWATER

Discharge to percolation ponds would be considered by the Regional Board as a discharge to groundwater. Table 2-3 and Figure 2-2 in the Basin Plan identify the groundwater basins in Region 3. Los Osos Creek is in the Los Osos Valley Basin (Basin 3-8). The beneficial uses assigned to *all groundwater* in Region 3 (except to the Soda Lake Sub-basin) are as follows[15]:

Use	Description
MUN	Municipal and Domestic Supply
AGR	Agricultural Supply
IND	Industrial Service Supply

The water quality standards that apply to the Los Osos Valley Groundwater Basin because of these beneficial uses are listed below. In addition to the MUN and AGR objectives, the Basin Plan assigns objectives for salts and nitrogen (*total nitrogen*, not nitrate) to selected groundwater basins in the Central Coast Region; the Los Osos Valley Basin is not one of these basins.

Objectives for MUN (for groundwater)

- Bacteria (7-day median for coliform bacteria)
- Title 22 Primary and Secondary Maximum Concentration Limits (MCL)

Objectives for AGR

- pH (allowable range)
- Dissolved Oxygen (numeric limit)
- Irrigation Supply (numeric limits for 18 inorganics)
- Livestock Watering (numeric limits for 16 inorganics, including for "Nitrate+Nitrite" and "Nitrite")[16]

[15] The Basin Plan does not include a table assigning beneficial uses to individual groundwater basins (as it does for many coastal and inland waters). Instead, at the beginning of Chapter 2, the Basin Plan indicates in a narrative that all groundwater in Region 3 is suitable for the MUN, AGR, and IND uses.

[16] The Livestock Watering limits in Table 3-4 of the Basin Plan for "Nitrate+Nitrite" and for "Nitrite" are 100 mg/L and 10 mg/L, respectively.

Attachment 3: Water Quality Monitoring

PERMIT APPLICATION MONITORING

Effluent and receiving water monitoring is likely to be required as part of the permit application. The full suite of constituents with water quality objectives from the Basin Plan, Title 22 MCLs, and CTR are listed in Table 3-1, in addition to a few without objectives which would still need to be monitored. For constituents with hardness-dependent objectives (some metals), hardness was assumed to be 150 mg/L.

Table 3-1. Constituents and Associated Water Quality Objectives Pertinent to Creek Discharge

		Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
Constituent	Units	MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
Dissolved Oxygen	mg/L	Min: 5	-	-	-	-	-	-	-	-	-
Aluminum	µg/L	1000	5000	5000	-	-	200	-	-	-	-
Antimony	µg/L	-	-	-	-	-	6	-	-	14	-
Arsenic, Total	µg/L	50	100	200	-	-	10	340	150	-	-
Asbestos	MFL	-	-	-	-	-	7	-	-	7	-
Barium	µg/L	1000	-	-	-	-	1000	-	-	-	-
Beryllium	µg/L	-	100	-	-	-	4	-	-	-	-
Cadmium, Total	µg/L	10	10	50	30 hard 4 soft	3 hard 0.4 soft	5	7.1	3.4	-	-
Chromium Total (or III)	µg/L	50	100	1000	50	-	50	2420	289	-	-
Chromium VI, Total	µg/L	-	100	1000	-	-	10	16	11	-	-
Cobalt	µg/L	-	50	1000	-	-	-	-	-	-	-
Copper, Total	µg/L	-	200	500	30 hard 10 soft	-	1000	21	13	1300	-
Cyanide	µg/L	-	-	-	-	-	150	22	5.2	700	3
Fluorene	µg/L	-	-	-	-	-	-	-	-	1300	30
Fluoride	µg/L	-	1000	2000	-	-	2000	-	-	-	-
Iron, total	µg/L	-	5000	-	-	-	-	-	-	-	-

Constituent	Units	Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
		MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
Lead, Total	µg/L	50	5000	100	30	-	15	137	5.3	-	-
Lithium	µg/L	-	75	-	-	-	-	-	-	-	-
Manganese, total	µg/L	-	200	-	-	-	-	-	-	-	-
Mercury	µg/L	2	-	10	0.2	-	2	-	-	0.05	-
Molybdenum	ug/L	-	10	500	-	-	-	-	-	-	-
Nickel, Total	µg/L	-	200	-	400 hard 100 soft	-	100	661	74	610	-
Perchlorate	µg/L	-	-	-	-	-	6	-	-	-	-
Selenium, Total	µg/L	10	20	50	-	-	50	-	-	-	-
Silver, Total	µg/L	50	-	-	-	-	100	8.15	-	-	-
Thallium	µg/L	-	-	-	-	-	2	-	-	1.7	-
Vanadium	ug/L	-	100	100	-	-	-	-	-	-	-
Zinc, Total	µg/L	-	2000	25000	200 hard 4 soft	-	5000	169	169	-	-
Ammonia (as N)	mg/L	0.025	-	-	-	-	-	-	-	-	-
Nitrate (as NO3)	µg/L	45000	-	-	-	-	45000	-	-	-	-
Nitrate + Nitrite (as N)	µg/L	-	-	100000	-	-	10000	-	-	-	-
Nitrite (as N)	µg/L	-	-	10000	-	-	1000	-	-	-	-
1,1,1-Trichloroethane (1,1,1-TCA)	µg/L	200	-	-	-	-	200	-	-	-	10000
1,1,2,2-Tetrachloroethane	µg/L	1	-	-	-	-	1	-	-	0.17	0.1
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	µg/L	1200	-	-	-	-	1200	-	-	-	-
1,1,2-Trichloroethane (1,1,2-TCA)	µg/L	32	-	-	-	-	5	-	-	0.6	0.45
1,1-Dichloroethane (1,1-DCA)	µg/L	5	-	-	-	-	5	-	-	-	-
1,1-Dichloroethylene (1,1-	µg/L	6	-	-	-	-	6	-	-	0.057	200

Constituent	Units	Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
		MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
DCE)											
1,2,4,5-Tetrachlorobenzene	µg/L	-	-	-	-	-		-	-	-	0.04
1,2,4-Trichlorobenzene	µg/L	-	-	-	-	-	5	-	-	-	8
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	0.2	-	-	-	-	0.2	-	-	-	-
1,2-Dichlorobenzene	µg/L	-	-	-	-	-	600	-	-	2700	700
1,2-Dichloroethane (1,2-DCA)	µg/L	0.5	-	-	-	-	0.5	-	-	0.38	0.29
1,2-Dichloropropane	µg/L	5	-	-	-	-	5	-	-	0.52	0.71
1,2-Diphenylhydrazine	µg/L	-	-	-	-	-	-	-	-	0.04	0.02
1,2-Trans-Dichloroethylene	µg/L	-	-	-	-	-	10	-	-	700	100
1,3-Dichlorobenzene	µg/L	-	-	-	-	-	-	-	-	400	5
1,3-Dichloropropene	µg/L	0.5	-	-	-	-	0.5	-	-	10	0.2
1,4-Dichlorobenzene (p-DCB)	µg/L	5	-	-	-	-	5	-	-	400	5
2,3,7,8-TCDD (dioxin)	µg/L	-	-	-	-	-	0.00003	-	-	1.3x10^-8	-
2,4,5-TP (Silvex)	µg/L	10	-	-	-	-	50	-	-	-	10
2,4,5-Trichlorophenol	µg/L	-	-	-	-	-	-	-	-	-	200
2,4,6-Trichlorophenol	µg/L	-	-	-	-	-	-	-	-	2.1	1.4
2,4-Dichlorophenol	µg/L	-	-	-	-	-	-	-	-	93	10
2,4-Dichlorophenoxyacetic acid (2,4-D)	µg/L	100	-	-	-	-	70	-	-	-	200
2,4-Dimethylphenol	µg/L	-	-	-	-	-	-	-	-	540	100
2,4-Dinitrophenol	µg/L	-	-	-	-	-	-	-	-	14000	10
2,4-Dinitrotoluene	µg/L	-	-	-	-	-	-	-	-	0.11	0.0378
2-Chloronaphthalene	µg/L	-	-	-	-	-	-	-	-	1700	90
2-Chlorophenol	µg/L	-	-	-	-	-	-	-	-	120	20
2-Methyl-4,6-Dinitrophenol	µg/L	-	-	-	-	-	-	-	-	13.4	2

Constituent	Units	Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
		MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
3,3-Dichlorobenzidine	µg/L	-	-	-	-	-	-	-	-	0.04	0.028
3-Methyl-4-Chlorophenol	µg/L	-	-	-	-	-	-	-	-	-	500
4,4-DDD	µg/L	-	-	-	-	-	-	-	-	0.00083	0.000019
4,4-DDE	µg/L	-	-	-	-	-	-	-	-	0.00059	3.76E-05
4,4-DDT	µg/L	-	-	-	-	-	-	1.1	0.001	0.00059	7.2E-06
Acenaphthene	µg/L	-	-	-	-	-	-	-	-	1200	200
Acrolein	µg/L	-	-	-	-	-	-	-	-	320	3
Acrylonitrile	µg/L	-	-	-	-	-	-	-	-	0.059	0.49
Alachlor	µg/L	-	-	-	-	-	2	-	-	-	-
Aldrin	µg/L	-	-	-	-	-	-	3	-	0.00013	0.000001
alpha-BHC	µg/L	-	-	-	-	-	-	-	-	0.0039	0.00042
Anthracene	µg/L	-	-	-	-	-	-	-	-	9600	200
Atrazine	µg/L	3	-	-	-	-	1	-	-	-	-
Bentazon	µg/L	18	-	-	-	-	18	-	-	-	-
Benzene	µg/L	1	-	-	-	-	1	-	-	1.2	1.025
Benzidine	µg/L	-	-	-	-	-	-	-	-	0.000012	0.00011
Benzo(a)Anthracene	µg/L	-	-	-	-	-	-	-	-	0.0044	0.011
Benzo(a)pyrene	µg/L	-	-	-	-	-	0.2	-	-	0.0044	0.00077
Benzo(b)Fluoranthene	µg/L	-	-	-	-	-	-	-	-	0.0044	0.0037
Benzo(k)Fluoranthene	µg/L	-	-	-	-	-	-	-	-	0.0044	0.011
beta-BHC	µg/L	-	-	-	-	-	-	-	-	0.014	0.0015
Bis(2-Chloroethoxy)Methane	µg/L	-	-	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)Ether	µg/L	-	-	-	-	-	-	-	-	0.031	0.00012
Bis(2-chloroisopropyl)Ether	µg/L	-	-	-	-	-	-	-	-	1400	200
Bis(2-chloromethyl)Ether	µg/L	-	-	-	-	-	-	-	-	-	0.00012
Bis(2-ethylhexyl)Phthalate	µg/L	4	-	-	-	-	4	-	-	1.8	0.028

Constituent	Units	Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
		MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
Bromoform	µg/L	-	-	-	-	-	-	-	-	4.3	5.2
Butylbenzyl Phthalate	µg/L	-	-	-	-	-	-	-	-	3000	800
Carbofuran	µg/L	18	-	-	-	-	18	-	-	-	-
Carbon tetrachloride	µg/L	0.5	-	-	-	-	0.5	-	-	0.25	0.3
Chlordanes	µg/L	0.1	-	-	-	-	0.1	2.4	0.0043	0.00057	6.8E-06
Chlorobenzene	µg/L	-	-	-	-	-	70	-	-	21000	90
Chlorodibromomethane	µg/L	-	-	-	-	-	-	-	-	0.41	0.58
Chloroform	µg/L	-	-	-	-	-	-	-	-	-	-
Chrysene	µg/L	-	-	-	-	-	-	-	-	0.0044	0.022
cis-1,2-Dichloroethylene	µg/L	6	-	-	-	-	6	-	-	-	-
Dalapon	µg/L	-	-	-	-	-	200	-	-	-	-
Di(2-ethylhexyl)adipate	µg/L	-	-	-	-	-	400	-	-	-	-
Dibenzo(a,h)Anthracene	µg/L	-	-	-	-	-	-	-	-	0.0044	0.000063
Dichlorobromomethane	µg/L	-	-	-	-	-	-	-	-	0.56	0.72
Dieldrin	µg/L	-	-	-	-	-	-	0.24	0.056	0.00014	0.00001
Diethyl Phthalate	µg/L	-	-	-	-	-	-	-	-	23000	4000
Dimethyl Phthalate	µg/L	-	-	-	-	-	-	-	-	313000	50000
Di-n-Butyl Phthalate	µg/L	-	-	-	-	-	-	-	-	2700	200
Dinoseb	µg/L	-	-	-	-	-	7	-	-	-	-
Diquat	µg/L	-	-	-	-	-	20	-	-	-	-
Endosulfan I	µg/L	-	-	-	-	-	-	0.22	0.056	110	8
Endosulfan II	µg/L	-	-	-	-	-	-	0.22	0.056	110	10
Endosulfan Sulfate	µg/L	-	-	-	-	-	-	-	-	240	10
Endothal	µg/L	-	-	-	-	-	100	-	-	-	-
Endrin	µg/L	0.2	-	-	-	-	2	0.086	0.036	0.76	0.01
Endrin Aldehyde	µg/L	-	-	-	-	-	-	-	-	0.76	0.03

Constituent	Units	Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
		MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
Ethylbenzene	µg/L	680	-	-	-	-	300	-	-	3100	400
Ethylene dibromide (EDB)	µg/L	0.02	-	-	-	-	0.05	-	-	-	-
Fluoranthene	µg/L	-	-	-	-	-	-	-	-	300	40
gamma-BHC (Lindane)	µg/L	4	-	-	-	-	0.2	0.95	-	0.019	2.5
Glyphosate	µg/L	700	-	-	-	-	700	-	-	-	-
Heptachlor	µg/L	0.01	-	-	-	-	0.01	0.52	0.0038	0.00021	0.000023
Heptachlor epoxide	µg/L	0.01	-	-	-	-	0.01	0.52	0.0038	0.00011	0.000016
Hexachlorobenzene	µg/L	-	-	-	-	-	1	-	-	0.00075	6.4E-06
Hexachlorobutadiene	µg/L	-	-	-	-	-	-	-	-	0.44	0.008
Hexachlorocyclopentadiene	µg/L	-	-	-	-	-	50	-	-	240	0.06
Hexachloroethane	µg/L	-	-	-	-	-	-	-	-	1.9	0.1
Indeno(1,2,3-cd)Pyrene	µg/L	-	-	-	-	-	-	-	-	0.0044	0.0045
Isophorone	µg/L	-	-	-	-	-	-	-	-	8.4	27
MBAS	mg/L	0.2	-	-	-	-	0.5	-	-	-	-
Methoxychlor	µg/L	100	-	-	-	-	30	-	-	-	0.4
Methyl Bromide	µg/L	-	-	-	-	-	-	-	-	48	100
Methyl tertiary butyl ether (MTBE)	µg/L	-	-	-	-	-	5	-	-	-	-
Methylene Chloride	µg/L	-	-	-	-	-	5	-	-	4.7	8
Molinate	µg/L	20	-	-	-	-	20	-	-	-	-
Monochlorobenzene	µg/L	30	-	-	-	-	70	-	-	-	-
Nitrobenzene	µg/L	-	-	-	-	-	-	-	-	17	10
N-Nitrosodimethylamine (NDMA)	µg/L	-	-	-	-	-	-	-	-	0.00069	-
N-Nitrosodi-n-Propylamine	µg/L	-	-	-	-	-	-	-	-	0.005	-
N-Nitrosodiphenylamine	µg/L	-	-	-	-	-	-	-	-	5	-
Oxamyl	µg/L	-	-	-	-	-	50	-	-	-	-

Constituent	Units	Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
		MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
PCB 1016	µg/L	0.3	-	-	-	-	0.5	-	-	-	-
PCB 1221	µg/L	0.3	-	-	-	-	0.5	-	-	-	-
PCB 1232	µg/L	0.3	-	-	-	-	0.5	-	-	-	-
PCB 1242	µg/L	0.3	-	-	-	-	0.5	-	-	-	-
PCB 1248	µg/L	0.3	-	-	-	-	0.5	-	-	-	-
PCB 1260	µg/L	0.3	-	-	-	-	0.5	-	-	-	-
PCB 1254	µg/L	0.3	-	-	-	-	0.5	-	-	-	-
PCBs	µg/L	-	-	-	-	-	-	-	0.014	-	-
Pentachlorophenol	µg/L	-	-	-	-	-	1	19.49	14.95	0.28	0.02
Phenols (Total)	µg/L	1	-	-	-	-	-	-	-	21000	2000
Picloram	µg/L	-	-	-	-	-	500	-	-	-	-
Pyrene	µg/L	-	-	-	-	-	-	-	-	960	20
Simazine	µg/L	10	-	-	-	-	4	-	-	-	-
Styrene	µg/L	-	-	-	-	-	100	-	-	-	-
Tetrachloroethylene (PCE)	µg/L	5	-	-	-	-	5	-	-	0.8	10
Thiobencarb	µg/L	70	-	-	-	-	1	-	-	-	-
Toluene	µg/L	-	-	-	-	-	150	-	-	6800	300
Total Trihalomethanes	µg/L	-	-	-	-	-	80	-	-	-	-
Toxaphene	µg/L	5	-	-	-	-	3	0.73	0.0002	0.00073	0.000019
trans-1,2-Dichloroethylene	µg/L	10	-	-	-	-	10	-	-	-	-
Trichloroethylene (TCE)	µg/L	5	-	-	-	-	5	-	-	2.7	0.5
Trichlorofluoromethane (Freon 11)	µg/L	150	-	-	-	-	150	-	-	-	-
Vinyl Chloride	µg/L	0.5	-	-	-	-	0.5	-	-	2	0.018
Xylenes	µg/L	1750	-	-	-	-	1750	-	-	-	-
Gross alpha particle activity	pCi/L	-	-	-	-	-	15	-	-	-	-
Gross beta particle activity	mrem/yr	-	-	-	-	-	4	-	-	-	-

Constituent	Units	Basin Plan					Title 22	CTR[a]			
			Table 3.4							Human Health	
		MUN	Irrig Supply	Live-stock	WARM & COLD	SPWN	MCL	Acute	Chronic	Current	Future
Radium-226 + Radium-228	pCi/L	-	-	-	-	-	5	-	-	-	-
Strontium-90	pCi/L	-	-	-	-	-	8	-	-	-	-
Tritium	pCi/L	-	-	-	-	-	20000	-	-	-	-
Uranium	pCi/L	-	-	-	-	-	20	-	-	-	-
Hardness as CaCO3	mg/L	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	-	0.75	5	-	-	-	-	-	-	-
Chloride	mg/L	-	-	-	-	-	250	-	-	-	-
TDS	mg/L	-	-	-	-	-	500	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	250	-	-	-	-
Bromate	µg/L	-	-	-	-	-	10	-	-	-	-
Chlorite	µg/L	-	-	-	-	-	1000	-	-	-	-
Haloacetic Acids (five) (HAA5)	µg/L	-	-	-	-	-	60	-	-	-	-
pH	pH	7-8.5	-	-	-	-	-	-	-	-	-
Acute Toxicity[b]	TUa	-	-	-	-	-	-	-	-	-	-
Chronic Toxicity[b]	TUc	-	-	-	-	-	-	-	-	-	-

[a] CTR metals criteria for cadmium, chromium III, copper, lead, nickel, silver, and zinc were calculated assuming a creek hardness of 150 mg/L. This is greater than the Basin Plan limit for “soft” water (100 mg/L), therefore “hard” Basin Plan objectives were applied.

[b] Although no surface water quality objectives current exist for toxicity, monitoring results are required by the NPDES permit application Form 2A for surface water discharge from a treatment plant with a design flow greater than or equal to 1 MGD.

EXAMPLE OF MONITORING REQUIREMENTS

Monitoring requirements within an NPDES permit depend upon the results of the initial monitoring and reasonable potential analysis. Required monitoring for constituents which are not detected in effluent is likely to be less frequent and may eventually cease, while constituents which exceed the water quality objectives (shown in Table 3-1) may receive more frequent monitoring requirements.

The three recent NPDES permits from Region 3 that were reviewed (2014 SLO Permit, 2012 CMC Permit and 2011 Lompoc Permit) contain monitoring requirements for surface water discharges. The effluent monitoring requirements included in these other permits are shown in Table 3-2, receiving water monitoring requirements in Table 3-3, and groundwater monitoring requirements in Table 3-4.

Table 3-2. Effluent Monitoring Requirements in Similar Permits

Constituent	2014 SLO Permit	2012 CMC Permit	2011 Lompoc Permit
Flow	Daily		Daily
pH	Daily	Daily	Continuous
BOD	Monthly	Weekly	Weekly
TSS	Weekly	Weekly	Weekly
Chlorine residual	2/day	Daily	
Temperature	5/week	Weekly	5/week
Turbidity	1/10 days	Daily	Monthly
Settleable solids	5/week	Daily	5/week
Dissolved oxygen	Monthly	5/week	Weekly
Oil & Grease	Monthly	Monthly	Quarterly
Fecal Coliform	5/week		5/week
Total Coliform	5/week	5/week	
Ammonia-N	Weekly	Weekly	Weekly
Nitrate-N	Monthly	Weekly	Monthly
Nitrite-N	Monthly	Weekly	Quarterly
TKN	Monthly	Weekly	
Organic Nitrogen			Quarterly
Total Nitrogen		Weekly	
Orthophosphate-P	Monthly	Monthly	
Total phosphate-P	Monthly	Monthly	Quarterly
Chlorodibromomethane	Monthly	Monthly	
Dichlorobromomethane	Monthly	Monthly	
Pentachlorophenol	Quarterly		
n-Nitrosodi-methylamine	Quarterly		
Bis(2-ethylhexyl) phthalate		Monthly	Quarterly
MBAS	Annually	Annually	
TDS	Quarterly	Monthly	Quarterly

Constituent	2014 SLO Permit	2012 CMC Permit	2011 Lompoc Permit
Sodium	Quarterly	Monthly	Quarterly
Chloride	Quarterly	Monthly	Quarterly
Sulfate		Quarterly	Quarterly
Acute toxicity	Annually	Quarterly	Monthly
Chronic toxicity	Annually	Annually	Quarterly
Hardness		Monthly	Quarterly
Boron	Annually	Quarterly	Quarterly
Aluminum			Annually
Copper		Monthly	
Cobalt	Annually	Annually	
Iron	Annually	Annually	
Lithium	Annually	Annually	
Manganese	Annually	Annually	
Molybdenum	Annually	Annually	
Vanadium	Annually	Annually	
Phthalate Esters		Annually	
CTR Pollutants[a]	Annually	Annually	Annually
Title 22 Pollutants[b]	Annually	Annually	Annually

[a] The CTR priority pollutants are those listed by the California Toxics Rule at 40 CFR 131.38 (b) (1).

[b] The Title 22 pollutants are those for which primary Maximum Contaminant Levels (MCLs) have been established by the Department of Health Services and which are listed in Tables 64431-A and 64444-A of the California Code of Regulations, Title 22, Division 4, Chapter 15.

Table 3-3. Receiving Water Monitoring Requirements in Similar Permits

Constituent	2014 SLO Permit	2012 CMC Permit	2011 Lompoc Permit
Flow	Weekly		Quarterly
Turbidity	Weekly	Monthly	Quarterly
Color	Weekly	Monthly	Quarterly
pH	Weekly	Monthly	Quarterly
Dissolved oxygen	Weekly	Monthly	Quarterly
Temperature	Weekly	Monthly	Quarterly
TDS	Quarterly	Monthly	Quarterly
Sodium	Quarterly	Monthly	Quarterly
Chloride	Quarterly	Monthly	Quarterly
Sulfate		Annually	Quarterly
Boron		Annually	Quarterly
Hardness		Monthly	Quarterly
Cobalt		Annually	
Iron		Annually	
Lithium		Annually	

Constituent	2014 SLO Permit	2012 CMC Permit	2011 Lompoc Permit
Manganese		Annually	
Molybdenum		Annually	
Vanadium		Annually	
Fecal Coliform			Quarterly
Acute Toxicity			Quarterly
Un-ionized ammonia	Monthly	Monthly	Quarterly
Ammonia-N	Monthly	Monthly	Quarterly
Nitrate-N	Monthly	Monthly	Quarterly
Nitrite-N	Monthly		
TKN	Monthly		
Total Nitrogen		Monthly	
Orthophosphate-P	Monthly	Monthly	
Total Phosphorus		Monthly	
Chlorophyll A		Monthly	
MBAS		Annually	Annually
Phthalate Esters		Annually	
CTR Pollutants[a]		Annually	Annually
Title 22 Pollutants[b]		Annually	Annually

[a] The CTR priority pollutants are those listed by the California Toxics Rule at 40 CFR 131.38 (b) (1).

[b] The Title 22 pollutants are those for which primary Maximum Contaminant Levels (MCLs) have been established by the Department of Health Services and which are listed in Tables 64431-A and 64444-A of the California Code of Regulations, Title 22, Division 4, Chapter 15.

Table 3-4. Groundwater Monitoring Requirements in Similar Permits

Constituent	2014 SLO Permit	2012 CMC Permit	2011 Lompoc Permit
Depth to groundwater	none	Quarterly	2/year (April & Oct)
Nitrate-N		Quarterly	2/year (April & Oct)
TDS		Quarterly	2/year (April & Oct)
Specific conductance		Quarterly	
Sodium		Quarterly	2/year (April & Oct)
Chloride		Quarterly	2/year (April & Oct)
Sulfate		Quarterly	2/year (April & Oct)
Boron		Quarterly	2/year (April & Oct)
Chemical oxygen demand		Quarterly	
pH			2/year (April & Oct)
Title 22 Pollutants[a]			2/year (April & Oct)

[a] The Title 22 pollutants are those for which primary Maximum Contaminant Levels (MCLs) have been established by the Department of Health Services and which are listed in Tables 64431-A and 64444-A of the California Code of Regulations, Title 22, Division 4, Chapter 15.

ATTACHMENT B

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January 8, 2016

Eileen Shields, PE
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Subject: LOCSD – Recycled Water Discharge Project Environmental Permitting Assessment

Dear Eileen:

This letter provides a preliminary overview of the environmental permitting steps needed to facilitate the Los Osos Community Services District's (LOCSD's) possible effort to discharge recycled water to Los Osos Creek, updating the information provided to you on October 18, 2015. The effort would be related to the Los Osos Water Recycling Facility (WRF) currently under construction, which is anticipated to be operable in March 2016. The plant is designed to produce tertiary treated wastewater and the effluent will be discharged and reused through a variety of methods, including percolation at leachfields, urban irrigation for schools and parks, and agricultural irrigation.

Project Understanding

Discharge of recycled water into Los Osos Creek is an opportunity that could directly benefit potable water supplies, since stream seepage from Los Osos Creek is one of the primary sources of recharge to the Los Osos Valley Groundwater Basin (Cleath-Harris Geologists, Inc., March 2014). A study by Cleath-Harris Geologists, Inc. (CHG), concluded that the greatest potential benefit to purveyor wells would occur when reallocating recycled water from new crop agricultural reuse to Los Osos Creek discharge.

It is estimated that the discharge point will be at the approximate beginning of the central upper reach of Los Osos Creek and water will only be discharged when the creek is dry (assumed to be April 15 through September 15). Three discharge scenarios with varying flow rates were developed based on estimated benefits from the CHG report and compliance with requirements in the Coastal Commission permit conditions included in the Updated Basin Plan for the Los Osos Groundwater Basin (January 2015). The available flow is estimated to be anywhere from 118 AFY under current conditions to 536 AFY at buildout.

The creek discharge project would require approximately 8,900 linear feet of 6-inch diameter pipe from the Water Recycling Facility to the discharge point at Los Osos Creek. Piping and valves will be below grade, and there will be risers and boxes to grade over the valves to allow operation. Bollards around the valves boxes may be required for protection. The discharge at the creek will include a concrete headwall and erosion control measures (energy dissipating pad, rip rap, etc.) to reduce the potential for erosion and sedimentation.

Required Environmental Studies and Permitting

This report preliminarily evaluates the environmental permitting requirements associated with implementing the recycled water discharge project, focusing on the pipeline construction and operation. Permit requirements associated with the water discharge itself are addressed separately by Larry Walker and Associates, especially with regard to the Regional Water Quality Control Board and other agencies with jurisdiction over the water resources.

a. Coastal Land Use Permitting. The project is located in unincorporated San Luis Obispo County within the Coastal Zone. Thus, the County has land use permitting authority, and must comply with coastal permitting regulations. These are codified in Title 23 (Coastal Zone Land Use Ordinance; revised December 2014), which is consistent with and implements the California Coastal Act.

Based on a preliminary review of Title 23, the project would be subject to a Coastal Development Permit, likely in the form of a Minor Use Permit. Typically, a Minor Use permit is applicable for projects that result in 1 to 3 acres of land disturbance or result in a similar amount of impervious surface. If we assume that 8,900 linear feet of pipeline would be required, and that a trench 6 feet wide would be needed to lay the pipeline, this would result in about 1.25 acres of disturbance. Conservatively, this report presumes that roughly an additional acre of disturbance may occur at the point of discharge and where valves may be installed along the line. Although the total area of disturbance is not yet known, it may conservatively be assumed that it would likely fall within the Minor Use Permit range of 1 to 3 acres. These assumptions would need to be reviewed and confirmed by County Planning staff.

The purpose of a Minor Use Permit is to:

1. Satisfy the notice and public hearing requirements established by the California Coastal Act for Plot Plans and other appealable land use permits;
2. Enable public review of significant land use proposals which are not of sufficient magnitude to warrant Planning Commission review; and
3. To insure the proper integration into the community of land uses which, because of their type or intensity, may only be appropriate on particular sites, or may only be appropriate if they are designed or laid out in a particular manner.

The Minor Use Permit process includes the opportunity for a public hearing before the Planning Director. Action on a Minor Use Permit is discretionary, and if approved, may include conditions as set forth by the Director.

Minor Use Permit applications are filed with the County Planning Department, and shall be processed as follows:

1. *Environmental Determination.* As a discretionary action, a Minor Use Permit is subject to the requirements of the California Environmental Quality Act (CEQA). This project is likely be subject to be processed as a Negative Declaration, or if mitigation is required, as a Mitigated Negative Declaration.
2. *Approval.* The Planning Director would have approval authority of a Minor Use Permit, subject to an administrative hearing. No public hearing is required unless requested by the project applicant or other interested parties.

3. *Appealability.* Because the proposed project would be processed with a Minor Use Permit, and is simply an extension of pipeline infrastructure, no determination of Land Use consistency is likely needed. In this case, the project is not normally considered appealable to the Coastal Commission under Coastal Act Section 30603. Note, however, that Coastal Commission staff have opined on other projects that "major public works projects" within the Coastal Zone may be considered appealable. Although the Coastal Act does not define what is meant by a "major public works project", Coastal staff have suggested that projects that cost more than "$270,000 to $300,000" could be considered to be "major public works projects (Daniel Robinson, October 7, 2015). In any case, project approval by the Planning Director may be appealed to the Board of Supervisors, whose decision would be final.

b. Environmental Review. As noted above, a Minor Use Permit is subject to CEQA review, in this case likely a Mitigated Negative Declaration, although County staff will make the final determination regarding the appropriate CEQA document. In general, an Environmental Impact Report (EIR) is typically required only if there is expected to be significant and unmitigable impacts, substantial public controversy regarding the project, or if there is a desire to consider project alternatives. Key issues that may require mitigation based on supporting technical studies including biological resources, cultural resources, and geologic hazards. The document would also likely include mitigation for impacts related to air quality and noise during project construction. However, the scope of needed environmental studies would be at the discretion of the County Planning Director.

c. Resource Regulatory Agency Permitting. The following technical studies and resource regulatory agency permits are likely to be required for this project, based on preliminary discussions with key resource regulatory agency staff.

1. *Biological and Jurisdictional Waters Assessment.* The District should consult with a certified wetland biologist to determine whether any of the proposed pipeline alignment will encroach within wetlands or other jurisdictional waters of the United States or the State of California. The focus of this investigation would be wherever the pipeline alignment would cross shallow swales, but most crucially, where the pipeline would discharge to Los Osos Creek. This step is necessary to determine whether or not the project would be within the jurisdiction of the U.S. Army Corps of Engineers (ACOE), California Department of Fish and Wildlife (CDFW), or Regional Water Quality Control Board (RWQCB). If no jurisdictional waters or wetlands are present, no permitting will be required relative to Section 404 and 401 of the Clean Water Act. It is recommended that if there is any question of jurisdiction, the District is advised to consult with the ACOE, CDFW, and RWQCB to determine whether or not any or all of those agencies will take jurisdiction. As currently envisioned, it is likely that the discharge point of the pipeline would be within the jurisdiction of all three agencies. If appropriate, the District should work with these agencies to redesign the project to avoid jurisdictional areas, or to mitigate for potential impacts to such resources. For example, it may be possible to design the project such that the discharge point would be outside the creek-related jurisdictional boundaries, with the water entering a manmade bioswale that feeds to the creek.

The recommendations of Jurisdictional Waters Assessment should be included in the CEQA document described in Item b. above. The biologist should also conduct the following studies that will be used in the CEQA document:

- Focused Special-Status Species Surveys (based on findings of California Natural Diversity Database search)
- Biological Assessment (of pipeline route and discharge area)
- Prepare Habitat Mitigation and Monitoring Plan (if any)

2. *Cultural Resources Assessment*. The District should consult with a certified cultural resource specialist to determine whether any of the proposed pipeline alignment will encroach within known identified cultural resources, or within areas that have a high potential to support such resources. The District should work with the cultural resource specialist and appropriate tribal representatives to avoid or mitigate potential impacts, if any are identified. The recommendations of this report should be included in the CEQA document described above.

3. *Soil Hazards Assessment*. The project area (new pipeline alignment and discharge area) should be evaluated for potential soil hazards with a Phase 1 Environmental Site Assessment. The Phase 1 report may recommend a Phase 2 assessment if a high potential for encountering contaminated soils is identified. The Phase 2 report would recommend mitigation and site remediation as appropriate. The recommendations of this report should be included in the CEQA document described above.

4. *Air Quality Evaluation*. The District should conduct an evaluation of potential air quality impacts related to construction and operation of the facility, in accordance with San Luis Obispo County Air Pollution Control District (APCD) requirements, using the CalEEMod.2013.2.2 air quality model. The recommendations of this report should be included in the CEQA document described above.

5. *Regulatory Resource Agency Permitting*. Permitting requirements will depend to a large extent on whether the pipeline route is within resource agency jurisdiction, as defined in Item 1 above. Key permitting agencies potentially include the U.S. Army Corps of Engineers (pursuant to Section 404 of the Clean Water Act), Regional Water Quality Control Board (NPDES permit if a discharge into Waters of the U.S.; meeting Porter-Cologne Act requirements; Section 401 certification), and California Department of Fish and Wildlife (Streambed Alteration Agreement). Although the permit process for these actions may be initiated during the CEQA process, their completion will depend to a large extent on agency evaluation and acceptance of the final CEQA document. If there are disagreements between permitting agencies and the District, it may require additional supplemental CEQA studies to satisfy resource permitting agency concerns.

   Permit acquisition after the CEQA evaluation is completed could take several months, particularly if the project has the potential to alter or result in discharge into Waters of the United States or Waters of the State, or would otherwise disturb natural resources under regulatory protection of one or another agency.

6. *Other Agency Permitting*. Other potential permitting agencies for this project could include:

   - California Environmental Protection Agency, Department of Toxic Substances Control (Site Assessment / Remedial Action Plan; necessary if a Phase I Environmental Site Assessment determines a high site hazard potential)
   - San Luis Obispo County APCD; dust generating or odor-producing activities may require a permit; should consult with agency during process)

   These agencies will use the final CEQA document to assist in their permitting processes.

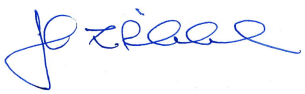
Estimated Cost and Timing

Based on the preliminary permitting and CEQA review needs described above, the following table presents an estimated cost and schedule for the review of these actions. Note that these could change subject to further input from the County Planning Director.

Project Cost Category	Estimated Cost	Timing	Assumptions/Comments
Coastal Development Permit (Minor Use Permit)	$5,000-$12,000 + consultant preparation costs ($5,000-$10,000)	4 months	Includes possible appeal to Board of Supervisors and Coastal Commission (if considered a "major public works project")
CEQA Review	$12,000-$20,000	4 months	Assumes Mitigated Negative Declaration; initiated 1 month after application for Minor Use Permit filed
Technical Studies (Bio Assessment; Wetland Assessment; Cultural Resources Assessment; Phase 1 ESA)	$20,000-$40,000	2 months	Assumes initiated at outset of CEQA process
Resource Regulatory Agency Permitting (CDFW, ACOE, RWQCB)	$15,000-$25,000	3-12 months	Assumes initiated during CEQA process
Other Permitting (DTSC; APCD)	$5,000-$10,000	3-6 months	Assumes initiated during CEQA process
Estimated Totals	**$60,000-$120,000**	**8-16 months**	

Thank you for the opportunity to assist you and the District with this project. As appropriate, we are prepared to work with you to conduct the required studies described above. If you have questions, please feel free to call me anytime at 805/610-1109.

Sincerely,
JOHN F. RICKENBACH CONSULTING



John Rickenbach, AICP
Principal Planner