

City of Riverside

**WASTEWATER COLLECTION AND TREATMENT
FACILITIES INTEGRATED MASTER PLAN**

**VOLUME 2: BASIS OF PLANNING
CHAPTER 2: REGULATORY REQUIREMENTS**

FINAL
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CHAPTER 2: REGULATORY REQUIREMENTS**

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REGULATORY REQUIREMENTS

2.1 PURPOSE

This City of Riverside (City) Integrated Master Plan will be used to guide the City's decisions regarding expansion and modernization of the wastewater collection and treatment facilities. In addition to estimating the additional treatment capacity required to service the needs of a growing population, the master plan attempts to anticipate the level of treatment required to comply with state and federal regulations now and in the future.

Current regulations are identified in the City's existing permits. The purpose of this chapter is to assess how these permits are likely to change over the next 10 to 20 years, and how those changes will affect design, construction, operations, and maintenance decisions at the City's Regional Water Quality Control Plant (RWQCP). The focus of this assessment is on regulations relating to the City's National Pollutant Discharge Elimination System (NPDES) and air quality permits.

2.2 CONCLUSION AND RECOMMENDATIONS

The regulatory brainstorming sessions that were held identified the following issues as high priority regulatory concerns that would need to be addressed during the master planning period:

- More restrictive residual chlorine limits may necessitate alternative disinfection strategies and/or continuously effective dechlorination controls. These limits may also require changes in operations and maintenance practices.
- More restrictive limits on disinfection byproducts (including trihalomethanes, cyanide, and dechlorinating compounds) may necessitate alternative disinfection strategies and/or additional treatment to reduce the concentration of these byproducts in the final effluent.
- New effluent limits for *E. coli* may necessitate alternative disinfection strategies.
- New collection system, Sanitary Sewer Overflow (SSO); Capacity, Management, Operation, and Maintenance (CMOM); and stormwater requirements may impact wastewater collection and treatment capacity and maintenance programs.
- Long-term trends in influent salinity may make it more difficult to comply with the existing Total Dissolved Solids (TDS) limitations specified in the NPDES permit.
- Increasing regulatory concern over excess nutrient loading may result in more stringent effluent limits for nitrogen and phosphorous. Ammonia limits may also become more restrictive.

- Continued compliance with Whole Effluent Toxicity (WET) limits may be adversely affected by increasing use of treatment compounds such as alum and polymers.
- More restrictive effluent limits for aluminum may necessitate revisions to the pretreatment program, changes to in-plant treatment strategies, adoption of advanced waste treatment alternatives and/or efforts to develop site-specific water quality criteria.
- Additional odor control and emission measures may be necessary due to more stringent South Coast Air Quality Management District (SCAQMD) rules.
- New electronic reporting requirements may necessitate upgrades to Supervisory Control and Data Acquisition (SCADA) systems and other database management tools.
- More restrictive water quality standards for pesticides may necessitate additional advanced waste treatment.
- More stringent limits on bacterial concentrations in stormwater may cause Municipal Separate Storm Sewer Systems (MS4s) agencies to intercept and divert dry-weather flows and first-flush storm flows to sanitary sewers for treatment.

Participants in the brainstorming session concluded that many of the high priority issues could be dealt with most effectively by remaining actively engaged with the Regional Water Quality Control Board's (Regional Board) watershed-wide planning efforts. Participants also agreed that the City's ongoing efforts with other dischargers in the region were essential to ensure that new regulatory requirements reflect relevant local factors based on the best available scientific information.

It was also clear that some regulatory issues may require new or improved treatment processes in order to ensure continued compliance. It was decided that the following treatment alternatives should be evaluated when developing the master plan:

- Microfiltration/Membrane Bioreactors (MBR) - MBR would be evaluated because it can help the City address the regulatory issues of compliance with pathogens, toxicity testing and endocrine disruptors.
- Ultraviolet (UV) disinfection - UV would be evaluated because it can help the City address the regulatory issues of compliance with disinfection byproducts, cyanide formation in the chlorine contact basin and TDS.
- Ozone disinfection - Ozone would be evaluated because, in conjunction with MBR, it can help the City address the regulatory issues of compliance with endocrine disruptors and also addresses disinfection byproducts and cyanide formation in the chlorine contact basin.
- Alum precipitation - All processes that add aluminum will be scrutinized because of the regulatory issue of compliance with an NPDES permit aluminum limit.

- Continued use of wetlands treatment for effluent polishing - Continued wetlands treatment, at the existing level, will be addressed because it changes the chemical signature of the effluent, which addresses the regulatory issue of compliance with Total Inorganic Carbon (TOC) limits.
- Odor control for primaries - Odor control would be evaluated because it can help the City address the regulatory issues of compliance with future SCAQMD regulations and address potential odor complaints from neighbors.

2.3 BACKGROUND

Environmental regulations are constantly evolving and, with limited exceptions, nearly always become more stringent, potentially requiring more advanced treatment to assure higher levels of water quality. Because these regulations are often discussed for several years prior to being incorporated into wastewater or air quality permits, it is possible to anticipate some future requirements.

Carollo Engineers contracted with Risk Sciences, a firm specializing in water quality standards regulation, to conduct a "brainstorming session" with City staff. The purpose of this session was to identify specific requirements likely to arise over the next 10 to 20 years, and ascertain whether the probability of new discharge limitations was sufficiently high to merit inclusion in the master plan.

Carollo Engineers and Risk Sciences prepared a summary table (Appendix A) describing more than two dozen areas in which state and federal regulators were presently considering significant changes to water quality standards and/or NPDES permitting. This table was used to stimulate discussion among the assembled experts.

The brainstorming session was successful in establishing a consensus about which new regulatory requirements should be considered in development of the master plan. Results from the session were documented in a Conference Memorandum distributed to the participants on September 15, 2006 (Appendix B).

2.4 DISINFECTION ISSUES

2.4.1 More Restrictive Residual Chlorine Limits

The State Water Resources Control Board is presently developing a new policy which is likely to result in significantly more restrictive effluent limits for residual chlorine. That policy, if adopted, would also eliminate existing provisions in the City's NPDES permit that allow infrequent, short-duration increases in residual chlorine concentration to occur without violating an effluent limitation. These "pulses" are an unavoidable result of normal maintenance activities and an inherent limitation in the water quality monitoring equipment

to continuously monitor and control chlorine residuals at the low levels required by their NPDES permit.

The master plan will evaluate alternative disinfection processes (including UV and ozone) and hybrid processes that combine such alternatives with limited use of chlorine. In addition, as a regulatory strategy, the City will consider the utility of seeking a revised point-of-compliance for measuring residual chlorine concentrations near the end of the effluent channel before it merges with the Santa Ana River.

2.4.2 Disinfection Byproducts

More restrictive chlorine limitations may necessitate increased use of dechlorinating compounds. These compounds may interfere with normal reproduction and growth among standard organisms used to perform whole effluent toxicity tests. Therefore, the master plan will investigate alternative disinfection strategies that eliminates the need for dechlorination.

Recent research indicates that cyanide concentrations may be increased as a result of the chlorination process. Therefore, it is important to ensure the City is collecting the data needed to properly assess this risk. In particular, more information is needed to characterize the concentration of free cyanide versus total cyanide before and after the chlorination process.

2.4.3 Bacteria

In 2007, it is likely that the Regional Board will adopt new water quality standards for *E. coli* to protect recreational uses in freshwater streams. No changes in treatment strategy are expected to be necessary to meet the new standard if it is added to the NPDES permit as an effluent limit. However, new Department of Health Services (DHS) regulations may require the City to meet Title 22 reuse disinfection requirements of a 450 Concentration X Time (CT) for both recycled water and discharges to the river. The master plan will, therefore, evaluate how best to achieve compliance with such a requirement.

2.5 NUTRIENT CONTROL

The Environmental Protection Agency (EPA) continues to develop and publish new guidance on establishing appropriate water quality standards for nutrients. If state authorities implement this guidance, it is possible that more stringent effluent limits for phosphorous and nitrogen will be enacted. However, it is unlikely that such requirements would be imposed in the near future.

The Santa Ana River is not presently listed as impaired by excessive nutrient concentrations. The process of adopting new water quality standards, gathering data needed to add the River to the state 303(d) list of impaired water bodies, and developing a Total Maximum Daily Load (TMDL) with more restrictive waste load allocations will require

at least 10 years to complete. Final compliance with any projected waste load allocation would not be mandated for approximately 10 years beyond that.

Therefore, this issue was deemed a "low priority" for the current planning horizon. However, it will be included in the master plan as a "minor factor" that may affect selection of other treatment alternatives. The master plan design criterion for effluent nitrogen will be 8.0 mg/L as total inorganic nitrogen.

2.6 SALINITY CONTROL

Long-term trends in supply quality and greater use of home water-softening units will continue to increase TDS concentrations in the final effluent. Therefore, it is important to avoid treatment processes that may further increase effluent salinity. In particular, the continued use of common disinfection chemicals must be reassessed to determine whether such a treatment strategy is sustainable over the long-term without violating the TDS limitations in the permit. This is especially true if the 450 CT requirement were applied to all discharges. The master plan will evaluate alternative disinfection strategies with respect to their impact on meeting salinity limitations.

2.7 METALS CONTROL

2.7.1 Aluminum

Effluent discharged by the City consistently complies with all existing permit limitations for trace metals. However, permits recently adopted for Eastern Municipal Water District contain more restrictive effluent limits for aluminum that may be difficult to comply with if added to the City's permit at some future date. The City believes the most appropriate strategy is to develop a site-specific water quality objective for aluminum. In addition, the possibility of more restrictive aluminum limits will be considered before recommending increased use of alum to control phosphorous or to improve flocculation.

2.7.2 Other Trace Metals

Elsewhere in the region and in the state, more restrictive effluent limits are being considered for mercury, selenium, arsenic, and other trace metals. None of these are deemed to be a high priority concern for the City. The City will continue to maintain its active monitoring program, especially the fish flesh assessment, to demonstrate the absence of mercury impairment in the Santa Ana River.

2.8 TOXICITY CONTROL

The City consistently passes the whole effluent toxicity tests that are performed on final effluent samples. Consequently, the current NPDES permit does not contain a WET limit. However, the State Water Resources Control Board is developing a new policy to govern

application of toxicity limits in NPDES permitting. It is likely that WET limits may be made a default requirement for Publicly Owned Treatment Works (POTWs).

Therefore, the master plan will carefully consider how various treatment alternatives may adversely affect compliance with WET requirements. Specifically, higher salinity concentrations, as might result from increased use of common disinfection chemicals, is known to interfere with normal reproduction in the toxicity test. Similarly, chemicals used to enhance treatment efficiency and effectiveness (e.g., alum or polymers) may also cause inadvertent toxicity to standard test organisms. Unintended side-effects of various treatment alternatives will be considered when developing the master plan.

In addition, more restrictive limitations on pesticide residuals are being imposed in this region (e.g., Newport Bay) and in other regions (e.g., San Francisco). Previous experience at other local dischargers (e.g., Inland Empire Utilities Agency (IEUA)) indicates that it may be necessary to enhance treatment performance to reduce pesticide concentrations in the final effluent in order to continue passing the whole effluent toxicity test consistently. To date, this has not been an issue at the City; however, the master plan will consider this as a "minor factor" when evaluating treatment alternatives for long-term compliance.

2.9 CARBON CONTROL

The City presently owns and operates a constructed wetlands in the Hidden Valley area. Originally developed to aid in nutrient removal, such wetlands may also be useful for reducing trace metals, complex organics, and providing a carbon matrix in the final effluent that is more similar to that found in natural streams. Due to the present regulatory environment, it is unlikely that the wetlands can be expanded at this time. However, the City plans to continue to use the existing wetlands as an effluent polishing treatment process.

2.10 PERMIT REPORTING

The State Board is committed to adopting an electronic compliance monitoring and reporting system. Field-testing of the new California Integrated Water Quality System (CIWQS) project is nearly complete and the Regional Board will require all dischargers to begin using the new system in the next year or so.

Therefore, it is advisable to reevaluate the capability of the City's current SCADA and Laboratory Information Management Systems (LIMSs) to ensure that they are well integrated and able to support the new electronic reporting requirements. This will be a high priority consideration as the master plan is developed.

2.11 AIR QUALITY COMPLIANCE

It is anticipated that air quality regulations will become more stringent in the master plan timeframe. These regulations include new air dispersion modeling requirements, revised

risk assessments for toxic air contaminants, more stringent Best Available Control Technology (BACT) requirements, and more stringent diesel engine requirements. In addition, the master plan will address more stringent odor control requirements, including covering primary clarifiers.

2.12 OTHER ISSUES

A number of other issues were identified as likely to affect NPDES permit requirements in the distant future. These include adoption of sediment objectives, effluent limits on endocrine disrupters, and dry weather diversions from the MS4 system. However, in each instance, it was believed that more stringent limits were unlikely to be imposed for at least 15 to 20 years. Therefore, the revised Master Plan will not address these concerns.

WATER QUALITY ISSUES SUMMARY TABLE

Brainstorming Future Water Quality Issues at Riverside Wastewater Treatment Plant

Regulatory Issue	Priority	Compliance Implications
Chlorine	High	
Disinfection By-products a) Dechlorinating Compounds b) Trihalomethanes c) Cyanide	High	
Pathogens a) E. coli limits b) "Regrowth" studies	High High	
Sanitary Sewer Overflows	High	
Electronic DMR Reporting	High	
CMOM Implementation	High	
OCWD Water Rights Application	High	
Stormwater Program Coordinated Implementation	High	
Watershed Monitoring Programs	High	

Brainstorming Future Water Quality Issues
at Riverside Wastewater Treatment Plant
(continued)

Regulatory Issue	Priority	Compliance Implications
Total Organic Carbon	Medium	
Dry Weather Runoff Treatment	Medium	
Pesticides a) Organophosphates b) Pyrethrins	Medium	
Nutrients a) Phosphorous b) Nitrogen c) Nitrates	Medium	
Perchlorate	Medium	
Santa Ana Sucker Habitat	Medium	
Stormwater Treatment	Medium	
Revised Ammonia Standards	Medium	
Capacity Requirements a) 85% rule b) I & I c) Jurupa d) Largest process offline rule	Medium	
Salinity a) TDS b) Individual Ions (chloride)	Medium	
Whole Effluent Toxicity (WET) a) Ionic interference b) Pesticides c) Treatment Polymers d) Alum	Medium	
Terrorism & Security Precautions	Medium	

Brainstorming Future Water Quality Issues
at Riverside Wastewater Treatment Plant
(continued)

Regulatory Issue	Priority	Compliance Implications
Endocrine Disrupters a) Pharmaceuticals b) Treatment Polymers c) Pesticides d) Hormones e) Caffeine, Acetametaphin	Low	
Metals a) Copper b) Lead c) Mercury d) Arsenic e) Selenium f) Cadmium g) Chromium h) Silver i) Aluminum	Low	
Legacy Remediation	Low	
Sediment Objectives	Low	
TMDLs a) Receiving water > 0 b) Load Allocations c) Mandatory Offsets	Low	
Low Level Organics (detection driven limits)	Low	
Viruses & Protozoa a) Direct Virus Assessment b) Giardia & Cryptosporidium	Low	
Oil & Grease	Low	
Biosolids Disposal a) Disinfection b) Trace Organics c) Trace Metals d) Loss of Disposal Sites	Medium	

Advanced Waste Treatment Probability Assessment

Treatment Technology	Driving Factor	Planning Priority
Reverse Osmosis		
Microfiltration		
Activated Carbon		
Ion Exchange		
Equalization Basins		
UV Disinfection		
Ozone Disinfection		
Biological Nutrient Removal		
Polymer Management		
Chlorination Contact		
Alum Precipitators		
Wetlands Polishing		
CIWQS Reporting System		
Biosolids Disinfection		

CONFERENCE MEMORANDUM



ROUTE

CONFERENCE MEMORANDUM

Project: City of Riverside Integrated Master Plan **Conf. Date:** September 6, 2006
Client: City of Riverside (City) **Issue Date:** September 15, 2006
Location: City of Riverside Office
Attendees: City of Riverside: Risk Sciences: Carollo:
Sandy Caldwell (SC) Tim Moore (TM) Naray Anan
Rod Cruze (RC) Jeff Berlin
Steve Schultz (SS) Petros Dimitriou
 Doug Lanning (DJL)
 Susanna Li (SL)
 Coenraad Pretorius (CFP)
 Toby Weissert (TW)

Purpose: Regulatory Brainstorming Meeting
Distribution: Attendees, Mark Bartlett, Tracy Clinton, **File:** 7472A.00
Shawn Dent, Robert Grantham,
Tom Mossinger, Amily Zhang,
Steve McDonald, Priscilla Bloomfield

Discussion:
The following is our understanding of the subject matter covered in this conference. If this differs with your understanding, please notify us.

SUMMARY OF DECISIONS MADE

The brainstorming session lead to two conclusions:

1. Most of the future regulatory issues will need to be addressed by developing regulatory strategies.
2. Some future regulatory issues will require treatment processes to meet them. It was decided that the following treatment processes would be used as alternative treatment scenarios in the master plan evaluations:
 - A. Microfiltration/MBR.
 - B. Equalization basins.
 - C. UV disinfection.
 - D. Ozone disinfection.
 - E. Alum precipitators for alum control.
 - F. Need cover for chlorine contact basin.
 - G. Wetlands Polishing: Keep wetlands as treatment process.

- H. Alternatives to handle biosolids.
- I. Late process aeration system.
- J. Odor control for primaries.

ACTION ITEMS - CITY

Item	Actions	Responsible Party	Due Date
9-06-01	Need to decide whether the dry weather runoff will be included in the Master Plan.	SC	9/15/2006

ACTION ITEMS - CAROLLO

No actions required of Carollo.

MEETING MINUTES

1. Introductions:
 - A. TW introduced everyone who attended the meeting and the individual's responsibility for the brainstorming session.
 - B. TW presented the purposes and goals of the meeting. He stated the following as the main goals:
 - 1) Purpose:
 - a) To brainstorm potential future regulations.
 - b) To decide on the likelihood of the particular regulation being implemented.
 - c) To decide upon a method for handling that regulation (compliance strategy). The compliance strategy could be an advanced treatment process or a regulatory approach strategy.
 - d) To decide upon a list of the compliance strategies that will be included as alternative treatment scenarios in the master plan.
 - 2) Goal:
 - a) The ultimate goal is to develop a list of alternative treatment scenarios for the master plan.
2. Expectations:
 - A. TW stated that each of attendees has a specific focus area that the group is relying on to provide the expertise that would allow the group to meet the ultimate goal of developing the list of alternative treatment scenarios for the master plan.
 - B. TW briefly described each of the person's role:
 - 1) City Personnel: After participating in the discussions of regulations, to make the final decision about which regulations are likely to be implemented. After those decisions are made, to further participate in the discussions and make the final decision about which compliance strategies to include in the list of alternative treatment scenarios for the master plan.
 - 2) Carollo Personnel: Act as the main source of knowledge for the treatment processes that will comprise part of the compliance strategies. To provide suggestions on processes that will allow the future facilities to meet those anticipated new standards.

3) Tim Moore: Facilitate and participate in the discussion about likelihood and compliance strategies for each of the regulations, lend his experience of water quality regulatory issues and to facilitate decisions.

3. Regulatory Brainstorming and Compliance Strategies:

A. Regulatory issues were divided into three categories, high, medium and low priorities. The prioritize scheme was based on the potential changes in regulation in relation to the permit cycle. Issues that were listed as high priority are likely to happen during this permit cycle. Issues that were listed as medium priority are likely to happen in the next two permit cycles; while the low-priority issues would probably take place no sooner than two permit cycles. The following tables summarize the highlights of discussions and compliance strategies of each regulatory issue.

Regulatory Issue	Discussions and Compliance Implications
Chlorine	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Cannot consistently measure low levels of chlorine in the field accurately. • Use alternative analyzers such as ORP. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Use an alternative permit strategy of adding a point of compliance for chlorine a long distance down the effluent channel. • Use an alternative disinfection process (hybrid chlorine and UV systems combined).
Disinfection By-Products	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • THMs are low priority. • Measuring free cyanide is a concern. • Review where sampling should take place. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Add a point of compliance for cyanide a long distance down the effluent channel. • Site-specific objective for cyanide. • Post-aeration structure.

Table 1 Summary of Discussions on Water Quality Regulatory Issues (High Priority)	
Regulatory Issue	Discussions and Compliance Implications
Pathogens	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • <i>E. coli</i> limits will likely be instituted and total + fecal coliform will be for performance basis in future. • Purely a regulatory strategy. • May need to meet 450 CT for both discharges and recycled water. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Multiple Barriers: UV, ozone. • Use MBR to reduce particle size.
Sanitary Sewers Overflows/CMOM	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • One of the biggest problems for the City. • Master Plan is only addressing capacity issue. • Failure due to pump station problems. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Better maintenance.
Electronic DMR Reporting	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Will happen. • Potential SCADA issue with implementation.
OCWD Water Rights Application	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Need to protect future right to reclaim. • City should expand reclaim/reuse. • Need City legal department involvement. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Satellite treatment strategies-to keep OCWD at bay.
Stormwater Program Coordination Implementation	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Will impact on staffing/information gathering and sharing. • Need to know what type of chemicals in the storm water.

Regulatory Issue	Discussions and Compliance Implications
Watershed Monitoring Programs	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Will lead to the issues such as requiring high SRT treatment if mercury is an issue. • More restrictive nutrient limits might occur: TIN and phosphorous. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Be present in regulatory process to make sure City defends status quo, as much as possible.

Regulatory Issue	Discussions and Compliance Implications
Total Organic Carbon	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Use wetlands to help change organic carbon signature of discharge.
Dry Weather Runoff Treatment	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • This is inevitable but will it occur in 5 to 10 or 10 to 15 years. • Will be a capacity issue. • Flood control board needs to look at how to control storm water. • Need a study to determine the storm flow quantity and quality - should this be part of the master plan? <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Separate treatment train just for storm water or treat in RWQCP processes.
Pesticides	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Main concerns are organophosphates and Pyrethrins. • San Francisco Regional Board might want to switch to numeric limits on organophosphates; might eventually get in our permits also. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Use of High SRT and high MLSS concentrations. • Use big clarifiers. • Use MBR at high MLSS.

Table 2 Summary of Discussions on Water Quality Regulatory Issues (Medium Priority)	
Regulatory Issue	Discussions and Compliance Implications
Nutrients	<u>Discussions:</u> <ul style="list-style-type: none"> • 10+ years timeline. • Phosphorus is the main concern; will be driven by new EPA guidance.
Perchlorate	<u>Discussions:</u> <ul style="list-style-type: none"> • Communities may force regulators to turn to zero tolerance. • Currently mainly wellhead treatment.
Santa Ana Sucker Habitat	<u>Discussions:</u> <ul style="list-style-type: none"> • Need to keep them out of the wetlands, will be difficult because hydraulics have changed. • Need to add fish screens/net to keep fish out.
Revised Ammonia Standards	<u>Discussions:</u> <ul style="list-style-type: none"> • Standard will go below 1 mg/L; currently at 5 mg/L. <u>Compliance Strategies:</u> <ul style="list-style-type: none"> • If nutrient levels are met, this will also be met.
Capacity Requirements	<u>Discussions:</u> <ul style="list-style-type: none"> • Nothing specific.
Salinity	<u>Discussions:</u> <ul style="list-style-type: none"> • Potential issue if TDS rises. • If 450 CT is required/enforced, TDS will become an issue. • Need to conduct study to determine TDS/salinity level before and after chlorination to see if 450 CT will cause violation. • Chloride levels if >200 mg/L could cause toxicity test failures.
Whole Effluent Toxicity (WET)	<u>Discussions:</u> <ul style="list-style-type: none"> • Might have issues with treatment polymers and alums. • EPA implementation guidance for WET. <u>Compliance Strategies:</u> <ul style="list-style-type: none"> • Side stream treatment.
Terrorism and Security Precautions	<u>Discussions:</u> <ul style="list-style-type: none"> • Not an issue.

Table 3 Summary of Discussions on Water Quality Regulatory Issues (Low Priority)	
Regulatory Issue	Discussions and Compliance Implications
Endocrine Disruptors	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Most likely two permit cycles away. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Ozone can be used to treat these constituents with 3 mg/L and 60-minute contact time. • MBR is the likely choice for the City in the future because high SRTs will likely remove many endocrine disruptors.
Metals	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Aluminum is hardness dependent and will be regulated more closely in the future. <p><u>Compliance Strategies:</u></p> <ul style="list-style-type: none"> • Regulatory strategies, i.e., site-specific objectives.
Legacy Remediation	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • TDS, nitrogen, and bacteria.
Sediment Objectives	<p><u>Discussions:</u></p> <ul style="list-style-type: none"> • Inevitable but beyond 10 years. • Most likely metals related (i.e., copper).
TMDLs	<p><u>Discussions:</u></p> <p>Nothing specific.</p>
Low-Level Organics	<p><u>Discussions:</u></p> <p>Detection driven limits.</p>
Viruses and Protozoa	<p><u>Discussions:</u></p> <p>Technology driven limits.</p>
Oil and Grease	<p><u>Discussions:</u></p> <p>Nothing specific.</p>
Biosolids Disposal	<p><u>Discussions:</u></p> <p>Current plan is to work with Enertech.</p>

Table 4 Summary of Discussions on Air Quality Regulatory Issues	
Regulatory Issue	Discussions and Compliance Implications
Odor Nuisance (High)	<u>Discussions:</u> <ul style="list-style-type: none"> Primary clarifier covers for Plant 1 may be needed. City would like to evaluate the option of equalization basins after primaries.
Major Source Status (High)	<u>Discussions:</u> <ul style="list-style-type: none"> RWQCP is a Title 5 plant. Need to look at numbers of continuous run time.
<ul style="list-style-type: none"> Air Dispersion Modeling (High) Risk Assessment for Toxic Air Contaminants (High) More Stringent BACT Requirements (High) Diesel Emission (Likely) 	<u>Discussions:</u> <ul style="list-style-type: none"> These items are currently required or inevitable in the near future. There is technology to address these issues, however, it can be expensive.
Cap on CO ₂ Emission (Unlikely)	

4. Summary

- A. Regulatory strategies can be developed to handle most issues that were presented.
- B. Chlorine: Need to determine what are the alternative disinfectants.
 - 1) City would like to get rid of bringing chemicals on site, i.e., if continue with chlorine, City would like to generate on site or replace with UV or ozone.
- C. City needs to decide how to handle the extra capacity, which the dry weather runoff could bring to the plant.
 - 1) Currently this is not included in the Master Plan.
 - 2) **Action: City will make decision by September 15 whether to include this in the Master Plan.**
- D. Covering the new primaries for odor control purposes may be needed.
- E. Evaluate installation of MBR as a future treatment.

5. Treatment Assessment:

- A. The group went over a list of possible treatment alternatives and discussed the priority of including these technologies as alternative treatment scenarios for the master plan. The following is a list of technologies that were discussed:
 - 1) With Low Planning Priority:
 - a) Reverse osmosis.
 - b) Ion exchange.

- c) Biological nutrient removal.
- d) Activated carbon.
- 2) With High Planning Priority:
 - a) Microfiltration/MBR.
 - b) Primary equalization basins.
 - c) UV disinfection.
 - d) Ozone disinfection.
 - e) Alum precipitators for alum control.
 - f) Chlorine contact basin covers.
 - g) Wetlands Polishing: Keep wetlands as treatment process.
 - h) Alternatives to handle biosolids disposal.
 - i) Post disinfection aeration tank or other form of post aeration.
 - j) Odor control for primaries.

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SL:blm