Chino Basin Watermaster Reports

Purpose/Requirement/Schedule, Analyses Performed, and Report Content

Purpose/Requirement/Schedule	Analyses Performed	Report Content
Water Rights Compliance Monitoring. Pursuant to Term 20 of Watermaster's Water Rights Permit 21225 and an agreement with the California Department of Fish and Wildlife (DFW), Watermaster must prepare an annual report of estimates of monthly changes in discharge in each tributary to the Santa Ana River that resulted from diversions of storm water and dry-weather flow for recharge in the Chino Basin. The annual report covers the 12-month period of July 1 through June 30, and is submitted to the DFW by October 1 of each year.	Watermaster Engineer prepares the report with review and input from Watermaster Counsel, which includes the following efforts: 1. Measured data and Watermaster's surface-water model are used to estimate the discharge in flood control channels that cross the Chino Basin and the diversions for recharge. 2. To compute the differences in discharge caused by the diversions for recharge, the discharge from the tributaries to the Santa Ana River is estimated with and without the Watermaster diversions.	A letter report is prepared, including text and exhibits, that describes the data, methods, and results of the analysis.
Sustainable Groundwater Management Act (SGMA). The SGMA requires that the Watermaster of an adjudicated basin identified in WC Section 10720.8(a) submit specific data, information, and annual reports for the previous water year to the California Department of Water Resources (DWR) by April 1. Pursuant to SGMA WC Section 10720.8(f), Watermaster is required to submit: (A) Groundwater elevation data unless otherwise submitted pursuant to WC Section 10932 (B) Annual aggregated data identifying groundwater extraction (C) Surface water supply used for or available for use for groundwater recharge or in-lieu use (D) Total water use (E) Change in groundwater storage (F) The annual report submitted to the court	Watermaster Engineer prepares a technical memorandum, which includes the following efforts: Item (A) is already submitted for the California Statewide Groundwater Elevation Monitoring (CASGEM) Program, so no further data is reported pursuant to SGMA. Items (B), (C), (D) and (F) are compiled from the appropriators, the IEUA, and Watermaster. Item (E) is completed using the Chino Basin groundwater model to simulate storage change over the past water year.	A technical memorandum explicitly documenting the information for required items (A) through (F). The memorandum is included in the agenda packets for review by the Watermaster Pools, Advisory Committee, and Board. The memorandum and its contents are then submitted to the DWR via its online Adjudicated Basin Annual Reporting System.

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Biannual Evaluation of the Cumulative Effect of Transfers. Pursuant to the Peace Agreement, page 20, Section 5.1 (e) (iv); the OBMP Implementation Plan, page 21, paragraph 11 (d); and the Rules and Regulations, page 51, Section 9.3, Watermaster will evaluate for the potential for any Material Physical Injury that may result from the cumulative effects of transfers of water in storage or any water rights proposed in place of physical recharge of water to the Chino Basin. The purpose of this evaluation is to provide guidance to Watermaster for future recharge activities. Reporting on this evaluation is required biannually beginning on July 1, 2003.	Watermaster Engineer performs this evaluation: 1. Re-calibrate the Chino Basin groundwater-flow model for the prior two years. 2. Prepare a hypothetical historical model scenario that replaces transfers with physical replenishment. 3. Simulate the hypothetical historical model scenario with the groundwater-flow model over the period of the Peace Agreement (since 2000). 4. Compare the results of the new model simulation with the calibrated model results to characterize the cumulative effects of transfers since the Peace Agreement.	Watermaster's Engineer prepares one report that documents: (i) any model updates that were performed, (ii) the evaluation of the Balance of Recharge and Discharge, and (iii) the evaluation of the Cumulative Effects of Transfers. The evaluation of the Cumulative Effects of Transfers characterizes the differences in: water levels (especially in areas where low water levels and subsidence are a concern); storage; the achievement and maintenance of hydraulic control; Santa Ana River discharge at Prado Dam; and the developed yield of the Chino Basin.
Biannual Evaluation of the Balance of Recharge and Discharge. Pursuant to Section 7 of the Rules and Regulations, page 35, 7.1 (b) (iii) and (iv) and the Peace Agreement, page 20, Section 5.1 (e) (iii), Watermaster will conduct an evaluation of the hydrologic balance of recharge and discharge in the Chino Basin. The purpose of this evaluation is to provide guidance to Watermaster for future recharge activities to promote the goal of equal access to groundwater in each area and sub-area of the Chino Basin. Reporting on this evaluation is required biannually beginning on July 1, 2003.	Watermaster Engineer performs this evaluation: 1. Use the same version of the groundwater-flow model that is used for the evaluate of the Cumulative Effect of Transfers. 2. Prepare an updated planning scenario that includes groundwater production projections to comport with the latest Urban Water Management Plans, the IEUA-TVMWD-WMWD planning projections, state mandated water conservation, and climate change projections. 3. Simulate the updated planning scenario with the groundwater-flow model over long-term future period. 4. Evaluate the model results with respect to changes in water levels and the balance of recharge and discharge.	Watermaster's Engineer prepares one report that documents: (i) any model updates that were performed, (ii) the evaluation of the Balance of Recharge and Discharge, and (iii) the evaluation of the Cumulative Effects of Transfers. The evaluation of the Balance of Recharge and Discharge characterizes long-term changes in water levels across the Chino Basin under the plans of the Parties and the Watermaster, and characterizes the balance of recharge and discharge.

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Annual Finding of Substantial Compliance with the Recharge Master Plan. Pursuant to Sections 7.3 and 8.1 of the Peace II Agreement, Watermaster must make an annual finding that it is in substantial compliance with a Court-approved Recharge Master Plan, particularly regarding the sufficiency of Replenishment capability to satisfy reasonable projections of future Desalter Replenishment obligations following the completion of Basin Re-Operation and its associated forgiveness of Desalter Replenishment obligations.	Watermaster Engineer performs this work: 1. Describe Watermaster's projections of future Replenishment obligations based on the most recent production plans of the Parties. These production plans are typically extracted from Watermaster's most current groundwater modeling efforts. 2. Describe Watermaster's projections of future Replenishment capacity as documented in the Recharge Master Plan and/or current RMP implementation efforts. 3. Compare the projections of Replenishment obligations vs. Replenishment capacity to assess compliance with the Recharge Master Plan.	A letter report is prepared to document the data, methods, and findings of the evaluation of substantial compliance with the Recharge Master Plan.
Annual Report of Compliance with SB 88 and SWRCB Regulations for Measurement and Reporting of Diverted Surface Water. Watermaster holds three diversion permits, issued by the SWRCB, that provide authorization to Watermaster to divert and recharge storm and dry-weather discharge. Watermaster reports annually on the amount of water diverted for recharged to the SWRCB pursuant to its permits and SWRCB regulations in Title 23, Chapter 2.7. SB 88 was signed into law by Governor Brown on June 24, 2015. Sections 15 through 18 of that law add new measurement and reporting requirements for a substantial number of diverters, including the Chino Basin Watermaster. Watermaster must demonstrate to the SWRCB its compliance with SB88. Reports are due annually by April 1, the reporting period is calendar year.	Watermaster Engineer performs this work: 1. Collect, compile, and summarize estimates of diversion and recharge volumes for the calendar year for each point of diversion for each permit. Much of these data and information are borrowed from the data collected and analyzed for Watermaster's *Water Rights Compliance Reporting* report. 2. Collect information from IEUA on the measurement scheme for each point of diversion (device, accuracy, methods of measurement and calculation, recording frequency). Evaluate each point of diversion for compliance with SB88. If any point of diversion is not in compliance with SB88, develop and document a plan to comply.	1. Prepare a progress report of the estimates of diversion and recharge volumes for the calendar year for each point of diversion, and submit the estimates to the SWRCB electronically on its website. 2. To comply with SB 88, Watermaster must annually report the following in addition to (1.) above: • Information on the device or method used to calculate the amount of water diverted • Water diversion measurement, either direct diversion or diversion to storage, including the type of device(s) used, additional technology used, who installed the device(s), and any alternative method(s) used in measuring water diversion.

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Safe Yield Recalculation and Reset. Pursuant to the OBMP Implementation Plan and Section 6.5 of Watermaster's Rules and Regulations, Watermaster is required to recalculate and reset the Safe Yield of the Chino Basin in fiscal year 2010/11 and every ten years thereafter. The purpose of the recalculation and reset is to prevent overdraft, and continue to operate the Chino Basin pursuant to the Physical Solution of the Judgment.	Watermaster Engineer performs the analysis, and prepares the report. Pursuant to the Safe Yield Reset Technical Memorandum, the methodology to recalculate Safe Yield is: 1. Collect and use all prior data in a re-calibration process of Watermaster's groundwater-flow model. 2. Use a long-term historical record of precipitation falling on current and projected future land uses to estimate the long-term average net recharge to the Basin. 3. Describe the current and projected future cultural conditions, including, but not limited to the plans for pumping, storm water recharge and supplemental-water recharge. 4. With the information generated in [1] through [3] above, use the groundwater-flow model to redetermine the net recharge to the Chino Basin taking into account the then existing current and projected future cultural conditions. 5. Qualitatively evaluate whether the groundwater production at the net recharge rate estimated in [4] above will cause or threaten to cause "undesirable results" or "Material Physical Injury". If so, identify mitigation measures or an alternative Safe Yield to prevent "undesirable results" or "Material Physical Injury."	The report documents the data collected, the model re-calibration, and the analyses performed to recalculate the Safe Yield.
Annual Assessment of Cultural Conditions. Pursuant to Section 4.5 of the Safe Yield Reset Agreement (SYRA), Watermaster shall annually collect and analyze data on current and near-future cultural conditions to assess whether those conditions have changed substantially from the assumptions used in SYRA. The purpose of this assessment is to evaluate the potential need for prudent management discretion to avoid or mitigate undesirable results including, but not limited to, subsidence, water quality degradation, and unreasonable pump lifts. Where the evaluation of available data suggests that there has been or will be a material change from existing and projected conditions or threatened undesirable results, then a more significant evaluation, including modeling, as described in the Safe Yield Reset Technical Memorandum, will be undertaken.	Watermaster Engineer conducts the assessment, which includes: 1. Collect data concerning cultural conditions annually, with cultural conditions including, but not limited to, land use, water use practices, production, and facilities for the production, generation, storage, recharge, treatment, or transmission of water. 2. Compare the actual cultural conditions during the period of 2011 through 2016 and the projected cultural conditions during the period 2017 through 2020 to the cultural conditions assumed in the prior work to support the SYRA, and determine if cultural conditions have changed materially.	A technical memorandum is prepared that documents the data, methods of analysis, results and conclusions of the assessment.

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State of the Basin Report. Pursuant to Section 2.21 of the Rules and Regulations and the November 15, 2001 Court Order, Watermaster prepares a State of the Basin report every two years to describe the status of individual OBMP related activities and document how the basin has physically responded during OBMP implementation (i.e. since September 2000). The report is typically finalized by June 30.	Watermaster Engineer prepares this report. Most of the data and information utilized to prepare the report are acquired from other Watermaster monitoring and reporting efforts. Text, tables, charts, and maps are prepared to characterize: hydrology, production, recharge (replenishment and other recharge), groundwater levels and quality, point-source groundwater contamination, storage, ground level, hydraulic control, desalter planning and engineering, and production meter installation.	The report includes annotated maps, charts, and tables that characterize the physical state of the basin and how it has changed since 2000. The report is published as a tabloid-sized map atlas and a PDF file for online viewing.
California Statewide Groundwater Elevation Monitoring Program (CASGEM). Pursuant to Water Code section 10920, Watermaster must measure and report groundwater-elevation data from a subset of wells to the Department of Water Resources' CASGEM website twice per year (January 1 and July 1) for the Chino (8-2.01) and Cucamonga (8-2.02) Groundwater Subbasins of the Upper Santa Ana Valley Groundwater Basin (8-2).	Watermaster Engineer reviews time-series charts of groundwater elevations from a defined set of 37 wells in the Chino Basin and nine (9) wells in the Cucamonga Basin, and selects and compiles monthly measurements for a six-month period (summer/fall and winter/spring) that are representative of non-pumping water levels. This effort is performed in HydroDaVE Explorer. The selected data is exported from HydroDaVE in a file format for seamless upload to the CASGEM website.	The selected groundwater elevations for summer/fall and winter/spring are uploaded to the CASGEM website twice per year.

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Chino Basin Maximum Benefit Annual Report. This annual report is required by the Regional Board pursuant to Chapter 5 of the Basin Plan and Order No R8-2012-0026. There are a total of nine (9) maximum benefit commitments required of the Watermaster and IEUA in exchange for obtaining elevated TDS and nitrate objectives for the Chino-North Groundwater Management Zone. The Maximum Benefit commitments are: 1. The implementation of a surface-water monitoring program. 2. The implementation of a groundwater monitoring program. 3. The expansion of the Chino-I Desalter to 10 million gallons per day (mgd) and the construction of the Chino-II Desalter with a design capacity of 10 mgd. 4. The additional expansion of desalter capacity (20 mgd) pursuant to the OBMP and the Peace Agreement. 5. The completion of the recharge facilities included in the Chino Basin Facilities Improvement Program. 6. The management of recycled water quality to ensure that the agency-wide, 12-month running average wastewater effluent quality does not exceed 550 mg/L and 8 mg/L for TDS and total inorganic nitrogen (TIN), respectively. 7. The management of basin-wide, volume-weighted TDS and nitrogen concentrations in artificial recharge to less than or equal to the maximum-benefit objectives. 8. The achievement and maintenance of the “hydraulic control” of groundwater outflow from the Chino Basin to protect Santa Ana River water quality. 9. The determination of ambient TDS and nitrogen concentrations of Chino Basin groundwater every three years. The purpose of the annual report is to describe and document compliance with the Maximum Benefit commitments. The report is due by April 15th, and the reporting period is the calendar year.	Watermaster Engineer prepares the report, which includes the following efforts: 1. Collect, check, and upload groundwater-level, groundwater-quality, and surface water-quality data to Watermaster databases. These data are used in the analyses required to demonstrate Hydraulic Control and compute ambient water quality. 2. Review and summarize CDA progress reports on completion of the desalter well fields to achieve 40,000 afy of groundwater-production. 3. Calculate: (i) the 12-month running average of IEUA's effluent TDS concentration to determine whether it has exceeded 545 mg/L for 3 consecutive months, and (ii) the 12-month running average of IEUA's effluent TIN concentration to determine whether it has exceeded 8 mg/L in any one month. 4. Calculate: the 5-year running volume-weighted concentration of TDS and nitrate in recharged recycled water, supplemental water, and new storm water, and determine if the average is less than the TDS and nitrate Maximum Benefit objectives of the Chino-North GMZ. 5. Use groundwater-elevation contours prepared in the State of the Basin Report (every 2 years) to show the extent of Hydraulic Control. 6. Use Watermaster's groundwater-flow model (updated and recalibrated every five years) to determine if the volume of groundwater flowing past the desalter well field is *de minimis* (<1,000 afy). 7. Report on the status of the recomputation of ambient groundwater quality for the Chino Basin groundwater management zones, which is performed once every three years (for TDS and nitrate-nitrogen). 8. Utilize data from the Santa Ana River Watermaster's Annual Reports to characterize the influence of rising groundwater from the Chino Basin on the flow and quality of the Santa Ana River.	Text and exhibits that describe the status of compliance with the Maximum Benefit commitments. The data collected each calendar year are submitted to the Regional Board as an attachment to the report.

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Annual Report of the Prado Basin Habitat Sustainability Committee. The monitoring and mitigation requirements of the Peace II CEQA SEIR (Biological Resources/Land Use & Planning—Section 4.4-3) call for the IEUA, Watermaster, and the Orange County Water District to form the Prado Basin Habitat Sustainability Committee (PBHSC) to ensure that the Peace II Agreement actions will not significantly or adversely impact the Prado Basin riparian habitat. One of the responsibilities of the PBHSC is to prepare annual reports by June 30 of each year.	Watermaster Engineer prepares the annual report, which includes the following efforts: 1. Preparation of maps and data graphics that characterize the extent and quality of the riparian habitat in Prado Basin. 2. Preparation of maps and data graphics that characterize the trends in groundwater levels, climate and weather, surface water, and other factors that can affect the riparian habitat. This information is compared to the changes in the extent and quality of the riparian habitat to identity cause-and-effect relationships. 3. Groundwater-level change maps from existing results of Watermaster's groundwater-flow modeling are used to identify prospective areas of concern for the riparian habitat.	Summary of activities conducted for the PBHSC. Documentation of measured loss or prospective loss of riparian habitat (if any) with attribution of cause. Recommendations for ongoing monitoring and a scope of work and budget for the following fiscal year. Recommended adaptive management actions, if any, required to mitigate any measured loss or prospective loss of riparian habitat that is attributable to the Peace II activities.

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Water Recycling Requirements for the Chino Basin Recycled Water Groundwater Recharge Program. IEUA and Watermaster have a permit from the Regional Water Quality Control Board (Order R8-2007-0039, amended as R8-2009-0057) for recycled water recharge at 13 sites in the Chino Basin (Phase I and Phase II). The permit requires implementation of a monitoring and reporting program, and the submittal of the following reports: Quarterly and Annual Groundwater Recharge (GWR) Monitoring Reports, five-year Engineering Reports, and Basin Start-up Period Reports.	IEUA staff performs the analyses and prepares the reports. The analyses include the following efforts: Collect recycled water, diluent water, and groundwater data and compare to regulatory limits and specifications in the permit; report on recharge operations and any non-compliance events due to water quality, including records of any operational problems, plant upset and equipment breakdowns or malfunctions, and any diversions of off specification recycled water and the locations of final disposal; report of corrective or preventive action(s) taken; certification that no groundwater has been pumped for domestic water supply use from the buffer zone that extends 500 feet and 6-months underground travel time from the recharge basin(s) where recycled water is applied; mass balance calculations to ensure bleeding is occurring in the aquifer; and estimates of approximate travel times of recharged recycled water in the aquifer at each basin. Watermaster, as the co-permittee, has its Engineer provide technical support and review and comment on all reports before they are submitted to the permitting agencies.	Quarterly GWR Monitoring Reports: Summaries of the data in tabular form to demonstrate compliance with permit limits and specifications. Summary of recharge operations and any operational problems and preventive and/or corrective actions taken. Annual GWR Reports: Summaries of recycled water and groundwater monitoring efforts for the year. Demonstration of recycled water recharge and diluent water in-aquifer blending by 120-month mass-balance calculations presented in Recycled Water Contribution (RWC) Management Plans and analysis of monitoring well water quality data. Estimates of approximate travel times of recharged recycled water in the aquifer. Five-year Engineering Reports: Address all project changes over the last five years. Basin Start-up Period Reports: Determination of percolation rates, soil aquifer treatment efficiency, lysimeter monitoring program, and initial maximum average RWC limits.
Annual Report of the Ground-Level Monitoring Committee. The MZ-1 Subsidence Management Plan (MZ-1 Plan) was developed by the MZ-1 Technical Committee (now named the Ground-Level Monitoring Committee) and approved by Watermaster in October 2007. In November 2007, the Court approved the MZ-1 Plan and ordered its implementation. The MZ-1 Plan was updated in 2015 and is now called the Chino Basin Subsidence Management Plan (SMP). Pursuant to the SMP, Watermaster prepares an annual report that includes the results of ongoing monitoring efforts, interpretations of the data, and recommended adjustment to the SMP, if any.	Watermaster Engineer prepares the annual report, which includes the following efforts: Preparation and interpretation of maps and graphics of data generated from the Ground-Level Monitoring Program including: the basin stresses of groundwater pumping and recharge, and the basin responses of changes in groundwater levels, aquifer-system deformation, and ground motion.	Background information on the program. Summary of activities conducted for the Ground-Level Monitoring Program. Analysis and interpretation of data. Conclusions and recommendations for ongoing monitoring and a scope of work and budget for the following fiscal year. Recommended updates to the SMP, if any.

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OBMP Semi-Annual Status Reports. Pursuant to the July 13, 2000 Court Order that approves Watermaster's adoption of the Peace Agreement and the OBMP Implementation Plan, Watermaster is required to prepare semi-annual status reports to the Court on OBMP implementation. The purpose of the report is to provide the Court with updates on progress in implementing the OBMP.	Watermaster staff, with the assistance of Watermaster Engineer and Counsel, prepare text descriptions of activities that were conducted to implement the OBMP for the prior six months.	Descriptions of activities that implement the OBMP program elements for the prior six months.
Quarterly Reports to the Watermaster Pools, Advisory Committee, and Board meetings. The Parties have requested quarterly reports that summarize the status of: (i) the groundwater contaminant plumes in the Chino Basin and (ii) the activities of the Ground-Level Monitoring Committee.	Watermaster Engineer prepares text descriptions of activities performed during the previous quarter.	A text description of status of each of the known plumes within the Chino Basin and the activities of the Ground-Level Monitoring Committee.