

Independent Rates Oversight Committee (IROC)

Annual Report

on the

San Diego Water Department (SDWD)

and

Metropolitan Wastewater Department (MWWD)

for the

Fiscal Year ended June 30, 2008

Issued: February 10, 2009

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In accordance with the provisions established in section 26.2003 of the San Diego Municipal Code (Appendix R), one of IROC's duties is to provide advice on the efficiency and performance of both Departments. In view of the impact that significant water conservation efforts (whether voluntary or mandated) are likely to have on both the revenues and operational priorities of San Diego's Water Department, IROC believes that it is in the best interests of the ratepayers and citizens that this report also (1) address the critical need for all San Diegans to participate in water conservation efforts, and (2) discuss other actions that should be actively considered by the management of the Water Department and by its policy makers to augment such conservation efforts.

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Introduction

IROC¹ is an independent, non-compensated, advisory body composed of eleven members, nominated by the Mayor and confirmed by the City Council, representing all ratepayer classes and a set of defined professional disciplines. It is led by a chair, a vice chair, and the chairs of three subcommittees (Finance, Environmental and Technical, and Education and Public Outreach).

IROC serves as an official advisory body to the Mayor and City Council on policy issues relating to the oversight of the City of San Diego's public utilities department operations including, but not limited to, resource management, planned expenditures, service delivery methods, public awareness and outreach efforts, and high quality and affordable utility service. In addition, the IROC assists the City in tracking and reviewing the use of rate proceeds to advance the capital improvements related to rate packages and work programs adopted by the City Council. It is the vision of IROC that a high level of public confidence in the City of San Diego's utility services be maintained with services provided in the most cost effective way.

In this, its first year of operation, IROC has established bylaws (included in this report as Appendix Q), set up three subcommittees, advised on the development of performance reports, and held monthly publicly-noticed committee and subcommittee meetings for the purpose of reviewing past, current and planned future operational, investment, and financing activities of the City's water and wastewater departments. IROC members have also participated in informational tours of both Department's facilities and of comparative facilities operated by similar utilities in Los Angeles and Orange County.

As indicated in the Chartering Enactment for IROC (included in this report as Appendix R) IROC's role is not that of an auditor or list checker, but more broadly as the independent overseer of the City's public utilities, on behalf of the ratepayers. To accomplish this, IROC believes that it must review and assess not only the current operations of the departments, but also the medium and long term investment plans, and planning process itself. IROC believes that ratepayers are best served by an oversight body having an independent perspective, which views operations and investment in terms of not only their stand-alone costs and benefits, but also, and critically, in terms of opportunity costs and avoided costs.

This vision requires IROC to take a broad and long-range view. In doing so, IROC is mindful that, while it is charged with offering advice on Department policy, it does not set policy for the Departments or in any way direct Department activities. However, we believe the value of

¹ Chapter 2, Article 6, Division 20, sections 26.2001 through 26.2003 of the City of San Diego's Municipal Code (the Chartering Enactment for IROC) established the purpose, intent, duties and functions of the City of San Diego's Independent Rates Oversight Committee.

IROC, from a ratepayers perspective, can only come from IROC's ability to evaluate and comment on all matters that currently or may in the future affect the economic interests of water and wastewater ratepayers, including those that might have policy implications.

In accordance with Chapter 2, Article 6, Division 20, Section 26.2003 (i) of the City of San Diego's Municipal Code, we are pleased to present IROC's first annual report (the Report) on San Diego's Water and Metropolitan Wastewater Departments (the Departments or the Utilities). The format and content of our report have been designed to provide the level of information that we believe necessary to assess, on behalf of the ratepayers, the current performance and future challenges faced by these Utilities.

This Report contains observations, commentary, analyses and recommendations, on behalf of all water and wastewater ratepayers, directed to those with policymaking authority over these important Utilities. For the reader's convenience, we have summarized the most significant recommendations in Appendix A of this Report. These recommendations address reclaimed water (including IPR), public outreach related to water conservation, potential costs of secondary wastewater treatment, control of wastewater spills, optimization of maintenance and investment activities, system vulnerability analysis, and rate structure.²

The primary missions and responsibilities of the Departments are to ensure the quality, reliability and sustainability of water resources and wastewater services for the benefit of the ratepayers and citizens served. The mission also includes ensuring that these Utilities accomplish their missions cost-efficiently and in an equitable manner among their ratepayers.

Over the course of the last year, IROC has invested considerable time to understand the operations of the Departments. Our scope of work, however, was never intended or funded to be at the level of an Independent Auditor, since such work is performed by others under the direction of the City of San Diego's Audit Committee. Accordingly, IROC has focused its attention on the material aspects (from the perspective of water and wastewater ratepayers) of the Departments with regard to their operations, including current issues and future challenges, and on the identification of any material matters or inefficiencies that currently, or potentially could, significantly impact San Diego water and wastewater system ratepayers.

We believe that inefficiencies are likely to exist in some form within all organizations whether they are private, public or governmental. Others, if provided with sufficient ratepayer or taxpayer funded resources and the time to focus specifically on searching for inefficiencies within either SDWD or MWWD probably could find some issues or matters not addressed in this report. However, IROC strongly believes that any such findings, individually or in the aggregate,

² IROC has addressed a broad range of water and wastewater questions in its first year of operation, and intends to include in its future work, among other things, analysis of (i) departmental consolidation, (ii) management succession, (iii) desalination of both ocean and brackish water, (iv) use of green technologies and energy efficiency, and (v) outsourcing.

would likely be insignificant relative to the larger issues and matters of interest disclosed, discussed and addressed in this report.

During the course of our service to date, we have actively reviewed and in some instances challenged and requested changes to the specific costs, timelines and purposes of a number of actions, projects and goals of the Departments. The nature and level of our review is evidenced in the minutes of IROC's formal monthly committee meetings and of the monthly meetings of its three subcommittees, which are available at www.sandiego.gov/mwwd. These meetings are open to the public, and meeting times, place and agendas along with all materials reviewed are posted in advance at the same website. However, it should be noted that material portions of the contents of this report resulted from significant time and effort spent by individual members of IROC researching, evaluating and developing the commentary, observations, analyses and recommendations contained in this report on San Diego's Water and Wastewater systems, operations and performance. All members of IROC have had the opportunity to review and edit the contents of this report, and concur with its general commentary, observations, analyses and recommendations.³

In developing this Report IROC concluded that, in addition to evaluating the results and activities that comprised the fiscal year 2008 operations of the Departments, we also needed to address and evaluate the ongoing and future activities and operations of both Utilities as well as any existing or potential operational impediments or challenges which currently or prospectively could materially impact either the rates being paid or to be paid by each system's ratepayers. IROC developed a series of six questions designed to identify material issues and items that merit disclosure to and resolution by Department management or by those with policy making authority over them.

These six questions, along with IROC's conclusions about each, constitute the core of this Report. We have organized them as set forth in the table of contents. The Appendices to this Report include both supporting and additional observations, commentary, analysis and recommendations on these matters. The Appendices should be viewed as an essential part of this Report.

³ IROC held a special, publicly noticed meeting to discuss this Report in draft form on January 29, 2009.

Question 1 - Operations:

Are both Utilities operating on an overall basis as efficiently as they could be?

Based on the results of the first annual performance reports on the Departments (Appendices S and T), which were developed with independent input from, and reviewed by, IROC, we have concluded that the overall operations of both Utilities, for the fiscal year ended June 30, 2008, appear to be appropriate in scope of operations and performed in an overall efficient manner, subject to the level of funds raised from the systems' ratepayers, from their net borrowings and from the limited amount of grant funds received during the year. Of course, with additional funding, more could have been achieved by both Departments.

IROC believes there are several significant impediments to the attainment, by San Diego, of a level of cost efficiency that would compare favorably with that of other major water and sewer systems in California and in the nation. We noted three such cost impediments within San Diego's water system and two within its wastewater/sewer system. Each of these comparative cost impediments are discussed in further detail in Appendix B to this report.

San Diego faces three major comparative cost disadvantages in the sourcing, treatment, and delivery of water. They are:

1) Minimal local sources of water which results in San Diego's substantial dependency on purchases of imported water to meet customer water supply needs.

Currently, approximately 90% of San Diego's water supply comes from purchased imported water. San Diego's extensive reliance on imported water, which has existed for decades, enables others outside of our community's control to dictate both the cost and potentially the quantity and quality of water San Diegans can obtain. The risk of a limitation on the quantity of our water supply increases in times of water shortages experienced by either or both the Colorado River or the Sacramento-San Joaquin Delta (S-SJ Delta) or when mandated by those authorized to control and allocate the distribution of such water to San Diego and hundreds of communities in California and in the Southwestern United States.

2) The inherent cost of a proportionally larger system geographic size requirement, on a per capita basis, than other major water or wastewater systems in California and in the nation.

This results from a greater geographic dispersion of the customers being served by the system as expressed in terms of customer population density per square mile of service area. Appendix C to this report contains comparative analyses of the geographic footprint San Diego's water and wastewater systems versus the ten largest cities in California and the ten largest cities in the nation.

3) A competitive disadvantage in the terms of the water system's borrowing costs for funding multi-year infrastructure replacement, enhancement and expansion projects.

Appendix B to this Report provides comparative credit ratings for San Diego and for a number of other major U.S. cities.

Examples of the combined impact of the above three comparative water system cost disadvantages are included in Appendix D to this Report which contains a city-to-city comparison of estimated water and sewer charges being billed to typical single family residential ratepayers in San Diego, Los Angeles and Phoenix.

San Diego is faced with two of the three previously mentioned major comparative cost disadvantages in the collection and treatment of wastewater.

- 1) The inherent cost of a proportionally larger system geographic size requirement, on a per capita basis, relative to that of other major water or wastewater systems in California and in the nation; and,
- 2) A competitive disadvantage in the terms of the water system's borrowing costs for funding multi-year infrastructure replacement, enhancement and expansion projects.

Appendices B, C and D to this Report contain further commentary, observations and analyses on each of the above mentioned comparative operating cost impediments faced by the Departments.

Other significant operational or system cost efficiency issues or potential issues of concern

In the performance of our reviews of the fiscal year 2008 performance of the Departments, in addition to the comparative operating cost disadvantages, IROC noted three significant operational or system cost efficiency issues or potential issues of concern.

Appropriate resolutions of these issues would provide opportunities for either an improvement in the overall quality of services being received or otherwise better control the overall cost of services being provided to water and/or sewer system ratepayers.

1. Reclaimed water in San Diego - Imbalance in current production versus use

MWWD has not been able to attract sufficient customers to utilize the daily volume of nonpotable reclaimed water currently produced and potentially available through the separate purple pipe distribution system. As a result, the portion of daily reclaimed water production that is not required to meet current user demand is returned to the wastewater flow for final treatment, processing and ultimate discharge into the Pacific Ocean. MWWD's efforts to increase customer demand for the reclaimed water has included pricing the reclaimed water at approximately 30% of the cost charged for potable water.

Nevertheless, IROC believes that it would be cost prohibitive to significantly expand the purple-pipe distribution system to reach additional potential customers.

2. The potential for a material, legally-mandated future wastewater system inefficiency

The potential risk of being legally mandated to modify San Diego's existing wastewater ocean outflow processing represents a pending future material inefficiency for MWWD and, as a result, a potentially significant future cost for our current and future wastewater ratepayers.

The City of San Diego's Point Loma Wastewater Treatment Plant (PLWTP) processes all of the sewage output of MWWD's wastewater system, which serves the customers of City of San Diego and 15 other participating agencies in San Diego County. Currently PLWTP operates under a joint National Pollutant Discharge Elimination System (NPDES) Variance ("the Variance"). The Variance is actually a waiver of some of the requirements that would otherwise be imposed upon the ocean discharges of PLWTP by the National Clean Water Act.

In December 2008, San Diego received a favorable tentative decision to approve a five year extension of the PLWTP's Variance. However, some have read the tentative decision to include a subtle warning that San Diego should not rely on the continuation of such periodic extensions of the Variance in the future.

In the event that, in the future, the Variance is not renewed by the applicable regulatory authorities, the cost to MWWD ratepayers would be significant. Department management has estimated that, given current technology and other factors, the cost of moving from advanced primary to full secondary treatment could cost the ratepayers on the order of \$1 to \$1.5 billion.

As further discussed in item B within Appendix E of this Report, MWWD needs to fully comply with the recommendations that accompanied the December 2008 tentative decision to approve the Point Loma Wastewater Treatment Plant Variance. In our view, MWWD should begin soon to plan on using the next five years under the Variance to effectively pursue all reasonable alternatives to ensure either the granting of future Variances (which the recent approval indicated should not be assumed or otherwise relied upon by MWWD) or to develop cost-rational alternatives to effectively meet the requirements currently waived under the terms of the existing Variance.

IROC is interested to know if there are other, related actions that could be taken to reduce the probability of a future unfavorable regulatory ruling.

3. A need to continue to prioritize, control and fund essential capital projects

As a result of a substantial number of regulatory-mandated requirements and deadlines, the capital expenditures of both Departments have for some time and will continue to be for the foreseeable future primarily allocated to the achievement and maintenance of regulatory compliance rather than in the pursuit of accomplishing other independently determined long-term goals and objectives. To frugally manage their respective capital improvement resources, an exceptionally thorough level of monitoring and control of all existing or planned capital expenditure projects is essential. This has only become more critical given the likely continuation of the turmoil that now characterizes local, national and global credit markets.

The Departments' respective lists of projects yet to be accomplished is, at any point in time, extensive in both scope and number, while the available level of resources (funding and staff) is limited by budgeted resources.

In our opinion, both agencies, during FY 2008, appear to have performed such monitoring and control over their respective capital improvement programs in a controlled and prudent manner in line with their available resources. However, the financial consequences of significant delays in implementing important construction projects, including the potential increases in construction costs and related debt service costs for such projects, could be material.

Appendix E to this report contains additional commentary and IROC's recommendations with regard to the current mismatch of reclaimed water production and use, PLWTP's operations under its existing Clean Water Act Variance, and the Departments' capital project management activities.

Appendix F to this report contains observations and recommendations by IROC with regard to other matters to be considered to improve the operational efficiencies of San Diego's Water and Wastewater Departments.

Question 2: CIP

Are the current operations, system repair and maintenance activities, and programmed infrastructure investments (including replacement actions) of the Departments sufficient to meet the near, mid-range and long-term needs of San Diego's water and wastewater users? Specifically, are the Departments managing public assets and planning for the future in a way that provides reasonable assurance to the ratepayers that future rate increases can be reliably forecast? Is there evidence that suggests that, if the Departments were currently either taking different actions, or spending more – and sooner – on maintenance and/or infrastructure investment, future rate increases could be avoided or reduced?

As more fully commented upon elsewhere in this report, ratepayers continue to be exposed to risk due to San Diego's substantial dependence on imported water, the underutilization of existing or potential expansion of reclaimed water, a substantial backlog of essential but currently unfunded capital projects at both Departments (including a much more aggressive timetable for replacing "at-risk" portions of the city's water distribution and wastewater collection systems) and the potential for a future denial of the City's existing joint National Pollutant Discharge Elimination System (NPDES) Variance.

MWWD has achieved meaningful reductions in spills from the wastewater collection system. However, significant episodic water distribution system failures continue to occur at a frequency that clearly merits additional effort and resources to either prevent such failures or otherwise mitigate the adverse impact of such failures on residents, businesses, infrastructure and the environment.

Additional resources should be allocated by both SDWD and MWWD to reduce the cost of disruptions of service and untimely redirections of available resources arising from water or wastewater system leaks or failures. IROC recommends that more resources be dedicated to the system failure risk assessments in general, and to preventive maintenance of the system up to and including, when necessary, a greater percentage of annual pipeline and main system replacement actions .

MWWD needs to continue its monitoring, cleaning, rehabilitation and replacement of portions of the sewer system on a priority basis to minimize the buildup of sewage items that create the conditions that lead to sewer spills. Additionally, MWWD needs to continue to work with all of its 15 participating wastewater agencies to ensure that all of its users are informed and educated about proper disposal of certain materials, for example greases and oils, which could be harmful to the wastewater treatment/conveyance process. Such materials are often a primary cause of wastewater spills.

IROC believes that the current pace of MWWD's CCTV inspections (100 miles/year or roughly 3% of the overall wastewater system each year) and MWWD's annual schedule for replacement of aged portions of the network of collection system pipelines (currently in the 30 to 40 miles/year range or roughly a little more than 1% of the network's 3,000 miles of pipelines) needs to be closely monitored and accelerated and expanded if deemed necessary based on the Department's then recent experience with sewer system performance and sewer spill experience

The concept of selectively assigning a designated annual number of miles of the system to be either examined or replaced, even when performed on a pre-determined priority basis, may not be adequately addressing the reality of the age versus the expected useful life of many portions of San Diego's Wastewater and Water systems. The fact that waterline breaks and sewer line spills continue to occur (even if much less frequently than in prior periods) causes us to be more pragmatic about whether the recent decline in breakdowns can be maintained or further improved upon without the benefit of video scanning, increased preventive maintenance or replacing a greater percentage of both systems than is presently funded in the departmental budgets for FY 2009.

Additionally, a cost analysis of each failure, along with a summary of the overall economic costs of each system's failures, should be performed and made available to decision makers and to system ratepayers, and utilized to support the prioritization of capital improvement projects intended to reduce distribution system failures in the future.

Question 3: Financing

Are all funds obtained from ratepayers (including, prospectively, funds from scheduled rate increases) being used or planned to be used by each utility solely for and on behalf of these ratepayers through the operations, activities and project expenditures, including debt service, of each utility?

In the course of our review of the operations and activities of San Diego's Water Department, IROC did not encounter any evidence of water system ratepayer funds being utilized for any purposes other than for the operations, activities, project expenditures or debt service of SDWD.

Similarly, in the course of our review of the operations and activities of San Diego's Metropolitan Wastewater Department, IROC did not encounter any evidence of wastewater system ratepayer funds being utilized for any purposes other than for the operations, activities, project expenditures or debt service of MWWD.

IROC did note that both Departments had contracted for a number of services supplied by other departments and agencies of the City of San Diego. Such contracted services were in lieu of such services being performed internally by the utilities. IROC believes that all such contracted services were clearly defined and well documented in Service Level Agreements (SLAs) between SDWD or MWWD (as the user of such services) and the respective department or agency providing the services.

The collective nature, scope and purpose of these SLAs, in IROC's opinion, are intended to provide the Departments with operational cost efficiencies that might otherwise not have been possible had the services been performed and managed internally by either Utility.

IROC's review of departmental expenditures of the Departments included a review of the SLAs. Appendix G to this report contains additional commentary and our conclusions about the use of such agreements by SDWD and MWWD.

Dedicated Reserve for Efficiencies and Savings (DRES)

IROC reviewed the Departments' DRES accounts established in Fiscal Year 2008. Appendix H to this Report contains IROC's observations and assessments of the DRES accounts.

Review of Independent External Reports on the Departments

IROC reviewed the most recently available reports and or commentary on the operations, activities and accounts of the Departments issued by external auditors, other independent entities or by regulatory authorities. A listing of the reports reviewed is contained in Appendix I to this Report. As noted in Appendix I, in view of the timing of the currently expected (late March 2009) release date for the audited CAFR report for Fiscal Year 2008, the financial information of SDWD and MWWD upon which IROC has relied in the development of portions of this Report has been based upon the most recently available unaudited financial information provided by the management of SWWD and MWWD.

Question 4: Environmental Management

Are San Diego's Water and Wastewater Departments' overall operations being maintained and enhanced in an environmentally safe and sound manner and is this being accomplished at a reasonable cost to the Ratepayers?

Based on our overall review of the Departments' operations for the fiscal year ended June 30, 2008, we have concluded that both utilities have been and continue to maintain and enhance their operations and activities in an acceptable environmentally safe and sound manner. We note in particular MWWD's success in reducing the number of sewer line breaks and sewer system overflows during fiscal year 2008 in comparison to the experiences of recent years and also as measured against composite peer grouping results reported for other wastewater utilities in the nation, in the western states and among the larger wastewater utilities included in peer group survey published by the American Water Works Association. See Appendix T for additional details of this survey.

IROC did note a number of water or wastewater related items that represent opportunities to further enhance the Departments' stewardship of its environmental responsibilities.

Reclaimed Water

For a variety of reasons, only a relatively small portion of the capacity of the water reclamation plants is actually purchased by customers. If more fully taken up, this water could contribute significantly to reducing our dependency on imported water. Expanding the purple pipe system or constructing a reservoir to store reclaimed water for use during the summer were both found to be extremely costly by the most recent Water Reuse Study obtained from SDWD.

Indirect Potable Reuse (IPR)

From an environmental perspective, IROC is convinced that the recently approved IPR demonstration program is critical for San Diego's citizens and water system ratepayers. However, given the likely completion timeline for the Demonstration Project and the subsequent Department of Public Health approval timeline, it will be some years before the citizens and ratepayers can expect to see a meaningful economic benefit from a reasonably sized IPR implementation. We recommend that the City consider moving on any post-IPR Demonstration Project planning activities that would shorten the timeframe between the successful completion of the IPR Demonstration Project and the actual delivery of meaningful volumes of IPR processed water to homes and businesses throughout San Diego. Examples of the work that could be started in advance include conceptual design, engineering design, identifying and preparing to apply for all IPR related appropriations or grants that may currently exist and monitor new ones as they come into existence, mapping out the scope and timetables of IPR specific Capital Improvement Projects, determining the likely scope of compliance with IPR related environmental reviews and requirements and evaluating the need for acquiring rights-of-way, etc

An additional concern is that the current thinking about implementing IPR is only directed at purifying a portion of the current capacity of the North City Water Reclamation Plant. We urge that the Water Department explore the feasibility of a much larger IPR capability in the future. That could provide a major source of reliable, locally-controlled water, and substantially reduce the volume of water handled by Pump Station 2 and the Point Loma Water Treatment Plant. A larger scale IPR implementation also holds the promise of saving ratepayers substantial costs in the form of the avoided cost of, among other things, expanding wastewater treatment capacity at Point Loma either based on increased flow from growth in wastewater volume or as a result of a potential future elimination of PLWTP's existing Variance. In our view, it is essential that any investment calculus explicitly take into account such avoided costs.

Water Conservation

The reduction of the amount of water our region uses has many environmental benefits. Pumping water from distant sources requires a lot of energy which produces Green House Gases. If we reduce the amount of water that is pumped we can reduce our impact on Global Climate Change. Also the water we draw from the Bay Delta and from the Colorado River causes those important ecological resources to be further degraded. Alternatively if we better conserve water we will reduce their degradation. Conserving water also reduces the energy needed to operate our water treatment plants and our wastewater system and reduces the amount of energy that they use. We find that the City's water conservation efforts are appropriate but we urge that they be substantially strengthened.

Of course, we understand that, notwithstanding these sound long-term reasons for promoting conservation, it will be driven, at least in the short term, first and foremost by supply restrictions, which in turn are likely to force the City to activate a mandatory conservation program. If climatologists are correct, what some currently characterize as a temporary "drought" likely is in fact the return of a historically more normal condition, so programs to promote more efficient use of our increasingly-scarce water resources must be devised and rolled out with some urgency.

Unfunded Projects

On a few occasions, IROC has been asked to make recommendations about whether the Departments should spend funds on specific projects that had not been included in the Rate Case. It seemed unfortunate that some of these projects had not been scheduled for funding. We recommend that decision makers be made aware of the needs that are identified but are not scheduled for funding. In this regard, IROC believes that its role is to ask two related questions: (1) are the Departments making the best use of the funds available to them under the current Rate Case? and (2) are the funds available sufficient? If the answer to the second question is in the negative, IROC would be concerned that ratepayers are being exposed to the risks that come with underinvestment, in the form of suboptimal maintenance and/or infrastructure investment.

Water Distribution System Breaks

Water pipe breaks are seen often in San Diego. Most of the breaks wash large amounts of soil, some of questionable quality, into our waterways and wetlands. They also cause a lot of damage to property and to infrastructure. The problem is greatly amplified by the length of time it often takes to turn off the water flowing from a broken pipe. Many of our valves do not work when needed, allowing high pressure water to cause damage for hours before they can be turned off. Repairs are costly and the released water causes hazards to the public and to Water Department workers. It also is a big waste of water. It appears that the total costs of broken water pipes are not tabulated and considered when considering the need for assigning priority for replacement. We urge that the City consider implementing a much more aggressive effort to replace aged pipe and valves. If the total costs were considered, we suspect that a higher replacement rate could reduce rates in a short period of time, but we do not have the information to verify that.

System Vulnerability

The continued functioning of the water and wastewater system is very important to our region. The need for reliability should be a part of long range and short range decisions. The only assessment of risk and vulnerability that we are aware of is focused on the vulnerability to terrorism. It appears to IROC that a risk analysis that considers a broad range of risks should be conducted. This would allow decisions about the future of the Water and Wastewater System to be made with the knowledge of system vulnerabilities and measures that could reduce those vulnerabilities. It should include the potential impacts of earthquakes, extreme storms, sea level rise, fires, equipment failures, accidental contamination, vandalism, internal sabotage, as well as terrorism.

Sub-metering

Normally multifamily residential buildings have one water meter for many units. The cost of water is paid by the landlord out of the rent received or by a homeowners association from fees. Normally, the resident is not aware of the amount of water he/she uses, nor the cost of it, so effective water conservation is less likely. Installing a meter for each apartment (sub-metering) is more likely to help water conservation efforts. Sub-metering is costly to retrofit, but it is not costly for new construction. We urge that the City require sub-metering for all new units and encourage conversion to sub-metering when multifamily units are being remodeled or being converted to condominiums.

Continued education and research regarding developing wastewater treatment technologies

There are numerous promising technologies and advancements under development for wastewater treatment. To name a few, technologies such as membrane biological reactors (MBR), integrated fixed film/activated sludge (IFAS), and moving bed biological reactors (MBBR) allow larger volumes of water to be treated to high quality effluent standards in smaller footprint areas. We urge that such advanced treatment technologies continue to be followed in their maturation and potentially be considered for future treatment facilities and possibly for

retrofits if appropriate. Technologies such as these may be particularly appropriate if the City of San Diego decides to upgrade to Secondary treatment of wastewater or for new water reclamation plants.

Disposal of Biosolids

The biosolid material left over from wastewater treatment has potential value. Currently its disposal is costly and can have negative environmental impacts, especially on water quality and from the fuel needed to transport it. We urge the City to aggressively seek ways to expand the beneficial use of biosolids in ways that do not have negative environmental impacts, and having the prospect of making a profit from it.

Waiver from Secondary Treatment

It appears that the Wastewater Department will receive a waiver from Secondary Treatment for another five years. We urge that the City begin soon to seek a more certain future before the coming Waiver expires.

Finally, with regard to environmental issues we also recommend that both agencies in their pursuit of greater operational efficiencies should seek to adopt, implement or expand their use of, wherever cost affordable, renewable green technology opportunities such as solar, fuel cell, biosolids reuse, slug eaters, cogeneration, etc.

Question 5: Equity and Effectiveness of Rate Structure

Are the allocations of the costs of operating each Utility being fairly assigned among single family residential, multi-family residential and other ratepayers, and are they designed in a manner that provides incentives to those users that practice water conservation and disincentives to those who use materially more than their ratepayer peers?

The reasonableness of costs charged to ratepayers is influenced not only by the efficiency with which management operates the systems, but also by the rising cost of purchases of water imported from the Colorado River and the S-SJ Delta, the need to expand, replace and/or periodically enhance portions of aging water and wastewater processing and delivery systems (including to comply with regulatory orders), and from debt service on borrowings incurred on behalf of the water and wastewater systems, and to be incurred in the future, to fund essential construction projects relating to the expansion, replacement and/or necessary enhancement of portions of both systems.

In its first year of operation, IROC did not conduct a formal study or review of the current rate structure, so has not taken a position on either the reasonableness of the structure or the allocation of costs among each utility's respective classes of ratepayers. Nevertheless, IROC does believe that the current water rate and sewer rate structures do not provide robust incentives to those ratepayers who practice significant water conservation and disincentives to those who consume water or produce wastewater at levels significantly above that of their ratepayer peers.

Going forward, as part of future rate case preparation, IROC intends to examine whether there are benefits to moving to a system of universal tiered rates, and whether there are potential cost savings from introducing a program of peak pricing (which holds the promise of ratepayer savings resulting from the avoided cost of system expansion). These are enormously complicated issues, and IROC believes that it is prudent to proceed cautiously. Moreover, while IROC's mandate to examine these issues is derived from its charter, it has neither the expertise nor the funding to independently develop rate cases or alternative rate structures.

Appendix J to this report contains additional commentary on and our recommendations for a potential enhancement of San Diego's Water Rate Structure that provides opportunities for each ratepayer to be motivated further to reduce water usage.

Question 6: Education and Outreach

Are the current and prospective challenges faced by the Departments as well as the potential impact of such challenges on the future quality, sustainability and cost of the services being provided to ratepayers being adequately communicated to ratepayers by management of the Utilities and by those who set policy for them?

San Diego, like most cities in the arid Southwestern United States, is facing a significant and possibly long-term water supply issue. We believe that most of the residents and water ratepayers of San Diego recognize that we have a potential water supply problem, however, the full scope and the likely material impact on them, both in terms of water cost and water availability is, in our opinion, not yet fully recognized or adequately understood by a significant percentage of the ratepayers. We base this belief on the observed limited success to date of the 20 Gallon Challenge program and other public education efforts.

The water supply issue in the Southwestern United States is arising from the reality of an ever increasing demand for water from population growth at a time when the existing supplies of water are in fact diminishing. The decrease in supply results from a persistent multi-year period of drought along the Colorado River; the impact of a diminished Sierra Nevada Snow Pack apparently due to changing climate conditions; and a legally-mandated 30 percent reduction in the water supply from the S-SJ Delta region, recently imposed by a court ruling designed to protect the sustainability of the Delta's eco-system.

The water supply situation, in the case of San Diego and the other cities in San Diego County, is likely to result in a more severe and more near-term water cost and water supply challenge than other areas in the Southwestern United States. San Diego is more exposed to such a supply challenge than are competing cities because nearly 90% percent of San Diego's water supply is imported water purchased from the San Diego County Water Authority (SDCWA).

SDCWA in turn purchases a majority of its water supply from the Metropolitan Water District (MWD). The S-SJ Delta (over 400 miles away) and the Colorado River (over 200 miles away) are the sources of this imported water. As a result, the supply of water for San Diego is much less reliable than it would be if we had more substantial local water resources.

No other major city or county in the United States has anywhere near this level of dependence on imported water, from sources that are so far away. An indicator of how significant is the cost of water to San Diego ratepayers is the share of their water bill that is required to purchase water. For the twelve months ended June 30, 2008, this totaled \$125 million, representing 43% of the total amount of water bill payments made by all San Diego ratepayers, compared to 24% in Los Angeles.

San Diego's dependence on imported water means that it has little control over the cost of water. When suppliers raise prices, it must simply pass those higher prices along to ratepayers. For example, San Diegans are faced with a significant price increase, effective January 1, 2009, imposed by the MWD on all water delivered to its member water agencies including SDCWA. SDCWA in turn has passed along this price increase, also effective January 1, 2009, on all water

supplied to its member water agencies, including SDWD. These increases necessitated an approval by San Diego's City Council of water rate increases for all classes of San Diego water system ratepayers, effective January 1, 2009, at a public hearing that occurred on November 17, 2008.

IROC's recommendation with regard to communication of water system challenges

It is essential that San Diego water users be engaged, now, in a more comprehensive discussion of the challenges our community faces in terms of higher future imported water costs and of risks to supply. IROC recognizes that SDWD, Mayor Sanders and members of the City Council have made numerous attempts to convey the importance of water conservation and the risks associated with not meaningfully conserving water at the homeowner and business unit levels. However, although these efforts are commendable and necessary, it is the actions of all San Diegans that will ultimately determine the extent of financial pain that will fall upon the citizens and ratepayers of San Diego. IROC believes that a stark disclosure to each ratepayer of the potential financial impact of a failure to adequately reduce water usage is necessary and to date has not been part of the water crises discussions to date. This public discussion must take place well in advance of the imposition of any substantial increases in water rates, limits on supply, or imposition of any material penalties or fines for water use beyond to-be-established benchmark levels. San Diego's water ratepayers need to be informed of these risks, well in advance, so that they have the opportunity to reduce the potential impact of higher costs and/or reduced supply of water. In this way, if a meaningful percentage of the ratepayers actively participate in significantly reducing their water requirements, San Diego may be able to either avoid or otherwise minimize the imposition of these excess water-use penalty rates.

For example, the SDCWA has established a series of substantial excess water-use penalty rates (likely to be applied at water volume levels less than SDCWA's current average daily water delivery amounts) that, in the event a water emergency is declared, will be imposed by the SDCWA on its member water departments (including SDWD).

The full financial impact of SDCWA's excess water-use penalty rates will ultimately be passed directly on to water system ratepayers. The potential ratepayer impact of such system-wide water emergency penalty water rates should be communicated to all of San Diego's ratepayers, so that they can begin now to take action to reduce consumption.

Unless San Diegans can significantly reduce their overall demand for water for imported water, or otherwise authorize and fund the cost to develop additional sources of local supply, the recent January 1, 2009 pass-through increases may turn out to be the proverbial "tip of the iceberg" of increased water rates in San Diego's future.

Addressing the challenge of regional water sustainability in San Diego will not be easy. After they have effectively received, in a clear and concise communication or series of communications, the essential information they have a right to know concerning the current and prospective water supply and cost issues facing San Diego, the citizens and water system ratepayers of San Diego can either ignore the potential impact of San Diego's current and near-term water situation (at their own peril), or they can begin the process of supporting and funding

the evaluation and selection of available options and actions that collectively can best ensure the sustainability of San Diego's essential water resources at a reasonable and affordable cost to all water system ratepayers.

Supplemental Comments on Water Conservation

In addition to our assessment of the previously addressed water and wastewater system performance questions, IROC believes that this annual report must communicate our assessment of San Diego's water conservation efforts to date as well as what appears to us to be the major alternatives for supplementing such water conservation efforts to best ensure the sustainability of San Diego's essential water resources at a reasonable and affordable cost to all water system ratepayers.

No one knows when the current water supply challenge will abate, if ever; however, the more San Diegans follow water-wise practices, the less likely will be the necessity for governmental authorities at the State, County or City level to impose long-term mandatory water use restrictions and possibly water rationing.

Each San Diego water system consumer needs to be a primary agent of change by taking personal responsibility for the reduction of his or her own water demand. SDWD's role in water conservation efforts is limited to 1) taking whatever measures are available to educate all of its customers in the need to conserve, and in the means and techniques that can be utilized to increase their collective water conservation expertise and success, and 2) differentiating the value of water conservation from the cost of water waste by providing clear economic incentives in the design and enforcement of an easy-to-understand water rate structure that rewards reductions of water use and penalizes (by means of significantly higher water rates) those who use water significantly beyond the average of their rate class peer group.⁴

Appendix K to this report contains additional commentary on the need to increase water conservation efforts in San Diego.

Appendix L to this report contains a comparative analysis of average household water use in San Diego versus three other Southern California coastal communities (Los Angeles, Long Beach and Santa Barbara). The results of this comparison indicate that San Diegans appear to be less water-efficient than the citizens of any of these other three cities by a meaningful variance.

Appendix M to this report contains an extensive list and discussion of increased water conservation actions with which each water and wastewater ratepayer and citizen of San Diego needs to become familiar. Using this reference source, each person and business in San Diego then needs to make a reasonable effort to select and implement as many of these recommended actions as practicable to help reduce overall water demand in San Diego.

⁴ Conservation of water should be promoted by the utility whether or not there is a near term emergency. Although wasting water includes the inefficient use of water, the concept of waste is much broader than the concept of inefficiency. Waste also includes the use of water when none might be required.

Alternatives for Augmenting Water Conservation Efforts

If increased water conservation efforts, on their own, are not likely to resolve San Diego's water supply challenge, what other options or actions should the water ratepayers and citizens of San Diego be considering?

In addition to increasing San Diego's water conservation efforts, our community also needs to evaluate, authorize and financially support the implementation of actions that will safely and at a comparatively affordable and reasonable cost either increase the sustainable quantity of water available for San Diego or otherwise increase or multiply the usability of San Diego's existing water resources.

We discuss these alternatives in Appendix N to this report. We believe that one or more of these alternatives will be needed even after considering the potential for a significantly greater level of community-wide participation in water conservation efforts, whether through voluntary efforts or mandatory requirements. The combination of actions we are proposing in this report represents the most cost-effective and reliable way for the ratepayers and citizens of San Diego to address effectively the pending water supply challenge. The time we have to move on such critical actions, if we want to avoid or materially reduce the impact of the looming water supply challenge, is running out.

Indirect Potable Water Reuse (IPR)

Today, through the development of a well thought out and extensively tested series of processes, water treatment professionals have the ability to process and treat most forms of wastewater in an effective manner that separates, captures and purifies a portion of what was wastewater into clear, odorless, drinkable water which fully meets or exceeds all of the stringent Federal and State environmental, health and safety standards and requirements established to protect the public's drinkable water.

Based on a constant monitoring and periodic testing of our potable water supply, every known potentially significant water contaminant is currently removed from San Diego's water supply; however, the additionally intense IPR purification processes established to convert, extract, capture and produce the pure water portion of wastewater represents a significant additional step in the removal of both known and unknown elements to something approaching the purity levels of distilled water.

The reality is that San Diegans are now, and have always been subject to having hundreds of other communities, farmers and businesses add elements to our sources of water that require removal and purification to protect the health and safety of all San Diegans.

Negative sound-bite labeling ("Toilet-to-Tap") of San Diego's pursuit of an Integrated Potable Reuse (IPR) approach, coupled with a significant level of negative campaigning, has, in our opinion, been and still remains a misguided attempt to undermine IPR. The perception that these

adversarial claims may be valid is no doubt aided by an uninformed psychological aversion to the concept of a reuse of wastewater as potable water.

The effect of such negative views about IPR has resulted in significant delays in the testing and implementation of this critically important, comparatively safe and environmentally sound option for increasing San Diego's available water resources at a very competitive cost, in comparison to available alternatives.

Numerous examples of successful and safe IPR projects exist. For example, Las Vegas, NV discharges 100 percent of that city's purified sewer water into Lake Mead, the primary storage facility for the portion of Colorado River water utilized as the main source of potable water by the citizens and ratepayers of Las Vegas. Another example is in Orange County, CA where purified sewage water is discharged into both surface lakes and underground aquifers which in turn serve as major sources of potable water for citizens and ratepayers in Orange County, CA.

Appendix N provides additional information on IPR as well as other potential alternative courses of action for augmenting water conservation efforts in San Diego. Appendix O provides a description of San Diego's proposed IPR Demonstration Project.

Other Data

Appendix P to this Report contains a series of key statistics on the operations of the Departments.

Concluding Remarks

IROC's overall assessment of the performance of the Departments is that they accomplished their overall missions and specific responsibilities in an acceptable manner during fiscal year 2008.

However, IROC does not view its mandate to include analyzing at a detailed level the day-to-day operational procedures of the Departments. IROC was not designed to act as a technical consultant. That said, we would be surprised if there were no opportunities to improve upon the operational efficiency of both Departments, just as there are such opportunities in any organization, resulting from continuous changes in the operating environment, technology, and other factors. The key is to develop a culture of continuous improvement that rewards the identification of such opportunities and is open to change. In that regard, IROC notes that, in varying degrees, the Departments have undergone BPR reviews, currently operate under a Bid-to-Goal system, and have received recognition from professional standard organizations.

At the same time, as also noted in our report there are numerous critical water and wastewater system issues that need to be addressed.

We believe that the City's action to establish IROC is an important step in building confidence on the part of ratepayers in the operations, system investments and planning activities of the water and wastewater departments. Composed of a small group of citizens with appropriately diversified backgrounds and a passion to serve the interests of the water and wastewater ratepayers of San Diego, IROC represents a major step in this direction. As is evidenced in this, our first annual report, we have focused primarily on identifying, evaluating and communicating those matters of critical importance to the ratepayers and citizens of San Diego and to the policy and decision makers who have the authority and duty to represent the best interests of those ratepayers.

The aggregate cost of the improvement initiatives we are proposing could be substantial; however, the cost of inaction very well could be more costly to the ratepayers of San Diego through the prospect of an ever increasing cost of scarce imported water and of wastewater services and the potential for a limit or decrease in the quantity or quality of water that can be purchased to meet San Diego's water needs.

In conclusion, the members of IROC wish to express our appreciation for the support and assistance we have received from the management and staff of the Departments, from Mayor Sanders and his staff and from the Members of the San Diego City Council and their staffs. The members of IROC look forward to continuing to serve the interests of San Diego's citizens and its water and wastewater ratepayers.

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