



A & N Technical Services, Inc.

Analysis of MPWMD Non-Residential Water Use Factors Scope of Work

A & N Technical services will conduct a technical analysis of Non-Residential Water Use Factors for the Monterey Peninsula Water Management District. MPWMD has used Non-Residential Water Use Factors since 1985 to estimate water demand for new and expanding Commercial, Industrial, and Institutional (CII) uses prior to construction to ensure that adequate water supplies exist to meet the project's needs. The factors are "regional averages" based on telephone surveys of the businesses used and on water consumption records from California American Water, the local utility. Factors are based on an amount of water demand per square-foot or other measurement (i.e., hotel room, restaurant seat, commercial washer in a Laundromat, etc.). Most of the 52 individual water factors used by MPWMD to calculate water demand "capacity" were last defined in 1992.

Tasks

The analysis will focus on three tasks.

Task 1. Review Existing and Alternative Practices to Water Use Factor Definition.

Contractor will review and collect information on the derivation of water use factors currently being employed at the District and in other service areas.

Task 2. Collect and Analyze Water Consumption and Permit Data.

The Contractor will collect, clean, and merge three types of data: water consumption records from California American Water, Water Permit Data from MPWMD, and weather data from NOAA or CIMIS. These data will be analyzed to develop recommendations for revised CII water use factors.

MPWMD and California American Water (Monterey Division) require recalibrated Non-Residential Water Use Factors to implement new CII rates approved by the Public Utilities Commission (PUC) in 2009. The rates are planned for implementation in mid-February 2010. Updated factors will also be used to estimate demand prior to issuance of a Water Permit and will be used to calculate CII rations prior to water rationing. In addition to recommending water use factors for different types of CII uses, the project should identify CII uses that are unique.

Data: MPWMD will provide Excel spreadsheets showing 368 Non-Residential properties that received Water Permits for New Connection between 1990 and 2005. The spreadsheets include (1) two spreadsheets of current and archived Water Permit data for Non-Residential New Construction Water Permits issued between 1990 and 2005; (2) two spreadsheets showing Non-Residential Water Permits, the factors applied to the permit (i.e. retail, restaurant, bakery, etc.)

and the square-footage or other measurement associated with that use; (3) a spreadsheet showing the variables in the commercial factors used, and (4) a description of the fields.

All properties listed on these spreadsheets were required to install ultra-low flush toilets, instant access hot water systems and low-flow showerheads and faucet aerators. All properties were required to have conservation signage and to serve water only upon request. Although MPWMD requires final inspections post-construction, not all properties have been site verified to have met the permit conditions. Estimated permit demand includes landscaping that was not separated measured/calculated during the permit process with the exception of large landscaped areas. In those cases, a separate water permit or landscape water factor is included for the property.

The spreadsheets provided by MPWMD include the following fields:

- Permit number
- Permit issue date
- Applicant name and telephone number
- Applicant address
- Agent name and telephone number
- Water company serving property
- Property address
- Jurisdiction
- Assessor's Parcel Number
- Existing use
- Proposed use
- Number of connections permitted
- Remarks
- Type of use
- Amount of water used on permit
- Amendment information
- Archived information
- Water factors used for permit

California American Water will supply historical consumption information and other data needed to match consumption and permit data. The fields required need to be identified by the Consultant. CAW data contain several fields that could potentially serve for matching data: premise number (8 digits), customer account number (6 digits), and meter number (10 character string). CAW will need to provide 5-8 years of historical consumption data, as well as information about the meter installation date and date of first service and other data as specified.

Analysis: The current Non-Residential Water Use Factors used in the water rate structure were originally developed for capacity-related calculations in the early 1990's. Their use as a basis for CII water rates bears a resemblance to recent national research on water budgets.¹ Consultant may consider weather patterns, industry fluctuations, and other factors that may be pertinent to establishing a water use factor for specific types of CII use.

To the extent possible, the analysis would build on currently applied methods for calculating CII water use factors and allow customization for alternative levels of indoor and outdoor water efficiency, irrigated area, and evapotranspiration requirements. Contractor will not address or offer opinions on any legal questions, as it is not qualified to do so; these questions will be

¹ See Mayer P., W. DeOreo, T.W. Chesnutt, et al. *Water Budgets and Rates Structures: Innovative Management Tools*, Awwa Research Foundation, March 2008, 1P-4.25C-91205-03/08-NH.

referred to the appropriate legal counsel.

Task 3: Develop and Present Recommended CII Water Use Factors. Contractor will develop, revise, and present a set of recommended CII water use factors. At the conclusion of the project, MPWMD and California American Water anticipate recommendations for implementation of the factors, including an analysis of how outdoor water use affects the factors. The Contractor should attend one public meeting in Monterey to explain the methodology and answer questions of California American Water customers. This task is currently limited to 1 presentation and associated presentation development costs.

Deliverables:

1. Technical Memorandum describing Analysis of Water Use Factors and Recommendations
2. Presentation Recommended CII Water Use Factors

Each task will be individually authorized by the Water Management District Project Manager. Additional work items may be added as directed by the Water Management District Project Manager.

Budget:

The proposed budget is \$49,808 with a not to exceed level of \$49,808. The project manager at MPWMD has the authority to reallocate level of effort among the tasks and consulting staff as needed. Contractor anticipates that Dr. Thomas Chesnutt will be the primary consultant working on this project. However, David Pekelney and Dana Holt can provide technical assistance on a range of topics as agreed to by the MPWMD Project Manager. Two trips are currently included in the budget for Dr. Chesnutt: one trip at project conception to review available data and elicit field experience and a second trip to present recommendations. Consulting rates are as follows:

Thomas Chesnutt, Ph.D.	\$220/hr.
David Pekelney, Ph.D.	\$190/hr.
Dana Holt, M.S.	\$120/hr.

MPWMD						
Analysis of MPWMD Non-Residential Water Use Factors						
Estimated Budget						
Task	Personnel	A&N Technical Services			Total Hours	Subtotal by Task
		Tom Chesnutt	David Pekelney	Dana Holt		
		-	-	-		
Task 1. Review Existing and Alternative Practices to Water Use Factors		16	8	20	44	\$7,440
Task 2. Collect and Analyze Water Consumption and Permit Data		64	24	72	160	\$27,280
Task 3. Develop and Present Recommended CII Water Use Factors		36	-	16	52	\$9,840
Contingency (10%)		12	3.2	10	25.2	\$4,448
Total Hours		128.0	35.2	118.0	281.2	\$49,008
Billing Rate		\$220	\$190	\$120		
Labor Cost		\$28,160	\$6,688	\$14,160	\$49,008	
Other expenses		-			\$800	
Total Budget					\$49,808	

Schedule:

MPWMD												
Analysis of MPWMD Non-Residential Water Use Factors												
Activity Schedule												
	January				February				March			
Task	1	2	3	4	1	2	3	4	1	2	3	4
Task 1. Review Existing and Alternative Practices to Water Use Factors												
Task 2. Collect and Analyze Water Consumption and Permit Data												
Task 3. Develop and Present Recommended CII Water Use Factors												