



April 7, 2009

Ms. Cheri Vogel
New Mexico Office of the State Engineer
Water Use and Conservation Bureau
P.O. Box 25102
Santa Fe, New Mexico 87504-5102

Re: Rio Rancho Commercial Audit Summary Report

Dear Cheri:

Daniel B. Stephens & Associates, Inc. is pleased to present the following summary of the City of Rio Rancho commercial water audits performed February 9 through 12, 2009.

A total of ten establishments participated in the project. Restaurant participation and audit scheduling were coordinated by Ruben Archuleta, City of Rio Rancho Water Conservation Technician. High commercial water users were targeted for participation in the project. Table 1 provides the date and time of each audit. Completed water audit questionnaires are provided as Attachment 1.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from approximately 150,000 to 970,000 gallons, or \$500 to \$3,000 per year, if all of the recommended conservation strategies are incorporated.

The lowest potential savings are estimated for Panda Express, which was built in October 2007 and has low-flow fixtures and xeriscaped landscaping (they can achieve their estimated savings by replacing two restroom faucet aerators). The highest potential savings are estimated for Village Inn, due to multiple recommended conservation strategies including replacing faucet aerators, replacing the ice machine, repairing the water softener leak, replacing six high-flow toilets, and changing landscaping irrigation practices and/or plant types.

Restaurant-specific issues identified and/or pointed out by City staff as part of this analysis that impact how the data should be interpreted include:

- Weck's Restaurant data presented from before April 2008 are for JB's Restaurant, the former occupant of this location (Figure 1).
- Mad Max's BBQ data presented from before October 2007 are for a former occupant of this location (Figure 2).
- Water metering began in April 2006 at Turtle Mountain Brewing Company (Figure 5).

Daniel B. Stephens & Associates, Inc.

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Albuquerque, NM 87109 FAX 505-822-8877

- A new water meter was installed at Applebee's on January 18, 2008 (Figure 7). The previous meter was underreporting flow.
- No water usage is listed for Lincoln Middle School in December 2006 (Figure 9).
- A new water meter was installed at Panda Express on November 14, 2008 (Figure 10). The City billing department has been working to solve this account's metering problem.

The smallest participating user was Osaka Steak House, billed for approximately 363,000 gallons in 2008. The largest participating user was Lincoln Middle School, billed for 6,031,000 gallons in 2008. Total water use for Lincoln Middle School is measured by one meter, but only the school cafeteria was audited as a part of this program. The daily water use for the participating commercial users in 2008 ranged from approximately 1,000 gallons per day (gpd) to approximately 16,500 gpd. Table 2 presents billed water data for each participating restaurant for 2006, 2007, and 2008; these data are plotted by restaurant in Figures 1 through 10. The City uses units of 1,000 gallons for their water accounting, but water consumption data have been converted to gallons for the purposes of this analysis.

A total of 8 Niagara Conservation Power Rinser pre-rinse spray nozzles were installed at the participating restaurants during the commercial audits. The flow rates of the existing pre-rinse spray nozzles ranged from 1 to 3.5 gallons per minute (gpm), while the flow rates of the replacement nozzles were between 0.5 and 1.5 gpm.

One nozzle each was replaced at every participating location except for the following:

- St. Thomas Aquinas School, where the existing nozzle had a low flow rate and was in good condition
- Turtle Mountain Brewing Company, where two nozzles were replaced
- Applebee's, where we were unable to shut the water off to replace the nozzle (a replacement nozzle was left, and was scheduled to be installed by a plumber the following day)
- Panda Express, which did not have a pre-rinse spray fixture

Village Inn had two pre-rinse spray fixtures, but one of the existing nozzles was left in place because it had a low flow rate and was in good condition. During the Rio Rancho commercial audits, the pre-rinse spray nozzle was also changed out at Dahlia's Restaurant, although a full audit was not done (this restaurant was not included in the full audit because water for the surrounding stripmall is all accounted for together on one meter, and is included as a portion of the rent that is paid). Rio Rancho Public School maintenance staff were given 15 nozzles for installation at other schools within the district following the Lincoln Middle School Cafeteria water audit.

The participating restaurants are mindful of their water use, although eight of the ten have leaks that need to be addressed (Table 3). A leak at Mad Max's BBQ is expected, although it was not found as a part of the audit. This leak is estimated at 600 gpd (based on the fact that their base flow never goes to zero), and is likely located underground, somewhere between the sidewalk and building. A plumber will need to be called to look for this leak.

Many of the kitchen faucets at the participating restaurants do not have aerators, and the fixtures in place would need to be changed out in order to add aerators. Aerators were present on the majority of the handwashing faucets, and in many cases were replaced with more restrictive aerators, reducing their flow rates.

Applebee's is the only participating restaurant that washes the kitchen floors with a hose during cleaning (they estimate that floors are sprayed for 10 minutes per day in addition to mopping them). Most of the participating restaurants use a mop and bucket to clean their floors.

Ice machines either make flake/nugget or cube ice, and either use air or water to cool their compressors. Flake/nugget ice machines use 20 gallons of water to make 100 pounds of ice, while cube ice machines use 30 or more gallons of water per 100 pounds of ice (EBMUD, 2008). In addition to the amount of water used to make ice, water-cooled ice machines use an additional 72 to 240 gallons of water per 100 pounds of ice to cool the machine's compressor (EBMUD, 2008). An air-cooled ice machine costs about \$1,000 more than a water-cooled ice machine, and a nugget/flake ice machine costs between \$500 and \$1,200 more than a cube-style ice machine. Only one flake/nugget ice machine was identified during the audits (Weck's). Six of the ten ice machines at audited locations were air-cooled, leaving four that were water-cooled (Mad Max's BBQ, St. Thomas Aquinas School Cafeteria, Lincoln Middle School Cafeteria, and Panda Express). Model numbers were not obtained on four of the ten ice machines, due to the cover being screwed shut (Turtle Mountain Brewing Company and Panda Express), or because this information was missing from the machine (Hot Tamales and Applebee's).

Of the ten participating restaurants, only two use garbage disposals (St. Thomas Aquinas School Cafeteria and Lincoln Middle School Cafeteria). Only three of the participating restaurants use water softeners (Weck's, Applebee's, and Village Inn). The water softener at Village Inn was discharging continuously, at a rate of approximately 360 gpd. Two of the participating restaurants have on-site laundry facilities (Osaka Steak House and Turtle Mountain Brewing Company), and both wash fewer than ten loads of laundry per week (the majority of their laundry is sent out). None of the participating restaurants have on-site showers.

Many of the participating restaurants have low-flow toilets (1.6 gallons per flush [gpf]), but there are also a total of 22 high-flow toilets (3.5 gpf) being used at the restaurants (Table 4). At Weck's, a total of four toilets have been replaced with low-flow models, although the original flush valves are still being used, leading to 3.5 gpf flush volumes for these four toilets. The flush valves need to be replaced in each of these toilets to reduce their flush volumes to 1.6 gallons per

flush. Aerators were present on the majority of the restroom handwashing faucets, and were in many cases replaced during the audits with more restrictive aerators, reducing their flow rates.

Two of the participating restaurants irrigate grass (Weck's and Village Inn), and four others irrigate landscaping (Applebee's, xeriscaped landscaping in the case of Turtle Mountain Brewing Company, Hot Tamales, and Panda Express). Neither Mad Max's BBQ nor Osaka Steak House uses any water outdoors. St. Thomas Aquinas School and Lincoln Middle School irrigate athletic fields and landscaping; however, because our site audits concentrated on water use by the school cafeterias, no estimates of water savings due to changes in landscaping irrigation types and/or plant types were made for these schools.

Weck's irrigates approximately 9,600 square feet of grass, and Village Inn irrigates approximately 1,200 square feet of grass. The Office of the State Engineer (OSE) has quantified landscape irrigation water requirements by vegetation and irrigation type for each county in New Mexico. Their estimate of the landscape irrigation water requirement using flood or sprinkler irrigation for Bermuda grass using flood or sprinkler irrigation in Sandoval County is 32.71 gallons per square foot per year (Wilson, 1996). At this rate, the irrigation of 9,600 square feet of Bermuda grass in Rio Rancho should require approximately 314,000 gallons of water per year and the irrigation of 1,200 square feet of Bermuda grass should require approximately 39,000 gallons of water per year. Grass is often overwatered; therefore, actual water use for irrigation may exceed these estimates.

Xeriscaping has been shown to reduce outdoor water use by 50 percent or more (NM OSE, 2001). If half of the landscaping at Weck's were replaced with xeriscape, approximately 78,500 gallons of water could be conserved each year, leading to an annual water bill savings of approximately \$250.00 under the current water rate structure. If all of Weck's grass were replaced with xeriscape, approximately 157,000 gallons of water could be conserved each year, leading to an annual water bill savings of approximately \$500.00 under the current water rate structure. If half of the grass at Village Inn were replaced with xeriscape, approximately 19,500 gallons of water could be conserved each year, leading to an annual water bill savings of approximately \$63.20 under the current water rate structure.

Letters have been sent to each of the participating restaurants thanking them for their participation, summarizing the findings of each individual audit, and including suggestions for how each restaurant can be more water efficient. Copies of these letters are included as Attachment 2.

Ms. Cheri Vogel
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We appreciate the opportunity to work on this project. Please contact me at (505) 822-9400 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing
Hydrogeologist

AE/rpf

Attachments

cc: Marian Wrage, City of Rio Rancho
Joe Alderete, U.S. Bureau of Reclamation

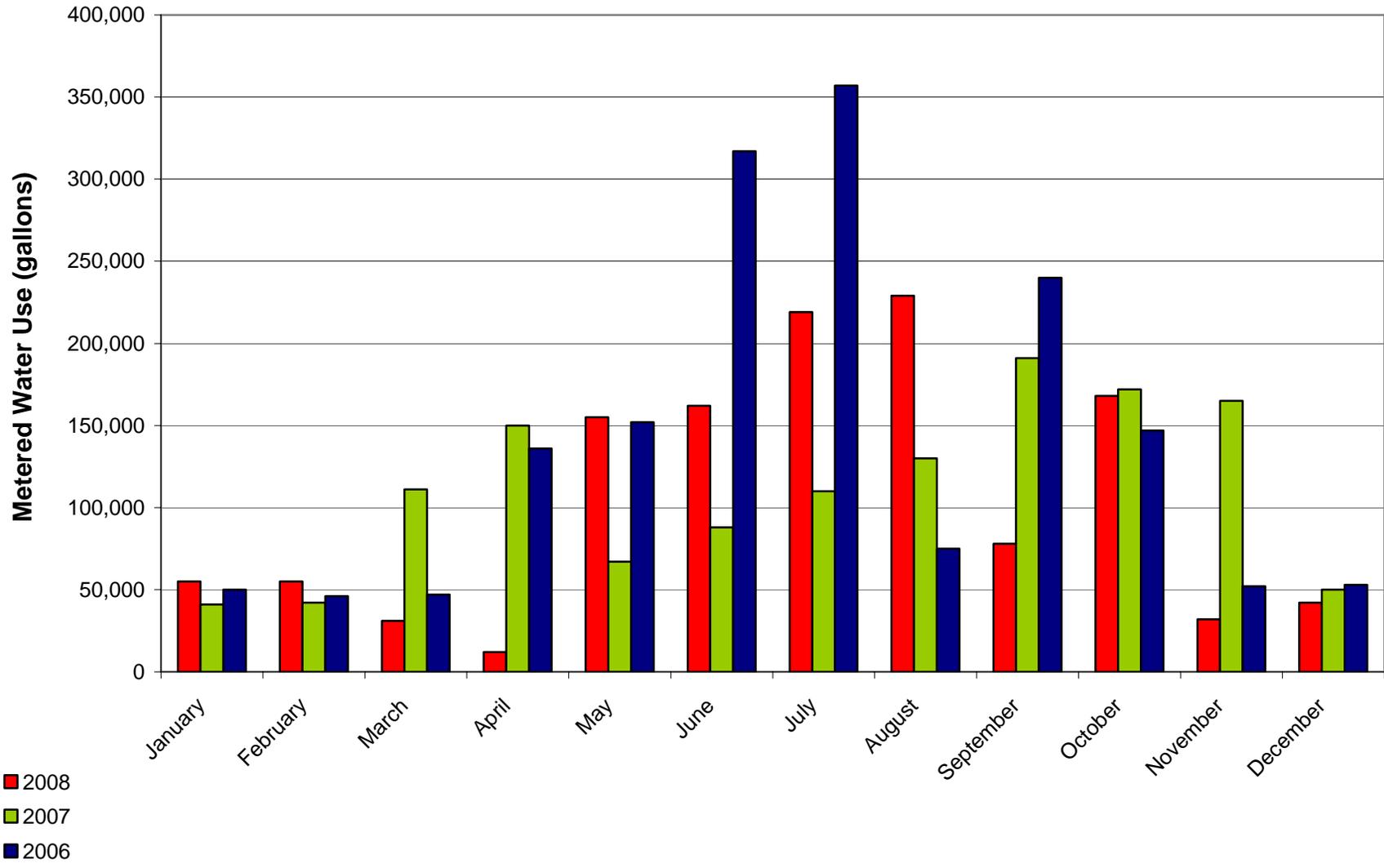
References

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.

New Mexico Office of the State Engineer (OSE). 2001. *A Water Conservation Guide for Public Utilities*. Available at <<http://www.ose.state.nm.us/water-info/conservation/pdf-manuals/nm-water-manual.pdf>>.

Wilson, B.C. 1996. *Water conservation and quantification of water demands in subdivisions: A guidance manual for public officials and developers*. Technical Report 48, New Mexico State Engineer Office. May 1996.

Figures



Note: Weck's remodeled and opened at this location in May 2008.
 Data from before then are from the previous tenant of this location.

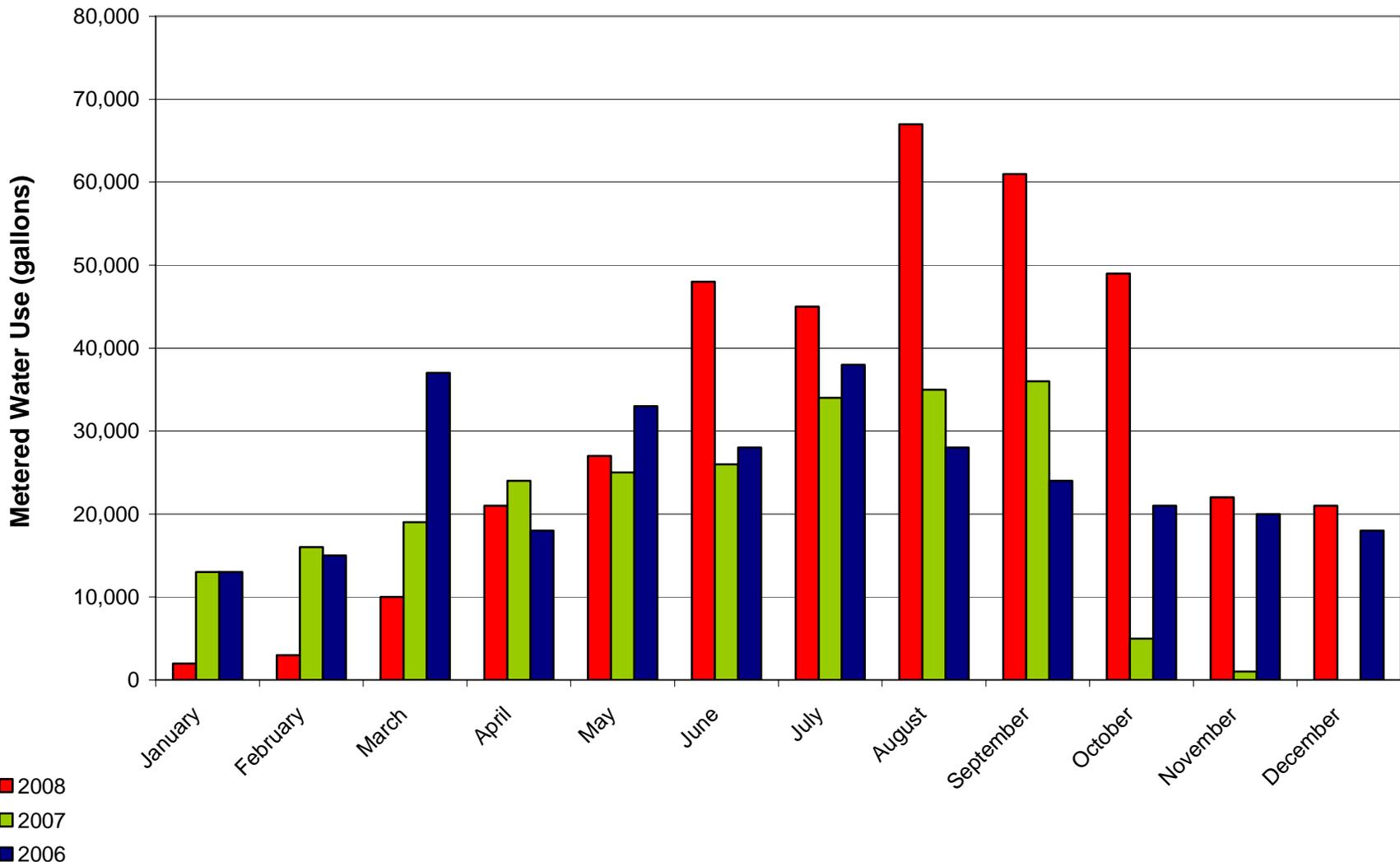
RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Weck's

Figure 1



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Note: Mad Max's BBQ opened in this location on April 1, 2008.
Data from before then are from the previous tenant of this location.

RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Mad Max's BBQ

Figure 2



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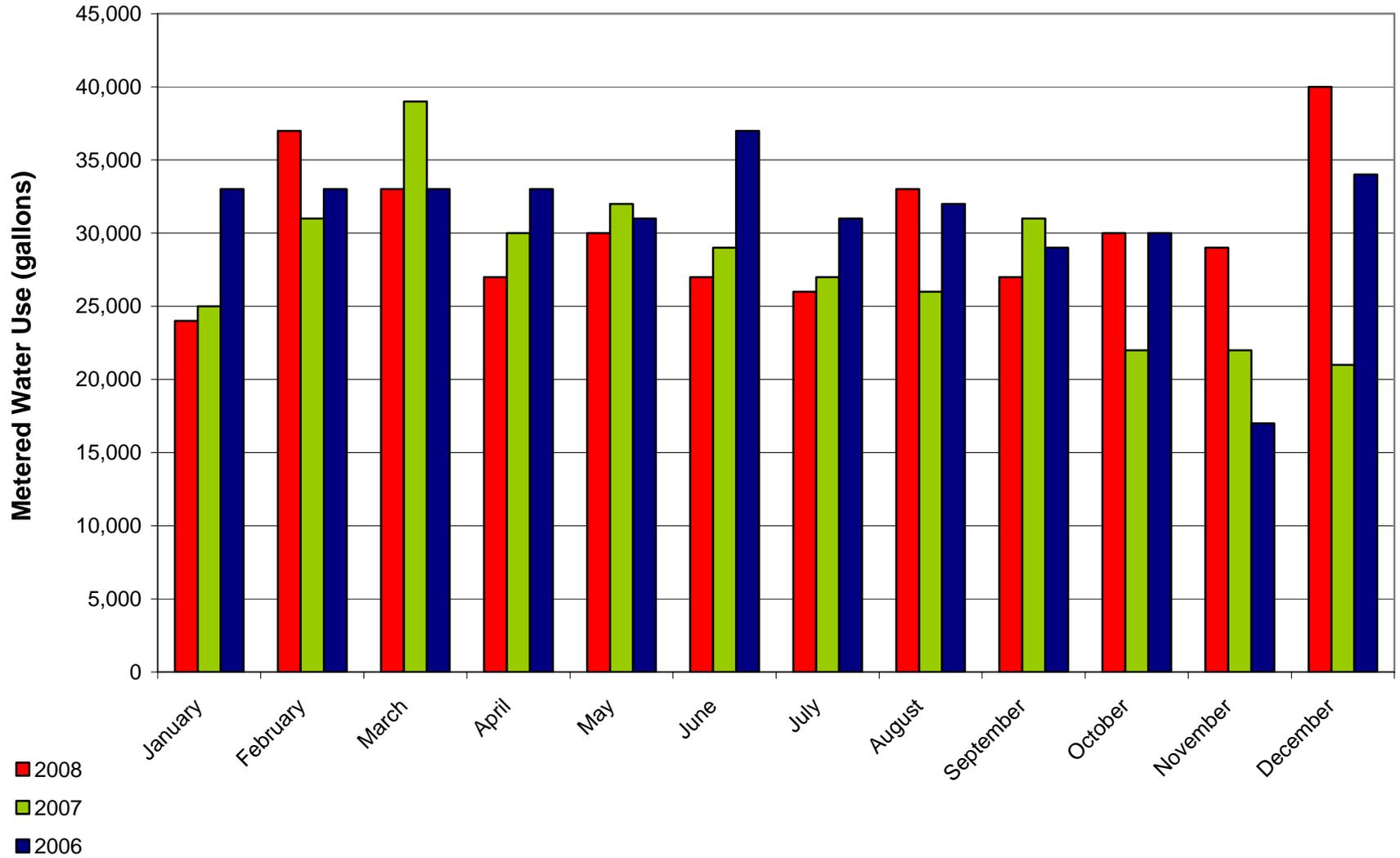


Figure 3

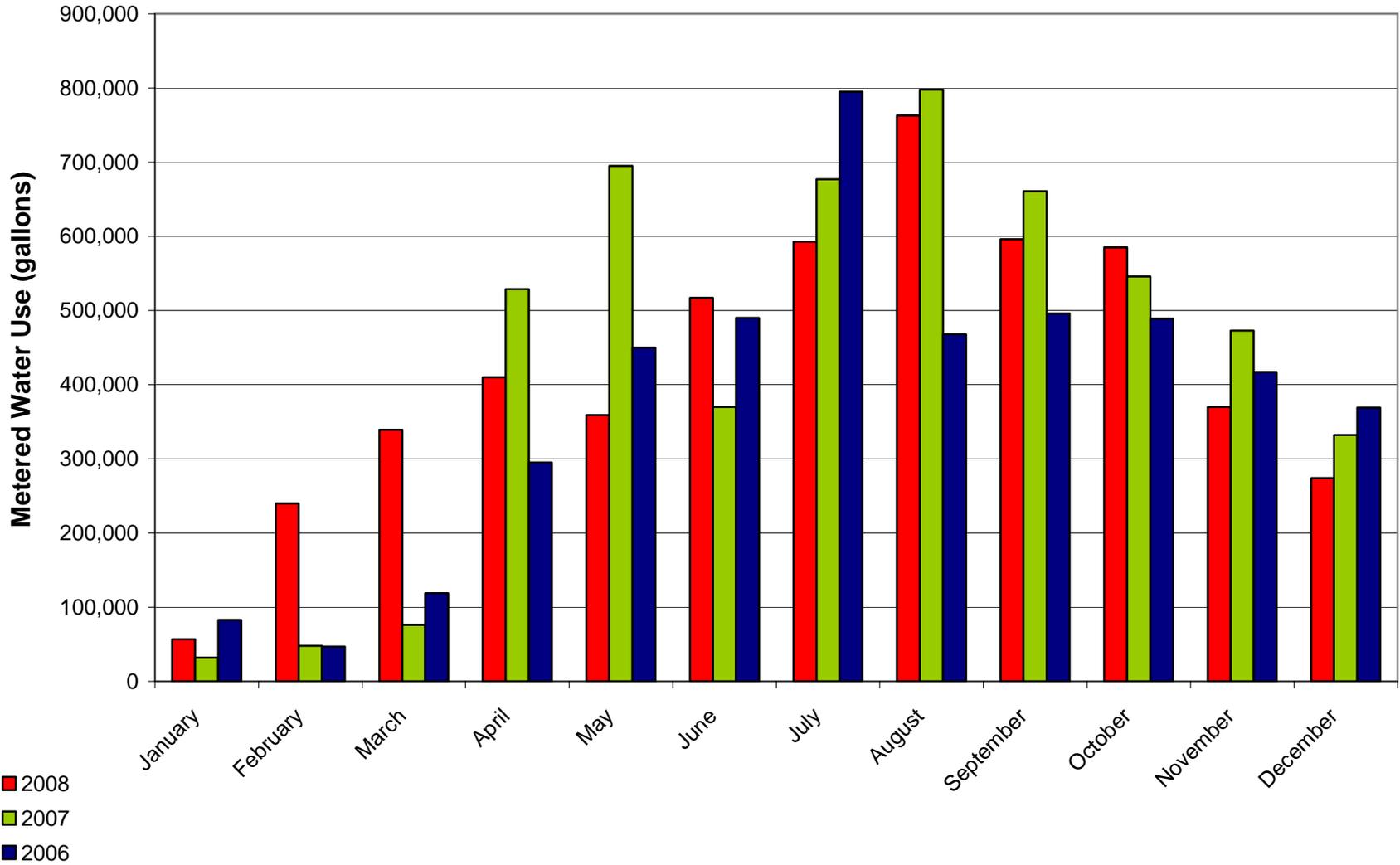


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RIO RANCHO COMMERCIAL WATER AUDIT

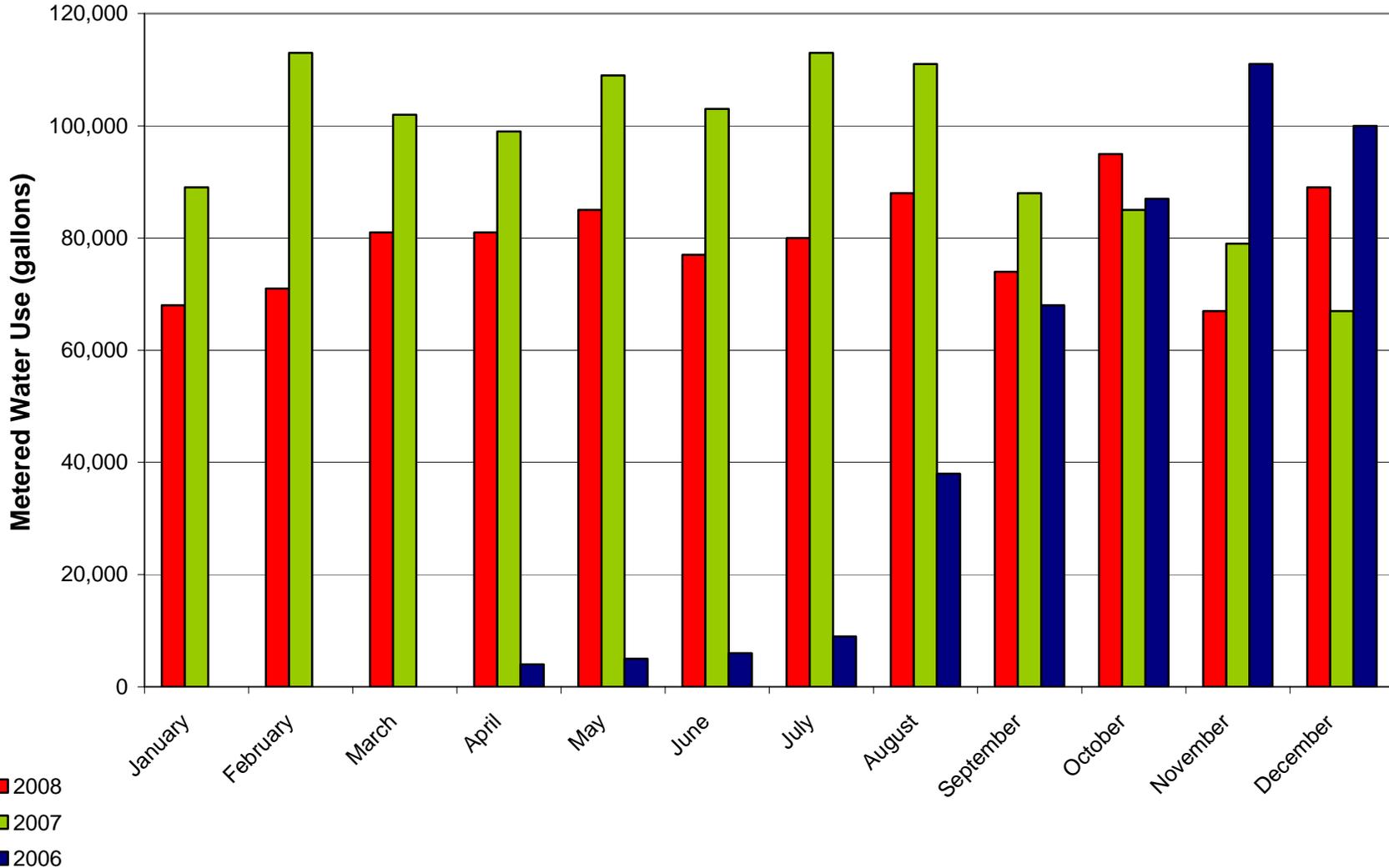
**Metered Water Use
Osaka Steak House**



RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
St. Thomas Aquinas School

Figure 4





Note: Turtle Mountain Brewing Co. began using water at this location in April 2006.

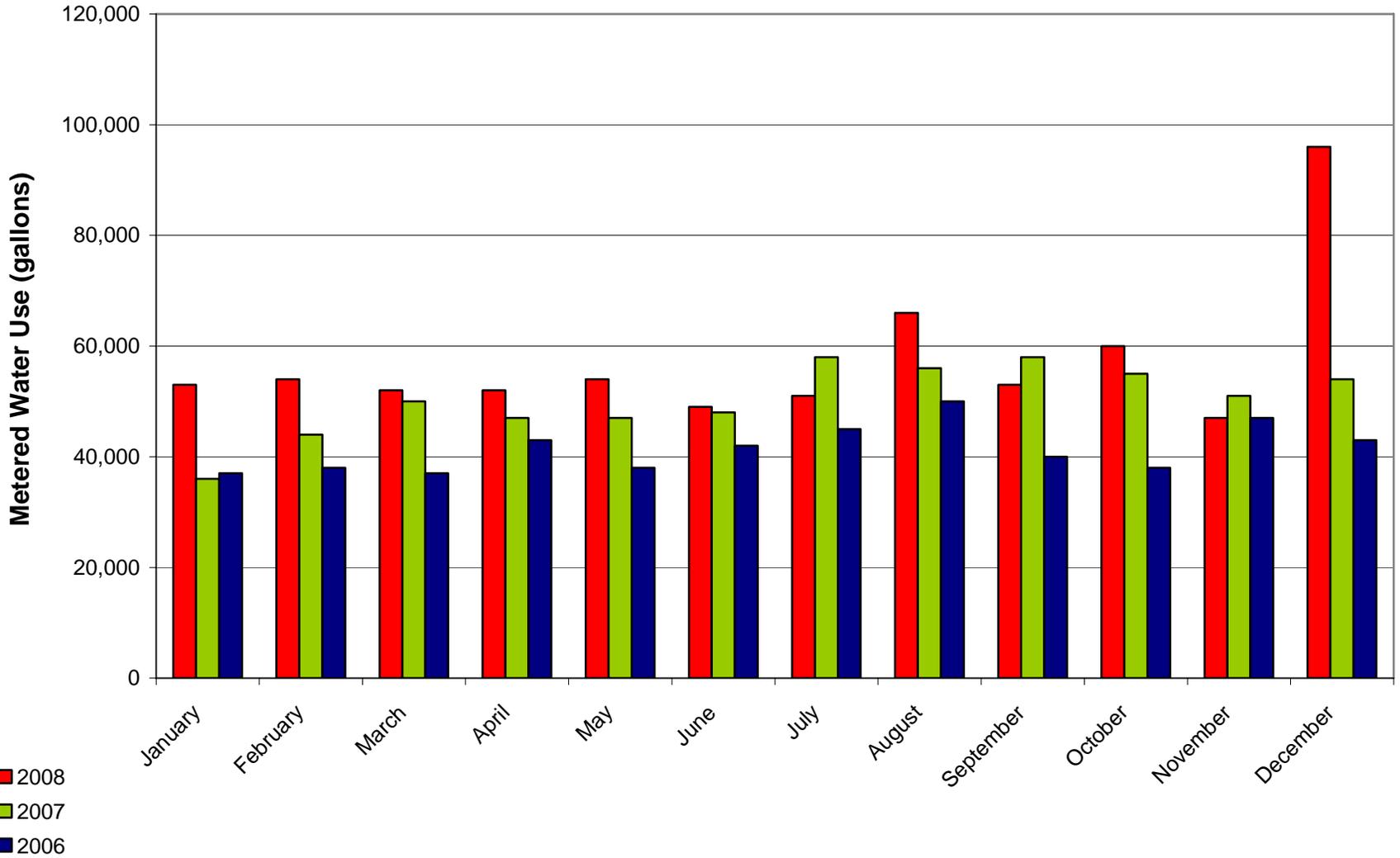
RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Turtle Mountain Brewing Co.

Figure 5



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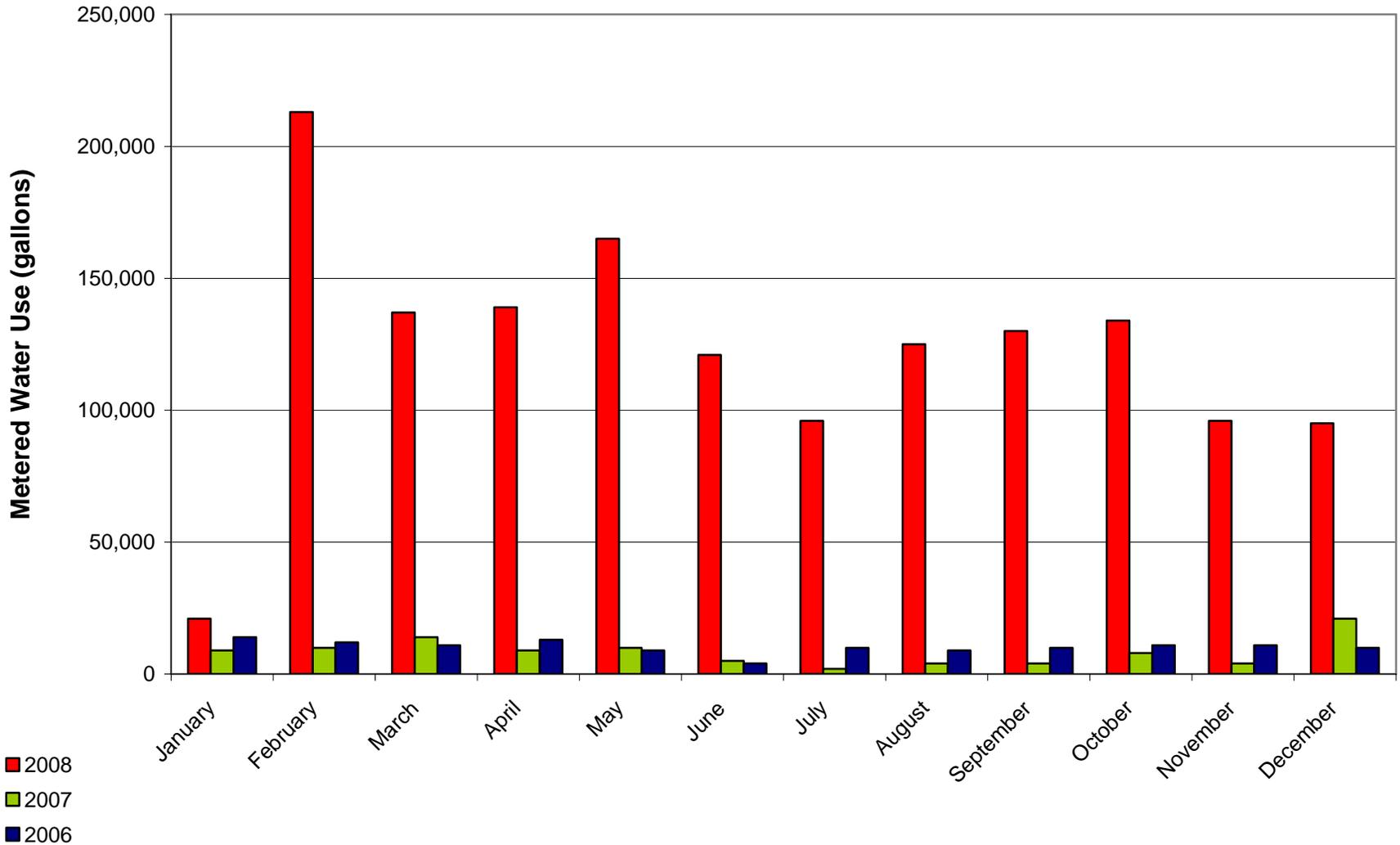
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RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Hot Tamales Restaurant

Figure 6





Note: A new water meter was installed at Applebee's in January 2008. The previously installed meter was underreporting flow.

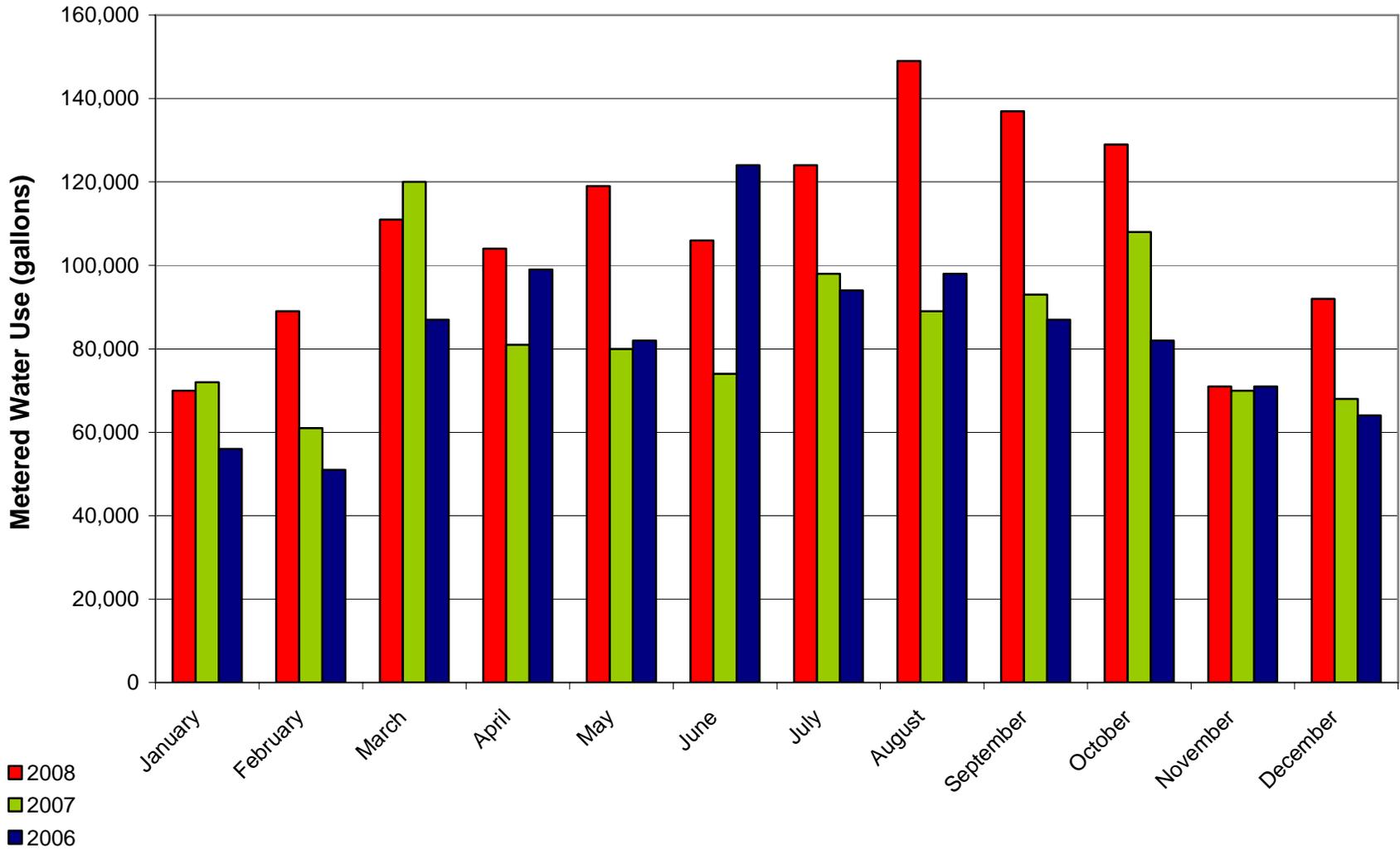
RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Applebee's Restaurant

Figure 7



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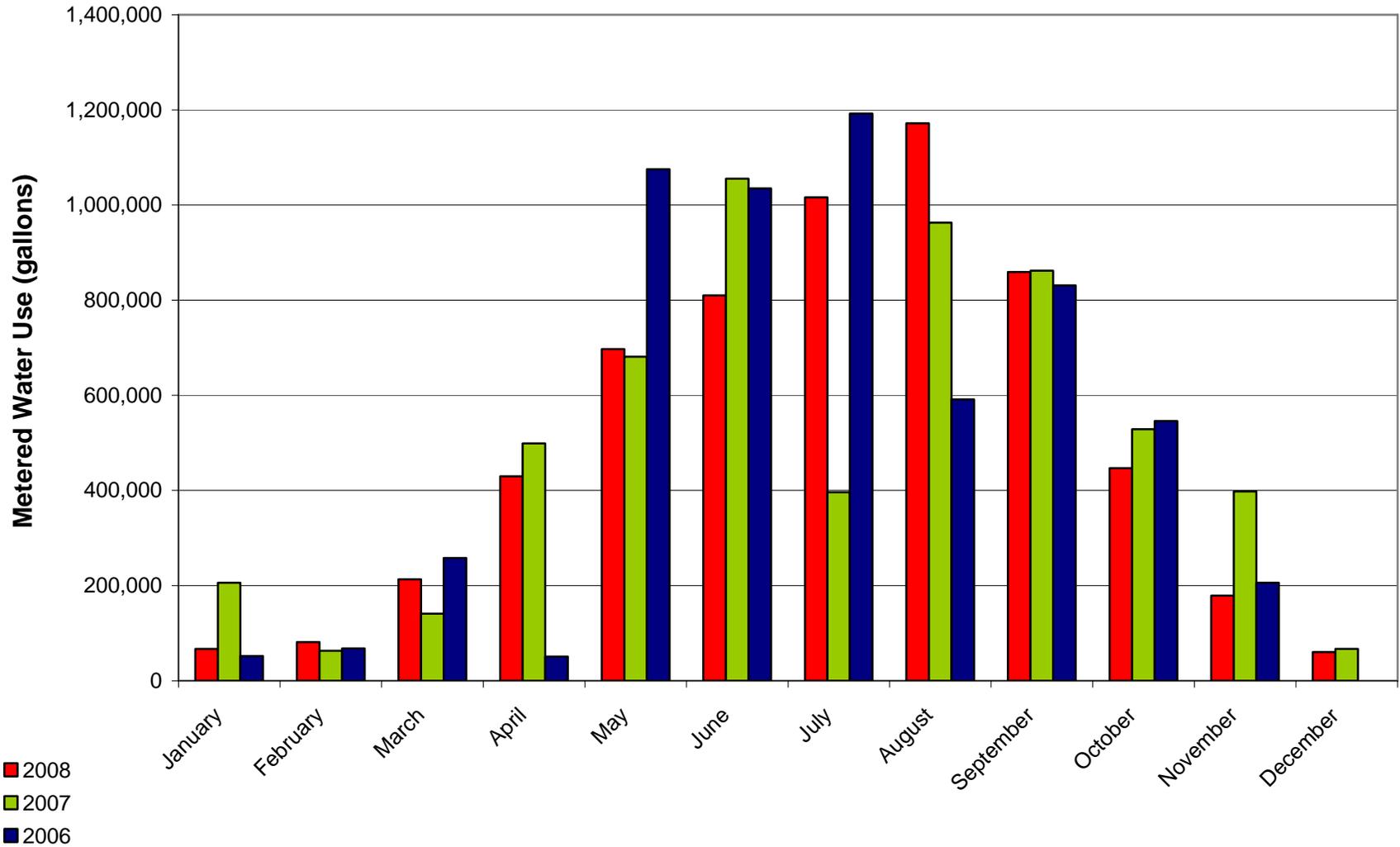
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RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Village Inn Restaurant

Figure 8





Note: This plot reflects water use for all of Lincoln Middle School (not just the cafeteria). The Rio Rancho water use database does not reflect water use in December 2006.

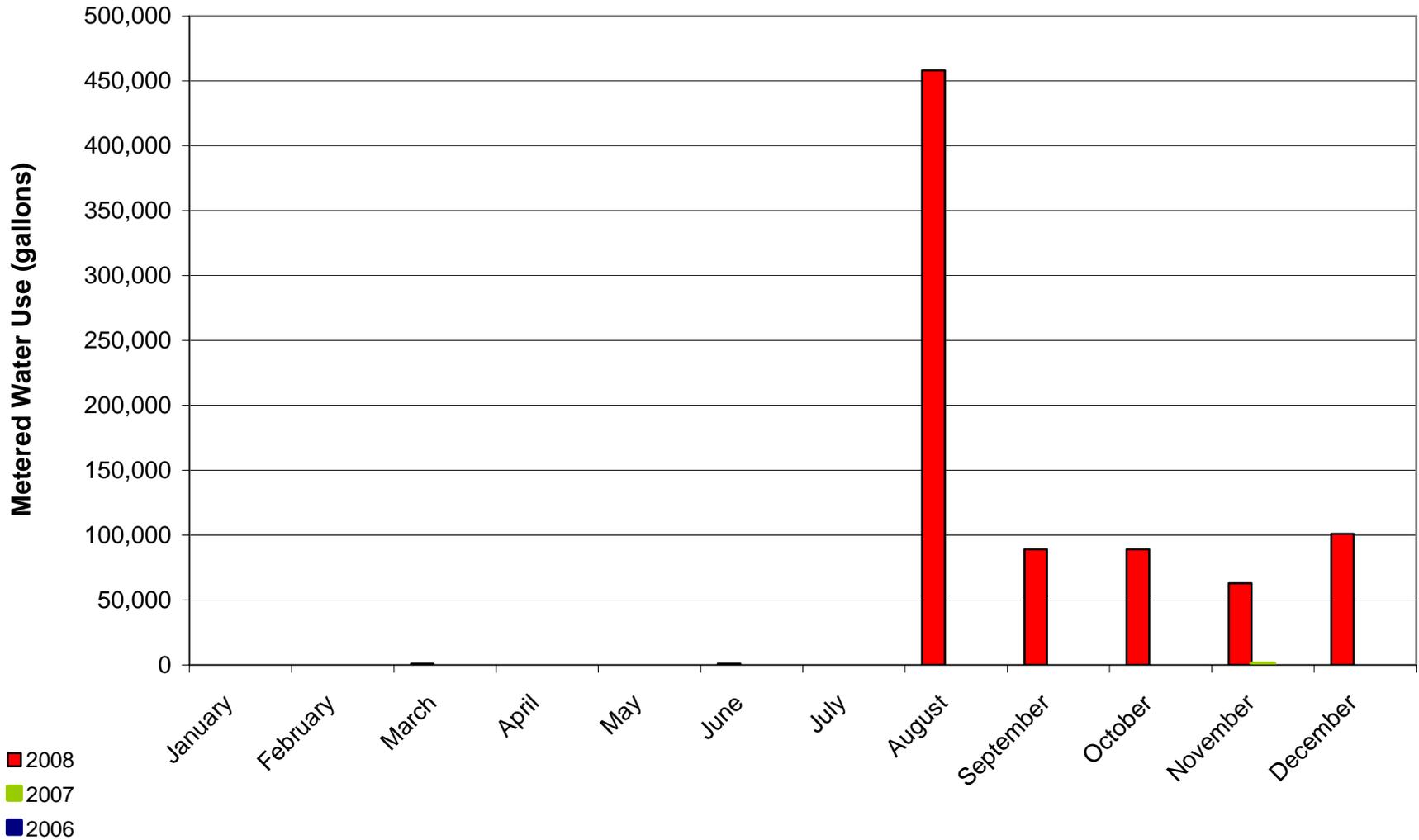
RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Lincoln Middle School

Figure 9



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4/6/09



Note: A new water meter was installed at Panda Express in November 2008. The City of Rio Rancho has had trouble with the meter at this location, and has been working to address the problem.

RIO RANCHO COMMERCIAL WATER AUDIT
Metered Water Use
Panda Express

Figure 10



Tables



Daniel B. Stephens & Associates, Inc.

Table 1. City of Rio Rancho Water Audit Schedule

Audit Time	Audit Date		
	2/09/2009	2/10/2009	2/12/2009
8:00–9:30 a.m.	Weck's Restaurant 1620 NM 528 SE	Turtle Mountain Brewing Co. 905 36th Pl. SE	Village Inn 1741 NM 528 SE
10:00–11:30 a.m.	Mad Max's BBQ 1600 Sara Rd. SE	Hot Tamales 1520 NM 528 SE	Lincoln Middle School 2287 Lema Rd. SE
11:30–1:00 p.m.	Osaka Steak House 1463 NM 528 SE	---	---
1:00–2:30 p.m.	St. Thomas Aquinas 1100 Hood Rd. SE	Applebee's 4100 Ridgerock Rd. SE	Panda Express 801 Unser Blvd. SE
3:00–4:30 p.m.	---	---	---



Table 2. Water Consumption Data for Participating City of Rio Rancho Users

User	Water Consumption (gallons)														Average Daily Use	Average Monthly Use
	Year	January	February	March	April	May	June	July	August	September	October	November	December	Total for Year		
Weck's Restaurant 1620 NM 528 SE	2008	55,000	55,000	31,000	12,000	155,000	162,000	219,000	229,000	78,000	168,000	32,000	42,000	1,238,000	3,392	103,167
	2007	41,000	42,000	111,000	150,000	67,000	88,000	110,000	130,000	191,000	172,000	165,000	50,000	1,317,000	3,608	109,750
	2006	50,000	46,000	47,000	136,000	152,000	317,000	357,000	75,000	240,000	147,000	52,000	53,000	1,672,000	4,581	139,333
Mad Max's BBQ 1600 Sara Rd. SE	2008	2,000	3,000	10,000	21,000	27,000	48,000	45,000	67,000	61,000	49,000	22,000	21,000	376,000	1,030	31,333
	2007	13,000	16,000	19,000	24,000	25,000	26,000	34,000	35,000	36,000	5,000	1,000	0	234,000	641	19,500
	2006	13,000	15,000	37,000	18,000	33,000	28,000	38,000	28,000	24,000	21,000	20,000	18,000	293,000	803	24,417
Osaka Steak House 1463 NM 528 SE	2008	24,000	37,000	33,000	27,000	30,000	27,000	26,000	33,000	27,000	30,000	29,000	40,000	363,000	995	30,250
	2007	25,000	31,000	39,000	30,000	32,000	29,000	27,000	26,000	31,000	22,000	22,000	21,000	335,000	918	27,917
	2006	33,000	33,000	33,000	33,000	31,000	37,000	31,000	32,000	29,000	30,000	17,000	34,000	373,000	1,022	31,083
St. Thomas Aquinas School 1100 Hood Rd. SE	2008	57,000	240,000	339,000	410,000	359,000	517,000	593,000	763,000	596,000	585,000	370,000	274,000	5,103,000	13,981	425,250
	2007	32,000	48,000	76,000	529,000	695,000	370,000	677,000	798,000	661,000	546,000	473,000	332,000	5,237,000	14,348	436,417
	2006	83,000	47,000	119,000	295,000	450,000	490,000	795,000	468,000	496,000	489,000	417,000	369,000	4,518,000	12,378	376,500
Turtle Mountain Brewing Co. 905 36th Pl. SE	2008	68,000	71,000	81,000	81,000	85,000	77,000	80,000	88,000	74,000	95,000	67,000	89,000	956,000	2,619	79,667
	2007	89,000	113,000	102,000	99,000	109,000	103,000	113,000	111,000	88,000	85,000	79,000	67,000	1,158,000	3,173	96,500
	2006	0	0	0	4,000	5,000	6,000	9,000	38,000	68,000	87,000	111,000	100,000	428,000	1,173	35,667
Hot Tamales 1520 NM 528 SE	2008	53,000	54,000	52,000	52,000	54,000	49,000	51,000	66,000	53,000	60,000	47,000	96,000	687,000	1,882	57,250
	2007	36,000	44,000	50,000	47,000	47,000	48,000	58,000	56,000	58,000	55,000	51,000	54,000	604,000	1,655	50,333
	2006	37,000	38,000	37,000	43,000	38,000	42,000	45,000	50,000	40,000	38,000	47,000	43,000	498,000	1,364	41,500
Applebee's 4100 Ridgerock Rd. SE	2008	21,000	213,000	137,000	139,000	165,000	121,000	96,000	125,000	130,000	134,000	96,000	95,000	1,472,000	4,033	122,667
	2007	9,000	10,000	14,000	9,000	10,000	5,000	2,000	4,000	4,000	8,000	4,000	21,000	100,000	274	8,333
	2006	14,000	12,000	11,000	13,000	9,000	4,000	10,000	9,000	10,000	11,000	11,000	10,000	124,000	340	10,333
Village Inn 1741 NM 528 SE	2008	70,000	89,000	111,000	104,000	119,000	106,000	124,000	149,000	137,000	129,000	71,000	92,000	1,301,000	3,564	108,417
	2007	72,000	61,000	120,000	81,000	80,000	74,000	98,000	89,000	93,000	108,000	70,000	68,000	1,014,000	2,778	84,500
	2006	56,000	51,000	87,000	99,000	82,000	124,000	94,000	98,000	87,000	82,000	71,000	64,000	995,000	2,726	82,917
Lincoln Middle School 2287 Lema Rd. SE	2008	67,000	81,000	213,000	430,000	697,000	810,000	1,016,000	1,172,000	859,000	447,000	179,000	60,000	6,031,000	16,523	502,583
	2007	206,000	63,000	141,000	499,000	681,000	1,055,000	396,000	963,000	862,000	529,000	398,000	67,000	5,860,000	16,055	488,333
	2006	52,000	68,000	258,000	51,000	1,075,000	1,035,000	1,192,000	591,000	831,000	546,000	206,000	0	5,905,000	16,178	492,083
Panda Express 801 Unser Blvd. SE	2008	0	0	1,000	0	0	1,000	0	458,000	89,000	89,000	63,000	101,000	802,000	2,197	66,833
	2007	0	0	0	0	0	0	0	0	0	0	1,000	0	1,000	3	83
	2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Table 3. Quantified Leaks by Restaurant

Restaurant	Total Lost to Leaks		
	(gallons per day)	(gallons per year)	(\$ per year) ^a
Weck's	154	56,210	182.00
Mad Max's BBQ	600	219,000	709.50
Osaka Steak House	82	29,930	97.00
St. Thomas Aquinas School Cafeteria	720	262,800	851.50
Turtle Mountain Brewing Company	180	65,700	212.75
Hot Tamales	20	7,300	23.75
Applebee's	170	62,050	201.00
Village Inn	394	143,810	466.00
Lincoln Middle School Cafeteria	0	0	0.00
Panda Express	0	0	0.00
Total	2,320	846,800	2,743.50

^a At current water rates



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Table 4. Number of High-Flow Toilets by Restaurant

Restaurant	Number of High-Flow Toilets (≥ 3.5 gallons per flush)
Weck's	5
Mad Max's BBQ	2
Osaka Steak House	4
St. Thomas Aquinas School Cafeteria	3
Turtle Mountain Brewing Company	0
Hot Tamales	1
Applebee's	0
Village Inn	6
Lincoln Middle School Cafeteria	1
Panda Express	0
Total	22

Attachment 1
Completed Surveys

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/9/2009

1. General information

Business name Weck's Restaurant Phone (505) 896-1411

Contact person name and title Becky Dominguez, manager

Physical address 1620 NM 528, SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 7015769

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>55,000</u>	Apr	<u>12,000</u>	Jul	<u>219,000</u>	Oct	<u>168,000</u>
Feb	<u>55,000</u>	May	<u>155,000</u>	Aug	<u>229,000</u>	Nov	<u>32,000</u>
Mar	<u>31,000</u>	Jun	<u>162,000</u>	Sep	<u>78,000</u>	Dec	<u>42,000</u>

Meter: Size 1.5-inch Type Badger AMR Installed May 7, 2007

Number of employees 25-30 (mostly full time) Number of shifts per day 1

Number of meals served per day unsure Days and hours of operation 6 a.m.-2 p.m., 7 days

Date the facility was built > 15 years Size of the facility (square footage) unsure

Restaurant seating capacity 161-165

Date of last remodel May 2008 (when Weck's moved into this location)

Description of any existing water conservation measures Water is served only on request.

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) Auto-Chlor Model D2, 60 loads per day on average (wash 56 seconds, rinse 32 seconds).

**City of Rio Rancho
Commercial Water Audit Questionnaire**

Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 5

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 Pre-rinse spray nozzle	Used for dishwashing; nozzle was replaced with a low flow nozzle, reducing flow from 2 to 1 gallons per minute (gpm).	NA	2
2 Handwashing	Handwashing sink in the kitchen. Faucet has a 5 gallon per day (gpd) drip.	Yes	2.75
3 Dishwashing	Dishwashing sink in the kitchen. Faucet has a 5 gpd drip.	Yes	3
4 Preparation	Faucet is rarely used.	No	8
5 Mop sink	Faucet used to fill buckets.	No	8

Pressure on main line coming into the restaurant 86 pounds per square inch (psi) (measured off the mop sink faucet).

Ice machine Brand Hoshizaki Model number F-1500MRH

Pound capacity 1,500 lbs./24 hours Cooling method (water or air?) Air

Is a garbage disposal used? Yes No If so, number of minutes used per day _____

Is there a water softener? Yes No If so, list the Brand Culligan

Model number Hi-Flo 2

Percent discharged Unknown; unit regenerates each day in the early morning.

Does the water softener run on a *timer*? or on *measured flow*?

Describe cleaning methods and equipment (for floors, etc.) A mop and bucket are used to clean the floors. Degreaser is used on equipment, with parts washed by running them through the dishwasher.

Discuss any other kitchen water use None

4a. Men's Restroom water use

Toilets: *Gravity tank:* Number 0 Volumes _____

Flush valve: Number 2 Volumes 4.5 gpf; 3.5 gpf

Urinals: Number 1 Volumes 1.5 gpf (Mansfield)

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Comments One of the toilets has been replaced, but the original flush valve is still installed. The handicapped (high profile) toilet is the original fixture, and has a leaking flush valve.

Lavatory sinks: Number 2 Estimated flow 2.5 gpm; 3 gpm

How many faucets have aerators installed? None All Number _____

Aerators were replaced on both sinks, reducing flow to 1 gpm each.

4b. Women's Restroom water use

Toilets: *Gravity tank:* Number 0 Volumes _____

Flush valve: Number 3 Volumes 3.5 gpf

Have any toilets been retrofitted with lower flow models? Yes No

Comments All three toilets were replaced in May 2008 when Weck's remodeled and moved in to this location, although the original flush valves are still installed, and so each toilet is using 3.5 gallons per flush.

Lavatory sinks: Number 2 Estimated flow 2 gpm; 2.5 gpm

How many faucets have aerators installed? None All Number _____

Aerators were replaced on both sinks, reducing flow to 1 gpm each.

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

City of Rio Rancho
Commercial Water Audit Questionnaire

6. Cooling water use

Cooling Units:	Number	Size/Location
Evaporative cooler	<u>1</u>	<u>unsure/for kitchen</u>
Refrigerated air	<u>2</u>	<u>unsure/for restaurant</u>

If evaporative cooling is used, do the cooling units recirculate water? Yes No

Coolers are used full days during the summer (May through September). _____

7. Outdoor water use

Area of irrigated landscape: 9,600 square feet

Landscape materials:

Plant type Grass Percentage of total area 85

Plant type Ornamental trees and bushes Percentage of total area 15

Watering/irrigation system description The care of the landscaping is contracted out. There is a Rainbird 1800 irrigation system, with multiple types of sprinkler heads. The landscaping is watered once a week during the summer, and once a month during the winter.

Condition of landscape (maintained, mulched, abandoned, etc.) Semi-maintained.

Is any water used to clean sidewalks/hose down parking lots? Yes No

Describe any other outdoor water uses. The sidewalks are power washed approximately once per year.

8. Other uses, leaks, and lost water

Method of floor mat cleaning: Floor mats are sprayed clean in the dishroom

If sprayed, estimate the number of minutes per day. 15 minutes at the end of each day

Describe any wait station water use. There is no sink at the wait station.

Describe any janitor closet water use. The mop sink and water softener are located in a janitor closet. See kitchen faucet section (section 3) for mop sink flow rate and use.

List any quantifiable leaks and estimated rates and locations. Two 5 gpd drips in the dishwashing and handwashing sinks in the kitchen. A 144 gpd leak due to a leaky flush valve on the handicapped toilet in the men's restroom.

Are there any showers on-site? Yes No

Describe any other water uses. None

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/9/2009

1. General information

Business name Mad Max's BBQ Phone (505) 604-7876

Contact person name and title Frances Montaña

Physical address 1600 Sara Rd., SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 6556373

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>2,000</u>	Apr	<u>21,000</u>	Jul	<u>45,000</u>	Oct	<u>49,000</u>
Feb	<u>3,000</u>	May	<u>27,000</u>	Aug	<u>67,000</u>	Nov	<u>22,000</u>
Mar	<u>10,000</u>	Jun	<u>48,000</u>	Sep	<u>61,000</u>	Dec	<u>21,000</u>

Meter: Size 1-inch Type Badger AMR Installed February 1, 2007

Number of employees 5 Number of shifts per day 2

Number of meals served per day 50 on average

Days and hours of operation 6:30 a.m.-8 p.m. Monday-Friday, 6:30 a.m.-7 p.m. on Saturday, closed on Sunday

Date the facility was built 1983/1984 Size of the facility (square footage) ~1,500 ft²

Restaurant seating capacity 32

Date of last remodel None (they just opened on April 1, 2008)

Description of any existing water conservation measures They are very conscious of their water use. Dishes are washed by hand, using a gray tub (there aren't many dishes to be washed).

City of Rio Rancho
Commercial Water Audit Questionnaire

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) None (dishes are washed by hand).

Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 3

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 <u>Handwashing</u>	<u>Handwashing sink in the kitchen.</u>	<u>Yes</u>	<u>2.5</u>
2 <u>Pre-rinse spray nozzle</u>	<u>Used for dishwashing; nozzle was replaced with a low flow nozzle, reducing flow from 3.5 to 1 gallons per minute (gpm).</u>	<u>NA</u>	<u>3.5</u>
3 <u>Dishwashing</u>	<u>Dishwashing sink in the kitchen.</u>	<u>Yes</u>	<u>4</u>

Pressure on main line coming into the restaurant 92 pounds per square inch (psi) (measured at the hose bib behind the restaurant).

Ice machine Brand Hoshizaki Model number KM-250BWE

Pound capacity 250 lbs./24 hours Cooling method (water or air?) Water

Is a garbage disposal used? Yes No

Is there a water softener? Yes No

Describe cleaning methods and equipment (for floors, etc.) The floors are cleaned using a mop and bucket daily.

Discuss any other kitchen water use None

4a. Men's Restroom water use

Toilets: Gravity tank: Number 1 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

Urinals: Number 0 Volumes _____

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 3 gpm

City of Rio Rancho
Commercial Water Audit Questionnaire

How many faucets have aerators installed? None All Number _____

The aerator on this lavatory sink was changed as a part of the audit, reducing its flow to 1gpm.

The valve under this sink is leaking.

4b. Women's Restroom water use

Toilets: *Gravity tank:* Number 1 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

Have any toilets been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 3 gpm

How many faucets have aerators installed? None All Number _____

The aerator on this lavatory sink was changed as a part of the audit, reducing its flow to 1gpm.

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

6. Cooling water use

Cooling Units:	Number	Size
Evaporative cooler	<u>2</u>	<u>55 cfm</u>
Refrigerated air	_____	_____
Other _____	_____	_____

If evaporative cooling is used, do the cooling units recirculate water? Yes No

How much of the year are the coolers used? June-September, on during the day and off at night

7. Outdoor water use

Area of irrigated landscape: None

The restaurant has one island containing juniper bushes, but it isn't watered.

8. Other uses, leaks, and lost water

Method of floor mat cleaning: The floor mats are taken to the car wash and power washed there.

Describe any wait station water use. None

Describe any janitor closet water use. None

List any quantifiable leaks and estimated rates and locations. City staff analyzed hourly data for this location, and found a 25 gallon per hour base flow (water use never goes to zero). A 600 gallon per day (18,000 gallons per month) leak is expected, but was not found as a part of the audit.

Are there any showers on-site? Yes No

Describe any other water uses. None

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/9/2009

1. General information

Business name Osaka Steak House Phone (505) 892-7778

Contact person name and title Ray Jong

Physical address 1463 NM 528, SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 6556413

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>24,000</u>	Apr	<u>27,000</u>	Jul	<u>26,000</u>	Oct	<u>30,000</u>
Feb	<u>37,000</u>	May	<u>30,000</u>	Aug	<u>33,000</u>	Nov	<u>29,000</u>
Mar	<u>33,000</u>	Jun	<u>27,000</u>	Sep	<u>27,000</u>	Dec	<u>40,000</u>

Meter: Size 1-inch Type Badger AMR Installed December 11, 2006

Number of employees 6 Number of shifts per day 2

Number of meals served 150-180 per week. The restaurant has been slow lately due to the downturn at Intel; business is seasonal (busier in winter).

Days and hours of operation Monday-Thursday 11:00 a.m.-2:00 p.m. and 5:00-9:30 p.m., Friday and Saturday 11:00 a.m.-2:00 p.m. and 5:00-10:30 p.m., closed on Sunday

Date the facility was built > 15 years ago Size of the facility (square footage) 8,000 ft²

Restaurant seating capacity 160

Date of last remodel None (facelift but nothing more)

Description of any existing water conservation measures The dishes are done all together at the end of each night (saving on water and on paying a dishwasher).

City of Rio Rancho
Commercial Water Audit Questionnaire

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) CMA Model C-2 (average of 30 loads washed each night)

Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 11

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 <u>Pre-rinse spray nozzle</u>	<u>Nozzle was changed out, but the flow rate remains unchanged.</u>	<u>NA</u>	<u>1</u>
2 <u>Dishwashing</u>		<u>No</u>	<u>10</u>
3 <u>5 faucets behind wok station</u>	<u>These faucets are not used.</u>	<u>No</u>	<u>---</u>
4 <u>Preparation</u>	<u>Two faucets at a multi-basin sink used for washing seafood and rice, and for knife sharpening. One of the faucets has a 10 gpd drip.</u>	<u>No</u>	<u>6</u>
5 <u>Preparation</u>		<u>No</u>	<u>4</u>
6 <u>Handwashing</u>	<u>Water to this sink has been turned off (it is not used).</u>	<u>No</u>	<u>---</u>
7 <u>Spatula washing</u>		<u>No</u>	<u>6</u>

Ice machine Brand Hoshizaki Model number KM-630MAE

Pound capacity 630 lbs./24 hours Cooling method (water or air?) Air

Is a garbage disposal used? Yes No

Is there a water softener? Yes No

Describe cleaning methods and equipment (for floors, etc.) Floors are scrubbed with a brush, rinsed with a bucket, and squeegeed dry (water is pushed to the floor drains).

Discuss any other kitchen water use None

4a. Kitchen Restroom water use

Toilets: Gravity tank: Number 1 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

City of Rio Rancho
Commercial Water Audit Questionnaire

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 2 gpm

How many faucets have aerators installed? None All Number _____

Aerator was replaced on this sink, reducing flow from 2 gpm to 1 gpm.

4b. Men's Restroom water use

Toilets: *Gravity tank:* Number 1 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

Urinals: Number 2 Volumes 1.0 gpf

Have any toilets or urinals been retrofitted with lower flow models? Yes No

The urinals have been changed out to lower flow models, but still have their original flush valves.

Lavatory sinks: Number 1 Estimated flow 2.5 gpm

How many faucets have aerators installed? None All Number _____

Aerator was replaced on this sink, reducing flow from 2.5 gpm to 1 gpm.

The sink can be easily left on by pushing the handle back too far (the water comes back on).

4c. Women's Restroom water use

Toilets: *Gravity tank:* Number 2 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

One of the toilets is out of order (it has a broken handle). Both toilets had water flowing over their discharge tubes, and this was fixed.

Have any toilets been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 2 gpm

How many faucets have aerators installed? None All Number _____

Aerator was replaced on this sink, reducing flow from 2 gpm to 1 gpm.

The sink can be easily left on by pushing the handle back too far (the water comes back on).

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

If so, list the type, brand, model number, and capacity for each:

Brand:	Model number:	Capacity:
<u>GE top loader</u>	<u>not listed</u>	<u>unsure</u>

Number of laundry loads washed? < 10 per week Is the rinse water reused? Yes No

There is a mop sink located in the same closet as the washing machine, although it is not used.

6. Cooling water use

Cooling Units:	Number	Size
Evaporative cooler	<u> </u>	<u> </u>
Refrigerated air	<u>✓ </u>	<u>unsure of size or number</u>
Other <u> </u>	<u> </u>	<u> </u>

Only the dining area is cooled, the kitchen is not.

How much is the cooler used? From June to September, but it is hardly used.

7. Outdoor water use

Area of irrigated landscape: None

8. Other uses, leaks, and lost water

Method of floor mat cleaning: Floor mats are sent out to be cleaned.

Describe any wait station water use. None

Describe any janitor closet water use. None

List any quantifiable leaks and estimated rates and locations. One of the faucets in the preparation area has a 10 gpd drip. A 72 gpd leak due to a faulty seal between the toilet tank and bulb in the employee restroom.

Are there any showers on-site? Yes No

Describe any other water uses. There is a lily pond in the lobby, and it is filled using buckets.

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/9/2009

1. General information

Business name St. Thomas Aquinas School Cafeteria Phone (505) 892-3221 ext. 25

Contact person name and title Ernie Catanach

Physical address 1100 Hood Rd., SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 011044740 (whole school)

Is all of the water billed to this account used by this restaurant? Yes No

If No, who are the other users? Provide any submetering information available. The water meter records water use for the whole school (submetering for the school cafeteria is not available).

Total water billed in 2008 (gallons)	Jan	<u>57,000</u>	Apr	<u>410,000</u>	Jul	<u>593,000</u>	Oct	<u>585,000</u>
	Feb	<u>240,000</u>	May	<u>359,000</u>	Aug	<u>763,000</u>	Nov	<u>370,000</u>
	Mar	<u>339,000</u>	Jun	<u>517,000</u>	Sep	<u>596,000</u>	Dec	<u>274,000</u>

Meter: Size 3-inch Type Unknown Installed Unknown

Number of employees 3 kitchen staff + 3 custodians Number of shifts per day Lunch only

Number of meals served per day 208 Days and hours of operation Monday-Friday

Date the facility was built 1982 Size of the facility (square footage) Unknown

Lunchroom seating capacity ~ 400 Date of last remodel Recent retiling

Description of any existing water conservation measures Existing conservation measures include fixing any leaks and using foot pedal operated sinks that cannot be left on. Also, a conserving pre-rinse spray nozzle (1.0 gpm) was already in place.

City of Rio Rancho
Commercial Water Audit Questionnaire

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) Hobart dishwasher (this dishwasher takes 3 to 4 minutes per load, and loads are run for ~ 1 hour per lunch shift)

Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 5

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 <u>Pre-rinse spray nozzle</u>	<u>Nozzle was not changed out (low flow rate, good condition)</u>	<u>NA</u>	<u>1</u>
2 <u>Dishwashing</u>	<u></u>	<u>Yes</u>	<u>4</u>
3 <u>Dishwashing</u>	<u></u>	<u>No</u>	<u>6</u>
4 <u>Mop sink</u>	<u></u>	<u>No</u>	<u>3</u>
5 <u>Handwashing</u>	<u></u>	<u>Yes</u>	<u>2.5</u>

Pressure on main line coming into the school 75 pounds per square inch (psi).

Ice machine Brand Manitowoc Model number QD0132A

Pound capacity 38 kg/day Cooling method (water or air?) Water

Is a garbage disposal used? Yes No If so, number of minutes used per day 20

Is there a water softener? Yes No

Describe cleaning methods and equipment (for floors, etc.) Mop and bucket

Discuss any other kitchen water use None

4a. Kitchen Restroom water use

Toilets: Gravity tank: Number 1 Volumes 5 gpf

Flush valve: Number 0 Volumes

Lavatory sinks: Number 1

Estimated flow 2.5 gpm (aerator was changed, reducing flow to 1.0 gpm)

How many faucets have aerators installed? None All Number 1

City of Rio Rancho
Commercial Water Audit Questionnaire

4b. Faculty Restroom water use

First faculty restroom

Toilets: *Gravity tank:* Number 1 Volumes 5 gpf (toilet was running during site visit, and was fixed).

Flush valve: Number 0 Volumes _____

Lavatory sinks: Number 1

Estimated flow 1.5 gpm (aerator was changed, reducing flow to 1.25 gpm)

How many faucets have aerators installed? None All Number 1

Second faculty restroom

Toilets: *Gravity tank:* Number 1 Volumes 5 gpf

Flush valve: Number 0 Volumes _____

Lavatory sinks: Number 1

Estimated flow 2.5 gpm (aerator was changed, reducing flow to 1 gpm)

How many faucets have aerators installed? None All Number 1

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

6. Cooling water use

The school cafeteria and lunchroom are cooled by the school's cooling system. The cooling system is used during June (for summer school) and then is not used during July, August, or September. The system is maintained by CMC Mechanical Company.

Cooling Units:	Number	Size
Evaporative cooler	<u>17</u>	<u>Unknown</u>

If evaporative cooling is used, do the cooling units recirculate water? Yes No

City of Rio Rancho
Commercial Water Audit Questionnaire

7. Outdoor water use

The St. Thomas Aquinas School audit focused on the school cafeteria and did not audit outdoor water use.

8. Other uses, leaks, and lost water

Method of floor mat cleaning: Floor mats are cleaned by running them through the dishwasher.

Describe any wait station water use. Not applicable

Describe any janitor closet water use. Not applicable

List any quantifiable leaks and estimated rates and locations. One of the faculty restroom toilets off of the lunchroom was running during our site visit (losing an estimated 720 gallons per day) and was fixed.

Are there any showers on-site? Yes No

Describe any other water uses. None

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/10/2009

1. General information

Business name Turtle Mountain Brewing Co. Phone (505) 259-4685

Contact person name and title Adam Galarneau

Physical address 905 36th Pl., SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 6391667

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>68,000</u>	Apr	<u>81,000</u>	Jul	<u>80,000</u>	Oct	<u>95,000</u>
Feb	<u>71,000</u>	May	<u>85,000</u>	Aug	<u>88,000</u>	Nov	<u>67,000</u>
Mar	<u>81,000</u>	Jun	<u>77,000</u>	Sep	<u>74,000</u>	Dec	<u>89,000</u>

Meter: Size 1-inch Type Badger AMR Installed February 7, 2007

Number of employees 50 Number of shifts per day 2

Number of meals served per day 350

Days and hours of operation 11 a.m.-9 p.m., 7 days per week

Date the facility was built April 2006 Size of the facility (square footage) ~10,000 ft²

Restaurant seating capacity 150 Date of last remodel None

Description of any existing water conservation measures Restaurant landscaping is xeriscape. They are pushing for a recycling program, but do not have the room for a recyclables dumpster.

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Commercial Water Audit Questionnaire

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) Dishwasher is a Jackson PA-1 (with a 40 second wash cycle and a 15 second rinse cycle). Unsure of the number of loads washed each day.

Is the dishwasher rinse water reused? Yes No

There is also a glasses dishwashing machine located behind the bar, which is being used constantly (Jet-Tech F-18).

Number of kitchen faucets 7

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 Pre-rinse spray nozzle	Nozzle was replaced, reducing the flow rate to 1.0 gpm.	NA	3.5
2 Pre-rinse spray nozzle	Nozzle was replaced, flow rate remained at 1.5 gpm.	NA	1.5
3 Dishwashing		No	5
4 Dishwashing		Yes	4.5
5 Dishwashing		No	3.5
6 Dishwashing	Thawing sink.	Yes	1.0
7 Handwashing	Foot pedal controlled.	Yes	3

Pressure on main line coming into the restaurant 70 pounds per square inch (psi).

Ice machine Brand Manitowoc Model number Unknown

Pound capacity Unknown Cooling method (water or air?) Air

Is a garbage disposal used? Yes No If so, number of minutes used per day _____

Is there a water softener? Yes No

Describe cleaning methods and equipment (for floors, etc.) Mop and bucket.

Discuss any other kitchen water use None

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Commercial Water Audit Questionnaire

4a. Banquet room restroom water use

Toilets: *Gravity tank:* Number 0 Volumes _____

Flush valve: Number 1 Volumes 1.6 gpf (auto-flush)

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 1.0 gpm (automatic sensor)

How many faucets have aerators installed? None All Number 1

4b. Men's Restroom water use

Toilets: *Gravity tank:* Number 0 Volumes _____

Flush valve: Number 1 Volumes 1.6 gpf (auto-flush)

Urinals: Number 2 Volumes 1.0 gpf

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 1.0 gpm (automatic sensor)

How many faucets have aerators installed? None All Number 1

4c. Women's Restroom water use

Toilets: *Gravity tank:* Number 0 Volumes _____

Flush valve: Number 2 Volumes 1.6 gpf (auto-flush)

Have any toilets been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 2 Estimated flow 1.0 gpm (automatic sensor)

How many faucets have aerators installed? None All Number 2

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

If so, list the type, brand, model number, and capacity for each:

**City of Rio Rancho
Commercial Water Audit Questionnaire**

Brand: GE Spacemaker stackable Model number: Unknown Capacity: Unknown

Number of laundry loads washed? 5-6 loads per week Is the rinse water reused? Yes No
A laundry service does the majority of the laundry each week.

6. Cooling water use

Cooling Units:	Number	Size
Evaporative cooler	<u>2</u>	<u></u>
Refrigerated air	<u>1</u>	<u></u>

The cooling system is used as needed, and is on much of the day between April and October.

7. Outdoor water use

Landscape materials:

Plant type Trees and bushes Percentage of total area 100

Watering/irrigation system description Hunter Pro-C drip system

Irrigation schedule: Time of day Watered daily (for 10 minutes each morning)
Seasonal adjustment Not used during the winter

Describe scheduler management: Full area is watered as one landscape zone
(how/when scheduler is read, adjusted)

Number of days per week Daily Number of weeks per year

Is any water used to clean sidewalks/hose down parking lots? Yes No

Every three months (a key is required to turn this spigot on).

Describe any other outdoor water uses. None

8. Other uses, leaks, and lost water

Method of floor mat cleaning: Floor mats are sprayed off and scrubbed down a few nights per week.

If sprayed, estimate the number of minutes per day. Approximately 5 minutes per day.

Describe any wait station water use. The drink station has one handwashing sink with a 3 gpm flow rate.

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Describe any janitor closet water use. Mop sink (hose connected, flow rate not measured).

List any quantifiable leaks and estimated rates and locations. There is a mop sink in the janitor closet, and its hot water handle has a > 100 gpd leak. The hose in the brewery had a 80 gpd leak during the site visit, which was fixed.

Are there any showers on-site? Yes No

Describe any other water uses. The brewery has a hose with a 80 gpd faucet drip (fixed during site visit). The bar also has a sink that is filled and used for washing wine glasses. This faucet has a 6 gpm flow rate and is not used very often.

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/10/2009

1. General information

Business name Hot Tamales Phone (505) 962-0123

Contact person name and title Jason Armstrong

Physical address 1520 NM 528, SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 6556300

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>53,000</u>	Apr	<u>52,000</u>	Jul	<u>51,000</u>	Oct	<u>60,000</u>
Feb	<u>54,000</u>	May	<u>54,000</u>	Aug	<u>66,000</u>	Nov	<u>47,000</u>
Mar	<u>52,000</u>	Jun	<u>49,000</u>	Sep	<u>53,000</u>	Dec	<u>96,000</u>

Meter: Size 1-inch Type Badger AMR Installed January 29, 2007

Number of employees 50 Number of meals served per day 175 (average)

Number of shifts per day 2 (9 employees work during day shifts, and 20 employees work during evening shifts)

Days and hours of operation Monday-Saturday 11 a.m.-9 p.m., Sunday 9 a.m.-3 p.m.

Date the facility was built ~1980s Size of the facility (square footage) Unknown

Restaurant seating capacity 175 Date of last remodel 5.5 years ago (guttled)

Description of any existing water conservation measures Xeriscaped landscaping, low-flow dish washer, auto-sensor faucet in the men's restroom

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3. Kitchen water use

Dishwasher description and use (number of loads washed each day) AutoChlor Model A4
(5,300 cycles washed per month)

Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 7

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 <u>Cup filler</u>		<u>NA</u>	<u>2</u>
2 <u>Handwashing</u>	<u>Aerator installed, reducing flow from 6 gpm to 1 gpm.</u>	<u>No</u>	<u>6</u>
3 <u>Mop sink</u>		<u>No</u>	<u>10</u>
4 <u>Preparation sink</u>	<u>Not used much (mostly for washing honey jars).</u>	<u>No</u>	<u>5.5</u>
5 <u>Preparation sink</u>	<u>Faucet has two leaks totaling 15 gpd (leak water is caught and used).</u>	<u>No</u>	<u>5</u>
6 <u>Pre-rinse spray nozzle</u>	<u>Fixture was replaced, reducing the flow rate from 2.0 to 1.5 gpm.</u>	<u>NA</u>	<u>2</u>
7 <u>Dishwashing</u>	<u>Faucet has on 5 gpd drip (this sink is used to wash large items and to fill the dishwashing sink).</u>	<u>No</u>	<u>6</u>

Ice machine Brand Hoshizaki Model number Unknown

Pound capacity Unknown Cooling method (water or air?) Air

Is a garbage disposal used? Yes No

Is there a water softener? Yes No

Describe cleaning methods and equipment (for floors, etc.) Floors are washed by hand using Tide and a deck brush, then rinsed and squeegeed, and finally mopped.

Discuss any other kitchen water use None

City of Rio Rancho
Commercial Water Audit Questionnaire

4a. Men's Restroom water use

Toilets: *Gravity tank:* Number 1 Volumes 1.6 gpf (measured using the Flushmeter device)

Flush valve: Number 0 Volumes _____

Urinals: Number 1 Volumes 1.0 gpf (auto-sensor flush)

Have any toilets or urinals been retrofitted with lower flow models? Yes No

If so, how many? 2 When? During remodel 5.5 years ago

Lavatory sinks: Number 1 Estimated flow 1 gpm (auto-sensor)

How many faucets have aerators installed? None All Number 1

4b. Women's Restroom water use

Toilets: *Gravity tank:* Number 2 Volumes 3.8 gpf; 2.5 gpf (both were measured using the Flushmeter device)

Flush valve: Number 0 Volumes _____

Have any toilets been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 2

Estimated flow 3 gpm each (aerators were changed on both faucets, reducing their flow rates to 1 gpm each)

How many faucets have aerators installed? None All Number 2

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

Laundry is sent out to AmeriPride.

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Commercial Water Audit Questionnaire

6. Cooling water use

Cooling Units:	Number	Size
Evaporative cooler	<u>2</u>	<u>Unknown</u>
Refrigerated air	<u>3</u>	<u>Unknown</u>

If evaporative cooling is used, do the cooling units recirculate water? Yes No

How much of the year is the cooler used? 6 months

Evaporative coolers are used for the kitchen, and refrigerated air is used for the restaurant, and the coolers are used between March and September. The swamp coolers are tied into the hoods in the kitchen, so they are on during business hours. The refrigerated air system is operated on a thermostat.

7. Outdoor water use

Landscape materials:

Plant type Trees (desert willows), yucca, sparse bushes

Watering/irrigation system description A drip system is used for landscaping irrigation, and a professional landscaping company (Working Ants) takes care of the landscaping (they check on the system weekly).

Number of days per week ~ 3 days per week Number of weeks per year Off during winter

Condition of landscape (maintained, mulched, abandoned, etc.) Maintained

Is any water used to clean sidewalks/hose down parking lots? Yes No

Describe any other outdoor water uses. None

8. Other uses, leaks, and lost water

Method of floor mat cleaning: None

Describe any wait station water use. None

Describe any janitor closet water use. None

List any quantifiable leaks and estimated rates and locations. Two leaks totaling 15 gpd from a kitchen preparation sink faucet, and a 5 gpd drip on one dishwashing faucet.

Are there any showers on-site? Yes No

Describe any other water uses. None

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/10/2009

1. General information

Business name Applebee's Phone (505) 994-3900

Contact person name and title George Stapleton, General Manager

Physical address 4100 Ridgerock Rd., SE

Mailing address (if different) send packet via e-mail to George at UnitNM06@applegrove.com

2. Background information

Restaurant meter account # 6389116

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>21,000</u>	Apr	<u>139,000</u>	Jul	<u>96,000</u>	Oct	<u>134,000</u>
Feb	<u>213,000</u>	May	<u>165,000</u>	Aug	<u>125,000</u>	Nov	<u>96,000</u>
Mar	<u>137,000</u>	Jun	<u>121,000</u>	Sep	<u>130,000</u>	Dec	<u>95,000</u>

Meter: Size 2-inch Type Badger AMR Installed January 18, 2008

Number of employees 50 Number of shifts per day 2

Number of meals served per day 350 (average)

Days and hours of operation Sunday-Thursday 11 a.m.-10 p.m., Friday-Saturday 11 a.m.-11 p.m.

Date the facility was built ~ 10 years old Size of the facility (square footage) Unknown

Restaurant seating capacity 200 Date of last remodel ~ 5 years ago

Description of any existing water conservation measures Pots and pans are washed in the large tri-sinks, and only full loads are run through the dishwasher

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Commercial Water Audit Questionnaire

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) CMA-44 (unsure of number of loads washed per day)

Is the dishwasher rinse water reused? Yes No Dishwater is recirculated

Number of kitchen faucets 16

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
Bar			
1 <u>Handwashing</u>	<u>Faucet has a 10 gpd drip.</u>	<u>Yes</u>	<u>2.5</u>
2 <u>Dipper well</u>	<u>Ice cream dipper well is run during business hours.</u>	<u>NA</u>	<u>~ 0.25</u>
Kitchen			
3 <u>Handwashing</u>	<u>Faucet aerator was changed out, reducing its flow rate from 4.0 gpm to 1.0 gpm.</u>	<u>Yes</u>	<u>4</u>
4 <u>Cup filler</u>		<u>NA</u>	<u>1</u>
5 <u>Cup filler</u>		<u>NA</u>	<u>1.25</u>
6 <u>Dipper well</u>	<u>Ice cream dipper well is run during business hours.</u>	<u>NA</u>	<u>1</u>
7 <u>Dishwashing</u>	<u>Triple sink.</u>	<u>No</u>	<u>6</u>
8 <u>Handwashing</u>		<u>Yes</u>	<u>5</u>
9 <u>Pre-rinse spray nozzle</u>	<u>The existing pre-rinse spray nozzle was left on (we were unable to shut off the water to this fixture).</u>	<u>NA</u>	<u>2</u>
10 <u>Dishwashing</u>	<u>Faucet is leaking at a rate of 150 gpd.</u>	<u>No</u>	<u>2</u>
11 <u>Preparation</u>	<u>Only used for morning preparation.</u>	<u>No</u>	<u>6</u>
12 <u>Handwashing</u>		<u>Yes</u>	<u>2</u>
13 <u>Mop sink</u>	<u>Hooked to a chemical system (flow not measured).</u>	<u>NA</u>	<u>---</u>
Front line			
14 <u>Dipper well</u>	<u>Fixture is turned off and has a 10 gpd</u>	<u>NA</u>	<u>off</u>

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	<u>drip.</u>		
15	<u>Dipper well</u>	<u>NA</u>	<u>~ 0.25</u>
16	<u>Dipper well</u>	<u>NA</u>	<u>0.5</u>

Pressure on main line coming into the restaurant 70 pounds per square inch (psi).

Ice machine Brand Hoshizaki Model number Unknown

Pound capacity Unknown Cooling method (water or air?) Air

Is a garbage disposal used? Yes No

Is there a water softener? Yes No If so, list the Brand Culligan

Model number Unknown

Percent discharged Unknown

Does the water softener run on a *timer*? or on *measured flow*?

Describe cleaning methods and equipment (for floors, etc.) Floors are cleaned using a mop and bucket and using deck brushes and squeegees. Floors are also sprayed for ~ 10 minutes each night.

Discuss any other kitchen water use None

4a. Men's Restroom water use

Toilets: *Gravity tank*: Number 0 Volumes _____

Flush valve: Number 2 Volumes 1.6 gpf

Urinals: Number 2 Volumes 1.0 gpf

Have any toilets or urinals been retrofitted with lower flow models? Yes No

If so, how many? All When? When Applebee's moved in (~ 5 years ago)

Lavatory sinks: Number 2 Estimated flow 2.0 gpm, 1.5 gpm (aerators were changed out on both faucets, reducing flow rates to 1.0 gpm).

How many faucets have aerators installed? None All Number 2

City of Rio Rancho
Commercial Water Audit Questionnaire

4b. Women's Restroom water use

Toilets: Gravity tank: Number 0 Volumes _____

Flush valve: Number 3 Volumes 1.6 gpf

Have any toilets been retrofitted with lower flow models? Yes No

If so, how many? All When? When Applebee's moved in (~ 5 years ago)

Lavatory sinks: Number 2 Estimated flow 2.0 gpm, 1.5 gpm (one of the aerators was changed out, reducing the flow rate to 1.0 gpm; the other aerator was an odd size and was left in place).

How many faucets have aerators installed? None All Number 2

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

6. Cooling water use

Cooling Units:	Number	Size
Evaporative cooler	<u>✓</u>	<u>Unknown</u>
Refrigerated air	<u>✓</u>	<u>Unknown</u>

If evaporative cooling is used, do the cooling units recirculate water? Yes No

The refrigerated air system is a Megabear, and is used to cool the restaurant. The evaporative coolers are online year round, and are hooked into the hood vents.

7. Outdoor water use

Watering/irrigation system description There is a drip system on a timer that is used to water the areas around the restaurant, and this system is left alone. The nearby grass is not theirs.

Condition of landscape (maintained, mulched, abandoned, etc.) Maintained

Is any water used to clean sidewalks/hose down parking lots? Yes No

Describe any other outdoor water uses. A deck brush is used to clean out back/the dock.

8. Other uses, leaks, and lost water

Method of floor mat cleaning: Floor mats are sprayed down each morning

If sprayed, estimate the number of minutes per day. 15 minutes per day

Describe any wait station water use. See Section 3 for bar water use

Describe any janitor closet water use. None

List any quantifiable leaks and estimated rates and locations. Kitchen handwashing sink dripping at a rate of 10 gpd, 150 gpd leak from a dishwashing sink faucet, 10 gpd leak on the front line dipper well (turned off during site visit).

Are there any showers on-site? Yes No

Describe any other water uses. None

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/12/2009

1. General information

Business name Village Inn Phone (505) 610-4581

Contact person name and title Tina Manzanares

Physical address 1741 NM 528, SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 6314506

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>70,000</u>	Apr	<u>104,000</u>	Jul	<u>124,000</u>	Oct	<u>129,000</u>
Feb	<u>89,000</u>	May	<u>119,000</u>	Aug	<u>149,000</u>	Nov	<u>71,000</u>
Mar	<u>111,000</u>	Jun	<u>106,000</u>	Sep	<u>137,000</u>	Dec	<u>92,000</u>

Meter: Size 1.5-inch Type Badger AMR Installed September 21, 2007

Number of employees 43 Number of shifts per day 2

Number of meals served per day > 400

Days and hours of operation Seven days 5:30 a.m.-10:00 p.m. (open until 11 p.m. on weekends)

Date the facility was built 13/14 years ago Size of the facility (square footage) Unknown

Date of last remodel Painting, wallpaper, rugs replaced when the smoking ban was adopted

Description of any existing water conservation measures Water is served only on request

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) AutoChlor Model D2 (4 loads per hour)

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Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 11

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 <u>Drip well</u>	<u>Left on during business hours</u>	<u>NA</u>	<u>~ 1</u>
2 <u>Handwashing</u>	<u>Used for handwashing and for cleaning syrup containers. Aerator was replaced, reducing flow from 4.5 to 0.5 gpm.</u>	<u>No</u>	<u>4.5</u>
3 <u>Handwashing</u>	<u>Used for handwashing and for filling the steam table. Aerator was replaced, reducing flow from 4.0 to 1.5 gpm.</u>	<u>No</u>	<u>4.0</u>
4 <u>Pre-rinse spray nozzle</u>	<u>Fixture was not changed (new, low-flow).</u>	<u>NA</u>	<u>1.0</u>
5 <u>Dishwashing</u>		<u>No</u>	<u>2.0</u>
6 <u>Handwashing</u>	<u>Aerator was replaced, reducing flow from 1.5 to 0.5 gpm.</u>	<u>Yes</u>	<u>1.5</u>
7 <u>Mop sink</u>	<u>Cold faucet has a 19 gpd drip.</u>	<u>No</u>	<u>5</u>
8 <u>Dishwashing</u>	<u>Used to wash pots and pans by hand (5 gpd drip).</u>	<u>No</u>	<u>4.5</u>
9 <u>Pre-rinse spray nozzle</u>	<u>Fixture was changed, reducing the flow rate from 1.0 to 0.5 gpm.</u>	<u>NA</u>	<u>1</u>
10 <u>Handwashing</u>	<u>Aerator was replaced, reducing flow from 1.5 to 0.5 gpm.</u>	<u>No</u>	<u>1.5</u>
11 <u>Preparation</u>	<u>Faucet has a 10 gpd drip.</u>	<u>No</u>	<u>5</u>

Pressure on main line coming into the restaurant 55 pounds per square inch (psi).

Ice machine Brand Hoshizaki Model number KM-1200SRE

Pound capacity 1,200 lbs./24 hours Cooling method (water or air?) Air

Is a garbage disposal used? Yes No

Is there a water softener? Yes No If so, list the Brand Culligan

Does the water softener run on a *timer*? or on *measured flow*?

The water softener was discharging continuously during the site visit, at a rate of 0.25 gpm.

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Describe cleaning methods and equipment (for floors, etc.) Mop and bucket, plus degreaser.

Discuss any other kitchen water use None

4a. Men's Employee Restroom water use

Toilets: *Gravity tank:* Number 1 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

Urinals: Number 0 Volumes _____

The toilet handle needs to be replaced.

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 2.0 gpm

How many faucets have aerators installed? None All Number 1

The aerator was installed during the site visit, reducing flow from 2.0 to 0.5 gpm.

4b. Women's Employee Restroom water use

Toilets: *Gravity tank:* Number 1 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 1.25 gpm

How many faucets have aerators installed? None All Number _____

The aerator was installed during the site visit, reducing flow from 2.0 to 0.5 gpm.

4c. Men's Restroom water use

Toilets: *Gravity tank:* Number 2 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

Urinals: Number 1 Volumes 1.0 gpf

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Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 1.25 gpm

How many faucets have aerators installed? None All Number 1

4d. Women's Restroom water use

Toilets: *Gravity tank:* Number 2 Volumes 3.5 gpf

Flush valve: Number 0 Volumes _____

Have any toilets been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 1.5 gpm

The hot handle on this faucet needs to be fixed. The water currently comes back on when the handle is pushed too far back.

How many faucets have aerators installed? None All Number 1

The aerator was installed during the site visit, reducing flow from 1.5 to 1.0 gpm.

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

All laundry is sent out for cleaning.

6. Cooling water use

Staff are unsure of the cooling unit type and usage.

7. Outdoor water use

Landscape materials:

Plant type Turf (1,200 ft²)

Plant type Decorative plum trees

Plant type Bushes

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Watering/irrigation system description A Rainbird RC-4Bi irrigation system is used to irrigate the grass (1800 model spray heads), and a micro-tube drip system is used for irrigating the bushes and trees.

Irrigation schedule: Seasonal adjustment Off during the winter

Describe scheduler management: Drip system and turf irrigation are separate.
(how/when scheduler is read, adjusted)

Condition of landscape (maintained, mulched, abandoned, etc.) Maintained (True Green Landscaping takes care of the landscaping).

Is any water used to clean sidewalks/hose down parking lots? Yes No

Describe any other outdoor water uses. The area behind the restaurant is degreased once per month.

8. Other uses, leaks, and lost water

Method of floor mat cleaning: The only floor mats used are in the dish room, and are washed in the dishwasher.

Describe any wait station water use. None

Describe any janitor closet water use. None

List any quantifiable leaks and estimated rates and locations. Mop sink dripping at a rate of 19 gpd, dishwashing faucet dripping at a rate of 5 gpd, preparation sink faucet dripping at a rate of 10 gpd, water softener running continuously at a rate of 360 gpd.

Are there any showers on-site? Yes No

Describe any other water uses. None

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/12/2009

1. General information

Business name Lincoln Middle School Cafeteria Phone (505) 892-1100

Contact person name and title John Anderson and Gina Colclasure

Physical address 2287 Lema Rd., SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 30258098 (whole school)

Is all of the water billed to this account used by the cafeteria? Yes No

If No, who are the other users? Provide any submetering information available. The meter measures water use for the whole school and there is no submetering.

Total water billed in 2008 (gallons)

Jan	<u>67,000</u>	Apr	<u>430,000</u>	Jul	<u>1,016,000</u>	Oct	<u>447,000</u>
Feb	<u>81,000</u>	May	<u>697,000</u>	Aug	<u>1,172,000</u>	Nov	<u>179,000</u>
Mar	<u>213,000</u>	Jun	<u>810,000</u>	Sep	<u>859,000</u>	Dec	<u>60,000</u>

Meter: Size 3-inch Type Unknown Location Unknown

Number of employees 7 Number of shifts per day 2 lunches + breakfast

Number of meals served per day 625 Days and hours of operation Monday-Friday lunches and breakfast (closed during the summer)

Date the facility was built Unknown Size of the facility (square footage) Unknown

Restaurant seating capacity 200-300 Date of last remodel None

Description of any existing water conservation measures Water is not left running, and they conserve where they can. The school is on the list for remodeling, which will include getting a dishwasher and a new walk-in refrigerator/freezer. The dishwasher will be a recirculating model, and will conserve water.

City of Rio Rancho
Commercial Water Audit Questionnaire

3. Kitchen water use

Dishwasher description and use (number of loads washed each day) Dishes are washed by hand in a triple sink (each basin holds 20 gallons and is filled 4 times per day).

Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 4

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 <u>Triple sink</u>	<u>Dishwashing</u>	<u>Yes</u>	<u>1.5</u>
2 <u>Triple sink</u>	<u>Dishwashing and eye wash station</u>	<u>No</u>	<u>4.5</u>
3 <u>Pre-rinse spray nozzle</u>	<u>Rinsing dishes. This nozzle was replaced, reducing the flow rate from 2.0 to 1.0 gpm.</u>	<u>NA</u>	<u>2.0</u>
4 <u>Handwashing</u>		<u>Yes</u>	<u>1.5</u>

Ice machine Brand Hoshizaki Model number KM-500MWE

Pound capacity 500 lb./24 hours Cooling method (water or air?) Water

Is a garbage disposal used? Yes No If so, number of minutes used per day 5-10

Is there a water softener? Yes No

Describe cleaning methods and equipment (for floors, etc.) Mop and bucket

Discuss any other kitchen water use None

4a. Cafeteria Restroom water use

Toilets: Gravity tank: Number 0 Volumes _____

Flush valve: Number 1 Volumes 3.5 gpf

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 2.2 gpm

How many faucets have aerators installed? None All Number 1

City of Rio Rancho
Commercial Water Audit Questionnaire

4b. Boy's Restroom water use

Toilets: *Gravity tank:* Number 0 Volumes _____

Flush valve: Number 2 Volumes 1.6 gpf

Urinals: Number 3 Volumes 1.0 gpf

Have any toilets or urinals been retrofitted with lower flow models? Yes No

These fixtures were added as a part of a new restroom addition, and were not retrofitted.

4c. Girl's Restroom water use

Toilets: *Gravity tank:* Number 0 Volumes _____

Flush valve: Number 5 Volumes 1.6 gpf

Have any toilets been retrofitted with lower flow models? Yes No

These fixtures were added as a part of a new restroom addition, and were not retrofitted.

4d. Handwashing Basin water use

The sinks are located in the lobby outside of the boy's and girl's restrooms, and include three 0.5 gpm spigots each on two units.

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

There are laundry facilities in the home economics room only.

6. Cooling water use

Cooling Units:

The school uses 5 evaporative cooler units and 24 air wash units that use cell decks instead of pads. These units recirculate water and are used during April, May, August, and September. The cafeteria sometimes runs only the cooling unit fan (leaving the water pump off) to keep the cooler from cooling the cafeteria food.

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If evaporative cooling is used, do the cooling units recirculate water? Yes No

How many days per year is the cooler used? _____ How long each day? _____

7. Outdoor water use

The Lincoln Middle School audit focused on the school cafeteria and did not audit outdoor water use.

8. Other uses, leaks, and lost water

Method of floor mat cleaning: Mats are cleaned using soap and water in a bucket and then are rinsed.

Describe any wait station water use. None

Describe any janitor closet water use. None

List any quantifiable leaks and estimated rates and locations. None

Are there any showers on-site? Yes No

Describe any other water uses. None

City of Rio Rancho Commercial Water Audit Questionnaire

Date of Audit 2/12/2009

1. General information

Business name Panda Express Phone (505) 896-2218

Contact person name and title Maritza Mendoza

Physical address 801 Unser Blvd., SE

Mailing address (if different) _____

2. Background information

Restaurant meter account # 6565255

Is all of the water billed to this account used by this restaurant? Yes No

Total water billed in 2008 (gallons)

Jan	<u>0</u>	Apr	<u>0</u>	Jul	<u>0</u>	Oct	<u>89,000</u>
Feb	<u>0</u>	May	<u>0</u>	Aug	<u>458,000</u>	Nov	<u>63,000</u>
Mar	<u>1,000</u>	Jun	<u>1,000</u>	Sep	<u>89,000</u>	Dec	<u>101,000</u>

Meter: Size 2-inch Type Badger AMR Installed November 14, 2008

Number of employees 15 Number of shifts per day 2

Number of meals served per day > 300

Days and hours of operation Monday-Saturday 10:30 a.m.-9:30 p.m., Sunday 11 a.m.-9 p.m.

Date the facility was built October 2007 Size of the facility (square footage) Unknown

Restaurant seating capacity 48 Date of last remodel None

Description of any existing water conservation measures This is a new facility with new, conserving fixtures. Also, water is not left running.

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3. Kitchen water use

Dishwasher description and use (number of loads washed each day) Dishes are washed by hand.

Is the dishwasher rinse water reused? Yes No

Number of kitchen faucets 11 (there is no pre-rinse spray nozzle fixture)

Type:	Usage:	Aerator Yes/No	Flow rate (gpm)
1 <u>Preparation</u>		No	4.5
2 <u>Mop sink</u>		No	10
3 <u>Handwashing</u>	<u>Operated using knee control. An aerator was installed on this faucet, but the flow rate did not change.</u>	Yes	2
4 <u>Dishwashing</u>		No	5
5 <u>Dishwashing</u>		No	5.5
6 <u>Handwashing</u>	<u>Operated using knee control.</u>	Yes	3
7 <u>Steam table</u>		Yes	2
8 <u>Steam table</u>		Yes	2
9 <u>Pot filling</u>		No	10
10 <u>Pot filling</u>		No	8
11 <u>Pot filling</u>		No	8

Pressure on main line coming into the restaurant 80 pounds per square inch (psi).

Ice machine Brand Manitowoc Model number Unknown

Pound capacity Unknown Cooling method (water or air?) Water

Is a garbage disposal used? Yes No

Is there a water softener? Yes No

Describe cleaning methods and equipment (for floors, etc.) Mop and bucket

Discuss any other kitchen water use None

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4a. Men's Restroom water use

Toilets: *Gravity tank:* Number 1 Volumes 1.6 gpf (pressure assist)
Flush valve: Number 0 Volumes _____

Urinals: Number 1 Volumes 1.0 gpf

Have any toilets or urinals been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 2.5 gpm

How many faucets have aerators installed? None All Number 1

4b. Women's Restroom water use

Toilets: *Gravity tank:* Number 2 Volumes 1.6 gpf (pressure assist)
Flush valve: Number 0 Volumes _____

Have any toilets been retrofitted with lower flow models? Yes No

Lavatory sinks: Number 1 Estimated flow 3.0 gpm

How many faucets have aerators installed? None All Number 1

5. Laundry water use

Are any clothes washing machines used on-site? Yes No

6. Cooling water use

Cooling Units:

An evaporative cooler is used to cool this facility, but the system is automatic and the staff has no information about it.

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7. Outdoor water use

Landscape materials:

Plant type Bushes and small trees in rock Percentage of total area 100

Watering/irrigation system description Rainbird ESP-4TM

Irrigation schedule: Time of day Unknown Seasonal adjustment Off during winter

Number of days per week 6 Number of weeks per year _____

Condition of landscape (maintained, mulched, abandoned, etc.) Maintained. Several emitters are located in spaces where plants have died and are not watering anything. These should either be removed or new plants should be added in those places. The irrigation schedule should be changed so that the plants are watered weekly instead of daily.

Is any water used to clean sidewalks/hose down parking lots? Yes No

Describe any other outdoor water uses. None

8. Other uses, leaks, and lost water

Method of floor mat cleaning: None

Describe any wait station water use. None

Describe any janitor closet water use. None

List any quantifiable leaks and estimated rates and locations. None

Are there any showers on-site? Yes No

Describe any other water uses. None

Attachment 2
Restaurant Letters



April 3, 2009

Ms. Becky Dominguez
Weck's Restaurant
1620 NM 528 SE
Rio Rancho, New Mexico 87124-1092

Re: Restaurant Water Audit Summary

Dear Ms. Dominguez:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City of Rio Rancho plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Weck's could save between \$1,600 and \$2,000 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for the current Weck's location for 2006, 2007, and 2008 is enclosed (data prior to May 2008 are for JB's, the previous occupant of this location). Annual water use decreased by 6 percent between 2007 and 2008, and decreased by 21 percent between 2006 and 2007. Average daily water use was 4,581 gallons per day (gpd) in 2006, 3,608 gpd in 2007, and 3,392 gpd in 2008.

Based on our review of your water usage, outdoor irrigation directly impacts Weck's water usage and costs. For example, in 2008, summer water use (the average of June, July, and August) was approximately 4 times greater than the winter water use (average of December, January, and February). Weck's used an average of approximately 200,000 gallons of water per month during the summer months, compared to an average of approximately 50,000 gallons of water per month during the winter months.

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Albuquerque, NM 87109-3315

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Site Visit and Recommended Conservation Measures

The Weck's site visit was conducted on February 9, 2009. The existing pre-rinse spray nozzle was replaced, reducing the amount of water used by this fixture from 2 to 1 gallon per minute (gpm). Assuming that this fixture is used for a total of 3 hours per day, using the new fixture will conserve approximately 180 gallons of water per day, or 5,400 gallons per month. This reduction will result in a monthly water bill savings of approximately \$17.50 until July 2009, when City water rates are raised, and approximately \$18.50 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). Other recommendations for how Weck's can conserve water follow.

The dishwashing and handwashing sinks in the kitchen were dripping during the site visit, each at a rate of approximately 5 gpd. At a total rate of 10 gpd, these leaks waste approximately 300 gallons per month. Fixing these two leaks would result in a monthly water bill savings of approximately \$1.00. Although the monetary savings will be slight, we recommend that these leaks be fixed as soon as possible.

The ice machine at Weck's is a new Hoshizaki Model F-1500MRH. This is an air-cooled, flake ice machine, which is the most energy- and water-efficient type of ice machine available. Flake/nugget ice machines use 20 gallons of water to make 100 pounds of ice, while cube ice machines use 30 or more gallons of water per 100 pounds of ice (EBMUD, 2008). In addition to the amount of water used to make ice, water-cooled ice machines also use between 72 and 240 gallons of water per 100 pounds of ice to cool the machine's compressor (EBMUD, 2008). Should this ice machine need to be replaced in the future, we recommend that an air-cooled, flake ice machine be chosen again.

Weck's uses a water softener, and could conserve water by installing a conductivity control on the softener. This would cause it to only turn on when needed, instead of flushing daily.

The lavatory sink aerators in the men's restroom were replaced, reducing flow from 2.5 and 3 gpm to 1 gpm each. Assuming that the faucets are used for 2 hours per day, this reduction will lead to a savings of approximately 180 to 240 gpd, or 5,400 to 7,200 gallons per month, leading to monthly water bill savings of between \$17.50 and \$23.30 under the current water rate structure.

The lavatory sink aerators in the women's restroom were replaced, reducing flow from 2 and 2.5 gpm to 1 gpm each. Assuming that the faucets are used for 2 hours per day, this will lead to a savings of approximately 120 to 180 gpd, or 3,600 to 5,400 gallons per month, leading to monthly water bill savings of between \$11.70 and \$17.50 under the current water rate structure.

All three of the toilets in the women's restroom and one of the toilets in the men's restroom have been replaced with low-flow (1.6 gallon per flush (gpf)) models, although the original flush

valves are still being used, leading to 3.5 gpf flush volumes for these four toilets. The flush valves should be replaced in each of these toilets, reducing their flush volumes to 1.6 gpf. Assuming 50 flushes per toilet per day, each of these four toilets would conserve 95 gpd, or 2,850 gallons per month, once their flush valves have been replaced, leading to a monthly water bill reduction of approximately \$9.25 per toilet under the current water rate structure. Sloan dual-flush valve replacement kits cost approximately \$60.00 each; at this cost, the water bill savings will pay for the replacement flush valves within approximately 6 months of their installation.

The second (handicapped/high-profile) toilet in the men's restroom has not yet been replaced with a low-flow model fixture, and it has a flush volume of 4.5 gpf, in addition to a leaky flush valve. This toilet should be replaced with a low-flow pressure assist toilet, reducing its flush volume from 4.5 to 1.6 gpf. Assuming 50 flushes by this toilet each day, a total of 145 gpd, or 4,350 gallons per month, could be conserved due to the reduction in flush volume alone. This would lead to a monthly water bill savings of approximately \$14.00 under the current water rate structure.

Toilet leaks often account for more water use than the difference between high- and low-flush volume fixtures. With a loss of 0.1 gpm due to the leaky flush valve in this toilet, approximately 144 gpd or 4,320 gallons of water per month are being wasted, accounting for approximately \$14.00 per month on the water bill. If the flushing and leak rate assumptions are correct, a total savings of almost \$28.00 per month could be achieved by replacing this toilet. A new pressure assist toilet can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings will pay for the replacement toilet within 1 year of its installation.

Weck's irrigates approximately 9,600 square feet of grass, ornamental trees, and bushes once per week during the summer and once per month during the winter. The OSE has quantified landscape irrigation water requirements by vegetation and irrigation type for each county in New Mexico, and their estimate of the landscape irrigation water requirement for Bermuda grass using flood or sprinkler irrigation in Sandoval County is 32.71 gallons per square foot per year (Wilson, 1996). At this rate, the irrigation of 9,600 square feet of Bermuda grass in Rio Rancho should require approximately 314,000 gallons of water per year. Grass is generally over-watered, and it appears that Weck's may be over-irrigating this landscaping (in 2008, Weck's used an estimated 450,000 gallons of water for irrigation during the three summer months of June, July, and August alone). Weck's could reduce water consumption by reducing the amount of water used for irrigation and/or by replacing some of the landscaping with xeriscape. Please contact Marian Wrage with the City of Rio Rancho for more information about xeriscaping.

Xeriscaping has been shown to reduce outdoor water use by 50 percent or more (NM OSE, 2001). If half of the landscaping at Weck's were replaced with xeriscape, approximately 78,500 gallons of water could be conserved each year, leading to an annual water bill savings of approximately \$250.00 under the current water rate structure. If all of the landscaping were replaced with xeriscape, approximately 157,000 gallons of water could be conserved each year,

leading to an annual water bill savings of approximately \$500.00 under the current water rate structure.

Conservation Savings

In summary, total water savings could be on the order of \$2,000 per year if all recommended conservation strategies are incorporated (Table 1). The EPA WaterSense toilet list is enclosed to assist you in selecting a quality low-flow model when purchasing replacement toilets. Information regarding a replacement dual flush valve is also enclosed.

Table 1. Weck's Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of the pre-rinse spray nozzle and four restroom faucet aerators (completed)	14,400–18,000	\$46.70–\$58.30	\$560.40–\$699.60
Replacement of the flush valves in four toilets	11,400	\$37.00	\$444.00
Replacing the handicapped toilet and valve in the men's restroom	8,670	\$28.00	\$336.00
Changes in landscaping irrigation and/or plant types	6,542–13,080 ^a	\$21.00–\$42.00 ^b	\$252.00–\$504.00
Total	41,012–51,150	\$132.70–\$165.30	\$1,592.40–\$1,983.60

Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

^a These estimates of landscaping water conservation are average monthly savings that do not take seasonal differences in irrigation into account (the values presented are monthly averages of the estimated annual savings of between 78,500 and 157,000 gallons per year).

^b Estimated savings will be higher than the averages presented during summer months, and lower than the averages presented during winter months.

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Weck's is currently paying a volume-based wastewater treatment fee of \$128.95 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Ms. Becky Dominguez
April 3, 2009
Page 5

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

References

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.

New Mexico Office of the State Engineer (NM OSE). 2001. *A water conservation guide for public utilities*. Available at <<http://www.ose.state.nm.us/water-info/conservation/pdf-manuals/nm-water-manual.pdf>>.

Wilson, B.C. 1996. *Water conservation and quantification of water demands in subdivisions: A guidance manual for public officials and developers*. Technical Report 48, New Mexico State Engineer Office, Santa Fe, New Mexico. May 1996.



April 3, 2009

Ms. Frances Montañó
Mad Max's BBQ
1600 Sara Rd. SE
Rio Rancho, New Mexico 87124-1829

Re: Restaurant Water Audit Summary

Dear Ms. Montañó:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Mad Max's BBQ could save between \$1,200 and \$1,700 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for the Mad Max's BBQ location for 2006, 2007, and 2008 is enclosed (data from before April 2008 are for the previous occupant of this location). Average monthly water use by Mad Max's BBQ for April through December 2008 was 40,111 gallons (average daily water use was 1,337 gallons per day [gpd] during this period). Average monthly water use by the previous occupant for January through September 2007 was 25,333 gallons (average daily water use was 844 gpd during this period). Water use was 10,000 gallons per month or less for October 2007 through March 2008, when the location was between tenants.

Based on our review of your water usage, summer water usage far exceeds winter use, even though Mad Max's BBQ reports no use of water for outdoor irrigation. In 2008, summer water use (the average of June, July, and August) was approximately 2.5 times greater than the amount of water used in December. The restaurant used 67,000 and 61,000 gallons during August and September, respectively. These monthly totals are approximately double the average monthly water use during the other seven months of operation in 2008.

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Site Visit and Recommended Conservation Measures

The Mad Max's BBQ site visit was conducted on February 9, 2009. The existing pre-rinse spray nozzle was replaced, reducing the amount of water used by this fixture from 3.5 to 1.5 gallon per minute (gpm). Assuming that this fixture is used for a total of 1 hour per day, using the new fixture will conserve approximately 120 gpd, or 3,600 gallons per month, resulting in a monthly water bill savings of approximately \$11.70 until July 2009 when City water rates are raised, and approximately \$12.30 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). Other recommendations for how Mad Max's BBQ can conserve water follow.

City of Rio Rancho staff analyzed the hourly water use data for this location, and found a 25 gallon per hour base flow (water use never goes to zero). Based on this information, a 600 gpd (18,000 gallons per month) leak is expected, but was not found as a part of the audit. This leak is likely located underground, somewhere between the sidewalk and building, and we recommend that a plumber be called to look for it. A loss of 18,000 gallons per month accounts for approximately \$60.00 per month on the water bill.

The ice machine at Mad Max's BBQ is a Hoshizaki Model KM-250BWE. This is a water-cooled, cube-style ice machine, which is the least energy- and water-efficient type of ice machine available. Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). In addition to the amount of water used to make ice, water-cooled ice machines also use between 72 and 240 gallons of water per 100 pounds of ice to cool the machine's compressor (EBMUD, 2008). Should this ice machine need to be replaced in the future, we recommend that an air-cooled, flake ice machine be chosen instead.

An air-cooled ice machine reduces water use by between 72 and 240 gallons per 100 pounds of ice produced (EBMUD, 2008). A nugget/flake ice machine reduces water use by about 15 gallons per 100 pounds of ice produced (EBMUD, 2008). The existing ice machine can make 250 pounds of ice per 24-hour period. Assuming that the machine is working at capacity (producing 250 pounds of ice per day), this machine is using between approximately 218 and 638 gallons more water each day than an air-cooled, flake ice machine would. This difference is equivalent to between 6,540 and 19,140 gallons of water more per month, and between \$21 and \$62 per month on the water bill.

An air-cooled ice machine costs about \$1,000 more than a water-cooled ice machine, and a nugget/flake ice machine costs between \$500 and \$1,200 more than a cube-style ice machine. If Mad Max's BBQ were to replace the existing ice machine with an air-cooled, flake ice machine costing between \$1,500 and \$2,200 more than the type of ice machine currently installed, the water bill savings would pay for the replacement ice machine within 3 to 7 years of its installation (under the current water rate structure).

The lavatory sink aerator in the men’s restroom was replaced, reducing flow from 3 to 1 gpm. Assuming that this faucet is used for 15 minutes per day, this reduction will lead to a savings of approximately 30 gpd, or 900 gallons per month, leading to monthly water bill savings of approximately \$3.00. The lavatory sink aerator in the women’s restroom was also replaced, reducing flow from 3 to 1 gpm. This reduction will lead to an additional \$3.00 per month savings. The valve under the sink in the men’s restroom was leaking during the audit, and should be fixed as soon as possible. It was not possible to quantify this leak, but assuming that the leak amounts to 5 gpd, 150 gallons could be lost each month.

The men’s and women’s restrooms each have one toilet with a flush volume of 3.5 gallons per flush (gpf). These toilets should be replaced with low-flow pressure assist toilets, reducing their flush volumes from 3.5 to 1.6 gpf. Assuming 10 flushes by each toilet each day, a total of 38 gpd, or 1,140 gallons per month, could be conserved due to the reduction in flush volume. This would lead to a monthly water bill savings of approximately \$3.70. New pressure assist toilets can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings would pay for both replacement toilets within 16 years of their installation.

Mad Max’s BBQ does not use any water for outdoor irrigation, so no savings can be achieved by changing the landscaping practices.

Conservation savings

In summary, total savings could be between \$1,200 and \$1,700 per year if all recommended conservation strategies are incorporated (Table 1). The EPA WaterSense toilet list is enclosed to assist you in selecting a quality low-flow model when purchasing replacement toilets.

Table 1. Mad Max’s BBQ Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of the pre-rinse spray nozzle (completed)	3,600	\$11.70	\$140.40
Finding and fixing underground leak	18,000	\$60.00	\$720.00
Replacement of ice machine	6,540–19,140	\$21.00–\$62.00	\$252.00–\$744.00
Replacement of two restroom faucet aerators (completed)	1,800	\$6.00	\$72.00
Replacement of two toilets (men’s and women’s restrooms)	1,140	\$3.70	\$44.40
Total	31,080–43,680	\$102.40–\$143.40	\$1,228.80–\$1,720.80

Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

Ms. Frances Montañó
April 3, 2009
Page 4

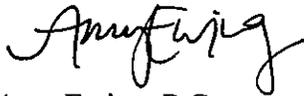
Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Mad Max's BBQ is currently paying a volume-based wastewater treatment fee of \$71.64 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.



April 3, 2009

Mr. Ray Jong
Osaka Steak House
1463 NM 528 SE
Rio Rancho, New Mexico 87124-1007

Re: Restaurant Water Audit Summary

Dear Mr. Jong:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Osaka Steak House could save on the order of \$650 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for Osaka Steak House for 2006, 2007, and 2008 is enclosed. Annual water use increased by 8 percent between 2007 and 2008, and decreased 10 percent between 2006 and 2007. Average daily water use was 1,022 gallons per day (gpd) in 2006, 918 gpd in 2007, and 995 gpd in 2008.

Based on our review of your water usage, outdoor irrigation does not factor into the Osaka Steak House water use (there is no outdoor water use at this restaurant). For example, in 2008, summer use (average of June, July, and August) was approximately 15 percent less than winter use (average of December, January, and February). Osaka Steak House used an average of approximately 29,000 gallons of water per month during the summer months, compared to an average of approximately 34,000 gallons of water per month during the winter months.

Site Visit and Recommended Conservation Measures

The Osaka Steak House site visit was conducted on February 9, 2009. The existing pre-rinse spray nozzle was replaced, although the resulting flow rate was the same as the flow rate of the previous fixture (1 gallon per minute [gpm]). The new fixture is expected to conserve water

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even though the flow rate is the same because the new fixture will take less time to clean dishes than the old fixture due to higher pressure resulting from a single stream of water (the previous fixture had a ring of openings, resulting in lower water pressure). Assuming that the new high pressure fixture reduces wash time by 45 minutes each night (all dishes are washed at the end of the night, and not while meals are still being served), the new fixture will conserve approximately 45 gpd, or 1,350 gallons per month, resulting in a monthly water bill savings of approximately \$4.40 until July 2009 when City water rates are raised, and approximately \$4.60 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). Other recommendations for how Osaka Steak House can conserve water follow.

One of the faucets at a multi-basin kitchen sink was dripping at a rate of 10 gpd during our site visit. This sink is used for washing seafood and rice, and for knife sharpening. With a 10 gpd drip, this faucet wastes approximately 300 gallons per month. Fixing this leak would result in a monthly water bill savings of approximately \$1.00. Although the monetary savings will be slight, we recommend that this leak be fixed as soon as possible.

The employee restroom off of the kitchen has one 3.5 gallon per flush (gpf) toilet, and the seal between the toilet tank and bulb needs to be replaced. Alternatively, this toilet could be replaced with a low-flow toilet, reducing the flush volume to 1.6 gpf. Fixing a leak in a toilet often conserves even more water than retrofitting the toilet with a lower-flow model. Assuming that the leaking seal between the toilet tank and bulb is responsible for a 0.05 gpm loss, this faulty seal is responsible for a loss of 72 gpd or over 2,000 gallons of water per month. Replacing the seal could conserve an estimated \$7.00 per month under current water rates.

Assuming 15 flushes per day, the current employee restroom toilet uses an estimated 53 gpd, which could be reduced to 24 gpd if the toilet is replaced with a low-flow model. This would result in a savings of 29 gpd, or 870 gallons per month. This reduction would correspond to a savings of \$3.00 per month on the water bill at the current water rates. If the flushing and leak rate assumptions are correct, a total savings of almost \$10.00 per month could be achieved by replacing this toilet (due to total savings of approximately 100 gpd, or 3,000 gallons per month, the sum of the leak and flush volume savings). A new pressure assist toilet can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings will pay for the replacement toilet within approximately 3 years of its installation.

The lavatory sink aerator in the employee restroom was replaced during our site visit, reducing flow from 2 to 1 gpm. Assuming that the faucet is used for 15 minutes per day, this will lead to a water savings of approximately 15 gpd, or 450 gallons per month, leading to monthly water bill savings of \$1.50 under the current water rate structure.

The ice machine at Osaka Steak House is a Hoshizaki Model KM-630MAE. This is an air-cooled, cube-style ice machine. Should this ice machine need to be replaced in the future, we recommend that another air-cooled machine be chosen, but that a flake ice machine be selected instead of a cube-style ice machine (air-cooled, flake-ice machines are most efficient). Cube ice

Mr. Ray Jong
April 3, 2009
Page 3

machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Air-cooled ice machines use between 72 and 240 gallons per 100 pounds of ice produced less than water-cooled ice machines (water used to cool the machine's compressor) (EBMUD, 2008).

A nugget/flake ice machine reduces water use by about 15 gallons per 100 pounds of ice produced (EBMUD, 2008). The existing ice machine can make 630 pounds of ice per 24-hour period. Assuming that the machine is working at capacity (producing 630 pounds of ice per day), this machine is using approximately 95 gallons more each day than an air-cooled, flake ice machine would. This difference is equivalent to 2,850 gallons of water more per month, and approximately \$9 per month on the water bill. A nugget/flake ice machine costs between \$500 and \$1,200 more than a cube-style ice machine. If the existing ice machine were replaced with a flake ice machine, this cost difference would be paid for in water bill savings within between 4.5 and 11 years of its installation.

The men's restroom has one 3.5 gpf toilet; this toilet could be replaced with a low-flow toilet, reducing the flush volume to 1.6 gpf. Assuming 10 flushes per day, the current toilet in the men's restroom uses an estimated 35 gpd, which could be reduced to 16 gpd if the toilet is replaced with a low-flow model. This reduction would result in a savings of 19 gpd, or 570 gallons per month, leading to a savings of \$2.00 per month on the water bill at the current water rates. A new pressure assist toilet can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings will pay for the replacement toilet within approximately 16 years of its installation.

The lavatory sink aerator in the men's restroom was replaced, reducing flow from 2.5 to 1 gpm. Assuming that the faucet is used for 10 minutes per day, this will lead to a water savings of approximately 15 gpd, or 450 gallons per month, leading to monthly water bill savings of \$1.50 under the current water rate structure. The sink in the men's restroom can be easily left on by pushing the handle back too far (causing the water to come back on). If the water gets left on in this faucet for 10 minutes once a day, 25 gpd, or 750 gallons per month, could be wasted (at the flow rate prior to changing the aerator out), corresponding to approximately \$2.50 per month under current water rates. The reduction in flow rate lessens this potential loss to 10 gpd, or 300 gallons per month, saving approximately \$1.00 per month under current water rates. The urinals in the men's restroom have been changed out to lower-flow models, but still have their original flush valves, meaning that the original flush volumes are still being used. We recommend that these flush valves be replaced.

The women's restroom has two 3.5 gpf toilets. One of the toilets in the women's restroom was out of order during the site visit (due to a broken handle). Both toilets had water flowing over their discharge tubes, and this was fixed. Assuming that each of the toilets was losing a flow of 0.05 gpm over their discharge tubes, approximately 150 gpd (4,500 gallons per month) could have been being lost by these two toilets (corresponding to \$14.50 per month under current water rates). By replacing these two toilets with low-flow toilets, reducing their flush volume to 1.6 gpf, 1.9 gpf would be conserved. Assuming 10 flushes by each of these toilets per day, a

Mr. Ray Jong
April 3, 2009
Page 4

total of 38 gpd, or 1,140 gallons per month, could be conserved by replacing both toilets. This reduction would correspond to a savings of \$3.70 per month on the water bill at the current water rates. A new pressure assist toilet can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings will pay for both replacement toilets within approximately 16 years of their installation. Including the fixed discharge tube leaks in this calculation, the payback period is reduced to just over 3 years.

The lavatory sink aerator in the women's restroom was replaced, reducing flow from 2 to 1 gpm. Assuming that the faucet is used for 20 minutes per day, this reduction will lead to a water savings of approximately 20 gpd, or 600 gallons per month, leading to monthly water bill savings of \$2.00 under the current water rate structure. The sink in the women's restroom can be easily left on by pushing the handle back too far (causing the water to come back on). If the water gets left on in this faucet for 10 minutes once a day, 20 gpd, or 600 gallons per month, could be wasted (at the flow rate prior to changing the aerator out), corresponding to approximately \$2.00 per month under current water rates. Replacement of the aerator cuts this potential loss in half.

Osaka Steak House has a GE top loader washing machine, and washes fewer than 10 loads of laundry per week using this appliance. Should this machine need to be replaced in the future, a more water conserving machine could be purchased instead, although due to its already low usage, this is not expected to yield significant water savings.

Osaka Steak House does not use any water for outdoor irrigation, so no savings can be achieved by changing the landscaping practices.

Conservation Savings

In summary, total savings could be on the order of \$540 per year if all recommended conservation strategies are incorporated (Table 1). The EPA WaterSense toilet list is enclosed to assist you in selecting a quality low-flow model when purchasing replacement toilets.

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Osaka Steak House is currently paying a volume-based wastewater treatment fee of \$167.76 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Mr. Ray Jong
April 3, 2009
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Table 1. Osaka Steak House Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of the pre-rinse spray nozzle and three restroom faucet aerators (completed)	2,850	\$9.40	\$112.80
Replacement of the ice machine	2,850	\$9.00	\$108.00
Fixing the discharge tube leaks on the two women's restroom toilets (completed)	4,500	\$14.50	\$174.00
Fixing the kitchen sink drip	300	\$1.00	\$12.00
Replacing the toilet in the employee restroom	3,000	\$10.00	\$120.00
Replacing the toilet in the men's restroom	570	\$2.00	\$24.00
Replacing two toilets in the women's restroom	1,140	\$3.70	\$44.40
Replacing faucets in the men's and women's restrooms	1,350	\$4.50	\$54.00
Total	16,560	\$54.10	\$649.20

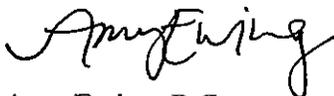
Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

Mr. Ray Jong
April 3, 2009
Page 6

Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.



April 3, 2009

Mr. Ernie Catanach
St. Thomas Aquinas School
1100 Hood Rd., SE
Rio Rancho, New Mexico 87124-3075

Re: Restaurant Water Audit Summary

Dear Mr. Catanach:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. St. Thomas Aquinas School could save on the order of \$1,500 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for St. Thomas Aquinas School for 2006, 2007, and 2008 is enclosed. Annual water use decreased by 3 percent between 2007 and 2008, and increased by 16 percent between 2006 and 2007. Average daily water use was 12,378 gallons per day (gpd) in 2006, 14,348 gpd in 2007, and 13,981 gpd in 2008.

Based on our review of your water usage, outdoor irrigation directly impacts St. Thomas Aquinas School water usage and costs. For example, in 2008, summer use (average of June, July, and August) was approximately 3.3 times greater than the winter water use (average of December, January, and February). St. Thomas Aquinas School used an average of approximately 620,000 gallons of water per month during the summer months, compared to an average of approximately 190,000 gallons of water per month during the winter months, even though school is not in session in July or August (there is a summer school session during June).

Daniel B. Stephens & Associates, Inc.

6020 Academy Rd., NE, Suite 100

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Albuquerque, NM 87109-3315

FAX 505-822-8877

Site Visit and Recommended Conservation Measures

The St. Thomas Aquinas School Cafeteria site visit was conducted on February 9, 2009. The existing pre-rinse spray nozzle was not replaced, since the existing nozzle was the same type of nozzle being installed as a part of the site audits, and was in good condition (1 gallon per minute [gpm] flow rate). Water use is not expected to change for this fixture going forward. Recommendations for how the St. Thomas Aquinas School Cafeteria can conserve water follow.

The ice machine at St. Thomas Aquinas School is a Manitowoc Model QD0132A. This is a water-cooled, cube-style ice machine. Should this ice machine need to be replaced in the future, we recommend that an air-cooled, flake ice machine be selected instead (air-cooled, flake ice machines are most efficient). Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Air-cooled ice machines use between 72 and 240 gallons per 100 pounds of ice produced less than water-cooled ice machines (water used to cool the machine's compressor) (EBMUD, 2008).

A nugget/flake ice machine reduces water use by about 15 gallons per 100 pounds of ice produced (EBMUD, 2008). The existing ice machine can make 38 kilograms (84 pounds) of ice per 24-hour period. Assuming that the machine is working at capacity (producing 84 pounds of ice per day), this machine is using between approximately 13 gpd more than a flake ice machine would. An air-cooled ice machine would further reduce water use by between 60 and 200 gpd, for a total reduction of between 73 and 213 gpd. This reduction is equivalent to between 2,190 and 6,390 gallons per month, and approximately \$7.00 to \$21.00 per month on the water bill under the current water rate structure. An air-cooled ice machine costs about \$1,000 more than a water-cooled ice machine, and a nugget/flake ice machine costs between \$500 and \$1,200 more than cube-style ice machines. If the existing ice machine were replaced with a flake-style ice machine, the approximately \$1,500 to \$2,200 cost difference would be paid for by water bill savings within between 7 and 20 years of its installation. City of Rio Rancho water rates will be raised from \$3.24 to \$3.42 per 1,000 gallons in July 2009. Under the new rate structure, monthly water bill savings for replacing this ice machine will range between \$7.50 and \$22.00.

The restroom off of the school cafeteria kitchen has one 5 gallon per flush (gpf) toilet. This toilet could be replaced with a low-flow toilet, reducing the flush volume to 1.6 gpf. Assuming 6 flushes per day, the current kitchen staff restroom toilet uses an estimated 30 gpd, which could be reduced to 9.6 gpd if the toilet is replaced with a low-flow model. This reduction would result in a savings of 20.4 gpd, or 612 gallons per month, leading to a savings of \$2.00 per month on the water bill at the current water rates. A new pressure assist toilet can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings will pay for the replacement toilet within approximately 15 years of its installation. The lavatory sink aerator in this restroom was replaced during our site visit, reducing flow from 2.5 to 1 gpm. Assuming that the faucet is used for 12 minutes per day, this reduction will lead to a water savings of

Mr. Ernie Catanach
April 3, 2009
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approximately 18 gpd, or 540 gallons per month, leading to monthly water bill savings of \$1.75 under the current water rate structure.

There are two faculty restrooms located off of the lunchroom, each with a 5 gpf toilet. These toilets could be replaced with low-flow toilets, reducing their flush volumes to 1.6 gpf. Assuming 50 flushes each per day, these two toilets are using 500 gpd, or 15,000 gallons per month. Reducing their flush volumes to 1.6 gpf would save 340 gpd, or 10,200 gallons per month, resulting in monthly water bill savings of \$33.00. New pressure assist toilets can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings would pay for these two replacement toilets within approximately 2 years of their installation. One of these toilets was running during our site visit, and was fixed. With a loss of 0.5 gpm due to the running water in this toilet, approximately 720 gpd, or 21,600 gallons of water per month, could have been being wasted, accounting for as much as \$70.00 per month on the water bill.

The aerators were replaced in the two sinks located in the faculty restrooms off of the lunchroom, decreasing flow from 1.5 to 1.25 gpm and 2.5 to 1 gpm, respectively. Assuming that these faucets are used for 50 minutes each per day, this will lead to a water savings of approximately 12.5 and 75 gpd (375 to 2,250 gallons per month), respectively, leading to a total monthly water bill savings of \$1.20 and \$7.30, respectively, under the current water rate structure.

St. Thomas of Aquinas School irrigates athletic fields and landscaping. However, because our site audit concentrated on water use by the school cafeteria, no estimates of water savings due to changes in landscaping irrigation types and/or plant types have been made.

Conservation Savings

In summary, total savings could be on the order of \$1,500 per year if all recommended conservation strategies are incorporated (Table 1). The EPA WaterSense toilet list is enclosed to assist you in selecting a quality low-flow model when purchasing replacement toilets.

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. St. Thomas Aquinas School is currently paying a volume-based wastewater treatment fee of \$1,286.89 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Mr. Ernie Catanach
April 3, 2009
Page 4

Table 1. St. Thomas of Aquinas School Cafeteria Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of three restroom faucet aerators (completed)	3,165	\$10.25	\$123.00
Replacement of ice machine	2,190–6,390	\$7.00–\$21.00	\$84.00–\$252.00
Replacement of the toilet in the kitchen staff restroom	612	\$2.00	\$24.00
Replacing the two lunchroom restroom toilets	10,200	\$33.00	\$396.00
Fixing leaking toilet in one of the lunchroom restrooms (completed)	21,600	\$70.00	\$840.00
Total	37,767–41,967	\$122.25–\$136.25	\$1,467.00–\$1,635.00

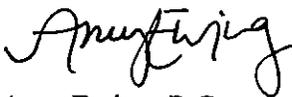
Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.



April 3, 2009

Mr. Adam Galarneau
Turtle Mountain Brewing Co.
905 36th Pl. SE
Rio Rancho, New Mexico 87124-4850

Re: Restaurant Water Audit Summary

Dear Mr. Galarneau:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Turtle Mountain Brewing Company could save on the order of \$820 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for Turtle Mountain Brewing Company for 2006, 2007, and 2008 is enclosed. Annual water use decreased by 17 percent between 2007 and 2008, and increased by 171 percent between 2006 and 2007 (Turtle Mountain Brewing Company began using water at this location in April 2006). Average daily water use was 1,173 gallons per day (gpd) in 2006, 3,173 gpd in 2007, and 2,619 gpd in 2008.

Based on our review of your water usage, outdoor irrigation accounts for less than 10 percent of summer water use at Turtle Mountain Brewing Company. In 2008, summer use (average of June, July, and August) was approximately 7 percent higher than winter use (average of December, January, and February). Turtle Mountain Brewing Company used an average of approximately 82,000 gallons of water per month during the summer months, compared to an average of approximately 76,000 gallons of water per month during the winter months.

Site Visit and Recommended Conservation Measures

The Turtle Mountain Brewing Company site visit was conducted on February 10, 2009. Two existing pre-rinse spray nozzles were replaced, reducing the amount of water used by the first

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Mr. Adam Galameau

April 3, 2009

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fixture from 3.5 to 1 gallon per minute (gpm). Assuming that the first fixture is used for a total of 3 hours per day, using the new fixture will conserve approximately 450 gpd, or 13,500 gallons per month, resulting in a monthly water bill savings of approximately \$43.75 until July 2009 when City water rates are raised, and approximately \$46.20 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). The flow rate of the second fixture was unchanged (1.5 gpm), although this fixture is expected to conserve water even though the flow rate is the same because the new fixture will take less time to clean dishes than the old fixture due to higher pressure resulting from a single stream of water (the previous fixture had a ring of openings, resulting in lower water pressure). Assuming that the new high-pressure fixture reduces wash time by 45 minutes each night, the new fixture will conserve approximately 68 gpd, or 2,040 gallons per month, resulting in a monthly water bill savings of approximately \$6.60. Other recommendations for how Turtle Mountain Brewing Company can conserve water follow.

The ice machine at the Turtle Mountain Brewing Company is a Manitowoc brand ice machine, is air-cooled, and is relatively new (Turtle Mountain Brewing Company opened in April 2006). The model number was not obtained because the front of the machine was screwed shut, and whether the machine makes flake/nugget or cube ice was not recorded. Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Air-cooled ice machines use between 72 and 240 gallons per 100 pounds of ice produced less than water-cooled ice machines (water used to cool the machine's compressor) (EBMUD, 2008).

There is one restroom located off of the banquet room, and it has one sensor faucet with a flow rate of 1 gpm and one auto-flush toilet with a 1.6 gallon per flush (gpf) flush volume. No problems were noted with the existing fixtures, but sometimes the sensors on auto-fixtures are set to be too sensitive, causing them to run when not needed. We recommend that the efficiency of the fixtures be monitored, and that the automatic devices be removed if a problem develops in the future.

There is a mop sink in the janitor closet, and this faucet was leaking hot water at a rate of more than 100 gpd during our site visit. A plumber was scheduled to come address this leak the same day as the site visit, and so it has likely been repaired by now. At a rate of over 100 gpd, over 3,000 gallons per month were being lost from this leak. This corresponds to almost \$10.00 per month on the monthly water bill (not to mention the energy cost to heat the water). The hose in the brewery also had a leak, which was fixed during the site visit. This faucet was leaking at a rate of 80 gpd, or 2,400 gallons per month, corresponding to approximately \$7.75 per month at the current water rates.

The men's restroom has one faucet with a flow rate of 1 gpm, one auto-flush toilet with a 1.6 gpf flush volume, and 2 urinals with 1.0 gpf flush volumes. The women's restroom has two sensor faucets with flow rates of 1 gpm, and two 1.6 gpf auto-sensor flush toilets. No problems were noted with any of these existing fixtures.

Turtle Mountain Brewing Company has a GE Spacemaker stackable washing machine, and washes approximately five to six loads of laundry on-site each week (there is a service that does the bulk of the laundry each week, and they have this appliance just in case additional linens are needed). Should this machine need to be replaced in the future, a more water conserving machine could be purchased instead; however, due to its already low usage, replacing this machine is not expected to yield significant water savings.

Turtle Mountain Brewery has irrigated landscaping, which is watered using a drip system. We recommend that those nozzles that were installed for plants that are no longer in place be removed, and that the irrigation schedule be changed so that the plants are only watered once per week. Overall, the irrigation system seems to be efficient and well maintained. No estimates of savings due to changes in landscaping irrigation and/or plant types have been made.

Conservation Savings

In summary, total savings could be on the order of \$820.00 per year if all recommended conservation strategies are incorporated (Table 1).

Table 1. Turtle Mountain Brewing Company Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of two pre-rinse spray nozzles (completed)	15,540	\$50.35	\$604.20
Repairing the leaky mop sink faucet	3,000	\$10.00	\$120.00
Repairing the leaky brewery hose faucet	2,400	\$7.75	\$93.00
Total	20,940	\$68.10	\$817.20

Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Turtle Mountain Brewing Company is currently paying a volume-based wastewater treatment fee of \$416.77 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Mr. Adam Galarneau
April 3, 2009
Page 4

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

A handwritten signature in cursive script, appearing to read "Amy Ewing".

Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosure

Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.



April 3, 2009

Mr. Jason Armstrong
Hot Tamales Restaurant
1520 NM 528 SE
Rio Rancho, New Mexico 87124-1010

Re: Restaurant Water Audit Summary

Dear Mr. Armstrong:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Hot Tamales could save on the order of \$1,000 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for Hot Tamales for 2006, 2007, and 2008 is enclosed. Annual water use increased by 14 percent between 2007 and 2008, and 21 percent between 2006 and 2007. Average daily water use was 1,364 gallons per day (gpd) in 2006, 1,655 gpd in 2007, and 1,882 gpd in 2008.

Based on our review of your water usage, summer use (average of June, July, and August) in 2008 was approximately 20 percent lower than winter use (average of December, January, and February). Hot Tamales used an average of approximately 55,000 gallons of water per month during the summer months, compared to an average of approximately 68,000 gallons of water per month during the winter months. Summer water use was approximately 21 and 16 percent higher than winter use in 2007 and 2006, respectively. We recommend that winter water use be further examined if there is no explanation for why winter water use would have been greater than summer water use in 2008. December 2008 water use was higher than any previous month in the past three years.

Daniel B. Stephens & Associates, Inc.

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Site Visit and Recommended Conservation Measures

The Hot Tamales site visit was conducted on February 10, 2009. The existing pre-rinse spray nozzle was replaced, reducing the amount of water used by this fixture from 2 to 1.5 gallon per minute (gpm). Assuming that this fixture is used for a total of 3 hours per day, using the new fixture will conserve approximately 90 gpd, or 2,700 gallons per month, resulting in a monthly water bill savings of approximately \$8.75 until July 2009 when City water rates are raised, and approximately \$9.25 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). Other recommendations for how Hot Tamales can conserve water follow.

An aerator was installed on the handwashing faucet in the kitchen, reducing flow from 6 to 1 gpm. Assuming that this faucet is used for 1 hour per day, this reduction will lead to a savings of approximately 300 gpd, or 9,000 gallons per month, leading to monthly water bill savings of almost \$30.00 under the current water rate structure. An aerator was also installed on the preparation sink in the kitchen, reducing flow from 5.5 to 2.5 gpm. This faucet is not used very often (it is used mostly for washing honey containers). Assuming that this faucet is used for 10 minutes per day, this reduction will lead to a savings of approximately 30 gpd, or 900 gallons per month, leading to monthly water bill savings of approximately \$3.00 under the current water rate structure.

The faucet on the preparation sink used to clean the main line each night had two leaks totaling 15 gpd during our site visit; this faucet should be replaced. At a total rate of 15 gpd, these leaks waste approximately 450 gallons per month. The dishwashing sink used to wash large items also had a 5 gpd drip, leading to the loss of 150 gallons per month. Fixing the three leaks in these two kitchen faucets would conserve 600 gallons of water per month, with a monthly water bill savings of approximately \$2.00. Although the monetary savings will be slight, we recommend that these leaks be fixed as soon as possible.

The ice machine at Hot Tamales is an air-cooled Hoshizaki machine. The model number was not identified on the machine during the site visit, and whether the machine makes flake/nugget or cube ice was not recorded. Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Air-cooled ice machines use between 72 and 240 gallons per 100 pounds of ice produced less than water-cooled ice machines (water used to cool the machine's compressor) (EBMUD, 2008).

The men's restroom has one toilet with a 1.6 gallon per flush (gpf) toilet and one 1.0 gpf urinal. There is one sink with a 1 gpm auto-sensor faucet. No problems were noted with the existing fixtures. Occasionally, auto-fixtures sensors are set to be too sensitive, causing them to run when not needed. We recommend that the efficiency of the faucet be monitored, and that the automatic device be removed if a problem develops in the future.

Mr. Jason Armstrong
April 3, 2009
Page 3

The women's restroom has two toilets, one with a 2.5 gpf flush volume and the other a 3.8 gpf flush volume (the flow was measured using the Flushmeter device in both toilets). The toilet in the small stall has a low water level and it appears that it was broken when it was snaked by a plumber. We recommend that these toilets be replaced with low-flow models, reducing their flush volumes to 1.6 gpf.

Assuming 50 flushes per toilet per day, 45 gpd could be conserved by replacing the first toilet, and 110 gpd would be conserved by replacing the second toilet. This reduction corresponds to 1,350 and 3,300 gallons per month, or a total of 4,650 gallons per month. If the flushing rate assumptions are correct, a total monthly savings of approximately \$15.00 could be achieved by replacing both toilets. A new pressure assist toilet can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings will pay for both replacement toilets within 4 years of their installation.

Both lavatory faucet aerators in the women's restroom were replaced, reducing flow in each faucet from 3 to 1 gpm. Assuming that the faucets are used for a combined 2 hours per day, this reduction will lead to a savings of approximately 240 gpd, or 7,200 gallons per month, leading to monthly water bill savings of \$23.30 under the current water rate structure.

Hot Tamales has irrigated landscaping, which is watered using a drip system and maintained by a professional landscaping company. This irrigation system seems to be efficient and well maintained. No estimates of savings due to changes in landscaping irrigation and/or plant types have been made.

Conservation Savings

In summary, total savings could be on the order of \$1,000 per year if all recommended conservation strategies are incorporated (Table 1). The EPA WaterSense toilet list is enclosed to assist you in selecting a quality low-flow model when purchasing replacement toilets.

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Hot Tamales is currently paying a volume-based wastewater treatment fee of \$325.72 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Mr. Jason Armstrong
April 3, 2009
Page 4

Table 1. Hot Tamales Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of the pre-rinse spray nozzle (completed)	2,700	\$8.75	\$105.00
Installation of two kitchen faucet aerators (completed)	9,900	\$33.00	\$396.00
Repairing three kitchen faucet leaks	600	\$2.00	\$24.00
Replacement of both toilets in the women's restroom	4,650	\$15.00	\$180.00
Installation of two women's restroom faucet aerators (completed)	7,200	\$23.30	\$279.60
Total	25,050	\$82.05	\$984.60

Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.



April 3, 2009

Mr. George Stapleton
Applebee's Restaurant
4100 Ridgerock Rd. SE
Rio Rancho, New Mexico 87124-2177
e-mail: UnitNM06@applegrove.com

Re: Restaurant Water Audit Summary

Dear Mr. Stapleton:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Applebee's could save on the order of \$1,800 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for Applebee's for 2006, 2007, and 2008 is enclosed. A new water meter was installed at Applebee's in January 2008. The previously installed meter was under-reporting flow. Data collected prior to January 2008 do not reflect actual water use by this restaurant (suggesting average daily water use was 340 gallons per day [gpd] in 2006 and 274 gpd in 2007). The average daily water use in 2008 was 4,033 gpd.

Based on our review of your water usage, water use for outdoor irrigation is low at Applebee's. For example, in 2008, summer use (average of June, July, and August) was approximately 4 percent higher than winter use (average of December, January, and February). Applebee's used an average of 114,000 gallons of water per month during the summer months, compared to an average of approximately 110,000 gallons of water per month during the winter months.

Daniel B. Stephens & Associates, Inc.

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Mr. George Stapleton
April 3, 2009
Page 2

Site Visit and Recommended Conservation Measures

The Applebee's site visit was conducted on February 10, 2009. The existing pre-rinse spray nozzle was left in place because we were unable to shut off the water to this fixture. A plumber was scheduled to come to the restaurant the day after our site visit; so we left a new nozzle to be changed out by the plumber. The flow rate of the existing nozzle was 2 gallons per minute (gpm), and the new nozzle should reduce the flow rate to 1 gpm. Assuming that this fixture is used for a total of 3 hours per day, using the new fixture will conserve approximately 180 gallons of water per day or 5,400 gallons per month, resulting in a monthly water bill savings of approximately \$17.50 until July 2009 when City water rates are raised, and approximately \$18.50 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). Other recommendations for how Applebee's can conserve water follow.

The handwashing sink in the bar area was dripping during the site visit, at a rate of approximately 10 gpd. At this rate, the leak wastes approximately 300 gallons per month. Fixing this leak would result in a monthly water bill savings of approximately \$1.00. Although the monetary savings will be slight, we recommend that this leak be fixed as soon as possible. The dishwashing sink in the kitchen (that shares the sink with the pre-rinse spray nozzle) was leaking during the site visit, at a rate of approximately 150 gpd. At this rate, the leak wastes approximately 4,500 gallons per month. Fixing this leak would result in a monthly water bill savings of approximately \$14.60. A plumber was scheduled to come fix this leak the day following our site visit; so this has likely been completed.

The aerators on two kitchen handwashing faucets were changed out, reducing flow from 4 and 2 gpm to 1 gpm. Assuming that these faucets are used for 1.5 hours each per day, this reduction will lead to a savings of approximately 270 gpd for the first faucet and 90 gpd for the second faucet, resulting in a total savings of 10,800 gallons per month. This corresponds to monthly water bill savings of \$35.00 under the current water rate structure.

Applebee's has five ice cream scoop dipper wells (one at the bar, one in the kitchen, and three on the front line), and these fixtures are required to be run during business hours. The flow rates are approximately 0.25 gpm for two of the fixtures (located at the bar and on the front line), 0.5 gpm (for a second fixture located on the front line), and 1 gpm (for the fixture located in the kitchen). The last fixture (located on the front line) was off during our site visit, although it had a 10 gpd drip. In-line restrictors are available that reduce flow down to 0.3 gpm (these get installed under the sink).

Applebee's is open for 11 hours per day Monday through Friday, and 12 hours per day on Saturday and Sunday. At the current flow rates, the four operable dipper wells use a total of 2 gpm, or 1,320 gallons in an 11-hour day. Reducing the flow of the two dipper wells that exceed 0.3 gpm would conserve 0.9 gpm (594 gpd, or 17,820 gallons per month), saving approximately \$57.75 per month on the water bill at current water rates (not accounting for the

Mr. George Stapleton
April 3, 2009
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energy costs to heat this water). Fixing the leak on the fifth dipper well would conserve 10 gpd, or 300 gallons per month, saving another \$1.00 per month on the water bill. We recommend that in-line restrictors be installed on these fixtures.

The ice machine at Applebee's is an air-cooled Hoshizaki machine. The model number was not identified on the machine during the site visit, and whether the machine makes flake/nugget or cube ice was not recorded. Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Air-cooled ice machines use between 72 and 240 gallons per 100 pounds of ice produced less than water-cooled ice machines (water used to cool the machine's compressor) (EBMUD, 2008).

The men's restroom has two toilets with 1.6 gallon per flush (gpf) flush volumes and two 1.0 gpf urinals; no problems were noted with these existing, low-flow fixtures. The aerators were changed out on both of the lavatory faucets in the men's restroom, reducing flow from 2 and 1.5 gpm to 1 gpm. Assuming that the faucets are used for 1.5 hours each per day, this reduction will lead to a savings of approximately 90 gpd for the first faucet and 45 gpd for the second faucet, resulting in total savings of 135 gpd, or 4,050 gallons per month, leading to monthly water bill savings of \$13.10 under the current water rate structure.

The women's restroom has three toilets with 1.6 gpf flush volumes; no problems were noted with these existing, low-flow fixtures. The aerator was changed out on one of the lavatory faucets in the women's restroom, reducing flow from 2 to 1 gpm (the aerator on the second 2 gpm flow rate faucet was an odd size, and was left in place). Assuming that the faucet is used for 1.5 hours each per day, this reduction will lead to a savings of approximately 90 gpd, or 2,700 gallons per month, leading to monthly water bill savings of \$8.75 under the current water rate structure.

Applebee's has a small amount of irrigated landscaping, which is watered using a drip system (the nearby grass is not watered by this system). No estimates of savings due to changes in landscaping irrigation and/or plant types have been made.

Conservation Savings

In summary, total savings could be on the order of \$1,800 per year if all recommended conservation strategies are incorporated (Table 1).

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Applebee's is currently paying a volume-based wastewater treatment fee of \$59.82 per month, although this fee

Mr. George Stapleton
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is artificially low due to the water meter under recording in the past and will be raised when the fees are recalculated. By implementing water conservation measures, the average winter usage will decrease, as will future wastewater treatment fees.

Table 1. Applebee's Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of the pre-rinse spray nozzle	5,400	\$17.50	\$210.00
Fixing leaky kitchen handwashing and dishwashing faucets	4,800	\$15.60	\$187.20
Replacement of two kitchen faucet aerators (completed)	10,800	\$35.00	\$420.00
Installation of two ice cream dipper well in-line flow restrictors and fixing one dipper well leak	18,120	\$58.75	\$705.00
Replacement of three restroom faucet aerators (completed)	6,750	\$21.85	\$262.20
Total	45,870	\$148.70	\$1,784.40

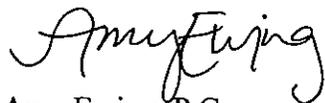
Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

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April 3, 2009
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Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.



April 3, 2009

Ms. Tina Manzanares
Village Inn Restaurant
1741 NM 528, SE
Rio Rancho, New Mexico 87124

Re: Restaurant Water Audit Summary

Dear Ms. Manzanares:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Village Inn could save on the order of \$3,000 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for Village Inn for 2006, 2007, and 2008 is enclosed. Annual water use increased by 28 percent between 2007 and 2008, and 2 percent between 2006 and 2007. Average daily water use was 2,726 gallons per day (gpd) in 2006, 2,778 gpd in 2007, and 3,564 gpd in 2008.

Based on our review of your water usage, water use for outdoor irrigation is significant at the Village Inn, directly impacting water usage and costs. For example, in 2008, summer use (average of June, July, and August) was approximately 2.5 times greater than the winter water use (average of December, January, and February). Village Inn used an average of approximately 125,000 gallons of water per month during the summer months, compared to an average of approximately 80,000 gallons of water per month during the winter months.

Site Visit and Recommended Conservation Measures

The Village Inn site visit was conducted on February 12, 2009. One existing pre-rinse spray nozzle was replaced, reducing the amount of water used by the first fixture from 1 to 0.5 gallon

Daniel B. Stephens & Associates, Inc.

6020 Academy Rd., NE, Suite 100 505-822-9400

Albuquerque, NM 87109-3315 FAX 505-822-8877

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per minute (gpm). Assuming that the first fixture is used for a total of 3 hours per day, using the new fixture will conserve approximately 90 gpd, or 2,700 gallons per month, resulting in a monthly water bill savings of approximately \$8.75 until July 2009 when City water rates are raised, and approximately \$9.25 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). A second existing pre-rinse spray nozzle was not replaced because the existing nozzle was new and had a flow rate of 1 gpm. No savings are expected to come from this fixture. Other recommendations for how Village Inn can conserve water follow.

The ice cream scoop dipper well was running very slowly, at a rate of approximately 20 gpd (Village Inn is open from 5:30 a.m. to 10 p.m. on weekdays, and until 11 p.m. on weekends, and the dipper well is left on during business hours). No savings are expected for this dipper well, as the flow rate only amounts to 600 gallons per month.

The aerators on four kitchen handwashing faucets were changed out, reducing flow from 4.5 to 0.5 gpm, 4.0 to 1.5 gpm, 1.5 to 0.5 gpm, and 1.5 to 0.5 gpm (these faucets are used for cleaning syrup containers, handwashing, and filling the steam table). Total savings for the four faucets are 8.5 gpm. Assuming that these faucets are each used for 2 hours per day, this change will lead to a savings of 1,020 gpd, resulting in a total savings of 30,600 gallons per month. This reduction corresponds to monthly water bill savings of \$99.00 under the current water rate structure.

There were three leaks in the kitchen during our site visit. The mop sink faucet was dripping at a rate of 19 gpd, the dishwashing sink had a 5 gpd drip, and a preparation area faucet had a 10 gpd drip. At a total rate of 34 gpd, these three leaks waste approximately 1,020 gallons per month. Fixing these three leaks would result in a monthly water bill savings of approximately \$3.30. Although the monetary savings will be slight, we recommend that these leaks be fixed as soon as possible.

The ice machine at Village Inn is a Hoshizaki Model KM-1200SRE. This is an air-cooled, cube ice machine. Should this ice machine need to be replaced in the future, we recommend that an air-cooled, flake ice machine be selected instead (air-cooled, flake ice machines are most efficient). Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Air-cooled ice machines use between 72 and 240 gallons per 100 pounds of ice produced less than water-cooled ice machines (water used to cool the machine's compressor) (EBMUD, 2008).

A nugget/flake ice machine reduces water use by about 15 gallons per 100 pounds of ice produced (EBMUD, 2008). The existing ice machine can make 1,200 pounds of ice per 24-hour period. Assuming that the machine is working at capacity (producing 1,200 pounds of ice per day), this machine is using approximately 180 gpd (5,400 gallons per month) more than a flake ice machine would, corresponding to a monthly water bill charge of \$17.50. A nugget/flake ice machine costs between \$500 and \$1,200 more than cube-style ice machines. If the existing ice

machine were replaced with a flake ice machine, the \$500 to \$1,200 cost difference would be paid for by water bill savings within 6 years of its installation.

The water softener was discharging continuously at a rate of approximately 0.25 gpm during our site visit (the water softener should only backwash at night). This problem needs to be addressed, as the leak is wasting 360 gpd, or 10,800 gallons per month, corresponding to \$35.00 on the monthly water bill at current water rates. Also, Village Inn should consider installing a conductivity control on the softener. This would cause it to only turn on when needed, instead of flushing daily.

The men's and women's employee restrooms each have one toilet with a flush volume of 3.5 gallons per flush (gpf). These toilets should be replaced with low-flow pressure assist toilets, reducing their flush volumes from 3.5 to 1.6 gpf. Assuming 50 flushes by each toilet each day, a total of 190 gpd, or 5,700 gallons per month, could be conserved due to the reduction in flush volume. This reduction would lead to a monthly water bill savings of approximately \$18.50. New pressure assist toilets can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings would pay for both replacement toilets in just over 3 years after their installation. The handle was broken on the toilet in the men's employee restroom, so the replacement of this toilet should be a priority.

The lavatory sink aerators in the men's and women's employee restrooms were replaced, reducing flow from 2.0 to 0.5 gpm and 1.25 to 1 gpm. Assuming that the faucets are used for 50 minutes each per day, this reduction will lead to a total savings of 87.5 gpd (75 gpd and 12.5 gpd, respectively), or 2,625 gallons per month, leading to monthly water bill savings of \$8.50 under the current water rate structure.

The men's and women's restrooms each have two toilets with flush volumes of 3.5 gpf. These toilets should be replaced with low-flow pressure assist toilets, reducing their flush volumes from 3.5 to 1.6 gpf. Assuming 75 flushes by each toilet each day, a total of 570 gpd, or 17,100 gallons per month, could be conserved due to the reduction in flush volume. This reduction would lead to a monthly water bill savings of approximately \$55.40. New pressure assist toilets can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings would pay for all four replacement toilets in just over 2 years of their installation. The men's restroom also has one 1.0 gpf urinal no problems were identified with this fixture.

The lavatory faucet in the men's restroom had a flow rate of 1.25 gpm, and was left in place. The aerator on the faucet in the women's restroom was changed, reducing its flow rate from 1.5 to 0.5 gpm. Assuming that this faucet is used for 2 hours per day, this change will lead to a total savings of 120 gpd, or 3,600 gallons per month, leading to monthly water bill savings of \$11.70 under the current water rate structure. The hot water faucet handle in the women's restroom comes back on if it is pushed back too far, and needs to be replaced.

Ms. Tina Manzanares
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Village Inn irrigates approximately 1,200 square feet of grass, in addition to decorative plum trees and miscellaneous bushes, and a professional landscaping company takes care of the landscaping. Rainbird sprinkler heads are used to water the grass, and a drip system is used for the other vegetation. The micro-tube drip system heads used for watering the bushes and trees are difficult to see and maintain, and may need to be replaced. The OSE has quantified landscape irrigation water requirements by vegetation and irrigation type for each county in New Mexico; their estimate of the landscape irrigation water requirement for Bermuda grass using flood or sprinkler irrigation in Sandoval County is 32.71 gallons per square foot per year (Wilson, 1996). At this rate, the irrigation of 1,200 square feet of Bermuda grass in Rio Rancho should require approximately 39,000 gallons of water per year. Grass is generally overwatered, and Village Inn may be overwatering this landscaping (in 2008, Village Inn used an estimated 45,000 gallons of water for irrigation during the three summer months of June, July, and August).

Village Inn could reduce water consumption by reducing the amount of water used for irrigation to the landscape irrigation requirement and/or by replacing some of the landscaping with xeriscape. Please contact Marian Wrage with the City of Rio Rancho for more information about xeriscaping. Xeriscaping has been shown to reduce outdoor water use by 50 percent or more (NM OSE, 2001). If half of the grass at Village Inn were replaced with xeriscape, approximately 19,500 gallons of water could be conserved each year, leading to an annual water bill savings of approximately \$63.00 under the current water rate structure.

Conservation Savings

In summary, total savings could be on the order of \$3,000 per year if all recommended conservation strategies are incorporated (Table 1). The EPA WaterSense toilet list is enclosed to assist you in selecting a quality low-flow model when purchasing replacement toilets.

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Village Inn is currently paying a volume-based wastewater treatment fee of \$459.27 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Table 1. Village Inn Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of one pre-rinse spray nozzle (completed)	2,700	\$8.75	\$105.00
Replacement of four kitchen faucet aerators (completed)	30,600	\$99.00	\$1,188.00
Fixing three leaking kitchen faucets	1,020	\$3.30	\$39.60
Replacement of the ice machine	5,400	\$17.50	\$210.00
Repairing the water softener leak	10,800	\$35.00	\$420.00
Replacement the two toilets in the men's and women's employee restrooms	5,700	\$18.50	\$222.00
Replacement of two employee restroom faucet aerators (completed)	2,625	\$8.50	\$102.00
Replacement of the four toilets in the men's and women's restrooms	17,100	\$55.40	\$664.80
Replacement of one women's restroom faucet aerator (completed)	3,600	\$11.70	\$140.40
Changes in landscaping irrigation and/or plant types	1,625 ^a	\$5.25 ^b	\$63.00
Total	81,170	\$262.90	\$3,154.80

Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

^a These estimates of landscaping water conservation are average monthly savings that do not account for seasonal differences in irrigation (the value presented is a monthly average of the estimated annual savings of 19,500 gallons per year).

^b Estimated savings will be higher than the averages presented during summer months, and lower than the averages presented during winter months.

Ms. Tina Manzanares
April 3, 2009
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Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

References

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.

New Mexico Office of the State Engineer (NM OSE). 2001. *A water conservation guide for public utilities*. Available at <<http://www.ose.state.nm.us/water-info/conservation/pdf-manuals/nm-water-manual.pdf>>.

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April 3, 2009

Mr. John Anderson and Ms. Gina Colclasure
Lincoln Middle School
2287 Lema Rd. SE
Rio Rancho, New Mexico 87124

Re: Restaurant Water Audit Summary

Dear Mr. Anderson and Ms. Colclasure:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Lincoln Middle School could save between \$750 and \$1,700 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for Lincoln Middle School for 2006, 2007, and 2008 is enclosed (this plot reflects water use for all of Lincoln Middle School, not just the cafeteria). The Rio Rancho water use database does not reflect water use by Lincoln Middle School in December 2006. Annual water use increased by 3 percent between 2007 and 2008, and decreased by 1 percent between 2006 and 2007 (excluding a December 2006 value). Average daily water use was 16,178 gallons per day (gpd) in 2006, 16,055 gpd in 2007, and 16,523 gpd in 2008.

Based on our review of your water usage, outdoor irrigation directly impacts Lincoln Middle School's water usage and costs. For example, in 2008, summer use (average of June, July, and August) was more than 13 times greater than the winter water use (average of December, January, and February). Lincoln Middle School used an average of approximately 1,000,000 gallons of water per month during the summer months, compared to an average of approximately 70,000 gallons of water per month during the winter months.

Daniel B. Stephens & Associates, Inc.

6020 Academy Rd., NE, Suite 100

505-822-9400

Albuquerque, NM 87109-3315

FAX 505-822-8877

Site Visit and Recommended Conservation Measures

The Lincoln Middle School site visit was conducted on February 12, 2009. The existing pre-rinse spray nozzle was replaced, reducing the amount of water used by this fixture from 2 to 1 gallon per minute (gpm). Assuming that this fixture is used for a total of 3 hours per day, using the new fixture will conserve approximately 180 gpd, or 5,400 gallons per month, resulting in a monthly water bill savings of approximately \$17.50 until July 2009 when City water rates are raised, and approximately \$18.50 per month thereafter (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009). Other recommendations for how the Lincoln Middle School cafeteria can conserve water follow.

The school cafeteria serves a total of 625 meals per day, Monday through Friday between August and May (one breakfast and two lunch shifts per day). The school is on the list for a remodel, which will include acquisition of a dishwasher (dishes are currently handwashed, and the cafeteria staff estimate that a total of 240 gpd is used for dishwashing [20 gallons each, four times a day]).

The ice machine at the Lincoln Middle School cafeteria is a Hoshizaki Model KM-500MWE. This is a water-cooled, cube ice machine. Should this ice machine need to be replaced in the future, we recommend that an air-cooled, flake ice machine be selected instead (air-cooled, flake ice machines are most efficient). Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Air-cooled ice machines use between 72 and 240 gallons per 100 pounds of ice produced less than water-cooled ice machines (water used to cool the machine's compressor) (EBMUD, 2008).

A nugget/flake ice machine reduces water use by about 15 gallons per 100 pounds of ice produced (EBMUD, 2008). The existing ice machine can make 500 pounds of ice per 24-hour period. Assuming that the machine is working at capacity (producing 500 pounds of ice per day), this machine is using approximately 75 gpd more than would a flake ice machine. An air-cooled ice machine would further reduce water use by between 360 and 1,200 gpd, for a total reduction of between 435 and 1,275 gpd. This reduction is equivalent to between 13,050 and 38,250 gallons per month, and approximately \$42.00 to \$124.00 per month on the water bill under the current water rate structure. An air-cooled ice machine costs about \$1,000 more than a water-cooled ice machine, and a nugget/flake ice machine costs between \$500 and \$1,200 more than a cube-style ice machine. If the existing ice machine were replaced with a flake ice machine, the approximately \$1,500 to \$2,200 cost difference would be paid for by water bill savings within between 1 and 3 years of its installation.

The cafeteria staff restroom has one toilet with a flush volume of 3.5 gallons per flush (gpf). This toilet should be replaced with a low-flow pressure assist toilet, reducing its flush volume from 3.5 to 1.6 gpf. Assuming 20 flushes each day, a total of 38 gpd, or 1,140 gallons per

month, could be conserved due to the reduction in flush volume. This change would lead to a monthly water bill savings of approximately \$3.70. New pressure assist toilets can be purchased for between approximately \$300.00 and \$350.00. At this cost, the water bill savings would pay for this replacement toilet within 8 years of their installation. The cafeteria staff restroom has one sink with a flow rate of 2.2 gpm. This aerator in this faucet was left in place; therefore, no savings are anticipated for this fixture.

The boy's restroom adjacent to the cafeteria has two toilets with a flush volume of 1.6 gpf and three 1.0 gpf urinals. The girl's restroom adjacent to the cafeteria has five 1.6 gpf toilets. No problems were identified with these existing, low-flow fixtures. Two sinks with three automatic spigots each are located in the lobby outside the boy's and girl's restrooms. Each of the spigots has a flow volume of 0.5 gpm.

Lincoln Middle School irrigates athletic fields and landscaping; however, our site audit concentrated on water use by the school cafeteria. Therefore, no estimates of water savings due to changes in landscaping irrigation types and/or plant types have been made.

Conservation Savings

In summary, total savings could be on the order of \$1,700 per year if all recommended conservation strategies are incorporated (Table 1). The EPA WaterSense toilet list is enclosed to assist you in selecting a quality low-flow model when purchasing replacement toilets.

Table 1. Lincoln Middle School Cafeteria Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of the pre-rinse spray nozzle (completed)	5,400	\$17.50	\$210.00
Replacement of the ice machine	13,050–38,250	\$42.00–\$124.00	\$504.00–\$1,488.00
Replacing the toilet in the cafeteria staff restroom	1,140	\$3.70	\$44.40
Total	19,590–44,790	\$63.20–\$145.20	\$758.40–\$1,742.40

Note: Estimated savings are based on current rates (\$3.24 per 1,000 gallons).

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the

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April 3, 2009
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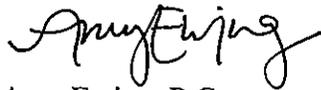
monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Lincoln Middle School is currently paying a volume-based wastewater treatment fee of \$434.97 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.



April 3, 2009

Ms. Maritza Mendoza
Panda Express
801 Unser Blvd. SE
Rio Rancho, New Mexico 87124-6368

Re: Restaurant Water Audit Summary

Dear Ms. Mendoza:

Daniel B. Stephens & Associates, Inc., the New Mexico Office of the State Engineer (OSE) Water Use and Conservation Bureau, and the City of Rio Rancho would like to thank you for your participation in the Rio Rancho Commercial Water Audit Project. The goal of this project was to reduce commercial water use. Ten establishments in the City of Rio Rancho participated in the project, and the City plans to continue conducting additional restaurant water audits in the future.

Based on our review of the water use at the ten local establishments, we have recommended water conservation measures for each location. Each establishment can conserve water, with estimated savings ranging from \$500 to \$3,000 per year for the ten establishments. Panda Express could save on the order of \$500 per year by implementing the recommended conservation measures.

Existing Water Usage

Three years of data were evaluated for each participating establishment prior to conducting the site visits. A figure showing billed water use for Panda Express for 2007 and 2008 is enclosed. This is a new facility that was built in October 2007; therefore, there are no data from before October 2007. As shown in the figure, the Panda Express water meter has malfunctioned since the facility opened. A new water meter was installed in November 2008. Meaningful statistics could not be calculated using the existing data for Panda Express.

Site Visit and Recommended Conservation Measures

The Panda Express site visit was conducted on February 12, 2009. This restaurant does not have a pre-rinse spray nozzle, so a water-conserving fixture could not be installed. Because this is a relatively new facility, the fixtures are new and in most cases, water conserving. None of the faucets were leaking at the time of the site audit, and the restaurant does not have a dishwasher (dishes are washed by hand). Recommendations for how Panda Express can conserve water follow.

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The ice machine at Panda Express is a relatively new Manitowoc brand ice machine. This is a water-cooled machine. The model number was not obtained because the front of the machine was screwed shut, and whether the machine makes flake/nugget or cube ice was not recorded. Water-cooled ice machines use between 72 and 240 gallons of water per 100 pounds of ice to cool the machine's compressor, in addition to the amount of water that is frozen to make ice (EBMUD, 2008). Cube ice machines use 30 or more gallons of water to make 100 pounds of ice, while flake/nugget ice machines use 20 gallons of water per 100 pounds of ice (EBMUD, 2008). Should this ice machine need to be replaced in the future, we recommend that an air-cooled, flake ice machine be chosen.

The men's restroom has one pressure assist toilet with a flush volume of 1.6 gallons per flush (gpf), and one 1.0 gpf urinal. The women's restroom has two pressure assist toilets with flush volumes of 1.6 gpf. No problems were identified with these existing, low-flow fixtures.

The lavatory faucet aerators in the men's and women's restrooms were not replaced during our site visit because they were odd sizes that we did not have on hand. The flow rates for these faucets were 2.5 gallons per minute (gpm) and 3.0 gpm, respectively, and these flow rates could be reduced to 1.0 gpm by changing them out in the future. Assuming that each of the faucets is used for 2 hours each day, a total of 420 gallons per day (gpd) (180 gpd for the first faucet and 240 gpd for the second faucet), or 12,600 gallons per month, could be conserved. This change would reduce the monthly water bill by \$40.80 under the current water rate structure (current City of Rio Rancho commercial water rates are \$3.24 per 1,000 gallons and will be raised to \$3.42 per 1,000 gallons beginning in July 2009).

Panda Express irrigates bushes and small ornamental trees (i.e., sycamore, fruit, afghan pine, juniper) using a Rainbird drip system, and the landscaping is maintained. Irrigation occurs on a schedule, and was off for the winter during our site visit. Several of the drip emitters were in places where there are no longer any plants. We recommend that these emitters be removed, and that the irrigation schedule be changed so that the plants are only watered once per week. The water data for Panda Express are not complete enough to make any conclusions about the amount of water being used for outdoor watering; therefore, no specific conservation savings have been estimated for changes in landscape irrigation.

Conservation Savings

In summary, total savings could be on the order of \$500 per year if all recommended conservation strategies are incorporated (Table 1).

Water rates will be raised by \$0.18 per 1,000 gallons in July 2009, which will further increase the monetary savings due to conservation going forward. Additional savings due to conservation will come from a reduction in wastewater volume charges. The City of Rio Rancho bills its customers a wastewater treatment fee that is based on their winter quarter average water use (currently \$5.97 per 1,000 gallons and increasing to \$6.30 per 1,000 gallons in March 2009; the

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monthly fee is recalculated annually), in addition to a \$9.00 flat rate base charge. Panda Express is currently paying a volume-based wastewater treatment fee of \$454.91 per month. By implementing water conservation measures, the average winter usage will decrease, as will the wastewater treatment fees.

Table 1. Panda Express Estimated Conservation Savings

Conservation Measure	Estimated Savings (gallons per month)	Estimated Savings (\$ per month)	Estimated Savings (\$ per year)
Replacement of two restroom faucet aerators	12,600	\$40.80	\$489.60
Total	12,600	\$40.80	\$489.60

Closing

Again, we appreciate your involvement in this project. Please contact me at (505) 822-9400 or Marian Wrage with the City of Rio Rancho at (505) 896-8715 if you have any questions.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.



Amy Ewing, P.G.
Hydrogeologist

AE/rpf
Enclosures

Reference

East Bay Municipal Utility District (EBMUD). 2008. *Watersmart guidebook: A water-use efficiency plan review guide for new businesses*. Oakland, California.