

# HURST CREEK MUNICIPAL UTILITY DISTRICT

## WATER CONSERVATION PLAN

### FIVE AND TEN YEAR GOALS

#### INTRODUCTION AND BACKGROUND

Hurst Creek Municipal Utility District was created by the Texas Water Commission in 1979 to provide water and sewer services to approximately 700 acres in western Travis County, Texas. In 2005 the district also took over responsibility for storm water drainage which had previously been administered by the Property Owner's Association. As a political subdivision of the State of Texas, the District is retail, non-profit public utility with the rights, powers and responsibilities as outlined in Chapter 54 of the Texas Water Code.

In 2003 the Texas Legislature mandated the Texas Commission on Environmental Quality (TCEQ), the successor agency to the Texas Water Commission, to adopt rules requiring all public water utilities appropriating more than 1,000 acre feet of surface water to develop water conservation plans with five and ten year goals.

This document examines the District's water usage for the past five and ten years and proposes five and ten year goals for conservation.

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## DESCRIPTION OF THE PLANNING AREA

Hurst Creek MUD's primary service area is a residential subdivision, The Hills of Lakeway, originally platted in 1979 in the City of Austin's extraterritorial jurisdiction. The subdivision consists of approximately 1,042 single family lots, 158 condo lots, and a small commercial tract fronting Lohman's Crossing Road. The commercial tract is within the City of Lakeway and contains an office complex, an assisted living center and a skilled nursing center. A general location map and a detailed map of the water distribution system are attached as Appendix Items 1 and 2.

In 1997 the Village of The Hills, a municipality, has been incorporated within the original District boundaries. Additionally, The District has annexed some 34 acres to include the Emmaus Catholic Church and adjacent grounds.

The residential portion of the District is nearing build out, with less than 10 vacant single-family home (SFH) lots and 2 vacant condo lots remaining.

Most of the existing homes are moderately large, with the average appraised value of a homestead at \$497,635 in 2018, the most recent year available. Most homes are heavily landscaped and lawn sprinkler irrigation systems are required by the Property Owner Association Architectural Rules. There are five condominium regimes within the District, with an average of 15 units each.

Most streets within the District are privately owned by the Property Owners Association, and access is restricted by a system of computer-controlled traffic gates; only residents and their guests are capable of free ingress. A private security firm oversees the manned gate.

## THE WATER SYSTEM

The District purchases raw water from the LCRA pursuant to a Water Sale Contract and Conveyance Agreement. The raw water is pumped through an 11,000-foot pipeline and treated by the District's three water treatment plants, each with a capacity of 1 MGD. Treated water is stored in two ground storage tanks of 150,000 gallons each, and a 500,000-gallon elevated tower.

A network of water mains ranging in size from 16" to 4" deliver treated water to the District's customers. The system map is included in Appendix 2.

All connections are metered, with meter sizes ranging from ¾" to 6". Currently, about 99% of the district's meters are Metron AMR's with single jet technology.

The system is financed via ad valorem property taxes levied on all property within the District, and from service revenues. All facilities were designed by registered professional engineers, approved by the appropriate State agencies, and maintained by licensed operators.

## HISTORICAL USAGE PATTERNS

Usage patterns for the previous ten years are shown on Appendix 3.

The data for the last ten years shows a large rise in residential connection daily avg usage to peak in 2011 at 853 GPD. This was primarily due to the extreme drought experienced during that time and the following couple of years. With the implementation of water restrictions and customer education, it lowered to 519 GPD per connection. In 2015 water restrictions were removed, however even though the average usage went up it did so only slightly to elevate to 596 gpd 2018.

When comparing GPD per connection entering the distribution system with the total raw water pumped from Lake Travis (source water), it is evident there has been a large reduction in 2018. This has primarily been accomplished by the installation of the district's backwash water treatment facility. This will be discussed in greater detail later in this document.

Water accountability is excellent, ranging from 94.3% to 83.9%, with an average accountability of 90.6%. This high accountability is the result of a wholesale change-out of all service lines in the system in the early 2000's. In fact, the district experiences less than half a dozen system leaks per year as apposed to previously having as many as 2 to 3 leaks per week!

## PROJECTED USAGE PATTERNS

With continual conservation efforts the district is expecting the average usage to level out and trend down.

## IRRIGATION OF THE HILLS GOLF COURSE

Due to the legislative ban on wastewater discharges in the Highland Lakes region, golf course irrigation with wastewater effluent goes hand-in-glove with operation of a public water system. The District has a contract with the Hills Golf Course allowing for the disposal of treated wastewater effluent. Conversely, storage of wastewater effluent is essential for operation of the course during the hot, dry summer months, when area lakes are low, drinking water demand is high and the LCRA's water conservation plans may curtail the use of lake water on golf courses.

Hurst Creek MUD's irrigation infrastructure includes a 500,000 gallon per day wastewater treatment plant, a 210,000-gallon surge tank, a 12" diameter effluent force main, a 50-million-gallon effluent holding pond, and a sophisticated computer-controlled pumping and valving system. The actual irrigation distribution system belongs to the owner of the golf course.

The irrigation system provides for the application to the golf course of effluent stored in the 50 MG pond, or alternately, water from Hurst Creek may be used. However, state law forbids the introduction of the effluent into the creek. Effluent and creek irrigation volumes are separately accounted.

The contracts between the District and golf course stipulate that the District will pump water from Lake Travis, as part of its water sale contract with the LCRA, to maintain water levels in Hurst Creek. The golf course may take suction from the creek but must pay the District for the water withdrawn; in turn, the District must pay the LCRA for creek water used.

Effluent irrigation typically takes place at night, when the course is closed to play, and large volumes are applied – up to 1,800 gallons per minute – by a network of sprinkler stations spaced throughout the course.

To operate properly, an irrigation distribution system must always be kept pressurized, even when sprinkling is not taking place. Additionally, landscape maintenance personnel use irrigation water during the day, but not in enough volumes to justify running the District's 250 hp effluent pumps. Because the golf course irrigation system is kept pressurized with water from Hurst Creek on a continuing basis, and effluent from the pond is supplied only during major irrigation cycles. This creek water must be replenished with Lake Travis water, purchased by the District from the LCRA. This lake water usage represents an opportunity for water conservation efforts.

## HISTORICAL USAGE PATTERNS

Golf course irrigation demand, like drinking water, is highly weather dependent. A roughly constant flow of wastewater must be stored and apportioned onto the golf course so that the storage pond neither overflows nor goes dry. Over the past twenty years golf course irrigation demand has ranged from about 39 MG during a wet year to 161 MG during a dry year. Average annual use appears to be around 97 MG. Refer to Appendix 3 for historical golf course irrigation data.

## PROJECTED USAGE PATTERNS

As 100% of all wastewater effluent produced by the District must be irrigated on the golf course or adjacent landscaping, effluent disposal must be the guiding principle of reuse. Current wastewater production is around 200,000 gallons per day. Additionally, the District is contractually obligated to store and dispose of a maximum of 100,000 gallons

per day of treated effluent from WCID#17's wastewater treatment plant. Total effluent production will exceed the average annual golf course irrigation demand of 264,527 gallons per day, and it is obvious that additional irrigable areas will be required in the future. However, averages are somewhat meaningless. In a dry year there will not be enough effluent, and we will require water from Lake Travis to meet golf course demand; in a wet year we will be urging the golf course to irrigate more than their actual needs, to legally dispose of the necessary volume of effluent.

## PAST CONSERVATION EFFORTS

In May of 2015 the District purchased an AMR system from Metron Farnier. All meters and registers including all commercial and residential customers were changed. This significant upgrade took place over three months. Included in this system is an online portal both for the district and the customers. It is web based and has phone apps for Android and Apple. The meters report daily their total usage and gallons per minute (gpm) for every 5 minutes! With this amount of detail, it is possible to detect many different types of leaks and report them. Built into the system is a customizable alert system for both the District and the customers. In conjunction with the installation of the AMR system the District implemented a customer leak notification program. This is in addition to the automated system. The District's personnel receive a master leak email daily and through a set of guidelines make sure customers not only are aware of their leaks but help to make sure they get repaired. Please see Appendix 4. In 2016 a total of 168.91 gpm worth of leaks were corrected. In 2017, 185.33 gpm and in 2018, 73.15 gpm were corrected.

In March of 2017 the District completed its Backwash Recovery System. Previously all backwash and filter-to-waste flows were sent to the wastewater treatment facility for final disposal. For 2017 and 2018 a total of 28.535 MG has been recovered. Not only does this save source water but also greatly reduces the impact on the WWTP, including reducing electrical and chemical costs associated with its disposal. In fact, it reduces the necessity of pumping this water three times! Please see Appendix 5.

In conjunction with the installation of this system a thorough examination of backwash procedures and chemical usages was conducted. Through this the backwash water used has been reduced by an additional 15.53 MG in 2018.

In addition to these large projects the District continues to periodically promote water conservation by sending out flyers, posts notices on the District's website, and maintaining signs requesting voluntary watering scheduling throughout the year. Customers are also encouraged to monitor their usage through Waterscope, the AMR's customer portal, and look for ways to conserve water and monitor irrigation cycles.

The District also maintains an increasing block rate structure to help curve water usage.

## FIVE- AND TEN-YEAR CONSERVATION GOALS

The District is currently working with its engineer to study the possibility of inter-connecting the effluent irrigation system with the nearby Lakeway MUD's effluent irrigation system. This would allow more storage during the winter and more effluent during the summer. The overall efficiency of both systems could be increased substantially.

**Five-year Goal** – replace with effluent 10% of the lake water pumped to Hurst Creek for golf course irrigation. Using the numbers for 2018, for example, this effort would have conserved about 5.2 million gallons of Lake Travis water. On the treated water side, it would be difficult to improve on water accountability (which averages over 90% accountability for the past five years), so our goal is to maintain this high level of accountability. Regarding per capita water use, the District proposes to reduce by 5% the annual use per connection, primarily via customer education and treatment facility efficiency.

**Ten Year Goal** – replace with effluent 25% of the lake water pumped to Hurst Creek for golf course irrigation. Based on 2018 numbers, this would conserve about 13.8 million gallons of Lake Travis water annually. Regarding treated water use, the District proposes to reduce by 10% the annual use per connection, again by customer education and treatment facility efficiency.

## CONSERVATION PLAN IMPLEMENTATION

The Board of Directors will consider adopting this plan with a formal resolution (see appendix 6) and implement it through direction to the General Manager to initiate the necessary modifications to the effluent delivery facilities. Also, the District Manager will provide educational materials to customers urging water conservation in lawn watering.

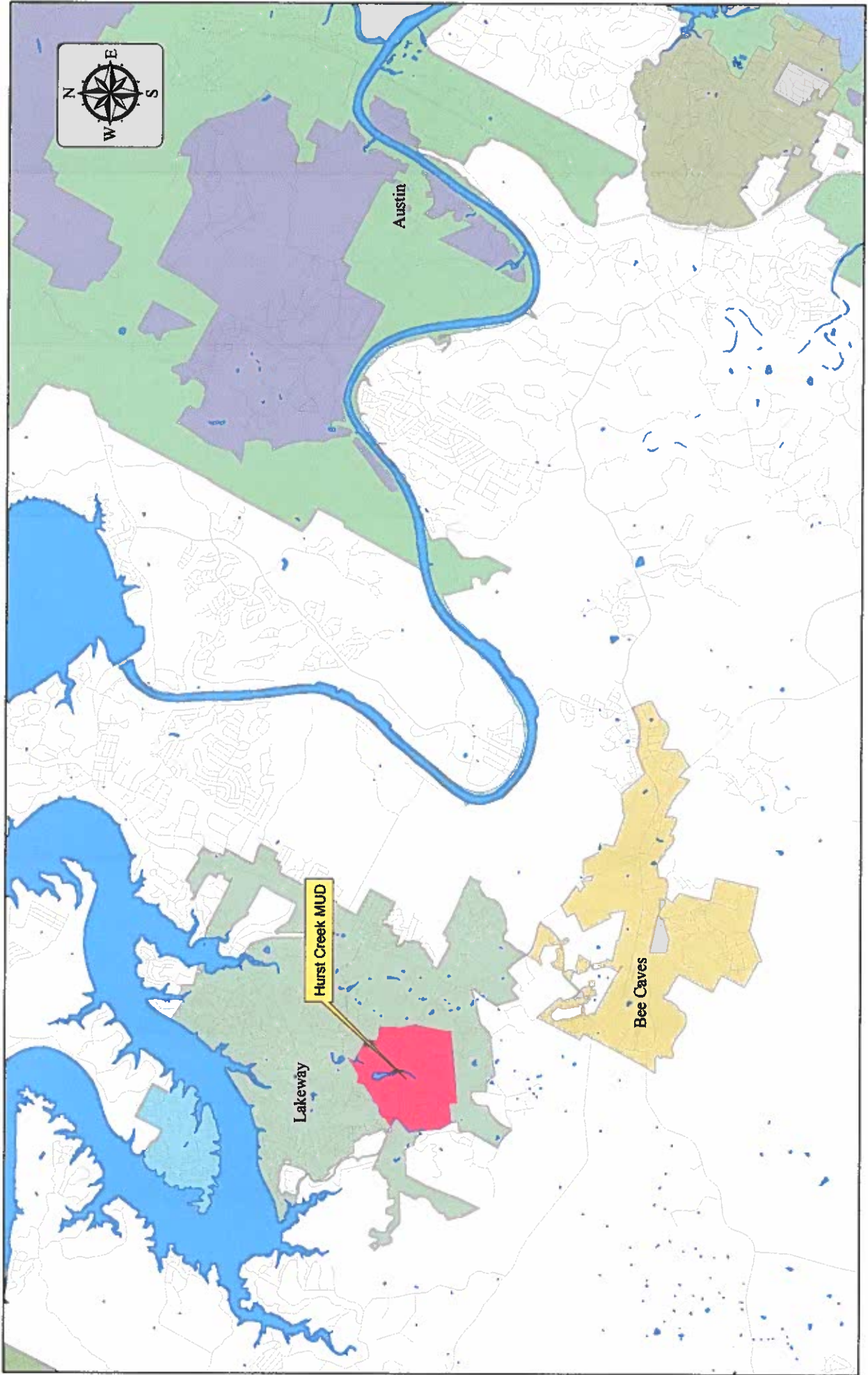
## REPORTING AND REVIEW

An annual report describing the implementation, status and effectiveness of the water conservation plan will be submitted to the Texas Water Development Board. The General Manager and District Engineer will review the plan annually and make recommendations to the District's Board of Directors for any necessary amendments or modifications.

# Appendix 1



Hurst Creek Municipal Utility District - Locator Map



# Appendix 2

# Hurst Creek Municipal Utility District



# Appendix 3



# Appendix 4



| METER ID | CUSTOMER NAME                | ADDRESS               | LEAK RATE GPM | LEAK START | EMAIL     | CALL       |
|----------|------------------------------|-----------------------|---------------|------------|-----------|------------|
| 1        | 1037347 PARTHASARATHY, SUSAN | 2 LOST MEADOW TRAIL   | 0.91          |            |           | 1/2/2018   |
| 2        | 1039173 DOUCET, TIM          | 27 CAMWOOD TRAIL      | 4.00          |            |           | 1/3/2018   |
| 3        | 1015372 COKER, JACKIE        | 4 GLENWAY COURT       | 1.13          |            |           | 1/3/2018   |
| 4        | 1050134 BRINKLEY, JEFF       | 53 LOST MEADOW TRL    | 1.03          |            |           | 1/3/2018   |
| 5        | 1050128 ROSILLO, JOSE ROBERT | 115 THE HILLS DRIVE   | 2.06          |            |           | 1/19/2018  |
| 6        | 1027212 FINLEY, MICHAEL D.   | 8 TIBURON COURT       | 0.97          |            |           | 1/19/2018  |
| 7        | 1008050 HAWTHORNE, HAL       | 6 TOURNEY COVE        | 2.03          |            | 1/19/2018 | 1/19/2018  |
| 8        | 1007872 RANKIN, MARK         | 7 SPARROWGLEN LANE    | 0.91          |            |           | 1/19/2018  |
| 9        | 1051338 HAGLER, SHAWN        | 6 HIGHTRAIL WAY       | 1.72          |            |           | 1/19/2018  |
| 10       | 1008166 SMALL, GEORGE TRUST  | 12 RADNOR             | 4.39          |            |           | 2/5/2018   |
| 11       | 1008050 HAWTHORNE, HAL       | 6 TOURNEY COVE        | 2.04          |            |           | 2/12/2018  |
| 12       | 1008998 KNAPLUND, JUSTIN     | 17 HIGHTRAIL WAY      | 5.04          |            |           | 2/16/2018  |
| 13       | 1008825 MARTIN, BARBARA      | 24 FALLING OAKS TRAIL | 5.45          |            |           | 4/3/2018   |
| 14       | 1030509 GORE, WAYAM          | 5 GENTLEBROOK BEND    | 1.18          |            |           | 4/27/2018  |
| 15       | 1030039 BLAKELY, BRUCE       | 2 GLENWAY DRIVE       |               |            | 4/18/2018 | 4/17/2018  |
| 16       | 1031777 PATTERSON, CARIN     | 323 THE HILLS DRIVE   | 3.37          |            |           |            |
| 17       | 1008783 WOODY, LEE           | 4 LOST MEADOW TRAIL   | 1.23          |            |           | 5/2/2018   |
| 18       | 1008029 KELLY, THOMAS        | 23 LOST MEADOW TRAIL  | 1.23          |            |           | 5/4/2018   |
| 19       | 1051332 FEDORKEVICH, JIMMY   | 8 TORRINGTON COURT    | 4.12          |            |           | 6/12/2018  |
| 20       | 1008644 SCOTT, JOHN          | 29 HEDGEBROOK WAY     | 1.00          |            |           | 6/13/2018  |
| 21       | 1008004 PUTMAN, BRUNO        | 38 STILLMEADOW DRIVE  | 1.93          |            |           | 12/10/2018 |
| 22       | 1106254 BOWNDS, BRANDON      | 20 TOURNAMENT WAY #16 | 0.45          |            |           | 12/31/2018 |
| 23       | 1008243 THOMAS, DOUGLAS      | 7 CHAMPIONSHIP DR     |               |            |           | 10/10/2018 |
| 24       | 1051325 LARKIN, LINDSAY      | 24 WINGREEN LOOP      | 7.00          |            |           | 10/12/2018 |
| 25       | 1038170 GIBBS, RICHARD       | 6 SPARROWGLEN LN      | 0.89          |            |           | 10/16/2018 |
| 26       | 1054852 HINKLE, DAVID        | 5 BRADENTON CT        | 4.00          |            |           | 11/14/2018 |
| 27       | 1058062 SOFIA, AURELIUS      | 21 AUTUMN OAKS DR     | 1.07          |            |           | 11/26/2018 |
| 28       | 1058058 DRYSDALE, CLIFF      | 70 LOST MEADOW TRL    | 9.00          |            |           | 11/27/2018 |
| 29       | 1098208 WILEY, BRIAN         | 2 APPLEWOOD CT        | 1.00          |            |           | 11/30/2018 |
| 30       | 1054888 ALMOND, JOHN         | 15 LOST MEADOW TRL    | 3.00          |            |           | 11/30/2018 |
| 31       | 1028061 WIDNER, TERESA & RON | 2 WINDWOOD CT         | 1.00          |            |           | 12/4/2018  |
|          |                              | TOTAL                 | 73.15         |            |           | 19-Dec     |

# Appendix 5



## Hurst Creek Municipal Utility District

### Backwash Recovery Totals

**2017**

| Month        | Recycled to WTP | Sent to WWTP  | Total Backwash Water From WTP | Recovery Rate |
|--------------|-----------------|---------------|-------------------------------|---------------|
| January      | 0.000           | 2.372         | 2.372                         | 0.00%         |
| February     | 0.000           | 3.040         | 3.04                          | 0.00%         |
| March        | 1.645           | 1.971         | 3.616                         | 45.49%        |
| April        | 1.352           | 2.418         | 3.7697                        | 35.86%        |
| May          | 1.763           | 3.773         | 5.536                         | 31.85%        |
| June         | 1.561           | 3.169         | 4.73                          | 33.00%        |
| July         | 1.297           | 2.593         | 3.89                          | 33.34%        |
| August       | 1.922           | 1.075         | 2.997                         | 64.13%        |
| September    | 1.339           | 0.453         | 1.792                         | 74.72%        |
| October      | 1.000           | 0.544         | 1.544                         | 64.77%        |
| November     | 1.274           | 0.239         | 1.513                         | 84.20%        |
| December     | 0.994           | 0.246         | 1.24                          | 80.16%        |
| <b>Total</b> | <b>14.147</b>   | <b>21.893</b> | <b>36.040</b>                 | <b>39.25%</b> |

**2018**

| Month        | Recycled to WTP | Sent to WWTP | Total Backwash Water From WTP | Recovery Rate |
|--------------|-----------------|--------------|-------------------------------|---------------|
| January      | 0.913           | 0.189        | 1.102                         | 82.85%        |
| February     | 0.784           | 0.175        | 0.959                         | 81.75%        |
| March        | 1.098           | 0.387        | 1.485                         | 73.94%        |
| April        | 1.295           | 0.27         | 1.565                         | 82.75%        |
| May          | 1.423           | 0.413        | 1.836                         | 77.51%        |
| June         | 1.433           | 1.352        | 2.785                         | 51.45%        |
| July         | 1.77            | 0.924        | 2.694                         | 65.70%        |
| August       | 2.033           | 1.142        | 3.175                         | 64.03%        |
| September    | 1.238           | 0.363        | 1.601                         | 77.33%        |
| October      | 0.889           | 0.336        | 1.225                         | 72.57%        |
| November     | 0.737           | 0.48         | 1.217                         | 60.56%        |
| December     | 0.775           | 0.091        | 0.866                         | 89.49%        |
| <b>Total</b> | <b>14.388</b>   | <b>6.122</b> | <b>20.510</b>                 | <b>70.15%</b> |

# Appendix 6